

## APPENDIX 2: PROBLEM CROCODILE REPORT

### INTRODUCTION

Tanzania is one of the larger countries in Africa with a surface area of nearly 1 million square kilometres. It has a large population conservatively estimated at 30 million and it is thought that approximately 90% of these are rural dwellers.

Lakes and swamps cover approximately 6% of the surface area of the country with Lake Victoria being the largest. Other important lakes are Tanganyika, Malawi and Rukwa. Large artificial impoundments include the Mtera and Nyumba ya Mungu dams (Figure 1).

There are nine main drainage basins in the country (Table 1).

**Table 1: Drainage basins of Tanzania**

Basin	Area (km <sup>2</sup> )	Comments
Lake Victoria	79 570	Includes Kagera and Mara rivers. Feeds the Nile
Lake Tanganyika	137 900	Ugalla and Malagarasi rivers. Feeder link to the Congo
Lake Rukwa	81 180	Internal drainage basin
Lake Nyassa	75 230	Small short rivers in Tanzania. Link to the Zambezi
Ruvuma	103 720	Perennial river with many seasonal feeders
Rufii	177 420	Largest river in East Africa
Wami/Ruvu	72 930	Drain the coastal plain
Pangani	56 300	Source on Kilimanjaro
Internal	153 800	Feeds saline lakes of Natron and Eyasi

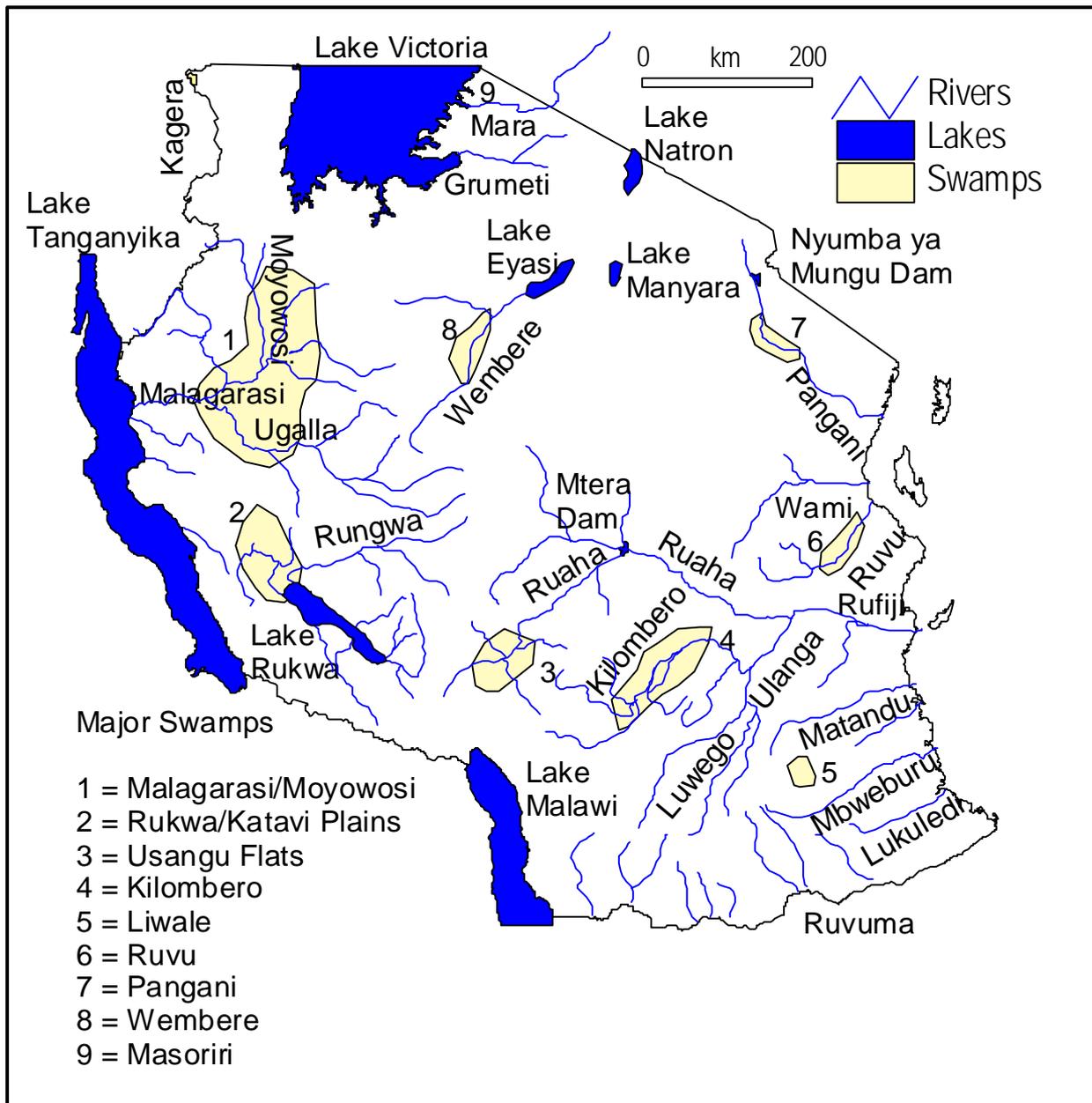
There are probably close to 5 000 kilometres of large rivers in the country with the Rufiji, Ruvuma, Pangani and Malagarasi systems being the most important (smaller rivers not included in this estimate). These rivers often feed extensive swamp systems on parts of their course with the following being the most important (Table 2).

**Table 2: Important wetlands/swamps in Tanzania**

Swamp	Comments
Masoriri	Mara river
Moyowosi	Malagarasi/Moyowosi system
Rukwa	North Lake Rukwa, Lake Chada and Katavi plains area
Usangu Flats	Source of the Ruaha
Kilombero	Fed from Udzungwa Mts. Feeds Rufiji
Liwale	South of Selous Game Reserve
Ruvu/Makata	Separate swamps floodplains fed from Uluguru Mts
Pangani	
Wembere	Internal drainage system

Two species of crocodiles are found in Tanzania – the Nile crocodile (*Crocodylus niloticus*) and the slender-snouted crocodile (*Crocodylus cataphractus*). The slender snouted crocodile is restricted to Lake Tanganyika and possibly the lower Malagarasi river. However, its biology and status remains poorly known.

Figure 1: Drainage of Tanzania



The Nile crocodile is widespread probably occurs in all of the wetland systems listed above (apart from the saline lakes of the internal drainage system) probably harbour crocodiles. Many of the rivers, especially in southern and western Tanzania are seasonal and dry up to a few remaining pools between August and January. Crocodiles (and hippo) living in these rivers are then forced to concentrate in these pools.

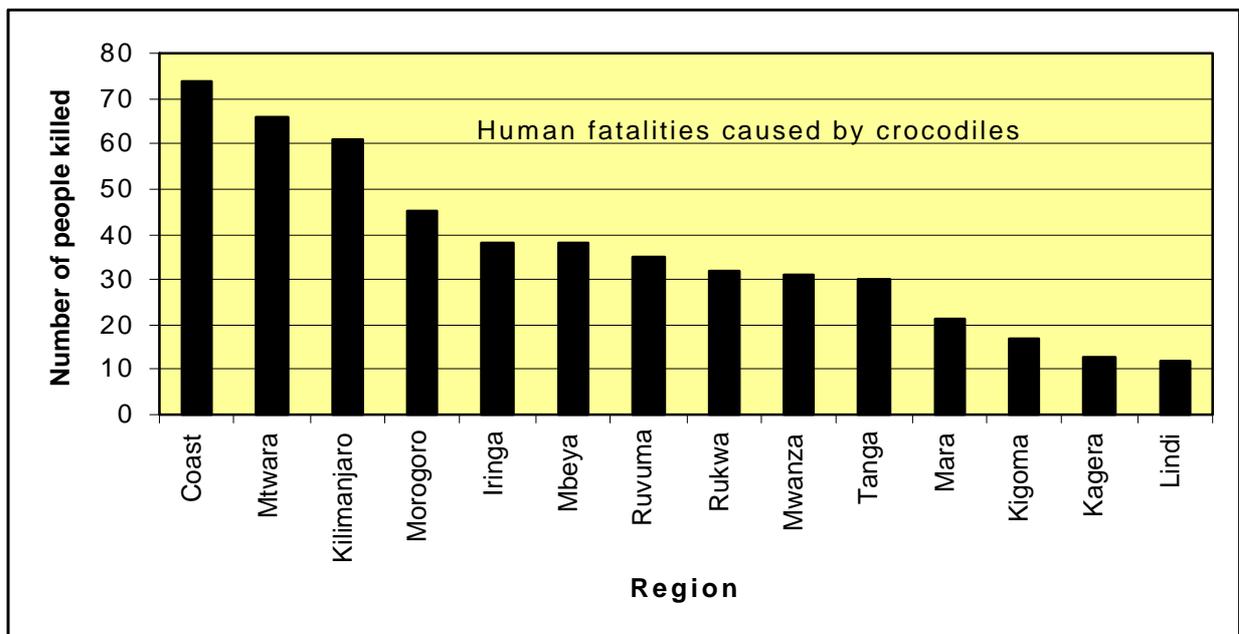
Similarly, rural people are also forced to use these same pools to water their livestock, wash themselves and their clothes and collect drinking and cooking water. This leads to a conflict between crocodiles and humans.

Crocodiles are a problem throughout Africa but it seems that the situation is particularly bad in Tanzania. This is perhaps a good point to define what exactly is a "problem crocodile". Obviously large crocodiles are an undoubted danger to human life and we believe that any animal approaching three metres (and above) certainly fits into this category. However, smaller crocodiles can also be considered a problem as they can take children, goats and dogs.

Also the number of complaints about crocodiles many not be directly proportional to the number of crocodiles. One large crocodile can certainly terrorise a village over a period of time leading to frequent reports of problems.

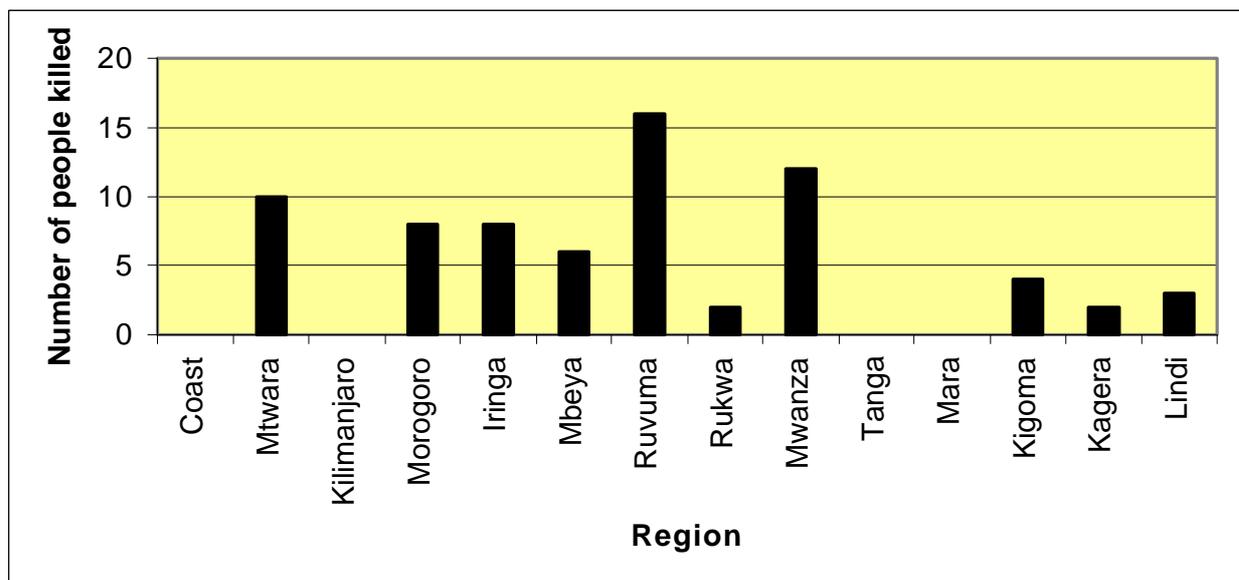
In excess of 500 people have been killed by crocodiles in Tanzania since 1985 (Figure 2). In addition another 462 are listed as having been wounded in the same period. The worst affected areas are the Mtwara and Kilimanjaro Regions.

**Figure 2: Reported human fatalities caused by crocodiles in Tanzania by region 1985-1998**



In the last two years there have been over 70 deaths in the country caused by crocodiles and 65 people wounded (Figure 3). The majority of these were recorded from the Ruvuma river and Lake Victoria.

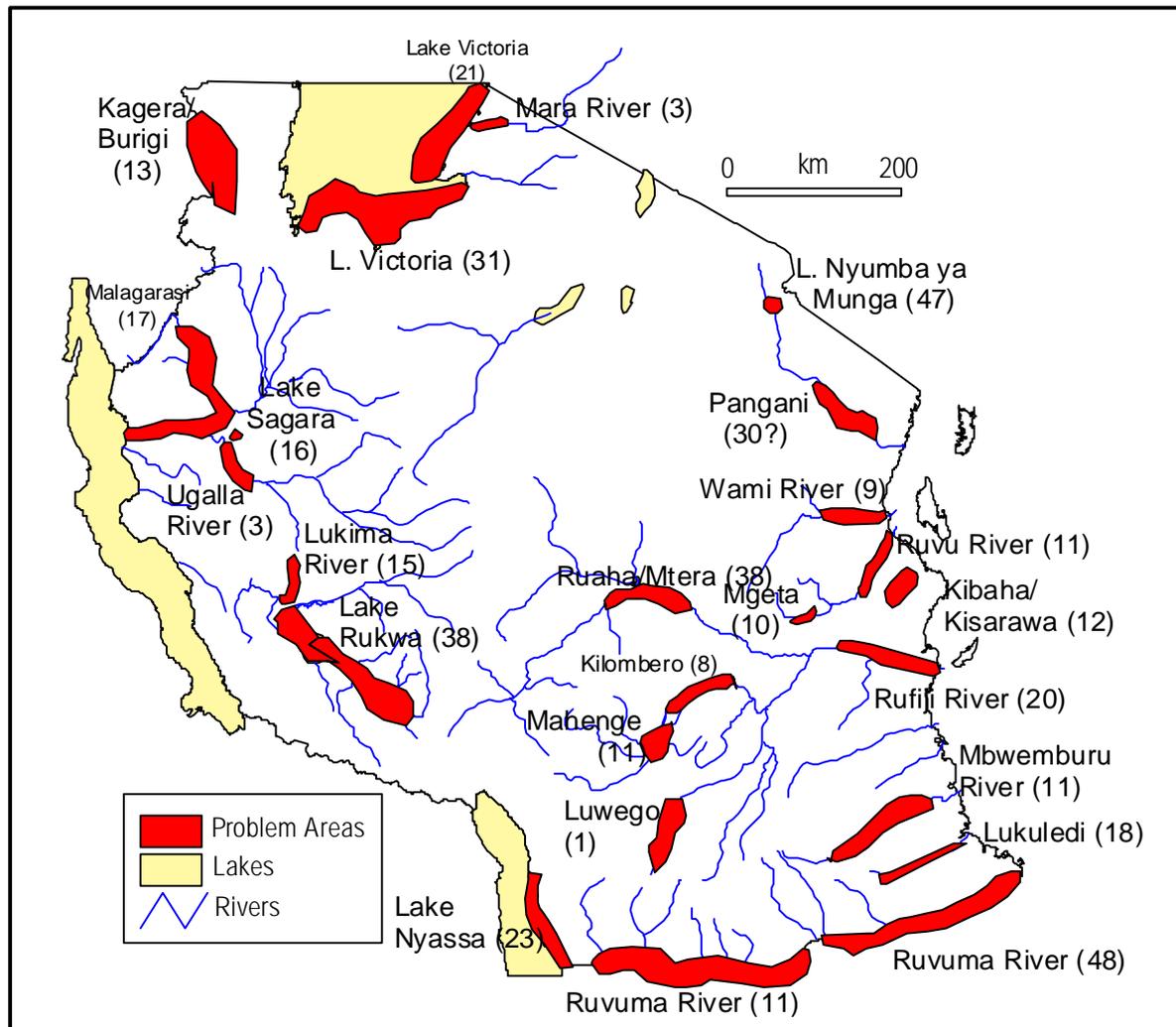
**Figure 3: Reported human fatalities caused by crocodiles in Tanzania by region 1997 -1998**



It should be noted that Tanzania is a large country with a poor infrastructure and it is likely that these figures are an under-estimate as many incidents do not get reported.

