

Annex 1.

Noteworthy fauna: (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

The Kilombero Valley has a higher density of large mammals than any other area in the Selous Ecosystem (TWCM 1999). The three main habitat types of the valley support significant populations of over twenty-five species of large mammal. Densities of animals are highest on the floodplain area in the dry season and in

Table. Selection of wildlife species found in the Kilombero Valley

Habitat	Species
River/Swamp	Crocodile, Hippopotamus,
Floodplain/grassland	Puku, Lion, Buffalo, Eland, Zebra, Hyaena, Bushbuck, Reedbuck, Hartebeest, Warthog
Miombo/forest	Leopard, Common Duiker, Bush Pig, Red Duiker, Civet, Waterbuck, Sable Antelope, Serval, Aardvark, Yellow Baboon, Sykes Monkey, Zanzibar Galago, Grant's Galago

particular in the central floodplain between Itete and Mofu (Kilombero). In 1998 TWCM recorded a puku density of 10.3 / km² in the Kilombero, the most dense population of any individual species in the Selous Ecosystem. The lion population is thought to be one of the densest in Africa (R. Shallom, pers.com). Historically the Kilombero is known for its large populations of buffalo (TWCM 1991, 1995).

The Kilombero is home to Tanzania's only viable population of the puku antelope (*Kobus vardoni*) the Southern Kob. The bulk of the population is found in the central part of the Kilombero Valley with a small outlier population at the exit point of the Kilombero River. There used to be a small population around Lake Rukwa but the status of this is now unclear (East 1998). Puku have a very specific habitat preference, floodplains or river margins, and consequently are sensitive to habitat destruction and poaching. In all there are now only 18 sites in Africa which harbour puku. Of these only four sites contain puku populations that can be considered stable (East 1998). The Kilombero population holds between 50 - 75 % of the world's puku population and as such is essential for the future conservation of the species. However the puku is the only large wildlife species not represented in any of National Parks or Game Reserves in Tanzania (TWCM, 1999). The Game Controlled Area status of the Kilombero gives limited protection from poaching (as there is no support for anti-poaching) and no protection for its habitat from the effects of agricultural, pastoral and settlement encroachment.

An increasing number of cattle are being introduced to the floodplain area. Although, the long-term impact of this on wildlife populations is unclear, research has revealed that cattle and wildlife do not co-exist in the area (Jenkins *et al.*, 2001b, Jenkins *et al.*, *in press*). In addition, in 1999 Ulanga District Council reported that an outbreak of a conjunctivitis type infection in puku was related to cattle (Ulanga District Game Office, *pers com.*). Increasing cattle numbers in this area also increases the potential of wildlife - human contact and consequently the possibility of poaching.

The miombo areas, particularly on the Ulanga side, are also very important for large mammals both as a permanent and as a temporary habitat in the wet season. Miombo areas in Ulanga have higher species richness in terms of large mammals than any other wooded habitat in the area (Hinde *et al.*, 1999a). In the wet season the floodplain floods and forces the animals to migrate up on to the higher areas. Grassland specialists such as puku tend to move into the miombo / floodplain fringe areas (wooded grassland) where they can be found in large numbers on both used and unused farmland (Jenkins *et al.* 2000a). Buffalo, elephant and zebra move up into the

higher miombo areas. Some of these animals migrate back to the Selous in the wet season although these migrations are not well understood (WWF 1992).

Large areas of miombo woodland are now being cleared and replaced with teak plantations. Research findings have shown that the change to teak plantation favours a select few animals but causes a general decline in species richness and diversity (Jenkins *et al.* 2001b). The study noted that:

- Clear felled areas temporarily increase the habitat available for animals such as puku and zebra in the wet season but this ceases once the area loses its similarities to grassland.
- The conversion of miombo to teak plantation improves the habitat for small gleaners such as duiker and dik dik.
- Teak plantations reduce the habitat for bulk feeders, such as elephant and buffalo, and large grazers, such as sable antelope and waterbuck.

Population data for large mammals is provided by aerial surveys carried out by Tanzanian Wildlife Conservation Monitoring. Trends over the last 12 years show that of the animals recorded, populations of Puku, Elephant, Zebra and Reedbuck were stable.

Elephants numbers have recovered from the high levels of poaching experienced in most parts of Tanzania before and during the 1980s. However recent evidence suggests that elephant poaching for ivory is on the increase again (R. Shallom, *pers comm*).

The decline in the numbers of hippo, however, is a cause for concern. Anecdotal evidence from Game Officers from Ulanga suggests that poaching of hippo, for meat, on the Kilombero River is high and this may be the cause of their steady decline. Gorsline (1997) also noted that large mammal populations have reduced significantly in the floodplain areas bordering Ifakara and attributed this to poaching. The sudden decline in the population of buffalo deserves further investigation as the population of buffalo in the entire Selous ecosystem remained stable over the same period. Thus, the decline in numbers in the Kilombero may be related to migration systems or other natural processes.

