SAVE THE ELEPHANTS

A Report on the Samburu October 2005 Aerial Total Count

The count was conducted under the auspices of Northern Rangelands Trust (NRT) jointly funded by NRT, African Wildlife Foundation, Disney Foundation and Save the Elephants. Participants were drawn from the organization and a full list of individuals who took part is in the acknowledgement section. In particular, Onesmas Kahindi took a leading role in training and coordinating the census crew while and Rose Mayienda put the data together and made a single shape file of it. Festus Ihwagi was not involved in the count but has been requested to put this report together, with the assistance of Onesmas Kahindi and Juliet King. The report describes the methodology used and summarizes the results of the counts in form of tables and Maps, as contained in the shapefile created by Rose. The Maps were prepared using ArcGIS 9.0 with ArcView license.

The striking trend is absence or reduction of wildlife numbers in areas with high livestock numbers. The reserves had the highest densities of wildlife. The census results show that aerial counting is not adequate for monitoring elephant deaths as very few carcasses were seen by air compared to those recorded under ground patrol within a period of ten months ahead of the census.

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Introduction

The counts covered the South Eastern part of Samburu District in Northern Kenya provides a snap shot of the scenario in a dry season. The district is largely under government ownership formally regarded as Trust Land. The inhabitants are predominantly pastoral communities. It is part of the wider Ewaso Ecosystem that hosts Kenya's second largest population of elephants outside protected areas (Omondi *et. al*. 2002). The wildlife-livestock distribution and abundance scenario is nevertheless expected to have changed at least in some parts of the range where ecotourism activities have developed further.

Methodology

This total count was done as described by Douglas-Hamilton in *Studying Elephants* (1996). Three fixed wing planes were used for the counts; two Supercubs and one four-seater Cessna. The Cessna crew comprised of Pilot, Front Seat Observer (FSO) and two Rear Seat Observers (RSO). There were three FSO and three RSO who kept alternating and a ground support team of three people. The crew was taken on training flights prior to the census by an experienced team leader, who also took pilots on a reconnaissance survey to familiarize them with the terrain and boundaries.

Flights were conducted early morning, taking off before 8:00am which is practically an hour after dawn. A Geographical Positioning System (GPS) was used in the aircraft to assist in navigation and for recording waypoints. A large scale map of the exact route was then downloaded as a shape-file and printed on a base map of the area. Attempts were made whenever possible to make waypoints directly above the sightings. The rear seat observers would call out sightings for the pilot to make and call out a waypoint. Parallel East to West aligned flight lines were maintained at approximately 1.25Km for the greater part of the census. Towards the northern part the distance between flight paths was increased to approximately 2km apart owing to better visibility. The flight paths varied in length to conform to block delineations (Map 1). These were occasionally interrupted by hills that characterize the landscape. Fifteen wildlife species, livestock, elephant carcasses, manyattas and boma sites were counted (Table 1).

Results

For the analysis in this report, the initial blocks were re-designed to exclude areas not covered by the flights and areas known not to be utilized significantly by livestock and wildlife, typically the mountainous areas. This yielded fifteen sub-blocks named according to the local name though they often deviate from true administrative boundaries. These sub-blocks broadly fall into three major categories based on conservation status; formally protected areas, the national reserves; community conservation areas and parts with no conservation efforts in place. The area of each block was auto-generated in ArcGIS 9.0 program and density values were calculated as numbers Km^{-2} using the same program.

Major wildlife concentration areas are the reserves and in particular the riverine zone (Map 2). Jenks Natural classification was used to display herd sizes in five categories for comparison of abundance and distribution of each. Large herds of livestock were present in Sera and Kipsing blocks during the count. The reserves recorded the highest of wildlife

densities while the community areas had highest livestock density (Table 2). The community areas that were already in existence at the time of counts namely Kalama and Namunyak had higher densities of livestock than those with little conservation efforts on them. An exploration of livestock versus wildlife numbers and their distribution in the two contiguous reserves, Samburu and Buffalo Springs, with the immediate vicinity reveal exclusion of wildlife in zones of high livestock numbers which is typically around community settlement areas, and clustering along the river (Map 3). For this analysis Samburu National Reserve was divided into two sub-blocks, eastern and western sub-blocks. These were compared with Buffalo Springs National Reserve (BSNR) and the adjacent community area to the west of BSNR. The latter has uncontrolled human settlement and hosts high livestock densities and despite its proximity to the reserves recorded virtually no wildlife during the count but for two waterbucks near its boundary with the reserves. The zone had the highest livestock densities of all sub-blocks; up to 93 heads Km^{-2}. The western block of Samburu National Reserve that neighbors the community area across the river exhibited lower wildlife densities too. Nine old elephant carcasses were counted which is far less than the 39 carcasses recorded within the census zone under the MIKE program by that time of the year.