The following map is a preliminary identification of the problem areas in Tanzania with regard to crocodiles. It should be noted that maps with village and ward names are poor and often are very old so there may well be some misidentification of actual areas. However we believe that it is a reasonable reflection of the problem.

**Figure 5: Preliminary Identification of Human/Crocodile Conflicts in Tanzania.**  
**Human Fatalities since 1985 recorded in brackets.**



## REGIONAL SUMMARY

Tanzania is divided into 14 regions (Figure 6), each with its own administrative capital. This report briefly summarises the known extent of the problem on a regional basis and only those regions with a reported crocodile problem are dealt with here.

Figure 6: Regions of Tanzania

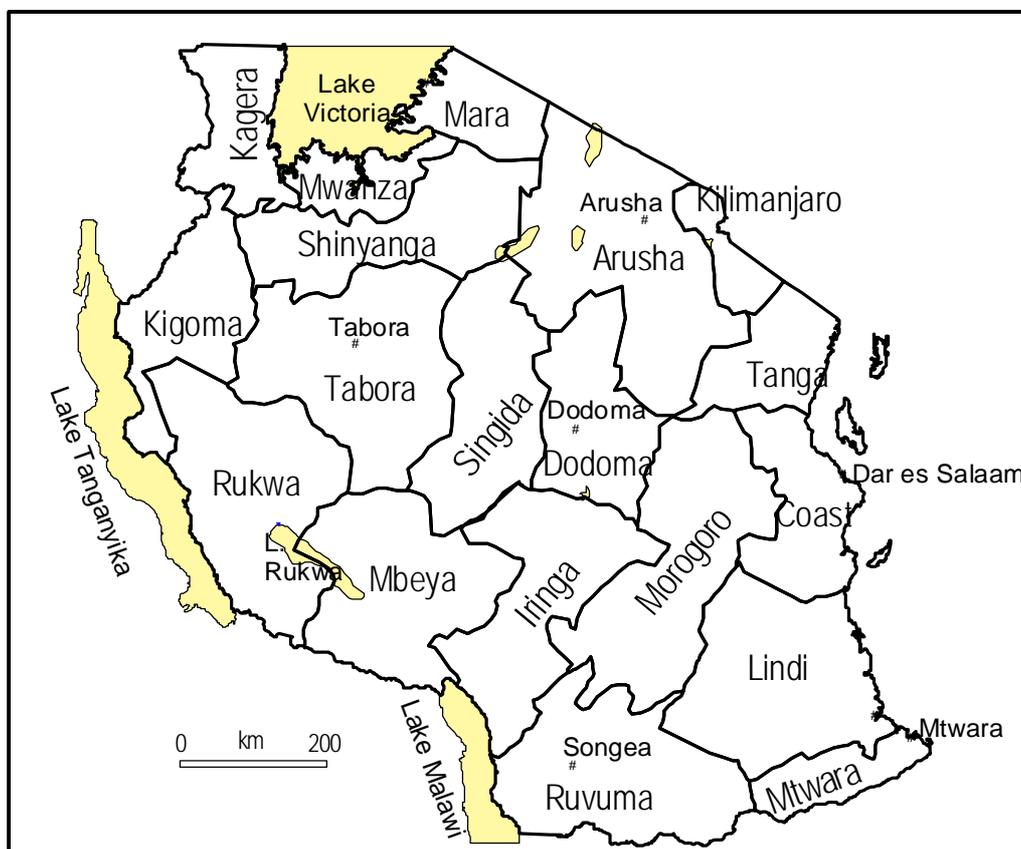


Table 3: Summary Of Reported Incidents Due To Crocodile Attacks In Tanzania Since 1985

REGION	Crocs Killed	People Wound	People Killed	Cattle Wound	Cattle Killed	Goats Wound	Goats Killed	Sheep Wound	Sheep Killed
Coast	50	34	74	0	0	0	6	0	0
Iringa	26	35	38	5	4	10	7	2	1
Kagera	5	16	13	0	1	1	4	1	0
Kigoma	11	18	17	0	2	0	2	0	0
Kilimanjaro	44	70	61	62	6	126	7	49	1
Lindi	3	5	12	2	3	2	0	1	0
Mara	19	17	21	23	10	4	0	4	0
Mbeya	20	7	38	4	4	2	1	1	0
Morogoro	68	43	45	24	6	9	11	1	1
Mtwara	22	160	66	2	1	16	2	1	0
Mwanza	77	9	31	22	11	13	12	5	3
Tanga	14	15	30	3	4	7	5	0	0
Rukwa	67	23	32	2	17	3	0	0	0
Ruvuma	97	10	35	7	5	1	10	0	0
<b>TOTALS</b>	<b>523</b>	<b>462</b>	<b>513</b>	<b>156</b>	<b>74</b>	<b>194</b>	<b>67</b>	<b>65</b>	<b>6</b>

## COAST REGION

### Administration

The Coast region (sometimes called Pwani Region) is divided into four districts – Bagamoyo, Kibaha, Kisarawe and Rufiji. The regional capital is Dar es Salaam which is also Tanzania's largest commercial centre. Important towns include Bagamoyo and Utete. Protected areas are parts of the Sadaani and Selous Game Reserves. The region has a high human population.

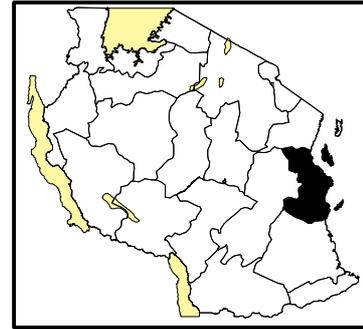
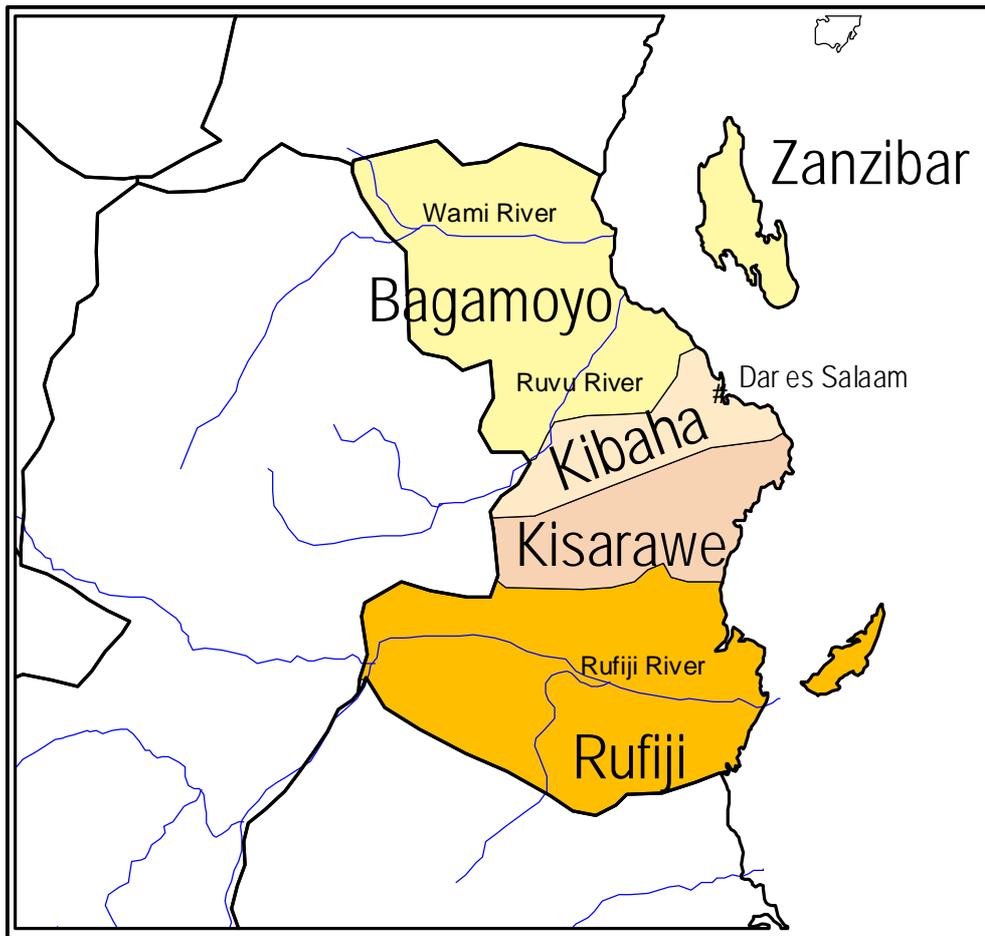


Figure 7: Coast Region



### Drainage

Rainfall in the area is relatively high and there are three main drainage systems – the Rufiji (which forms an extensive delta), the Wami and the Ruvu. Many smaller rivers and swamps are also present.

### Crocodiles

Fifty eight people have been recorded as being killed by crocodiles in this region since 1985. In addition a further 25 were injured (Table 4). No incidents have been recorded in the past two years. The Rufiji, Wami and Ruvu rivers appear to have been the most problematic.

**Table 4: Incidents between people and crocodiles in the Coast Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS		PEOPLE
				KILLED	WOUND	KILLED
Bagamoyo		Ruvu	1991-1994	2	1	4
		Ruvu	1992	2	2	-
		Wami	1993	9	-	-
		Ruvu	1994	-	3	3
		Ruvu	1994	-	4	-
		Ruvu	1989-1990	2	1	2
		Ruvu	1991	1	-	1
		Wami	1992	3	2	-
		Wami	1993-1994	-	-	6
Rufiji	Utete		1994-1995	12	-	4
	Mtandanda			-	-	1
	Mhoru			-	-	1
	Mbwera			-	-	3
	Chumbi			-	-	1
Bagamoyo	Kisanke		1994-1995	13	3	1
	Mkoko			-	-	1
	Kongo			-	-	1
	Tombo			-	-	1
	Makurenge			-	-	1
Kibaha	Kibaha		1995	2	3	10
Kisarawe	Mkamba		1994-1995	-	-	1
	Bigwa		1994-1995	1	-	1
Bagamoyo	Wami		1995	-	1	3
	Ruvu		1996	-	-	2
Kibaha		Ruvu	1995	-	4	-
Kibaha		Ruvu	1996	-	-	1
Rufiji		Rufiji	1995	-	-	3
Rufiji		Rufiji	1996	-	1	7
<b>TOTALS</b>				<b>47</b>	<b>25</b>	<b>58</b>

Crocodiles have been hunted in the Rufiji since 1985 with up to 200 being legally removed on an annual basis.

Crocodiles have been formally surveyed in the Rufiji and Wami rivers. Densities are low from the air but considerable numbers of crocodiles have been seen at night from boats even outside protected areas.

## IRINGA REGION

### Administration

Iringa Region is divided into five administrative districts – Iringa, Mufindi, Njombe, Makete and Ludewa (Figure 8). The regional capital is at Iringa. Protected areas are the Ruaha National Park and the recently formed Usangu Game Reserve.

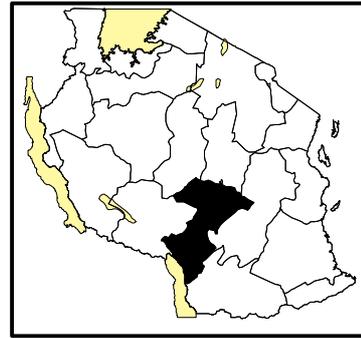
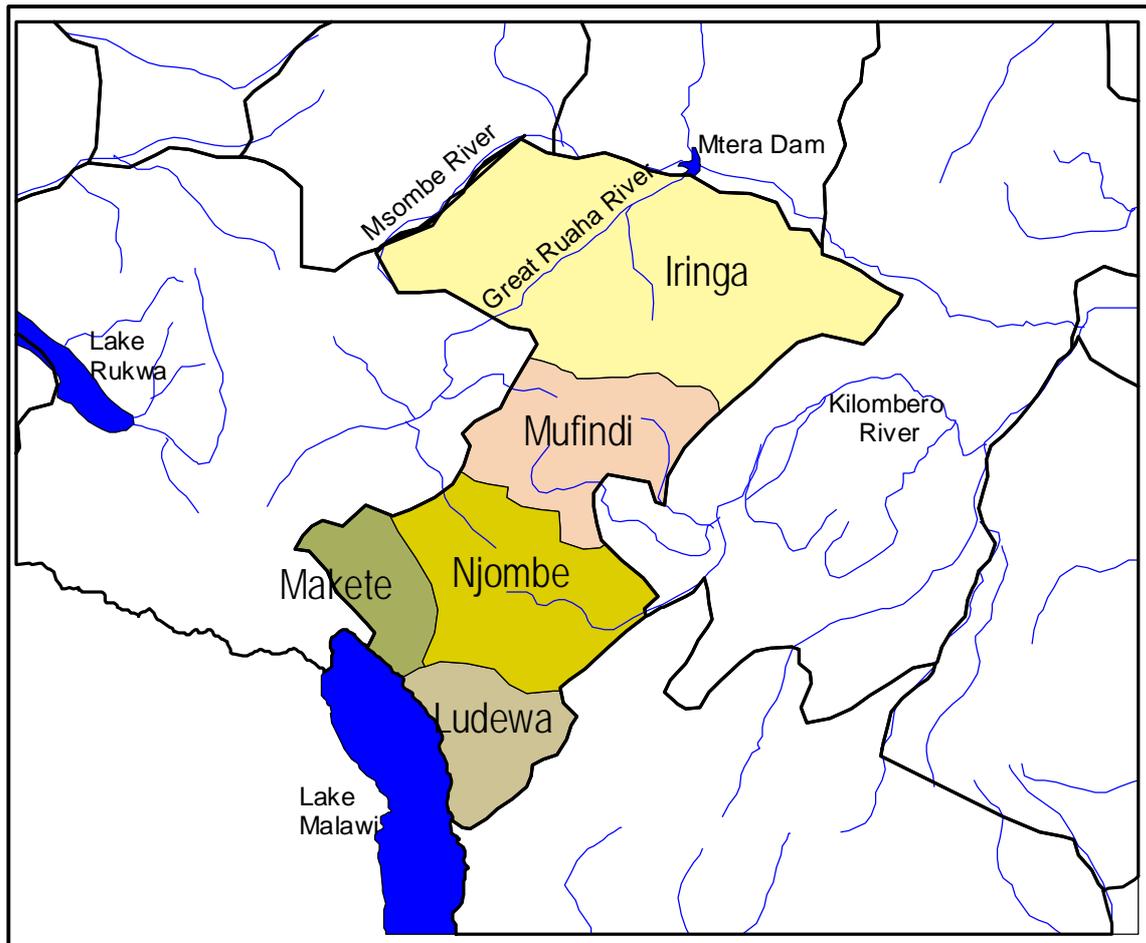


Figure 8: Iringa Region



### Drainage

The main drainage system is the Great Ruaha. This river has been drying up for the last few decades and currently is a seasonal. The Msombe and Great Ruaha rivers feed the Mtera Dam which then feeds into the Kidatu Dam. This system provides most of Tanzania's power. The area is also the headwaters for the Kilombero swamp system. The Usangu flats are an important wetland in the Mufindi District.

## Crocodiles

Thirty eight people were recorded as having being killed by crocodiles in the Iringa Region since 1985 (Table 5). In addition a further 35 cases are on record of attacks resulting in injury. Eight people have been killed in the past two years an 12 people have been wounded. The recent cases were recorded at Mtera Dam on the Ruaha river.