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Table: Large mammals counted in the Kilombero Valley during aerial surveys.*

	Sep 1989	SE	Jun 1991	SE	Sep1994	SE	Oct 1998	SE	Actual counts in 1998
Transects	10		11		15		14		
Area km²	4,701		5,893		6,928		6,587		
Declining populations									
Buffalo	30,494	7,530	35,301	9,673	46,607	3,536	16,778	12,006	452
Stable populations									
Elephant	995	633	1,848	512	1,903	241	5,308	2,151	143
Puku	55,769	19,428	36,569	13,133	53,020	13,577	66,964	12,629	1,804
Reedbuck	494	221	89	46	31	28	520	495	14
Zebra	976	570	716	393	569	250	631	449	17
Unknown status									
Hippopotamus	8,414	2,594	5,413	1,705	3,297	629	1,262	755	34
Human activities									
Agriculture									
Cattle	17,309	6,487	12,207	4,188	93,137	27,487	54,047	17,247	
Poachers camp	232	42	230	86	-	-	-	-	
Saw pits	-	-	-	-	214	60	-	-	
Sheep and Goats	-	-	-	-	-	-	6,125	2,906	
Tree felling	-	-	122	60	865	387	-	-	

* Tanzania Wildlife Conservation Monitoring 1999. Aerial Wildlife Census: The Selous, Mikumi, Kilombero and surrounding areas. TWCM / FZS Wildlife Survey Report.