A closer look at Elephants and Grevy Zebra which emerged as key species during the joint planning workshop reveals their absence in high livestock density areas. Grevy Zebra were recorded only in areas with little or no livestock (Map 4). Elephants were also found in large numbers in areas of low livestock densities (Map5), though seemingly more tolerant to livestock than the Grevy Zebras.

Table 1. Wildlife livestock species counted in the 2005 census. Manyattas and Boma sites were counted too.

	Shaba NR	*Samburu NR*	*BSNR*	*Namnu-nyak*	*Westgate*	*Kalama*	*Sera*	*South of BSNR*	*West of BSNR*	*North of Namunyak*	*Around Shaba*	*Around Sera*	*Kipsing*	*Lekuruki*	*Il Ngwezi*	*Sum*
Area Kmsq	231.16	168.95	126.77	440.25	621.29	195.78	397.61	187.52	85.54	1832.04	446.30	972.50	356.50	30.44	90.28	
Buffalo	395	0	40	0	0	0	0	0	0	0	6	0	0	0	0	441
Elephant	177	160	105	66	13	0	0	8	0	126	5	3	19	0	9	691
Giraffe	33	40	44	108	6	25	2	0	0	6	17	30	5	1	0	317
Grant gazelle	198	6	6	0	6	5	0	0	0	48	222	5	2	0	0	498
Gerenuk	2	4	0	7	29	11	3	0	0	11	6	11	0	0	0	84
Impala	9	70	22	52	0	0	0	0	0	0	0	0	0	0	0	153
Old Ele' Carcass	1	0	0	0	2	1	0	3	0	0	1	0	0	1	0	9
Ostrich	9	16	19	3	42	0	0	0	0	6	27	12	11	0	0	145
Oryx	268	27	101	3	10	0	6	0	0	0	34	0	0	0	0	449
Waterbuck	17	6	0	0	0	0	0	0	2	0	0	0	0	0	0	25
Plains Zebra	109	0	30	0	12	0	0	0	0	0	24	12	0	0	0	187
Grevy Zebra	24	30	88	1	97	2	0	0	0	0	0	14	5	0	0	261
Eland	0	0	0	0	14	1	0	0	0	0	0	0	0	0	0	15
Lesser Kudu	0	0	0	18	0	5	0	0	0	4	0	4	0	0	0	31
Hyena	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Greater Kudu	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	14
Sheep & Goats	1400	3520	160	5102	13175	1320	11400	2230	7720	4550	7691	18215	14210	1000	300	91993
Cattle	810	1090	370	4425	1400	1235	3469	1149	200	1708	5430	4158	720	240	300	26704
Donkey	6	8	0	67	108	20	36	12	0	0	9	31	70	0	0	367
Camel	0	0	0	16	326	50	0	0	0	128	0	122	0	0	0	642
Boma	0	0	0	29	13	1	0	0	0	7	0	2	5	0	0	57
Manyatta	3	61	3	77	398	257	0	293	85	57	81	19	358	28	10	1730