**Table 5: Incidents between people and crocodiles in the Iringa Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS			PEOPLE	
				KILLED	WOUNDED	KILLED		
Iringa		Mtera	1994-1995	0	-	1		
Mufindi	Mpanga	Ruaha	1992-1993	7	5	4		
Ludewa		Ruvuvu	1993	4	2	6		
Iringa	Mtambika	Rukosi	1994	0	-	-		
		Ruaha	1993	6	4	4		
	Pawaga	Ruaha	1995	0	-	-		
Iringa Rural		Ruaha&Mtera	1995	0	7	5		
		Ruaha&Mtera	1996	0	2	1		
Iringa Urban		Great Ruaha	1996	1	3	9		
		Mtera	1997	2	6	2		
		Great Ruaha	1998	2	3	2		
		Mtera	1999	4	3	4		
<b>SUB-TOTAL</b>			<b>1993-1999</b>	<b>26</b>	<b>35</b>	<b>38</b>		
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>8</b>	<b>12</b>	<b>8</b>		

No crocodiles have been hunted in the Region as part of the CITES quota but 26 animals were recorded as being killed since 1985.

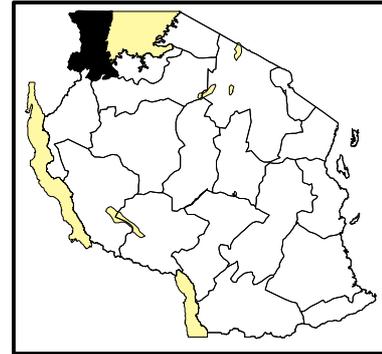
Formal surveys have been carried out on the Ruaha (inside the National Park), the Msombe (border between the Iringa and Singida Regions) and over parts of Mtera Dam.

Crocodile densities were low with the exception of a series of pools close to the Ruaha National Park headquarters at Msembe.

## KAGERA REGION

### Administration

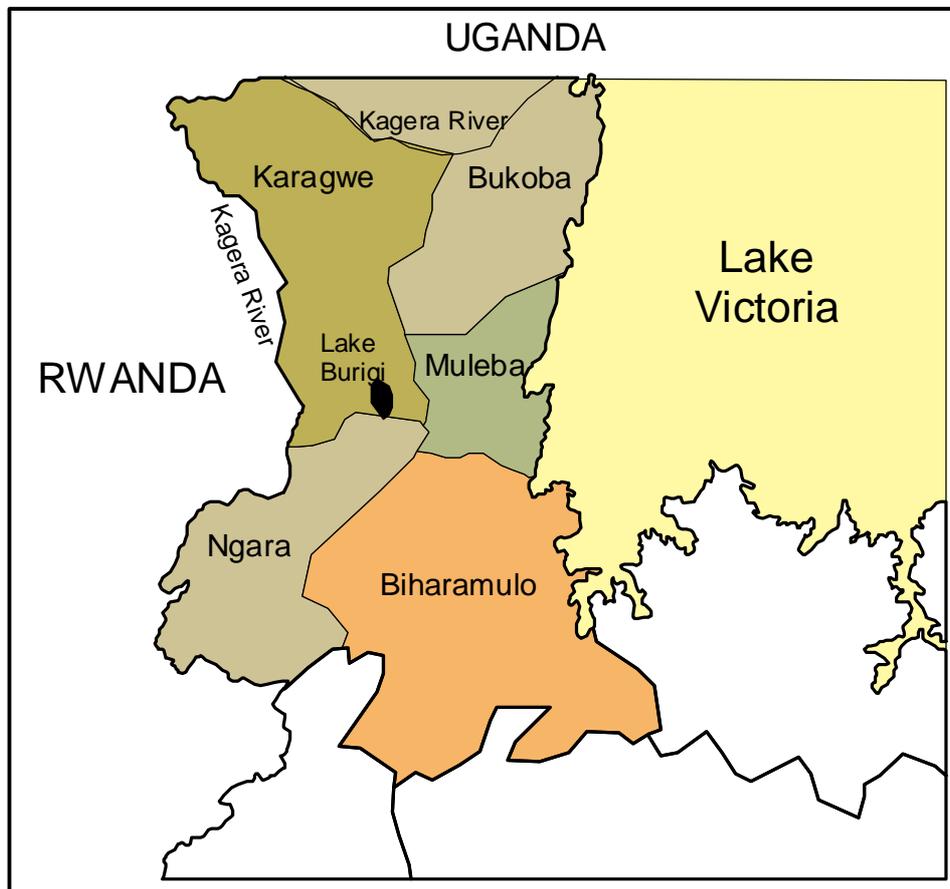
The Kagera Region is divided into five districts – Bukoba, Karagwe, Muleba, Biharamulo and Ngara. The regional capital is located at Bukoba. Protected areas include the Biharamulo and Burigi Game Reserves.



### Drainage

The main river in the area is the Kagera river. This river has its source in the highlands of Rwanda and forms the boundary between Rwanda and Tanzania for approximately 300 kilometres. Along this border it flows into a series of lakes which include Lake Nasho, Lake Herma and Lake Twamwale. The eastern side of the Region is dominated by Lake Victoria. In the central areas there are a number of smaller lakes which include Lake Burigi and Lake Ikimba.

Figure 9: Kagera Region



## Crocodiles

A total of 13 people have been killed by crocodiles in this region, two of them in the past two years. Problem areas are the Lake Victoria shoreline, Lake Burigi and the Kagera river. (Table 6).

**Table 6: Incidents between people and crocodiles in the Kagera Region since 1985**

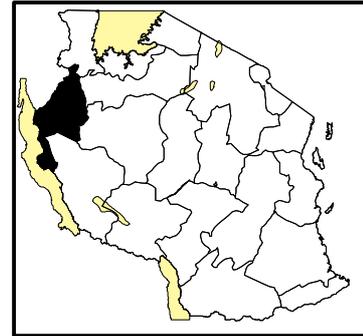
DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS			PEOPLE	
				KILLED	WOUNDED	KILLED		
Bukoba		Kagera	1989-1993	2	0	1		
	Muleba	Victoria	1994	-	-	-		
Bukoba Rural		Victoria & Kagera	1995	-	1	3		
Biharamuro		Victoria & Burigi	1995	-	1	2		
		Victoria & Burigi	1996	-	1	1		
Muleba		Victoria	1995	-	2	4		
		Victoria	1996	-	2	-		
Muleba		Victoria	1997	2	4	0		
Biharamuro		Victoria & Burigi	1998	0	2	2		
Muleba		Victoria	1999	1	3	0		
<b>SUB TOTAL</b>	<b>1989-1999</b>			<b>5</b>	<b>16</b>	<b>13</b>		
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>3</b>	<b>9</b>	<b>2</b>		

This area has never been formally surveyed for crocodiles.

## KIGOMA REGION

### Administration

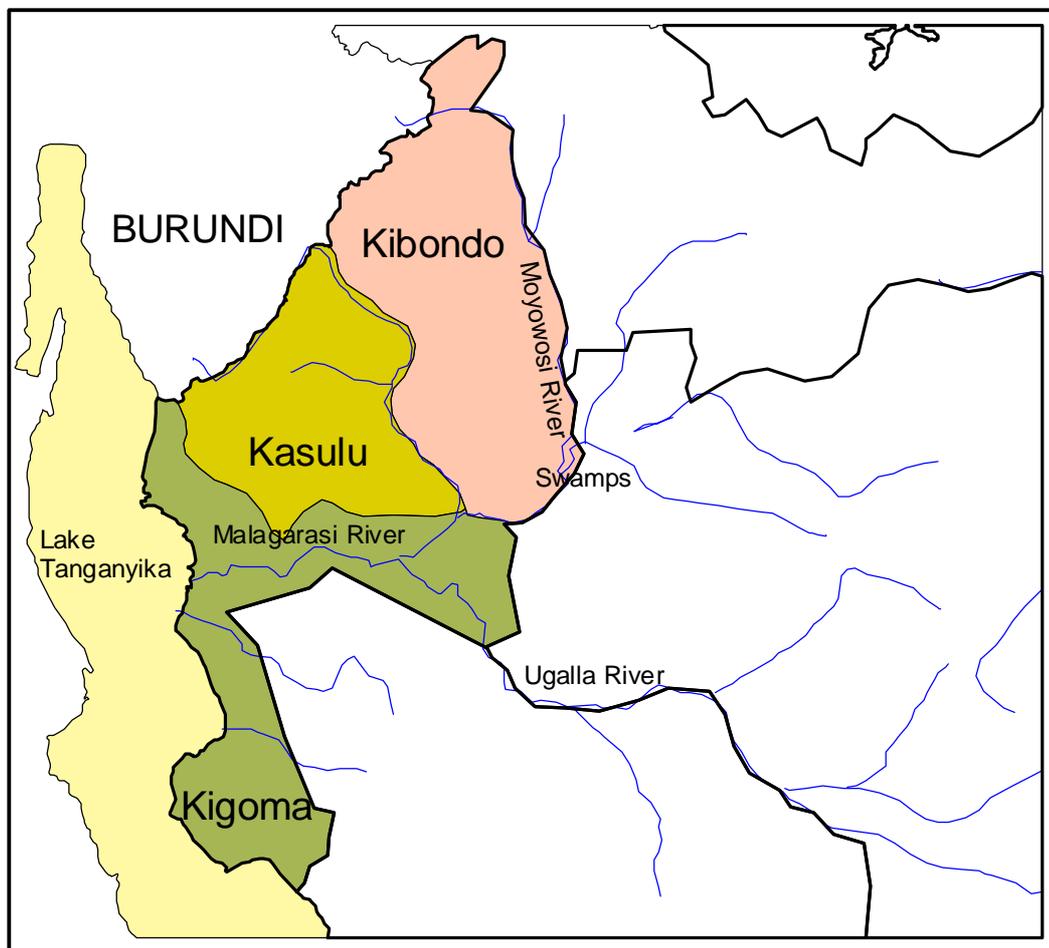
Kigoma Region is xxkm<sup>2</sup> and has its capital in Kigoma. It is divided into three districts (Kibondo, Kasulu and Kigoma). Uvinza, Kasulu and Kibondo are important towns. Protected areas include the Mahale Mountains and Gombe Stream National Parks and the xx and xx Game Reserves which are used for hunting.



### Drainage

The main hydrological feature of the Region is Lake Tanganyika which stretches along the western boundary (with Congo). Major rivers are the Malagarasi, Moyowosi, Ugalla (all part of the Malagarasi system) and the Rugufu. The Malagarasi has its source near Lake Tanganyika and flows in a large loop away from the lake before flowing back into it south of Ujiji

Figure 10: Kigoma Region



The topography in the northern and eastern parts is flat. This terrain, coupled with the high rainfall gives rise to an extensive swamp system centered on the Moyowosi, Malagarasi and Ugalla rivers. Lake Sagara is another important wetland in the area. The Ugalla river becomes a series of pools during the dry season.

## Crocodiles

Seventeen fatalities were caused by crocodiles in the Region since 1985 with four in recent years (Table 7) . Problem areas were the Malagarasi and Lake Sagara (in the Tabora region specifically).

**Table 7: Incidents between people and crocodiles in the Kigoma Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS			PEOPLE	
				KILLED	WOUND	KILLED		
Kigoma Rural		Tanganyika Magharibi	1995	-	2	9		
		Malagarassi Lwiche	1996	3	8	4		
			1997	4	2	1		
		Malagarassi	1998	2	4	2		
		Malagarassi Lwiche	1999	2	2	1		
<b>SUBTOTAL</b>			<b>1995-1999</b>	<b>11</b>	<b>18</b>	<b>17</b>		
<b>SUBTOTAL</b>			<b>1997-1999 Since last CITES meeting</b>	<b>8</b>	<b>8</b>	<b>4</b>		

Since the inception of CITES hunting of crocodiles has not taken place here (apart from trophy hunting). Records of hunting activities in the past (e.g. 1945 to 1970) are not available. Lake Tanganyika is part of the range of *Crocodylus cataphractus*. The status of this species is unknown but is believed to be relatively high in some areas (from anecdotal reports).

Surveys have been carried out on the Ugalla and Malagarasi rivers. The Moyowosi swamp is unsuited to aerial survey but it is believed (from habitat observation and conversations with hunters) that crocodile densities in here are high.

## KILIMANJARO REGION

### Administration

The Kilimanjaro Region is sub-divided into five districts – Rombo, Hai, Moshi, Mwanga and Same. The regional capital is Moshi but other important towns are Same and Sanye Juu. Protected areas include the Kilimanjaro National Park and the Mkomazi Game Reserve.

### Drainage

The most important river in the Region is the Pangani (also known as the Ruvu along parts of its course) which drains Mt. Kilimanjaro. The Nyuma ya Mungu dam is situated just south of Moshi and is important for fishing. South of Same town is an extensive wetland system.

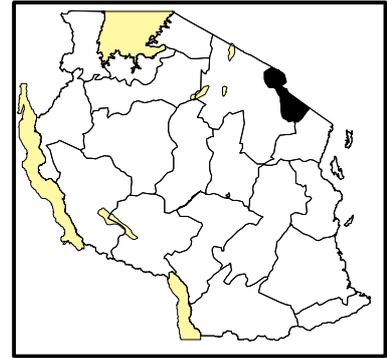
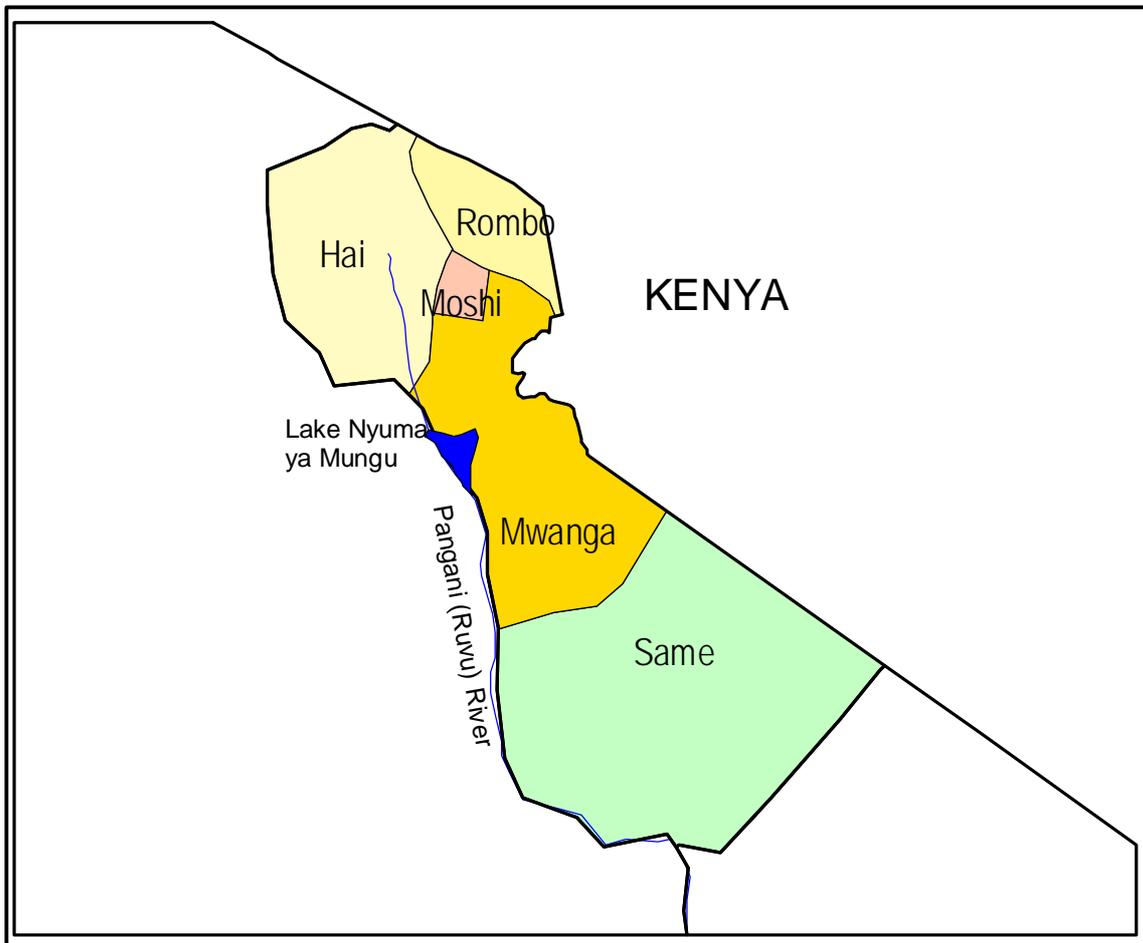


Figure 11: Kilimanjaro Region



## Crocodiles

A total of sixty one people are recorded as having been killed by crocodiles in the Region since 1985. The majority of deaths occurred at Nyumba ya Mungu dam. There have been no reported deaths over the last two years.