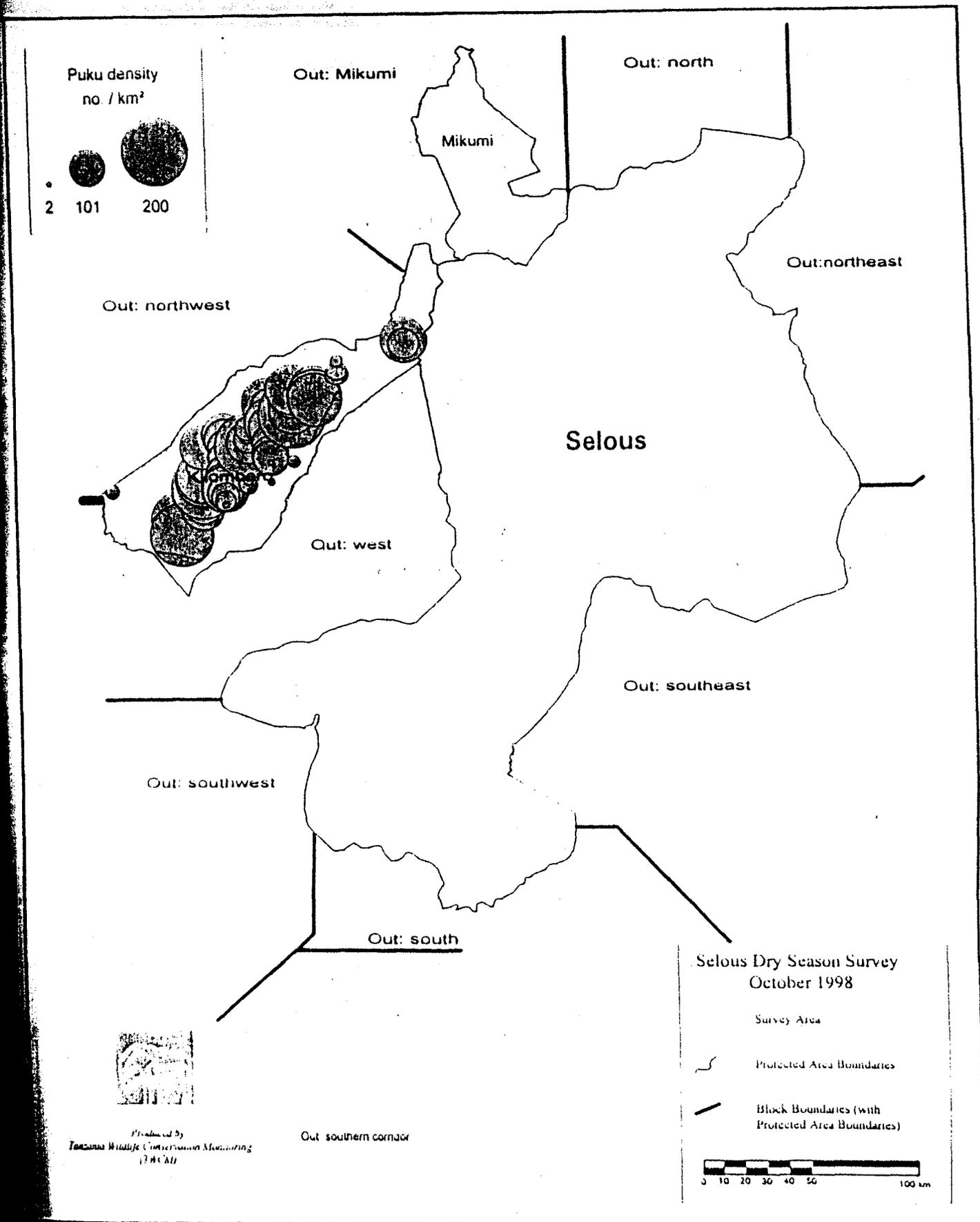


Figure 14. Distribution and density of Puku, October 1998

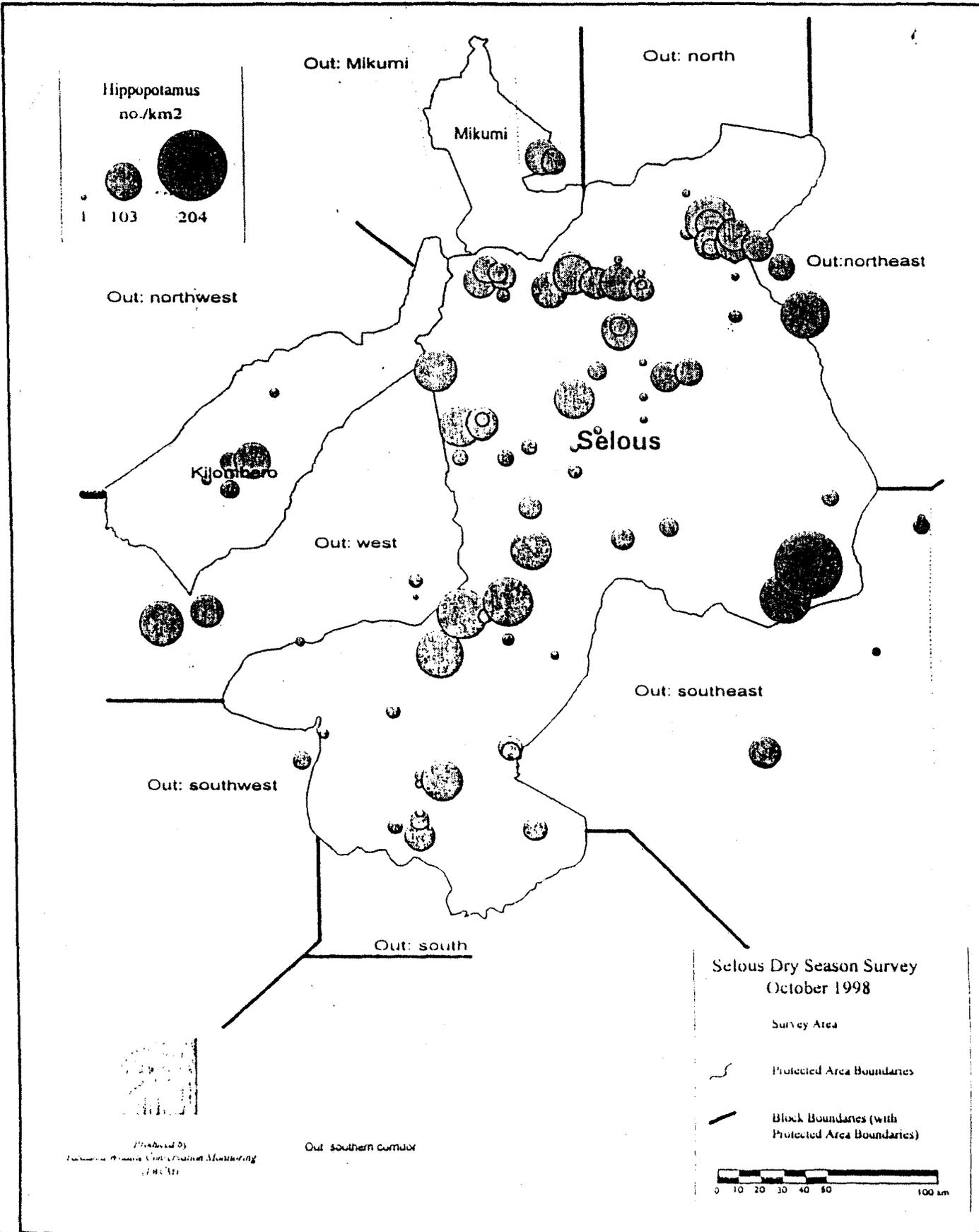


Figure 22. Distribution and density of hippopotamus, October 1998