CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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UNITED REPUBLIC OF TANZANIA AFRICAN ELEPHANT POPULATION STATISTICS
WITH FOCUS ON THE 2009 CENSUS RESULTS

In submission of the Proposal CoP 15 Prop 04 page 6 (Section D, 2) Tanzania committed to present its 2009 elephant census results during the CoP 15. Presentation of the results was not possible at the time of submission because the census coincided with the deadline of submitting the proposal. Details of the results, a summary of which is presented below, were made available to the Panel of Experts that visited Tanzania in January 2010. The final report of the 2009 elephant census will be published in the second half of 2010 and will be available upon request to TAWIRI (www.tawiri.org). This summary report also responds to some concerns that were raised by the CITES Panel of experts.

- An aerial census to update the status of elephant population in Tanzania covered six stronghold ecosystems: Tarangire-Manyara, Serengeti, Selous-Mikumi, Ruaha-Rungwa, Katavi-Rukwa and Moyowosi-Kigosi-Ugalla ecosystems (Figure 1). The surveys were conducted during the dry season from August 27th through December 24th 2009. Two census techniques were used: Total Count (TC) in the Tarangire-Manyara and Serengeti ecosystems and Systematic Reconnaissance Flight (SRF) in the other four ecosystems.

- Results of the census are presented in Table 1. A total of 2561 and 3068 elephants were counted in the Tarangire-Manyara and Serengeti ecosystems respectively. This represented a 32% and 64% increase in the Tarangire and Serengeti populations respectively compared to censuses conducted in the year 2006.

- Estimates from other ecosystem were: Selous-Mikumi including Selous-Niassa Corridor 43,552 (± 2,874 S.E), Ruaha-Rungwa 34,664 (± 4,178 S.E), Katavi-Rukwa 6,396 (± 1,920 S.E) and Moyowosi-Kigosi 15,198 (± 2751 S.E). Estimates from the six ecosystems gave a total population size of 105,439 (± 6,080 SE) elephants. Except for Selous-Mikumi, results for the other ecosystems were similar to previous estimates suggesting stable populations.

- The population estimate for the Selous-Mikumi ecosystem was much lower compared to the 2006 census results. However, the apparent decline occurred outside protected areas most probably caused by animals emigrating beyond the Selous-Mikumi census zone.

- A total of 41 carcasses were detected in the Selous-Mikumi ecosystem giving a carcass ratio of 1.7%. The low carcass ratio (dead elephants against living elephants) suggests a population that has emerged from severe poaching pressure that was experienced in the 1980s. In a normally aged population the natural death ratio would be about 4%, as only a few adult animals survived the 80s poaching wave, we have now a population of mostly young animals with less than normal natural death rate.

- The "*minimum best estimate"* for elephant population size in Tanzania was estimated to be 109,022 (± 6,135 SE) derived by incorporating recent estimates from areas that were not surveyed in 2009. Results from censuses conducted in 1991-1992, 2002, 2006 and 2009 suggest that the elephant population in Tanzania is stable at about 110,000 having steadily increased from 55,000 estimated in 1989 (Figure 2). The 2002 and 2006 statistics were verified by the IUCN African Elephant Specialist Group Database (Blanc et.al. 2007), and only the "*definite*" category of the census results are considered. The recent 2006 and 2009 population estimates are statistically similar putting the estimate at about 110,000 elephants.

- No obvious threats to the elephant population were detected during the censuses. However, the proximity of elephants to human habitation in some parts of the surveyed areas is likely to escalate the problem of human-elephant conflicts.

- Wardens in the Selous-Mikumi and Ruaha-Rungwa ecosystems reported the occurrence of ivory poaching in their areas of jurisdiction. Management authorities have embarked on more vigilant measures to combat the imminent threat that has also been reported in the media.

B. SELOUS-MIKUMI ECOSYSTEM ELEPHANT POPULATION ESTIMATES.

Compared to the 2006, the 2009 census results suggested a downward fluctuation from 70,406 ± 13695 SE to 38,975 ± 2,644 SE, a difference of 31,431 elephants in the Selous-Mikumi ecosystem (excluding Selous-Niassa Corridor), a figure that is also quoted by the CITES Panel of Experts as a cause of concern. Taking note of field observations by rangers and hunting operators who traverse a large part of the ecosystem on day-to-day bases, the downward fluctuation can be explained as follows.