**Table 8: Incidents between people and crocodiles in the Kilimanjaro Region since 1985**

DISTRICT	RIVER/LAKE	YEAR	CROCS	PEOPLE	
			KILLED	WOUND	KILLED
Moshi	Nyumba ya Mungu	1994-1995	32	28	28
Mwanga		1989	2	-	2
		1990-1994	-	-	-
Same	Same	1989	2	-	-
Mwanga	Ruvu	1994-1996	2	6	7
Same	Asilia	1994-1995	1	-	2
Moshi	Duhu	1994-1996	5	14	2
Same	Nyumba ya Mungu	1995	-	12	5
Same/ Mwanga	Nyumba ya Mungu	1995	-	7	13
	Dudugani Rombo U'msalanga Rongai	1996	-	3	2
<b>SUB TOTAL</b>		<b>1989-1996</b>	<b>44</b>	<b>70</b>	<b>61</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>		<b>0</b>	<b>0</b>	<b>0</b>

Lake Nyumba ya Mungu has been surveyed from the air several times but very few crocodiles have been seen.

## LINDI REGION

### Administration

Lindi Region is sub-divided into four districts – Kilwa, Liwale, Nachingwea and Lindi. A large part of the Liwale District is covered by the Selous Game Reserve which is the only protected area in the Region

### Drainage

The Matandu, Mbwemburu and Lukuledi are the major rivers in the Region, but all are seasonal and water is restricted to a pools in the dry season. The Mbaragandu river forms the western boundary but this also has a very reduced flow in the dry season.

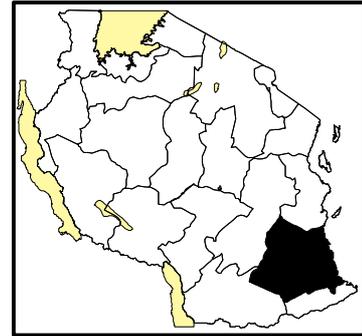
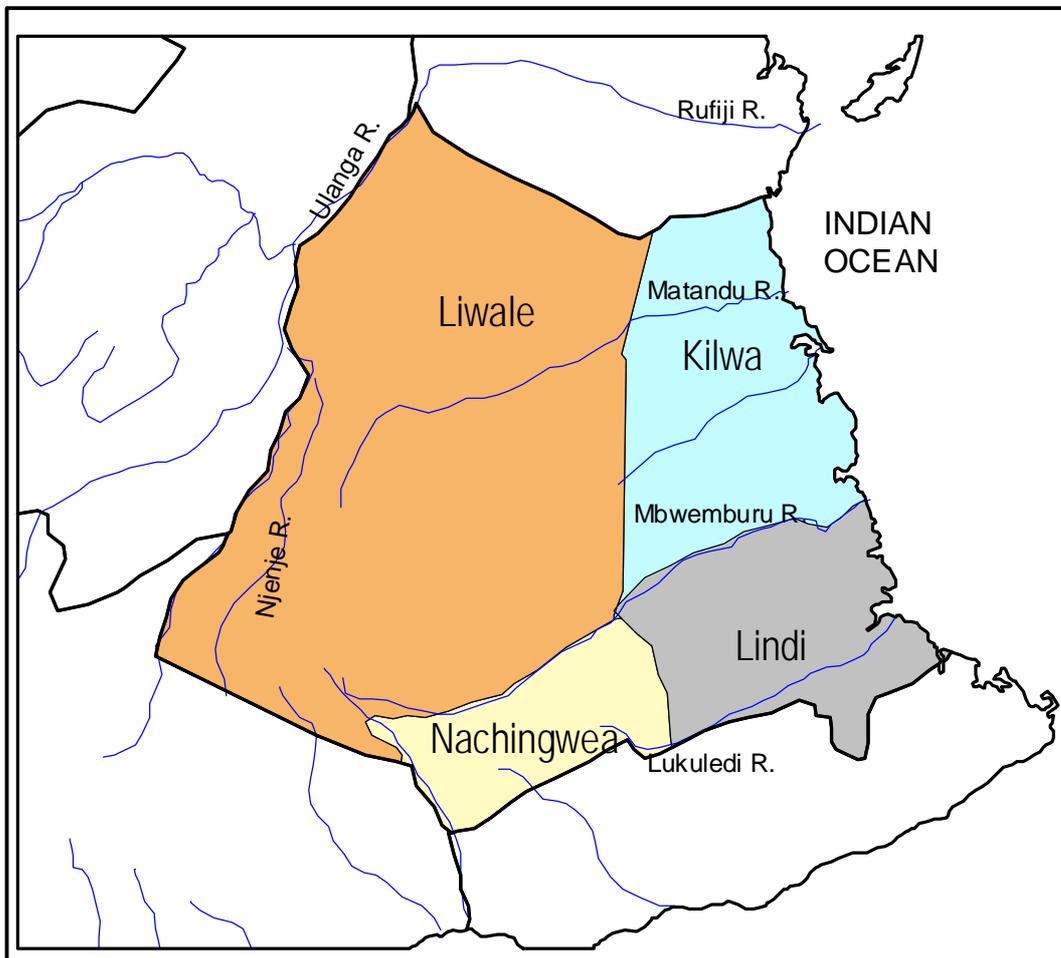


Figure 12: Lindi Region



## Crocodiles

A total of 12 deaths have been recorded from the Region since 1985; three of these in the last two years. These are all from the Mbwemburu or Lukuledi rivers. The Lukuledi forms the boundary between the Lindi and Mtwara Districts. Both of these are seasonal rivers and the crocodiles are concentrated in pools during the dry season.

**Table 9: Incidents between people and crocodiles in the Lindi Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	PEOPLE		
				KILLED	WOUNDED	KILLED
Lindi		Lukuledi	1989	-	1	3
Nachingwea		Mbwemburu	1993	-	1	5
		Mbwemburu	1990	-	-	1
Lindi		Lukuledi	1977	1	1	1
		Mbwemburu	1998	2	2	1
		Mbwemburu	1999	0	0	1
<b>SUB TOTAL</b>			<b>1989-1999</b>	<b>3</b>	<b>5</b>	<b>12</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>3</b>	<b>3</b>	<b>3</b>

Surveys in the region have been limited to the rivers in the Selous Game Reserve where crocodile densities are relatively high.

## MARA REGION

### Administration

The Mara Region is sub-divided into three districts – Musoma, Bunda and Serengeti. The regional capital is based in Musoma while other centres include Tarime and Bunda. Protected areas include the Serengeti National Park and the Ikorongo and Grumeti Game Reserves.

### Drainage

The biggest river in the Region is the Mara which has its source in Kenya. This river feeds the large Masirori swamp before draining into Lake Victoria. The Grumeti and Orangi rivers are other important watercourses but are seasonal. Surface water is restricted to pools during the dry season. Lake Victoria covers the north western part of the area.

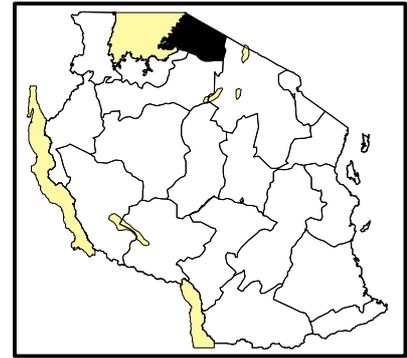
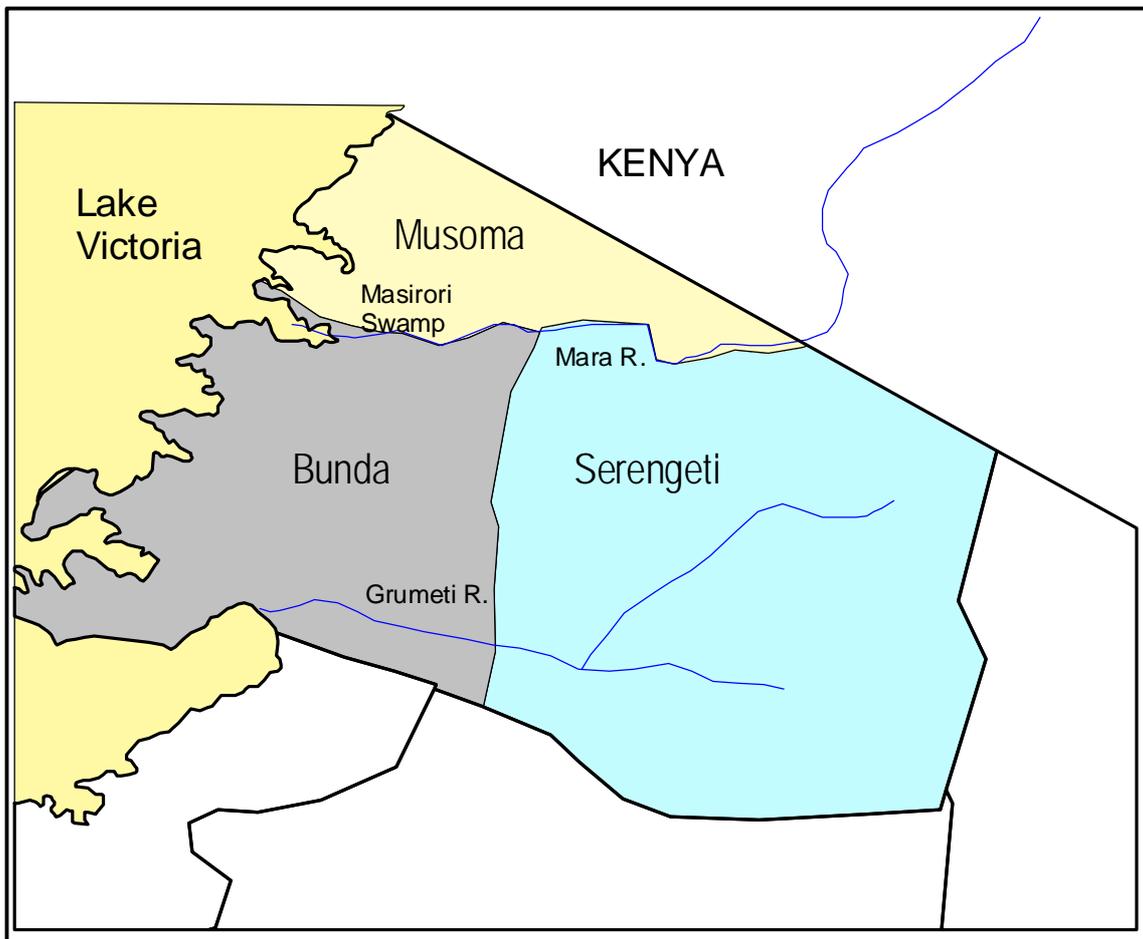


Figure 13: Mara Region



## Crocodiles

Twenty one deaths have been recorded from the region since 1985 from the Mara river and the Lake Victoria shoreline. There have been no deaths recorded in the last two years.

**Table 10: Incidents between people and crocodiles in the Mara Region since 1985**

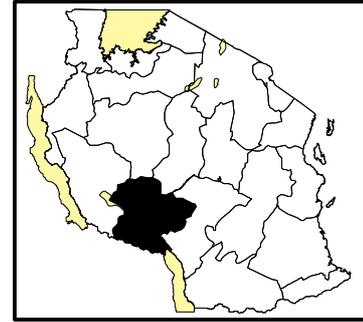
DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS KILLED	PEOPLE WOUND	KILLED
Musoma		Victoria	1991	3	-	2
		Victoria	1992	4	2	1
		Victoria	1993	1	-	-
		Victoria	1994	2	-	-
Serengeti		Victoria	1989-1991	-	-	-
		Victoria	1992	3	-	-
		Victoria	1993-1994 1996	1	-	1
Tarime		Victoria	1989	2	-	1
		Mara	1996	-	5	5
		Victoria		-	-	1
		Mara	1996	3	1	1
Musoma Rural		Victoria	1995	-	1	3
		Mara	1996	-	-	2
Tarime		Victoria	1995	-	1	1
		Victoria	1996	-	1	-
Mara		Mara	1996	-	6	3
<b>SUB TOTAL</b>	<b>1989-1996</b>			<b>19</b>	<b>17</b>	<b>21</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>0</b>	<b>0</b>	<b>0</b>

Formal surves have been carried out on the Mara and Grumeti rivers. Densities are relatively high inside the Serengeti National Park but are low outside the protected areas.

## MBEYA REGION

### Administration

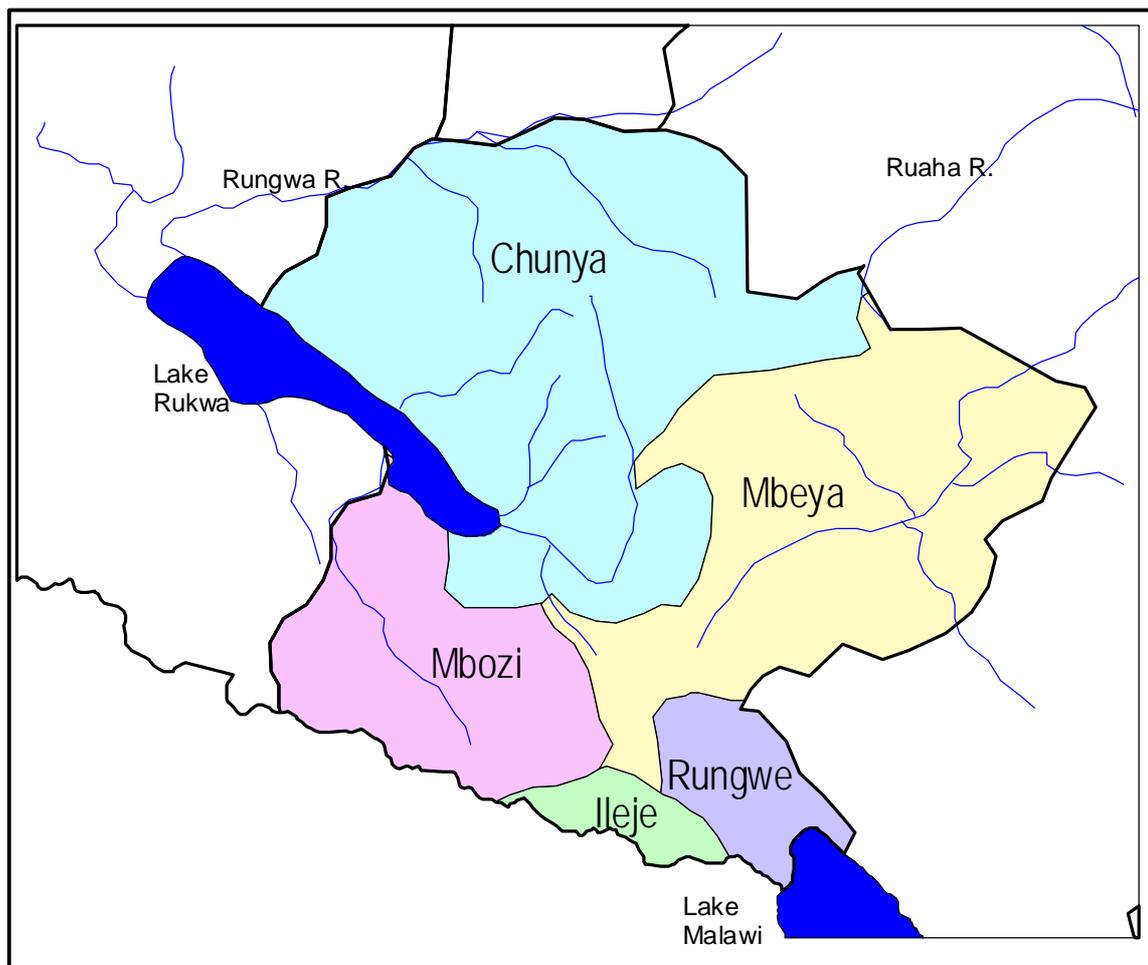
Mbeya Region is sub-divided into five districts – Chunya, Mbeya, Mbozi, Ileje and Rugwe. The Regional capital is based in Mbeya but other important towns are Vwawa and Tukuyu. Protected areas include parts of the Ruaha National Park and the Uwanda and (recently gazetted) Usangu Flats Game Reserves.



### Drainage

The Usangu flats are a drainage sink feeding the Great Ruaha river, which is the major river in the area. The flows in this river have receded during the last 20 years and it is currently a seasonal river. Climatic variation and changing land use practices in the Usangu flats area are thought to be the cause. The other large drainage feature is Lake Rukwa in the Chunya and Mbozi Districts. This is an inland drainage sink with no outlets. The lake has risen a great deal during the last decade and is apparently still coming up. Lake Malawi abuts onto the Rungwe District in the south-east.

Figure 14: Mbeya Region



## Crocodiles

A total of 38 people have been killed and four wounded by crocodiles in the Mbeya Region since 1985. Six people have been killed in the last two years in the Chunya District, probably on Lake Rukwa.

**Table 11: Incidents between people and crocodiles in the Mbeya Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	PEOPLE		KILLED
				CROCS KILLED	WOUND	
Chunya	Udinde	Kikamba	1989	1	-	3
	Semangombe	Ombaka	1990	1	-	8
		Momba	1991	4	-	5
	Udinde	Momba	1992	6	-	4
Mbozi/ Chunya	Semangombe	Kikamba	1992-	3	-	2
		Momba	1994-1995	-	-	2
		Ombaka	1994	-	-	3
Mbalali		Ruaha	1995	-	-	1
		Ruaha	1996	-	-	1
Mbozi		Rukwa	1996	-	-	1
		Rukwa	1996	-	3	2
Chunya		Ruaha	1996	-	-	-
Kyela		Mbaka	1996	2	-	-
Mbozi		Rukwa	1996	-	-	-
Chunya	Udinde	Kikamba	1997	2	2	3
	Semangombe	Ombaka	1998	1	1	2
	Udinde	Momba	1999	0	1	1
<b>SUB TOTAL</b>	<b>1989-1996</b>			<b>20</b>	<b>7</b>	<b>38</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>3</b>	<b>4</b>	<b>6</b>

Permits to crop crocodiles have been issued several times for Lake Rukwa with almost 400 having been killed in the last two years.

**Surveys have been carried out on Lake Rukwa but the habitat is not suited to aerial survey and hence the numbers seen are low.**

## MOROGORO REGION

### Administration

Morogoro Region is sub-divided into four districts – Kilosa, Morogoro, Kilombero and Ulanga. The Regional capital is based in Morogoro and other large towns are Kilosa, Ifakara and Mahenge. Protected areas include the Selous Game Reserve and the Mikumi National Park.

### Drainage

The area is well watered, especially along its western boundary which is formed by the Uluguru and associated mountains. The southern part of this range drains into the Kilombero swamp (approx. 3 500 km<sup>2</sup>), while the Ulugurus themselves feed the Mkata plain and the Ruvu/Mgeta rivers adjacent to the Selous Game Reserve. The major drainage channels are the Ruaha (downstream of the Kidatu dam) and the Kilombero which coalesce to form the Ulanga (upper Rufiji) and the Rufiji proper which is Tanzania's largest river. The Luwego and Mbaragandu are important drainage systems in the south of the region.

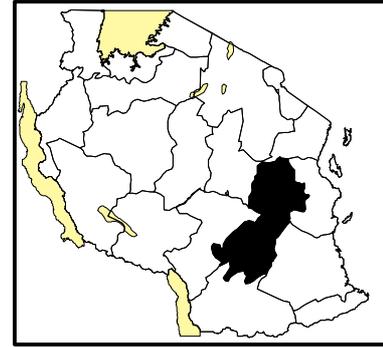
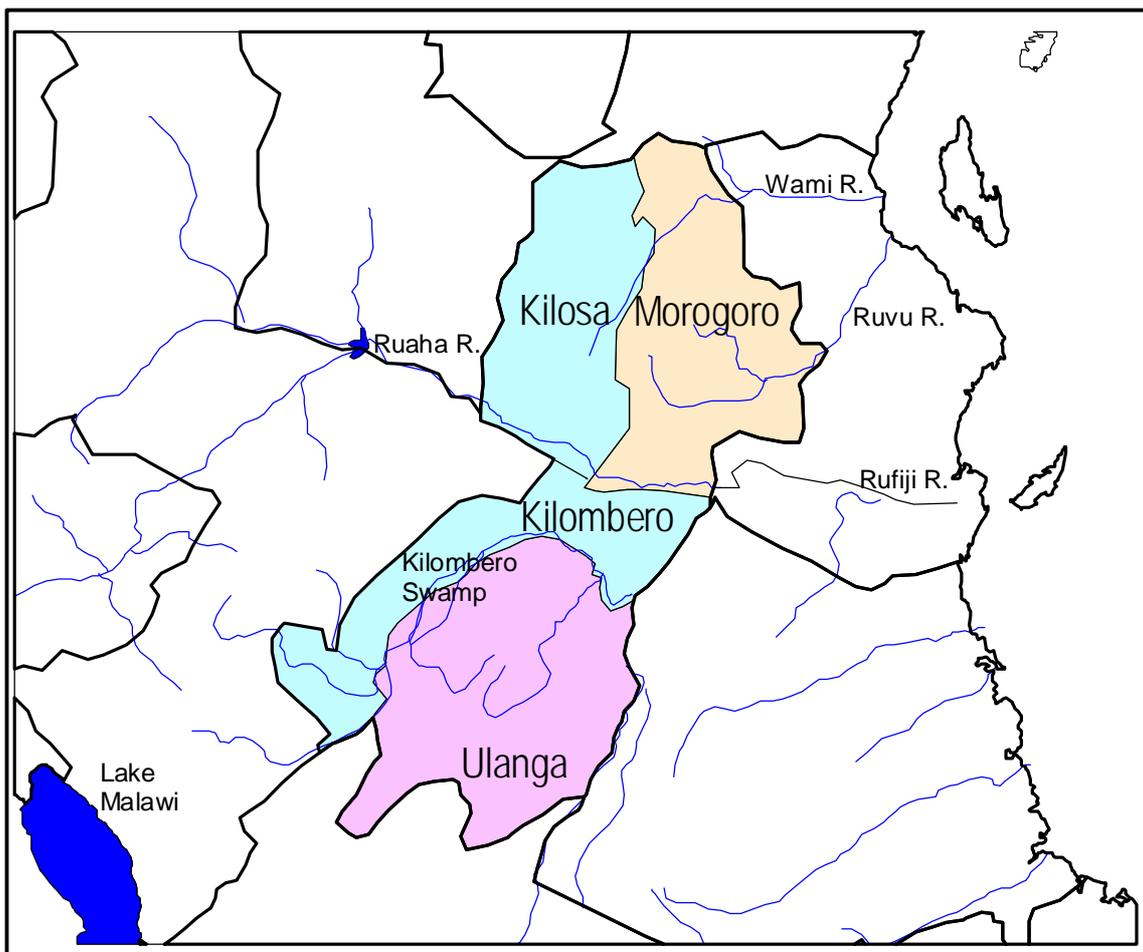


Figure 15: Morogoro Region



## Crocodiles

Eight people have been killed in the Region in the last two years and a total of 45 has been recorded since 1985. The Mgeta and Kilombero are the biggest problem areas.

**Table 12: Incidents between people and crocodiles in the Morogoro Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS	PEOPLE	
				KILLED	WOUND	KILLED
Kisaki	Mvuha	Mgeta	1989	14	7	10
		Mgeta	1990	14	-	-
Mahenge			1991	6	3	4
Kilosa			1992	4	4	4
Mahenge			1993	8	-	7
		Ikuti	1996	-	2	1
Ngerengere			1994-1995	2	1	1
Kilosa			1994-1995	4	-	-
Ulanga		Ipiti	1994-1995	2	-	1
Morogoro Rural		Ngerengere	1995	-	1	1
		Ruvu	1996	4	8	1
Kilombero		Mpanga/Kilombero	1995	-	1	1
Kilosa		Mandela	1995	-	1	-
Morogoro Rural		Ngerengere	1996	-	-	2
Kilombero		Mpanga/Kilombero	1996	-	5	2
Ulanga		Ipiti	1996	-	-	1
Kilosa		Mandela	1996	-	-	1
		Magele/Msowelo	1996	4	1	-
Kilombero		Mpanga/Kilombero	1997	1	4	3
Kilombero		Mpanga/Kilombero	1998	2	3	2
Kilosa		Magele/Msowelo	1999	3	2	3
<b>SUB TOTAL</b>			<b>1989-1996</b>	<b>68</b>	<b>43</b>	<b>45</b>
<b>SUBTOTAL</b>			<b>1997-1999 Since last CITES meeting</b>	<b>6</b>	<b>9</b>	<b>8</b>

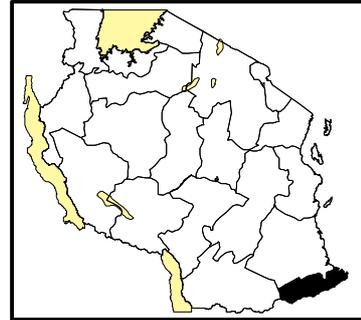
Formal surveys have been carried out on the rivers in the Selous Game Reserve where densities are high. Outside the Reserve the densities are low but considerable numbers of crocodiles occur in the Kilombero wetland.

Hunting for crocodiles takes place in the Kilombero annually with almost 500 animals having been removed in the last two years.

## MTWARA REGION

### Administration

Mtwara Region is divided into 3 Districts – Mtwara, Newala and Masasi. The Regional capital is Mtwara and other important towns are Masasi and Newala. The District Game Officer is based in Mtwara. Protected areas include the recently gazetted Lukwima-Lumusele Game Reserve on the Ruvuma River

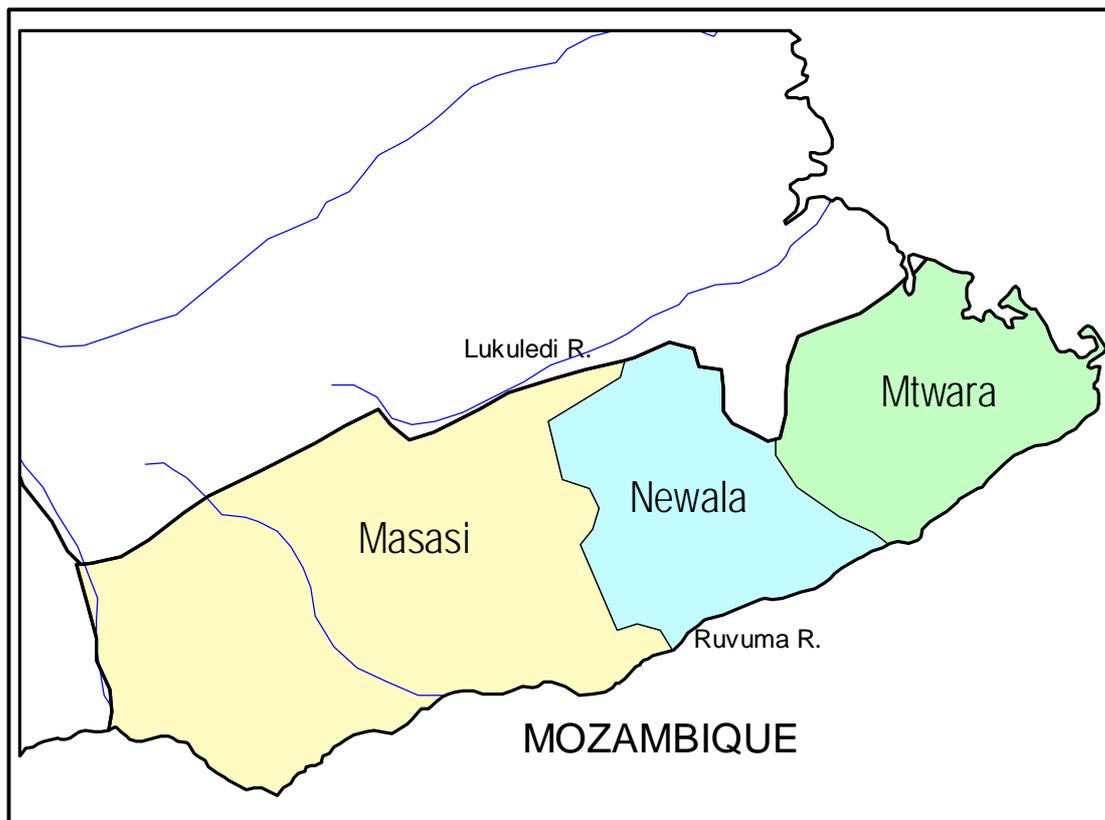


### Drainage

All rivers within the district are seasonal except for the Ruvuma. This perennial river follows the typical pattern for southern Tanzania with peak flows in April. Important seasonal rivers are the Lumusele, Lukwika and Mbangala. All of these drain into the Ruvuma. Another important river is the which Lukuledi drains eastwards into the Indian Ocean at Lindi. It also forms the boundary between the Mtwara and Lindi Regions.

All rivers will dry up after the rains but pools will remain. People, their livestock and crocodiles will be concentrated at these pools during the dry season which increases the possibility of fatalities caused by crocodiles.

Figure 16: Mtwara Region



## Crocodiles

Twenty deaths caused by crocodiles have been reported to the authorities since 1989. These have been on the Lukuledi and Ruvuma rivers, especially in the vicinity of Masgulu village. The Ruvuma has been formally surveyed for about half of its length from the coast in 1993 and 1999. Densities of crocodiles were low (as were hippo). Fishermen were observed using the river extensively, especially to the east of the Lukwima-Lumsele Game Reserve.

In 1998 a special permit was issued to hunt 50 crocodiles in the Masgulu area to a commercial hunter.