Elephants may have moved beyond the Selous-Mikumi census zone due to drastic increase of human settlements along with large herds of livestock in the Kilombero GCA and Northern census blocks since 2006. Human pressure coupled with the 2009 severe drought experienced in the ecosystem, caused some elephants to move into the Selous-Niassa Corridor and across Ruvuma River into the Niassa Game Reserve in Mozambique. These areas recorded increases of over 1,000 (TAWIRI 2009 Census Report *in prep*) and 7000 (Anabela Rodrigues; *pers. comm*.) elephants respectively; increases that cannot be explained by birth alone. The increase of HEC in the neighbourhood is further evidence of emigrating elephants. Taking into account of at least the aforementioned emigrated 8,000 elephants and the 95% confidence limits attached to the estimates, the two estimates of 2006 and 2009 are statistically similar (*d-value* < 2)

There is inconclusive evidence of increased mortality that could have come from carcass ratio, a methodology that is recognized by CITES–MIKE program. Consider the following cases:

- The 2009 census counted 41 elephant carcasses in the Selous-Mikumi ecosystem giving a carcass ratio of 1.7% which is below average natural mortality rating (2-4%). During heightened poaching periods (1986 and 1989) carcass ratio reached 17% (Douglas-Hamilton & Burrill 1991).

- The November 2009 special operation “Kipepeo” that covered the entire Selous Game Reserve and its surroundings observed only nine illegally killed elephant carcasses.

- MIKE’s 2009 report indicated a total of 43 carcasses for the entire ecosystem.

These results confirm occurrence of ivory poaching in the Selous-Mikumi ecosystem but not at heightened levels echoed by media and rumours. These results are also contrary to the hypothesis put forward by Wasser 2007 and 2009, especially in the present situation as the age of the ivory is unknown.

The dynamics of the nationwide elephant population shows a stable population above the optimal carrying capacity set as the national goal (that is “definite” estimates of 108,816 in 2006 (Blanc *et.al.* 2007) compared to 109,051 ± 6,223 SE in 2009 versus a carrying capacity of 100,600 estimated in 2001). Realistically about wildlife living outside protected areas; as the human population increases,

there will be less space for elephants.

Tanzania is willing to provide further information should any Party State require so.