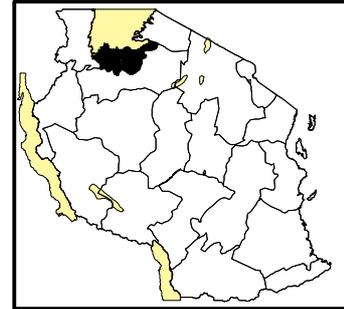
**Table 13: Incidents between people and crocodiles in the Mtwara Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	PEOPLE		
				CROCS KILLED	WOUND	KILLED
Mtwara		Ruvuma	1989	5	18	7
		Ruvuma	1990	-	14	3
		Ruvuma	1991-1992	2	18	4
		Ruvuma	1992	-	12	2
		Ruvuma	1993	2	12	2
		Ruvuma	1994	2	24	5
	Kitaya	Ruvuma	1995	-	10	1
Newala	Mapili	Lukuledi	1995	-	9	3
Masasi	Lichebe	Lukuledi	1995	-	-	6
Mtwara Rural		Ruvuma	1995	-	6	4
			1996	2	7	4
		Ruvuma	1996	-	4	2
Tandahimba		Ruvuma	1995	-	2	-
		Ruvuma	1996	-	-	2
Newala		Ruvuma	1995	-	8	2
			1996	2	1	-
		Ruvuma	1996	-	3	-
Masasi		Ruvuma	1995	-	6	3
		Ruvuma	1996	5	1	-
		Ruvuma & Lukuledi	1996	-	1	6
Mtwara		Ruvuma	1997	1	2	5
Newale		Ruvuma	1998	1	1	1
Masasi		Ruvuma & Lukuledi	1999	0	1	4
<b>SUB TOTAL</b>			<b>1989-1996</b>	<b>22</b>	<b>160</b>	<b>66</b>
<b>SUBTOTAL</b>			<b>1997-1999 Since last CITES meeting</b>	<b>2</b>	<b>4</b>	<b>10</b>

## MWANZA REGION

### Administration

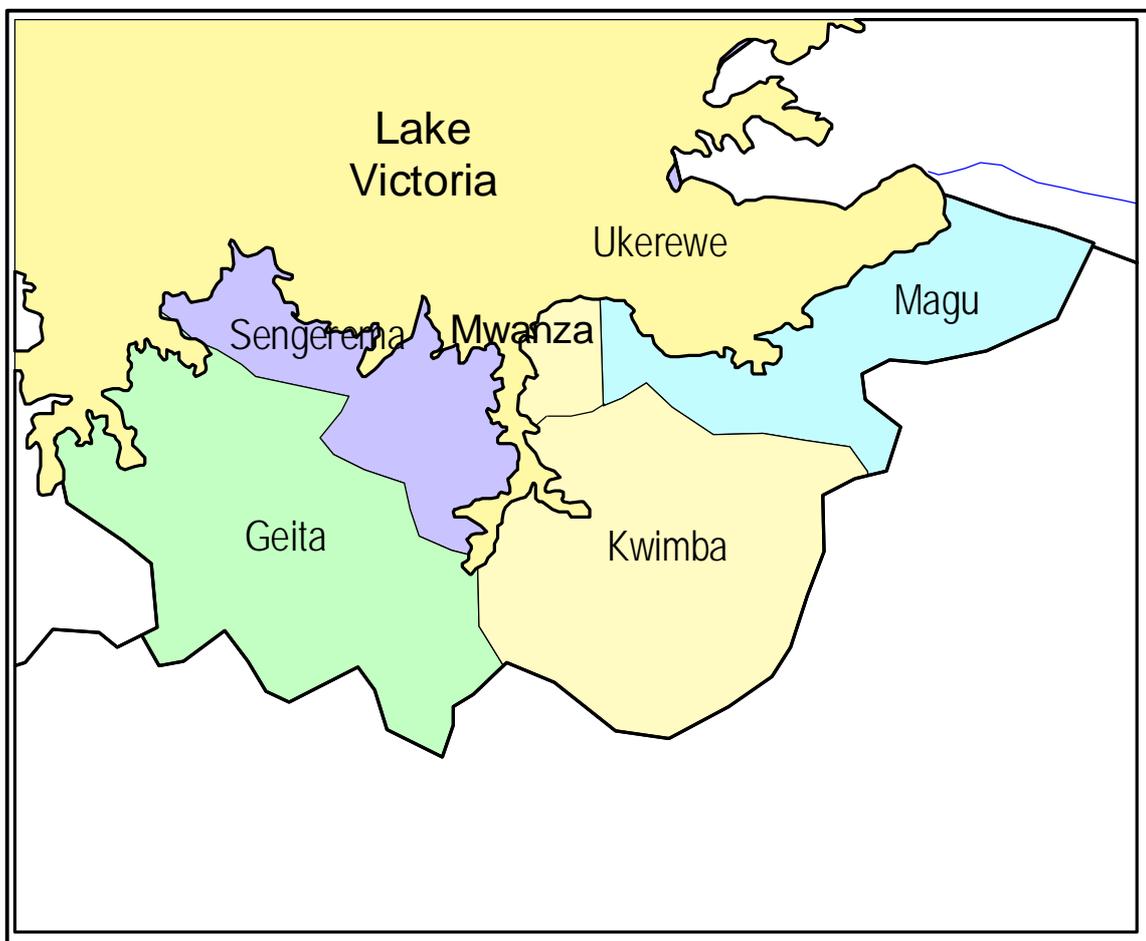
The Mwanza Region is sub-divided into six districts – Ukerewe, Magu, Kwimba, Mwanza, Sengerema and Geita. The Regional capital is based in Mwanza but other major towns include Nanslo and Geita. Protected areas are represented by the Rubondo National Park, an island in Lake Victoria.



### Drainage

The major feature of the Region is Lake Victoria which probably accounts for about half its surface area. The Simunyu and Moame are important seasonal rivers draining into the lake.

Figure 17: Mwanza Region



## Crocodiles

Thirty one people are on record as having been killed in the Mwanza Region since 1985 and 12 of these deaths occurred in the last two years. The Lake Victoria shoreline and the Siminyu river are particular problem areas.

**Table 14: Incidents between people and crocodiles in the Mwanza Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS	PEOPLE	KILLED
				KILLED	WOUND	
Magu	Kalemera	Simiyu	1989-1990	1	-	1
	Misungwi	Simiyu	1991	1	-	1
		Simiyu	1992	-	-	-
	Itumbili	Simiyu	1993	-	-	-
	Kalemera	Simiyu	1994	2	1	-
	Ijicha	Simiyu	1995	-	-	-
		Victoria	1996	1	-	-
		Victoria	1997	2	0	1
	Kalemera	Simiyu	1998	1	1	1
	Musungwi	Simiyu	1999	1	0	1
Sengerema	Katunguru	Victoria	1989	1	-	-
	Kasunza	Victoria	1990	-	-	1
	Kakobe/Nkome	Victoria	1991			
	Kakobe/Regeta	Victoria	1992	22	-	2
	Rubango	Victoria	1993	1	-	3
	Rubango	Victoria	1994	6	-	1
	Maranga	Victoria	1994	-	-	-
	Buyagu	Victoria	1995	1	-	-
		Victoria	1996	-	-	-
	Kalcobe	Victoria	1997	15	1	1
	Katunguru	Victoria	1998	8	0	0
	Kasume	Victoria	1999	7	1	1
Kwimba	Siwenge	Victoria	1990	1	-	-
	Sumbuga	Victoria	1990	-	-	-
	Tumbuko	Victoria	1991	-	-	1
	Tumbuko	Victoria	1992	1	-	-
	Mitego	Victoria	1993	-	-	-
	Mitego	Victoria	1994	-	-	1
Mwanza	Lucherere	Victoria	1994	2	1	-
	Busegema	Simiyu	1990	-	-	-
Ukerewe	Busegema	Simiyu	1991-1995	-	-	-
Magu		Victoria & Simiyu	1995	-	-	-
Sengerema		Victoria	1995	-	-	2
Mwanza		Victoria	1995	-	2	3
		Simiyu	1996	0	1	3
		Victoria	1997	1	0	4
		Victoria	1998	2	0	2
		Simiyu	1999	0	1	1
<b>SUB TOTAL</b>			<b>1989-1999</b>	<b>77</b>	<b>9</b>	<b>31</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>37</b>	<b>4</b>	<b>12</b>

Surveys have been carried out over Rubondo Island which has an impressive crocodile population. The Island is a protected National Park.

No crocodiles have been shot in this area as part of the CITES quota but 37 animals have been shot for control purposes in the last two years.

## RUKWA REGION

### Administration

The Rukwa Region is sub-divided into three districts – Mpanda, Nkansi and Sumbuwanga. The Regional capital is based in Sumbuwanga but other important towns include Mpanda and Kipili. Protected areas include the Katavi Plains National Park and the Rungwa Game Reserve.

### Drainage

The main feature of Rukwa Region is Lake Rukwa. This lake is an inland drainage sink for the Rukwa rift valley. Older maps show the lake in two parts but the lake has been rising since the late 1980s. Major rivers draining into the lake are the Rungwa and Kavuu from the north. The Kavuu and Kafufu drain the Katavi plains and Lake Chada. During the wet season this area becomes a large marsh and access is extremely difficult. The Songwa and Sira rivers drain into the south of the lake from the Mbeya range but they have relatively small catchments. The lake is backed up against the eastern side of the rift valley with deep water. Major rivers draining into this side are the Wuku and Kikambe. By contrast the western side is shallow and very suitable crocodile habitat.

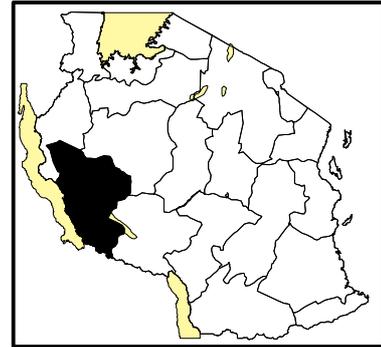
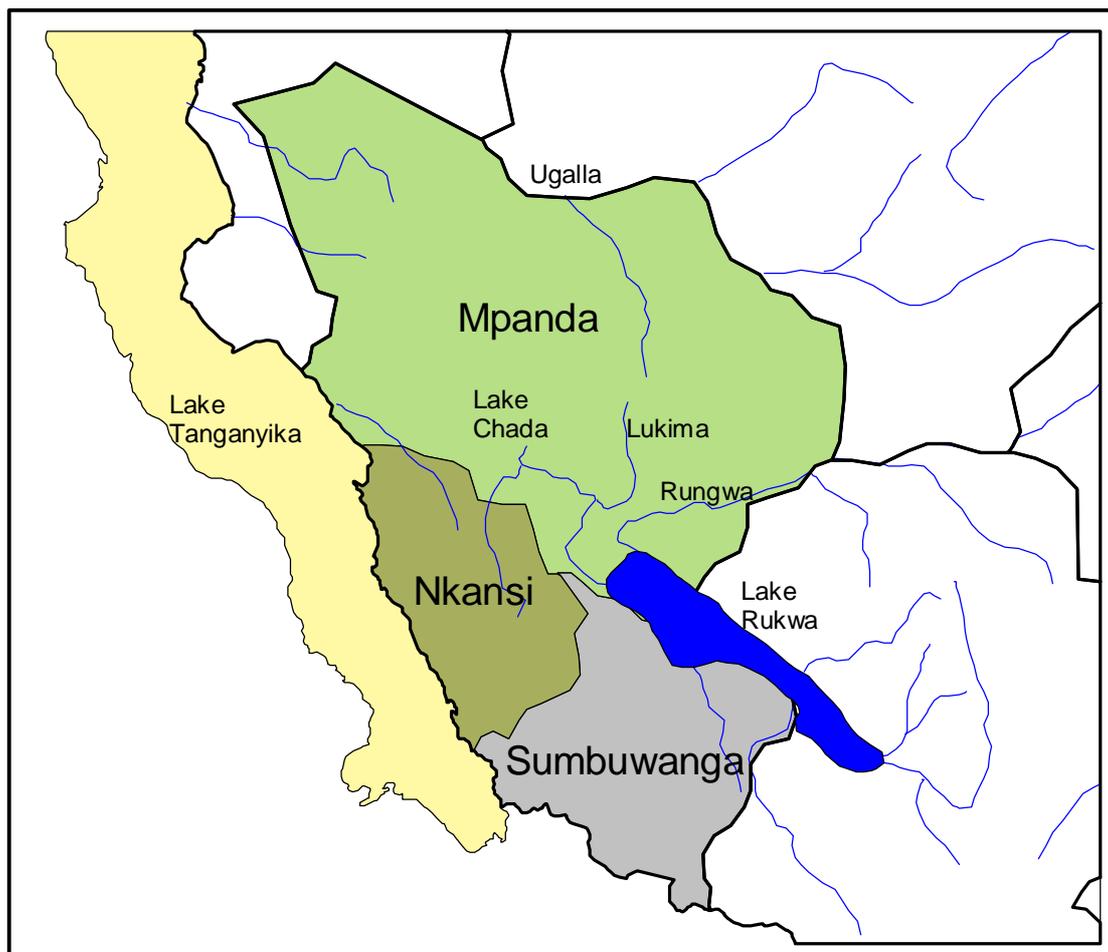


Figure 18: Rukwa Region



## Crocodiles

A total of 32 people are on record as having been killed by crocodiles in the Rukwa Region since 1985 and two of these have been in the last two years. Lake Rukwa, the Ugalla and Lukima rivers are listed as problem areas.

**Table 15: Incidents between people and crocodiles in the Rukwa Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	PEOPLE		
				CROCS KILLED	WOUND	KILLED
Mpanda		Ugalla	1989	8	1	4
		Ugalla	1994-1995	-	1	1
		Lukuma	1990	12	-	3
		Lukuma	1991	8	3	5
		Lukuma	1992	7	-	2
		Lukuma	1993	9	-	3
		Lukuma	1994	5	-	2
	Munze	Rukwa	1994	-	-	1
	Makapora	Rukwa	1995	-	1	-
	Kashu	Tanganyika	1994-1995	-	1	1
	?		1994-1995	-	1	1
		Rukwa	1995	-	4	3
		Rukwa	1996	-	-	2
		Tanganyika	1996	-	3	2
		Tanganyika	1996	-	3	-
			1997	1	3	1
			1998	5	1	0
			1999	12	1	1
<b>SUB TOTAL</b>	<b>1989-1996</b>			<b>67</b>	<b>23</b>	<b>32</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>18</b>	<b>5</b>	<b>2</b>

Surveys have been carried out in the Rungwa river, Lake Rukwa, the Lukima and Kavuu rivers. Lake Chada has also been surveyed.

Crocodiles have been shot in this area as part of the CITES quota (see Mbeya section).

## RUVUMA REGION

### Administration

The Ruvuma Region is sub-divided into three districts – Tunduru, Songea and Mbinga. The Regional capital is based in Songea. Other important towns are Tunduru and Mbinga. There are no protected areas in the Ruvuma Region.

### Drainage

The main hydrological feature of the Region is Lake Malawi which forms its western boundary. The Ruvuma river forms the southern boundary and is also the international border with Mozambique. The main road between Songea and Tunduru is an important watershed between the Rufiji and Ruvuma systems.

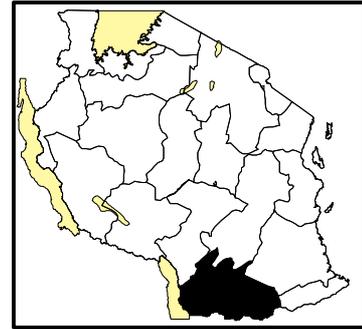
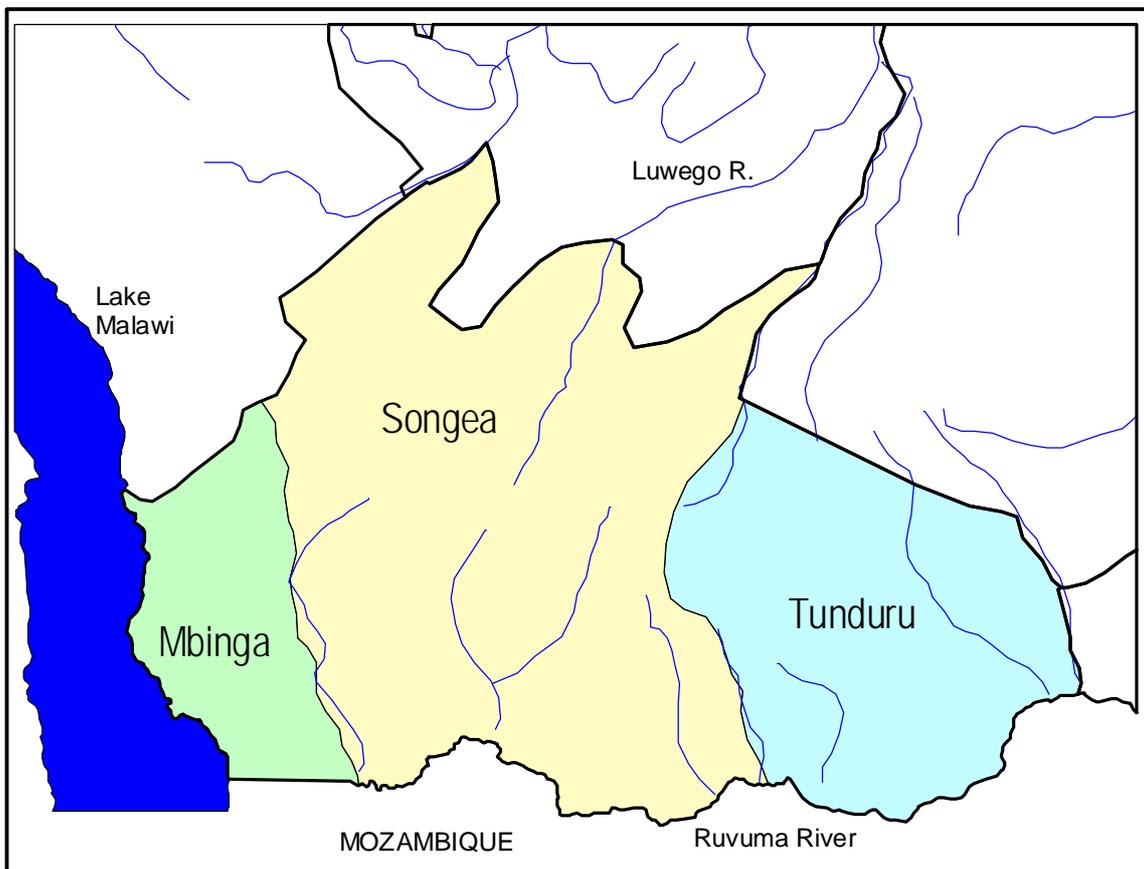


Figure 19: Ruvuma Region



## Crocodiles

Thirty five people have been killed in the Region since 1985 and 16 of these have been in the last two years. The majority of cases have been recorded from the Ruvuma river.