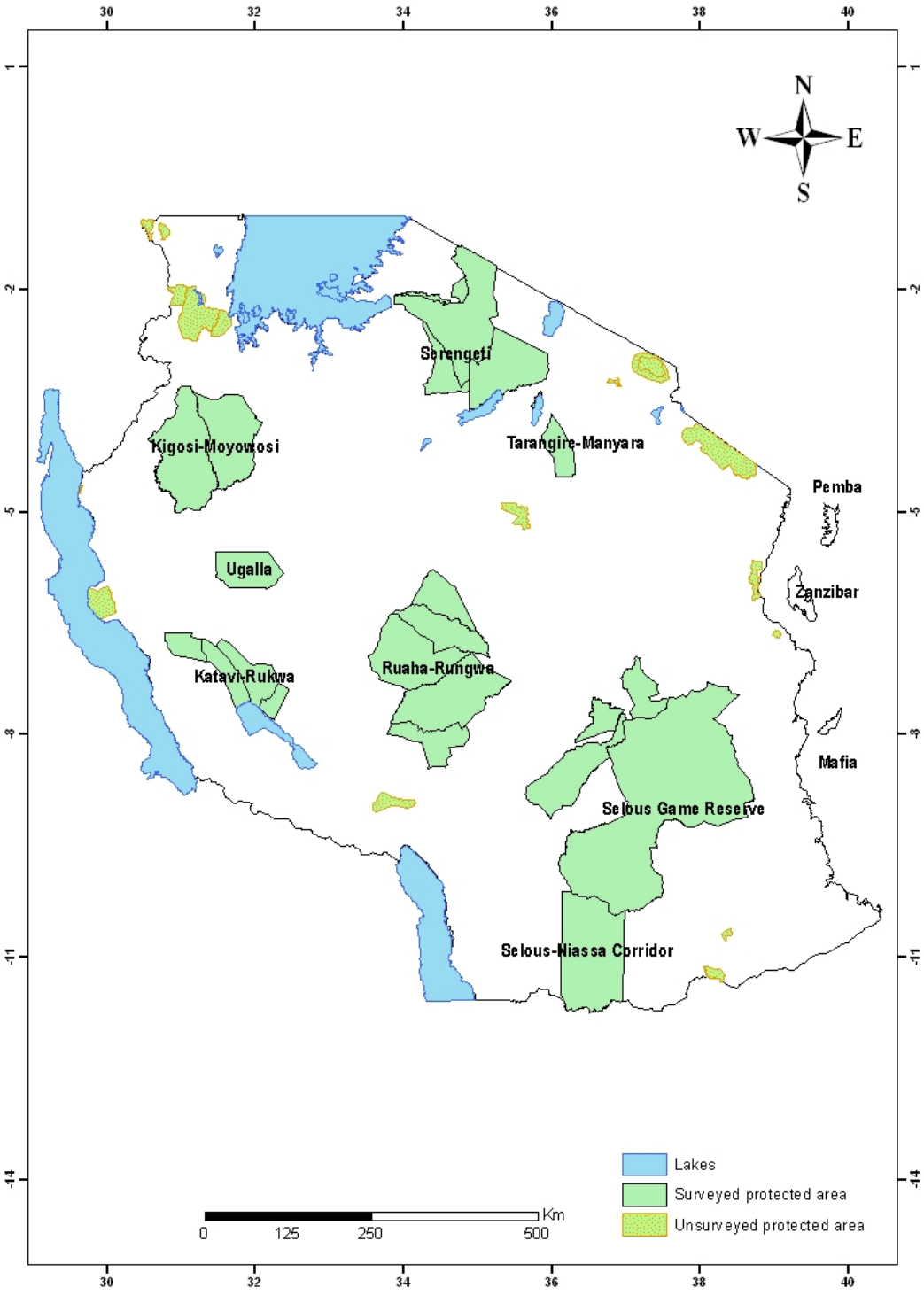

Figure 1: Location of census zones that were surveyed during the dry season of 2009

Table 1: Elephant population estimates analyzed by ecosystem (census zone) collated with previous population estimates. Compared to the "definite" 108,816 elephants estimated in 2006 (Blanc et.al. 2007) the Tanzania elephant population is stable.

Surveyed Area	Estimated Population Size	Standard Error	Size of Surveyed/ Extrapolated Area (km^2)	Density
Total Count, dry season 2009				
Tarangire-Manyara	2,561	0	12,766	0.2
Serengeti Ecosystem	3,068	0	26,931	0.1
Total (TC)	5,629	0	39,697	
Systematic Reconnaissance Flight, dry season 2009				
Katavi - Rukwa	6,396	1,920	11,876	0.5
Moyowosi-Kigosi	15,198	2,571	42,722	0.4
Ruaha - Rungwa	34,664	4,178	43,641	0.8
Selous - Mikumi	38,975	2,644	80,345	0.5
Selous - Niassa Corridor	4,577	1,126	14,876	0.3
Total (SRF)	99,927	6,169	193,460	
Total (TC + SRF)	105,556	5,997	233,157	
Other small populations -with previous estimates				
Arusha NP	100	0	322	0.3
Burigi-Biharamulo GR	1,295	785	7,292	0.2
Kilimanjaro NP	450	0		
Mkomazi NP	209	131	3,015	0.1
Rubondo NP	49	0		
Saadani NP	255	178	2,502	0.1
Selous Masasi (+Lukwika-Lumesule GR)	1,254	61	12,747	0.1
Total (previous estimate)	3,612	818	25,878	
Other small populations -without estimates				
Ibanda-Rumanyika GR				
Longido GCA				
Mahale Mountains NP				
Ngorongoro Highland Forest				
Southern Highland Forests (Kitulo, Rungwe, Livingstone, etc)				
Swagaswaga GR				
Wami-Mbiki WMA				
Total				
Minimum country estimate	109,168	6,223	259,035	

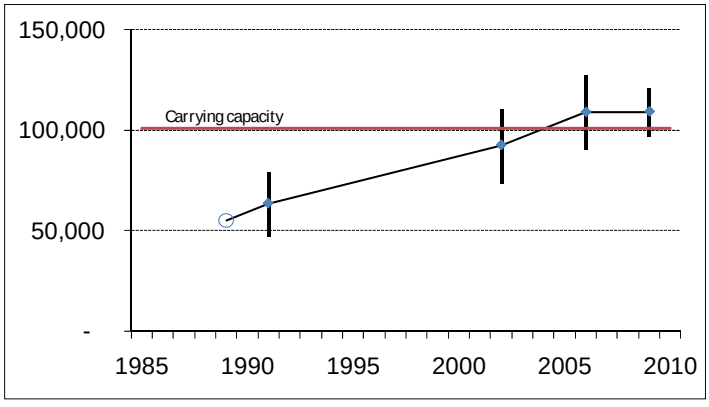

Figure 2. Population trend of the Tanzania elephant population based on the