**Table 16: Incidents between people and crocodiles in the Ruvuma Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS	PEOPLE	
				KILLED	WOUND	KILLED
Nyasa	Luwekei	Nyasa	1989	6	-	7
	Ngumbo	Nyasa	1990	6	-	-
	Luwekei	Nyasa	1991	22	-	4
	Ruhuhu	Nyasda	1992	6	-	1
	Ruhuhu	Nyasa	1993	2	-	-
	Ruhuhu	Nyasa	1994	1	-	3
	Lukwekei	Nyasa	1995	0	0	0
	Ruhuhu	Nyasa	1996	3	0	0
	Ruhuhu	Nyasa	1997	6	0	3
			Nyasa	1998	3	1
	Ruhuhu	Nyasa	1999	4	2	3
Tunduru	Sunda/Lunda	Ruvuma	1989	-	-	-
	Sunda/Lunda	Ruvuma	1990	-	-	-
	Sunda/Lunda	Ruvuma	1991	-	-	-
	Sunda/Lunda	Ruvuma	1992	-	-	-
	Sunda/Lunda	Ruvuma	1993	2	-	-
	Sunda/Lunda	Ruvuma	1994	2	-	-
	Sunda/Lunda	Ruvuma	1995-1996	15	2	2
	Sunda/Lunda	Ruvuma	1997	2	1	2
	Sunda/Lunda	Ruvuma	1998	1	0	2
	Sunda/Lunda	Ruvuma	1999	10	3	4
Songea	Mtoya	Luwegu	1989	6	-	1
Mbinga			1989	-	1	1
<b>SUB-TOTAL</b>			<b>1989-1999</b>	<b>97</b>	<b>10</b>	<b>35</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>26</b>	<b>7</b>	<b>16</b>

Surveys have been carried out on the Ruvuma river and densities of crocodiles were low.

No crocodiles have been shot in the area as part of the CITES quota but 26 animals have been killed in the last two years for control purposes.

## TANGA REGION

### Administration

Tanga Region is sub-divided into five districts – Lushoto, Muheza, Korogwe, Handeni and Pangani. The Regional Capital is based in Tanga and other important towns are Korogwe and Lushoto. Protected areas include part of the Mkomazi Game Reserve.

### Drainage

The major drainage feature of the Region is the Pangani river. Other important rivers are the Umbe and Msangasi.

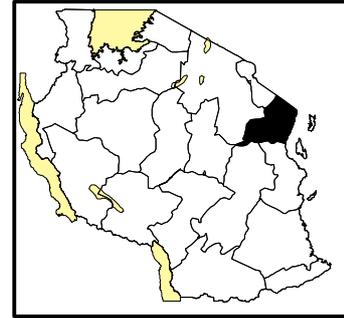
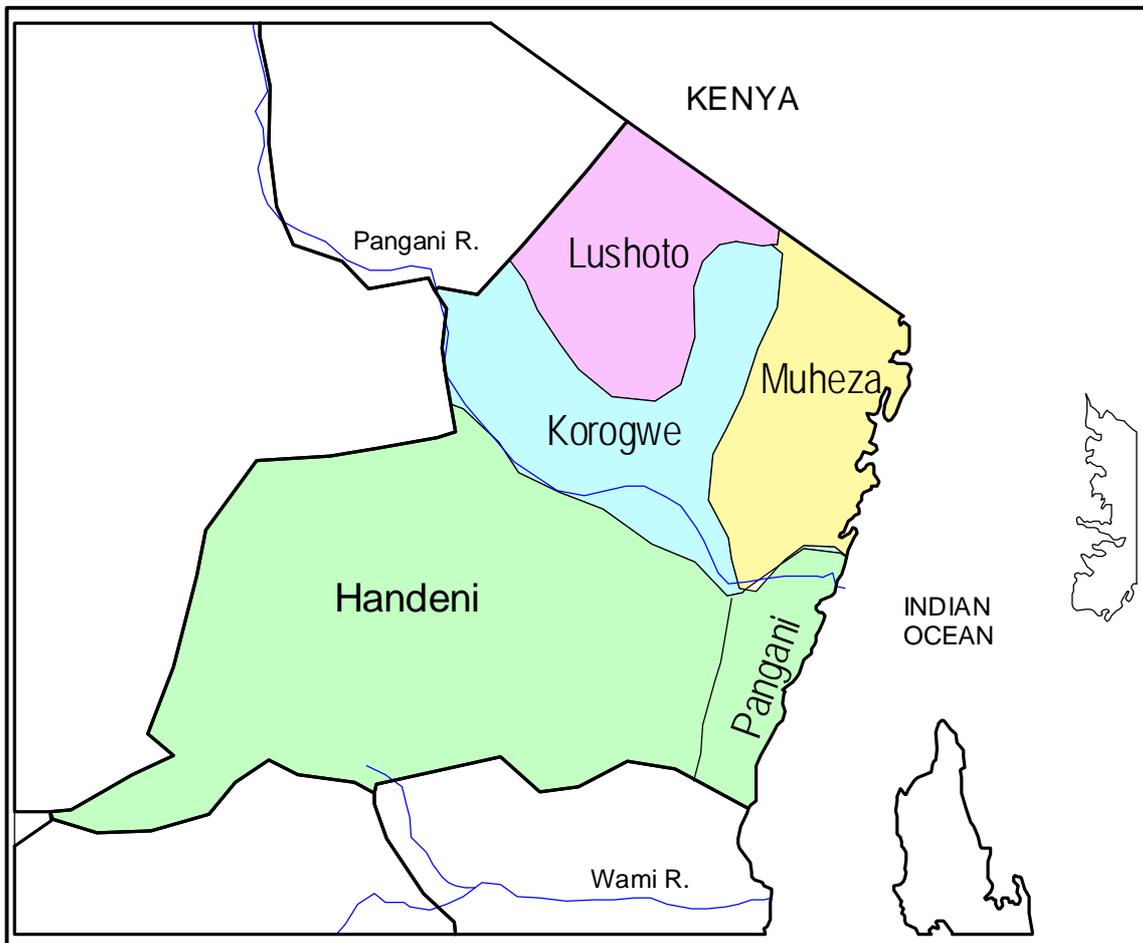


Figure 20: Tanga Region



## Crocodiles

Thirty deaths were recorded in the region since 1985 but there have been none in the last two years.

**Table 17: Incidents between people and crocodiles in the Tanga Region since 1985**

DISTRICT	VILLAGE	RIVER/LAKE	YEAR	CROCS	PEOPLE	
				KILLED	WOUND	KILLED
Tanga	Pongwe		1989	-	2	-
Korogwe	Pande		1990	-	-	2
Lushoto	Mukaro		1991	-	1	-
Tanga	Pande		1992	-	2	8
			1993	-	1	-
			1994	-	1	-
Pangani		Kigombe	1994-1996	11	5	11
Tanga		Mvumi/Zigi	1995-1996	1	1	4
Muheza		Ruvu/Jambwe	1995-1996	2	2	5
<b>SUB TOTAL</b>	<b>1989-1996</b>			<b>14</b>	<b>15</b>	<b>30</b>
<b>SUBTOTAL</b>	<b>1997-1999 Since last CITES meeting</b>			<b>0</b>	<b>0</b>	<b>0</b>

## APPENDIX 3: Excerpts from The Wildlife Policy of Tanzania

### 2.4.4 Ranching and farming

Ranching and farming of wildlife are not yet well-developed forms of the wildlife use in Tanzania.

It is not the government policy to engage itself in the direct utilisation of wildlife resources in Tanzania. The private sector is therefore encouraged to invest in the following:

- (i) Conducting hunting and photographic safaris.
- (ii) Investing in wildlife ranching and farming.
- (iii) Wildlife and wildlife products.
- (iv) Developing tourism infrastructures in the framework of wildlife policy and respective protected areas management plans

### 3.3.10 Regulating and developing the wildlife industry

The PA network devoted to wildlife conservation forms the basis of Tanzania's wildlife industry, and indeed much of Tanzania's tourist industry. Wildlife utilisation forms range from non-consumptive use, primarily game-viewing by both residents and non-resident tourists, to consumptive uses such as hunting by tourists and residents, live animal capture; cropping, ranching and farming, trophy sales and protection of human life and property. These activities generate revenue through direct earnings attributable to the PAs from fees and through charges made by tour operators and outfitters working in the PAs. The tourist wildlife industry is growing steadily and is an important sector in the Tanzanian economy with considerable potential for future development. The Government will encourage private investment in various forms of wildlife utilisation in a manner that is compatible with the principles of conservation and that maximise earnings from wildlife to the people of Tanzania.

#### Strategies for regulating and developing the wildlife industry

- (i) determining the limits of acceptable use to volumes of game-viewing tourists that the PAs can sustain,
- (ii) assessing visitor flows that will not result in ecological deterioration and increasing the quality of visitor experience and enjoyment,
- (iii) diversifying tourist circuits and visitor experience,
- (iv) co-operating with the relevant sector in improvement of road networks' leading to tourist destinations and in PAs.
- (v) imparting a deeper appreciation and understanding of the resource and significance of protected areas, and prohibiting high profile visitor activities that tend to focus visitor and user attention on the event,
- (vi) encouraging and promoting game viewing within appropriate WMAs which could offer a wide variety of recreational opportunity than are available within protected areas,
- (vii) advising tourist authorities on the minimum standards that are required to be upheld by all tourist operators basing their activities on game viewing,
- (viii) adopting flexible approaches which are based primarily on economic returns from alternative forms of wildlife utilisation,
- (ix) encouraging the processing and manufacturing of finished wildlife products and articles ready for sale in Tanzania and abroad, in order to increase local employment and retain a greater share of revenue derived from wildlife products in Tanzania,
- (x) seeking to improve participation in the tourist hunting industry through:
  - open and fair allocation of hunting blocks through a system acceptable by majority of stakeholders without prejudicing the long-term economic returns from tourist hunting to Tanzania;
  - adopting a fee structure formulated and approved by the appropriate wildlife authority;
  - setting sustainable hunting quotas on a scientific basis and monitoring wildlife populations that are hunted;
  - conducting examinations for professional hunters and monitoring their competence in the practice of hunting,
  - enforcing hunting regulations to ensure a high standard of hunting and of trophies;
  - facilitating the timely export of trophies to hunting clients in their home countries; and
  - creating an enabling environment for promotion of citizen professional hunters.
- (xi) permitting small-scale animal cropping by rural communities practising CBC, ranchers and farmers operating on privately-owned or leased land, and
- (xii) exercising control in wildlife utilisation activities,

## APPENDIX 4: POLICY FOR CROCODILE MANAGEMENT IN TANZANIA

Two species of crocodiles occur in Tanzania. Their conservation will be achieved through protection and utilization.

The slender-snouted crocodile, *Crocodylus cataphractus*, is uncommon and confined to Lake Tanganyika and the Luiche and Malagarasi rivers. This crocodile will be fully protected throughout its range in Tanzania.

The Nile crocodile, *Crocodylus niloticus*, is widespread. Populations of this crocodile will be conserved and encouraged where they do not conflict with legitimate human interests. Thus within the appropriate areas of Tanzania the aims of the Nile crocodile management will be:

- a) To maintain or increase their overall numbers (protection);
- b) To produce a sustainable harvest (utilization);
- c) To regulate their numbers where appropriate (control);
- d) To manage the crocodiles where appropriate for the benefit of local communities (community benefit).

A detailed management plan will be drawn up by the Director of Wildlife. The aims of management in each category of protected area and in open areas will be defined with respect to Nile crocodiles on the basis of land classification, habitat, crocodile density, distribution and reproduction, human activity, and crocodile-human interactions.

The aims of management in each zone will be detailed. The management plan will be submitted for review and approval by the Minister every three years.

Utilization may involve ranching and sport hunting (as defined by Resolutions of the Convention on International Trade in Endangered Species of the Wild Fauna and Flora), at the discretion of the Minister. Tanzania will strictly abide by the terms of the Convention for export of all products of utilization and control. However, Tanzania intends to prepare a case to be able to more fully utilise products from crocodile control operations under terms allowed by the Convention.

Legislation and institutional frameworks necessary to implement the protection of *Crocodylus cataphractus* and the management plan for *Crocodylus niloticus* will be maintained and strengthened, as deemed necessary, by the Minister.

## MANAGEMENT PLAN FOR THE NILE CROCODILE *Crocodylus niloticus* IN TANZANIA

### 1. INTRODUCTION

Tanzania's policy towards Nile crocodiles states that they will be conserved and encouraged where they do not conflict with legitimate human interests. Conservation may include protection, utilization and benefits to local communities. With its widespread population of crocodiles, and expanding population of humans, there are an increasing number of serious conflicts between man and crocodile. Where there are such serious conflicts, the crocodiles will be subject to control. In this respect, Tanzania expect to obtain from the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (hereinafter CITES) the authorization to export skins and other specimens from a limited number of crocodiles harvested in the wild, in the framework of such control operations. Accordingly, the management plan aims to encourage:

- a) the management of crocodiles upon a scientific basis;
- b) the protection of crocodiles within the wild;
- c) the controlled utilization of crocodiles on ranches and through limited sport hunting.

All exports of products will be in accordance with CITES and the Wildlife Conservation Act No. 12 of 1974 (hereinafter the Wildlife Conservation Act).

### 2. LEGISLATION

In accordance with the Wildlife Conservation Act, Nile crocodiles from the wild may be hunted or otherwise utilized under a license issued by the Director of Wildlife (hereinafter the Director). The only exception is that crocodiles may be killed in defense of human life and property.

No consumptive utilization may take place within National Parks under the National Parks Ordinance CAP. 412 of 1959.

### 3. MANAGEMENT IN PROTECTED AND OPEN AREAS

- i) In all National Parks, crocodiles will be fully protected and aquatic habitats managed to maintain their numbers or encourage their increase, as appropriate. Utilization of crocodiles within National Parks will be devoted solely to tourist game viewing.
- ii) In Game Reserves and Forest Reserves, crocodiles will be protected and aquatic habitats managed to maintain their numbers or encourage their increase, as appropriate. However, populations may be utilized, mainly through the collection of eggs or possibly hatchlings not exceeding 50cm in total length, for ranching as defined by CITES Resolution, or through the allocation of sustainable quotas.
- iii) In Game Controlled Areas and in open areas, crocodile protection will be encouraged. However, populations may be utilized through ranching or sport hunting and, where possible, benefits will be returned to local communities. Control of crocodiles will be allowed where there are genuine conflicts between crocodiles and legitimate human interests.

### 4. RANCHING

Ranching has been defined according to CITES Resolutions and therefore may be defined for the purposes of the Wildlife Conservation Act as: the rearing, in a controlled environment, of specimens, usually eggs or hatchling crocodiles, taken from the wild with the intention of engaging in trade.

- i) Requirements for a ranching operation  
Where investors or the Department of Wildlife (hereinafter the Department) identifies a potential for harvesting crocodile resources, it will be necessary for investors first to submit a short feasibility study to the Department. Upon acceptance of the feasibility study, close liaison between investors and the Department will be encouraged while the investor prepares a detailed project proposal with information on the following:

- a) locality;
- b) water supply;
- c) food supply;
- d) financial resources;
- e) expertise;
- f) ranch plans.

Applicants will have to show sufficient financial resources to cover 3 years of operation without an income, have provided evidence of a secure meat supply adequate to feed a stated number of crocodiles and will have detailed plans of their operations.

The Department will respond to feasibility studies and to completed project proposals within 60 days of receipt. During these 60 day periods the Department will make a physical inspection of the site.

As the number of ranches increases, ranchers may be encouraged to deal with the Department through an Association.

ii) Mutual responsibilities for ranches and the Department of Wildlife

Ranchers must accept that they are in direct partnership with the Department of Wildlife and the people of Tanzania, and that they have obligations and responsibilities towards the long-term management, conservation and welfare of species being utilized that go beyond those of a normal business. As such, ranchers may be subject to a more rigorous set of standards and controls that reflect these responsibilities.

The Department will set minimum standards for all aspects of crocodile production but will in no way be responsible for the provision of meat to feed the crocodiles. The Department recognizes that ranching operations require long-term security and the commitment of ranchers to husband the resources at a particular egg collection area. Long-term agreements will be granted to encourage investment, but quotas and permits will be reviewed annually on the basis of both the permit holder's adherence to detailed conditions and to biological conditions. A fee in Tanzania shillings will be levied for all eggs and hatchlings collected.

Quotas, and egg and hatchling collection areas, where appropriate, will be decided by the Director at the start of each season. New ranches will be inspected by the Department for completion of their facilities, at the end of year 1 as noted in (4i), before any permit to collect eggs is issued. If facilities are not up to standard, approval for the ranch will be withdrawn.

Permits will carry the following terms and conditions:

- a) Locality of collection will be specified on a map;
- b) Period of collection will be specified;
- c) Number and type of specimens will be specified, with numbers allocated to be limited by farm capacity;
- d) Where appropriate, fees to district councils and/or village government and local people will be specified;
- e) The fate of each specimen (clutch of eggs and hatchlings) will be recorded in the trapper's register and returns submitted to the Director in accordance with the Wildlife Conservation Act and regulations pertaining to capture. These will include:

- (i) Ranchers must report to the appropriate Wildlife Officer of the area before collection;
  - (ii) A bi-annual summary of the success of harvesting and ranching operations must be submitted by the rancher to the Director and the Regional/District Wildlife Officer by 1 December and 1 May of each year;
  - (iii) Permits will not be transferable;
  - (iv) In the event of any dispute, the decision of the Minister will be final.
- f) In two years from the date of issue of the permit to collect specimens, ranchers may be required by the Department to release a number of female crocodiles of 1.2m length, equivalent of up to 5% of the number of specimens actually collected from the wild.

All releases will be made in accordance with the Department's requirements in the presence of a Wildlife Officer.

- g) A bi-annual inspection of all ranch operations will be conducted by the Department, one during the closed season between 1 May and 1 July and the other during December and January. Additional inspections may also be carried out anytime that the Department considers appropriate.

iii) Methods of egg and hatchling collection

Eggs and hatchlings will be collected under the following conditions:

- a) Collection will be restricted to eggs and to hatchlings less than 50cm total length.
- b) Permits for collection will normally be issued by 1 July direct to the rancher.
- c) Collection will be expected to involve local people wherever possible. Ranchers will seek the Director's approval for staff they wish to hire and identity cards will be issued by the Department to all people involved in the egg collection process.
- d) Any collection of eggs will be within specific areas and will be to the maximum the areas can sustain.
- e) The collection of hatchlings will be restricted to capture by hand from a boat.

5. SPORT HUNTING

Quotas for sport hunting will be determined for each area at the start of each season by the Director. A fee, payable in foreign exchange, will be levied on each animal. Professional hunters will make annual returns to the Director stating the size, sex, locality, and ultimate destination of each animal taken. All exports will be tagged in compliance with CITES regulations.

## 6. SURVEYS AND MONITORING

An inventory of crocodiles will be undertaken, and crocodile populations and damage and loss to human life and property, will be monitored regularly from:

- a) records submitted by those collecting eggs, using standard forms issued by the Department;
- b) regular aerial and nightlight surveys on both the general and specific populations and nest sites, especially in areas being utilized for collection, at the discretion of the Director;
- c) records supplied by the Wildlife Staff throughout the country.

## 7. TAGGING, MARKETING AND TRADE

All crocodile products for export will be tagged in accordance with CITES regulations. Exporters will be required to reimburse the Department for CITES tags purchased on their behalf. The Department will undertake all tagging. CITES export documentation will only be issued on receipt of a detailed packing list, including skin size, tag number, and a copy of the original invoice to the purchaser. A fixed levy in Tanzanian Shillings per skin, equivalent at present to 3% of the gross value, will be placed on all exports of ranched skins.

## 8. CONTROL OF CROCODILE POPULATIONS

In many parts of Tanzania outside protected areas, crocodiles cause damage and loss of human life and property. Where problems are reported to the Department, each will be assessed and, when action is deemed necessary, capture will be attempted. Where capture is not possible, crocodiles will be shot according to the Wildlife Conservation Act.

All skins from control activities will be deposited with the Department which will in turn auction the skins to legal exporters. Skins will be measured and tagged in accordance with CITES requirements by a Wildlife Officer appointed by the Director.

Given the widespread population of crocodiles in Tanzania, and the wastage of adult skins available from genuine control operations, Tanzania expect to obtain from the Conference of the Parties to the CITES) the authorization to export skins and other specimens from a limited number of crocodiles harvested in the wild, in the framework of such control operations.

In this way, Tanzania aims to gain a greater economic value from that part of its crocodile population that has to be shot on control, to enhance the conservation prospects of crocodiles in general.

## 9. REVISION OF PLAN

The plan will be revised and updated, where necessary, by the Department and submitted to the Minister every three years for approval.

## **Appendix 5: Excerpts from the Tanzania crocodile surveys and performance report on harvesting problem crocodiles from the wild for 1995 and 1996, a report to CITES secretariat.**

### **6. COMMENTS FROM COUNTRIES OF ORIGIN**

A request for the downlisting of the Nile crocodile from Appendix I to Appendix II of CITES was tabled by African countries including Tanzania at a CITES seminar held in Brussels, Belgium in 1984. The request arose from concerns that the Nile crocodile is not endangered. It was believed that the Nile crocodiles was placed in Appendix I of CITES, as a measure to protect the American Alligator which was actually endangered, as a "look-alike" species.

Malawi presented a proposal at the 5th meeting of the Conference of the Parties to CITES advocating that downlisted populations for 9 countries, including those of Tanzania, needed be utilized under a quota system. The proposal was endorsed and Tanzania was granted permission to utilise the Nile crocodile at acceptable level up to and including 1991. However, for the years 1992 to 1994, the quota was decreased to a level of 500, 300, and 300, respectively. A subsequent crocodile quota of 100 crocodiles was endorsed as from 1995 for tourist hunting purposes. Tanzania was not happy with this decision, and the Government reacted by sending a special request to the CITES Secretariat for issuance of an extra quota of 3000 crocodiles. This request was turned down.

Many African crocodile producing countries have time and again shown, in consensus, their concern that the Nile crocodile should be in Appendix II of CITES. This would help to justify for continued government spending on the conservation of the Nile crocodile. Utilization of the abundant wild crocodile population would increase both government much needed foreign exchange earning and employment opportunities. However, the visit by members of the Crocodile Specialist Group in September, 1994 necessitated a revisit of the exercise. Radio call message were sent to all Regional Game Officers ordering them to visit their respective district and collect more information with regard to problem crocodiles. Data was collected from 16 region in the country.

It is, however, important to note that data on crocodile infliction on livestock and humans is far from accurate. Information is underestimate of events since most of the areas where conflicts occur are vastly sparsed and remote. Information on various incidences does not reach the appropriate authorities and it is therefore not reported at all. Most of the data on problem crocodiles for the year 1994 is yet to be compiled at district level, and one must not forget that the year 1994 has not come to and end.

It should also be underlined that while some areas have permanent water throughout the year, others are filled with water on a seasonal basis. In the circumstances, there is variation in the level of incidences observed on problem crocodiles with regard to reference on the state of occurrence of water and its level in an area. It may therefore be informed that while water may occur in an area on a seasonal basis, incidences from nuisance crocodiles may be more numerous that those in areas with permanent water. It is believed that for the latter case people have learnt to avoid crocodiles. Notwithstanding the fact that numerous threats have been reported. For example while in Lindi district in the Lukuledi and Mbwemkuru rivers where water

occurrence is seasonal, 9 people were killed in the period under discussion (1989-1994). in Kagera and Mleba rivers with permanent water only one person and two goats were killed.

## **7.0 THE NILE CROCODILE AS PROBLEM ANIMALS IN TANZANIA**

### **7.1. The Problem:**

It has been reported time and again to the Crocodile Specialist Group (CSG) of the SSC of IUCN/The World Conservation Union, and the CITES Secretariat that the crocodiles pose actual and potential threats to human life, limb and his property in most of their areas of occurrence in Tanzania. Tanzanians channel issues which need immediate attention to higher government levels through their Members of Parliament, and cases regarding losses of human life and his property have become commonly discussed in Parliament. the Ministry of Tourism, Natural Resources and Environment is under pressure to find solutions to the problem. Problem crocodiles are killed in the wild in response to reports of damage to human life and property, but it must be borne in mind that the exercise is expensive. It is therefore necessary to justify costs born out of crocodile control operations, through returns and benefits to the nation that accrue from such operations at least to enable the government to meet compensation costs to the victims.

Games and Severre (1993) sent out questionnaires to most Game Reserve Project Managers and Regional (Provincial) Wildlife Officers to get information about crocodiles as problem animals in their areas of occurrence. Some questionnaires were answered but there were handicaps speedily collecting all the information to be included in this report on time. The country is vast and crocodile areas of occurrence are diverse. Lack of transport within the regions to facilitate the quick gathering of information from all the districts (Parliamentary constituencies), villages and actual sites of crocodile/human conflicts has amplified the problem to the effect that little, albeit useful, information has been obtained.

Where problems caused by crocodiles are numerous, the local people will certainly not tolerate crocodiles. In order to restore confidence of the local communities in crocodiles, and in order to guarantee the success of the Crocodile Policy and Management Plan in seeing that crocodile survival can be ensured, the resources must be financially rewarding to the people in whose land the crocodiles thrive. If not given due concern, poaching of crocodiles will surface under the pretext of hunting for defense and control. In the circumstances, the CITES Appendix I listing of the Nile crocodile may well witness its decline in Tanzania.

### **7.3 The Quota Request:**

It is possible that some schools of thought will oppose Tanzania's request to downlist part of its crocodile population to Appendix II and capitalize on the existence of ranching operations. But in spite of an offtake of eggs/hatchlings from the wild it has been intimated earlier in this document that these offtakes have had no negative effects on the crocodile populations (Games and Severre, 1993). Craig et al (192), also reported that, given that Tanzania's ranching programme has largely collected eggs and that up to 92% of the annual production (proposed harvest of 84,000 eggs and hatchlings over 3 years) can be collected without long term detrimental effects to the

population, it is unlikely that the 15,370 eggs and hatchlings collected over the 3 years has had an overall negative effect on the wild population. The general trend of incidences has not significantly changed during the period under review albeit the number of crocodiles allocated for purposes of harvesting in the period (1989-1994).

This request is put forth under Resolution Conf. 8.22 and a decision made at a CSG meeting in Victoria Falls, Zimbabwe in 1993 as a reaction to Tanzania's concern for problem crocodiles which can actually stand controlled trade. But it all culminate to underline the following:

- that Tanzania had shown the need for a larger wild quota at the 8th Conference to the Parties of CITES,
- that Tanzania, under pressure from the local communities and hence members of Parliament, sent a request, in vain, for a quota of 3000 crocodiles in 1992 to the CITES Secretariat,
- that another crackdown on poachers, dealers and traders of wildlife, the crocodile inclusive, at a cost of 25 million Tanzania shillings has been put in place as a follow-up to Operation Uhai of 1989.
- that a Policy and Management Plan for Crocodiles in Tanzania is now in place.
- that a crocodile management Programme is in the making
- that local people must utilise land in the best way deemed suitable to boost their socio-economies through trade and employment, taking recognition of the appointment by CSG of a specialist (at its 11th Working Meeting held in Victoria Falls, Zimbabwe from 2nd to 7th August, 1992) to team up with Tanzania wildlife scientists to conduct a country-wide survey on Nile crocodiles, and insisting that the survey must be repeatable hence deployment of a GPS: and with full financial support (substantial initiative) for the survey having come from the government of Tanzania.
- that Nile crocodiles occur throughout the country and noting, with grief, that they continue to be nuisance animals, and they will not be tolerated at the expense of human life and his property,
- recognizing that the crocodile habitats is stable.
- noting that in some parts of the country, the stronghold areas inclusive, the crocodile population are stable.
- further noting the concern of Hon. Members of Parliament who duly represent their constituencies.
- Accepting the information that people actually lose their lives from crocodile attacks.

The United Republic of Tanzania strongly seeks the concern and hence support of the 9th Conference of the Parties in endorsing this proposal.

## **APPENDIX 6: Draft Regulations for control of the proposed wild harvest of “Problem” crocodiles in Tanzania**

For action by Wildlife Division – review of progress to be held mid-1999.

- This harvest is only to be directed at legitimate “problem” crocodiles, so harvesting can ONLY be carried out in areas of permanent human occupation. There will thus be NO utilisation of crocodiles in National Parks and utilisation on Game reserves will be limited to sport hunting and egg collection for ranching.
- A formalised record keeping system for recording the incidence of nuisance crocodiles, as initiated by Games & Severre (1993) will be kept by the Wildlife Division. The locations will be plotted and the foci of these locations used to direct the geographic location of survey effort and harvesting.
- Surveys of the crocodile population of the areas identified in 2 will be carried out annually or at least every second year. These surveys will normally comprise spotlight counts, and be made at a time of year when boat travel and crocodile sightings are optimised, if possible. Accepted standard methods of data collection and population estimation will be used for the surveys.
- The survey results will be used to calculate quotas for harvesting in each area surveyed. No more than two annual quotas will be set from each set of survey results. The quotas will normally be set at 5% (five percent) of the non-hatchling population estimated from the survey. Where this is insufficient to effectively control a nuisance crocodile population, an increased harvest may be made in a specific area to achieve this. As the national annual quota will be fixed, such increase will have to be compensated by a zero or reduced harvest in another area.
- All harvesting will be carried out between 1st July and 30th September each year.
- The minimum size of skin allowable for export is 60cm belly width, by the standard measurement. In the field only animals of 3.0m total length (TL) and larger should be targeted for harvest.
- Access to all harvesting will be controlled by the Wildlife Division. All persons intending to harvest crocodiles should obtain a permit/licence from DoW. Similarly all buyers of harvested skins should be permitted/licensed by DoW. DoW will keep records of the issue of the permits/licences in the normal manner. Buyers only to be allowed to buy skins tagged during harvest (see 10), in order to avoid poached skins entering the market, thereby becoming legalised.
- Allocation of the quota for harvesting in a particular area will be by commercial tender, administered by DoW.
- DoW will ensure field enforcement during harvesting i.e. that all “wounded and lost” animals are counted against the quota, the size and time restrictions are upheld, etc. Where crocodiles are shot by sport-hunters in “open” areas, these should count against the harvest quota rather than the sport hunting quota.
- DoW will ensure tagging of the skins as soon as possible after recovery of the animal and record standard measurements of the animals harvested. It is suggested that the scouts accompanying the harvest are given a series of tags to equal the number of animals on quota for each area. The tag numbers, date, place size, sex etc of each animal to be endorsed on the hunters licence/permit as they are taken and recorded/reported to regional office.
- The harvesting occurring within the existing administrative regions will be treated and reported separately