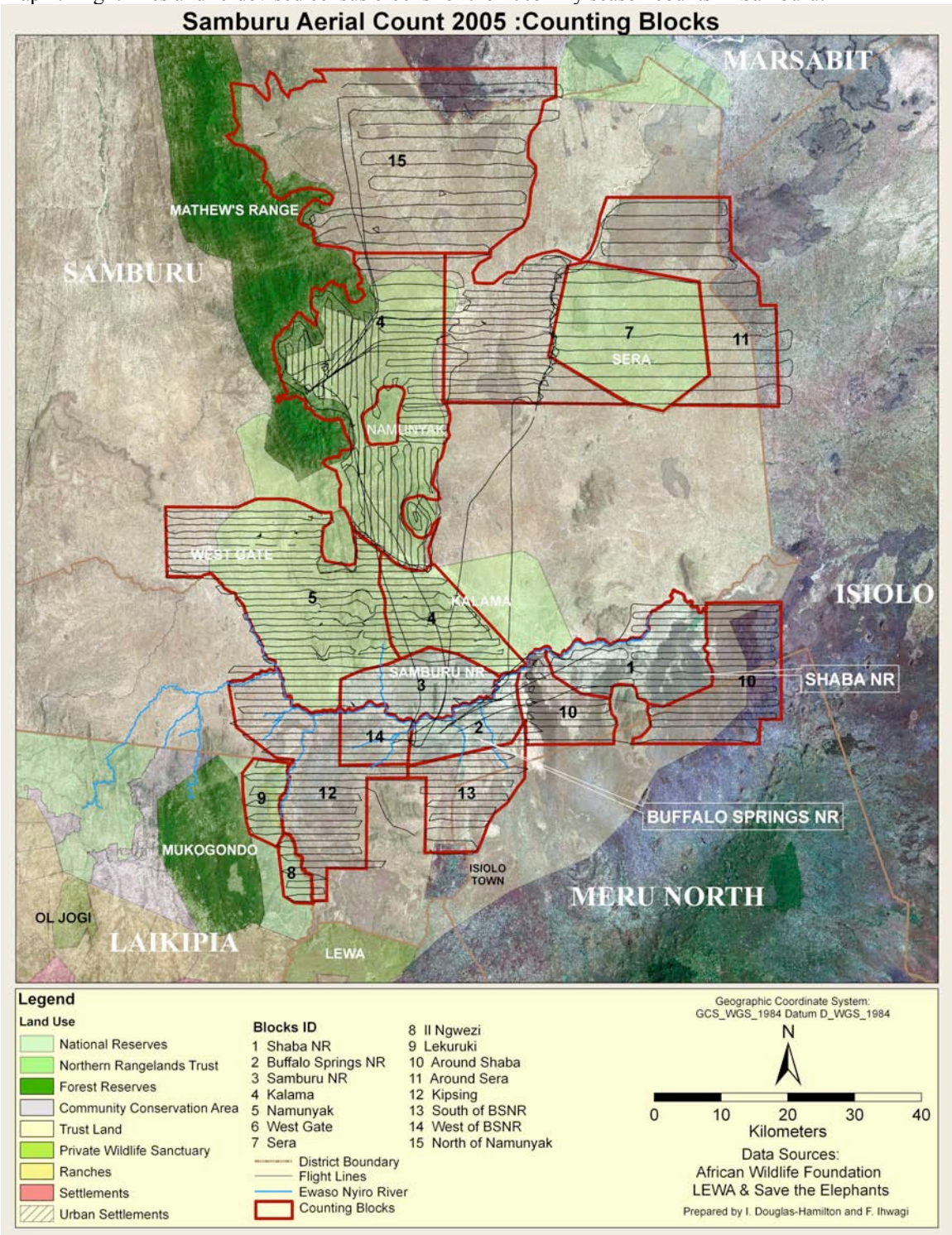
Table 2. Wildlife and livestock densities in 15 zones censured in 2005

Block	*Area in km sq*	*Wildlife density*	*Livestock density*
National Reserves			
Shaba	231.16	5.37	9.59
Samburu	168.95	2.12	27.33
Buffalo springs	126.77	3.59	4.18
Average	**175.63**	**3.69**	**13.70**
Community Conservation Areas			
Namnunyak	440.25	0.62	21.83
Westgate	621.29	0.37	24.16
Kalama	195.78	1.55	8.35
Lekuruki	30.44	0.03	40.74
Il Ngwezi	90.28	0.10	6.65
Sera	880.51	0.01	16.93
Average	**376.42**	**0.45**	**19.77**
Unprotected Areas			
South of Buffalo Springs	187.52	0.04	18.08
West of Buffalo springs	85.54	0.02	92.59
North of Namunyak	1832.04	0.11	3.49
Around Shaba	446.30	0.76	29.42
around Sera	972.50	0.09	23.16
Kipsing	356.50	0.12	42.08
Average	**646.73**	**0.19**	**34.80**

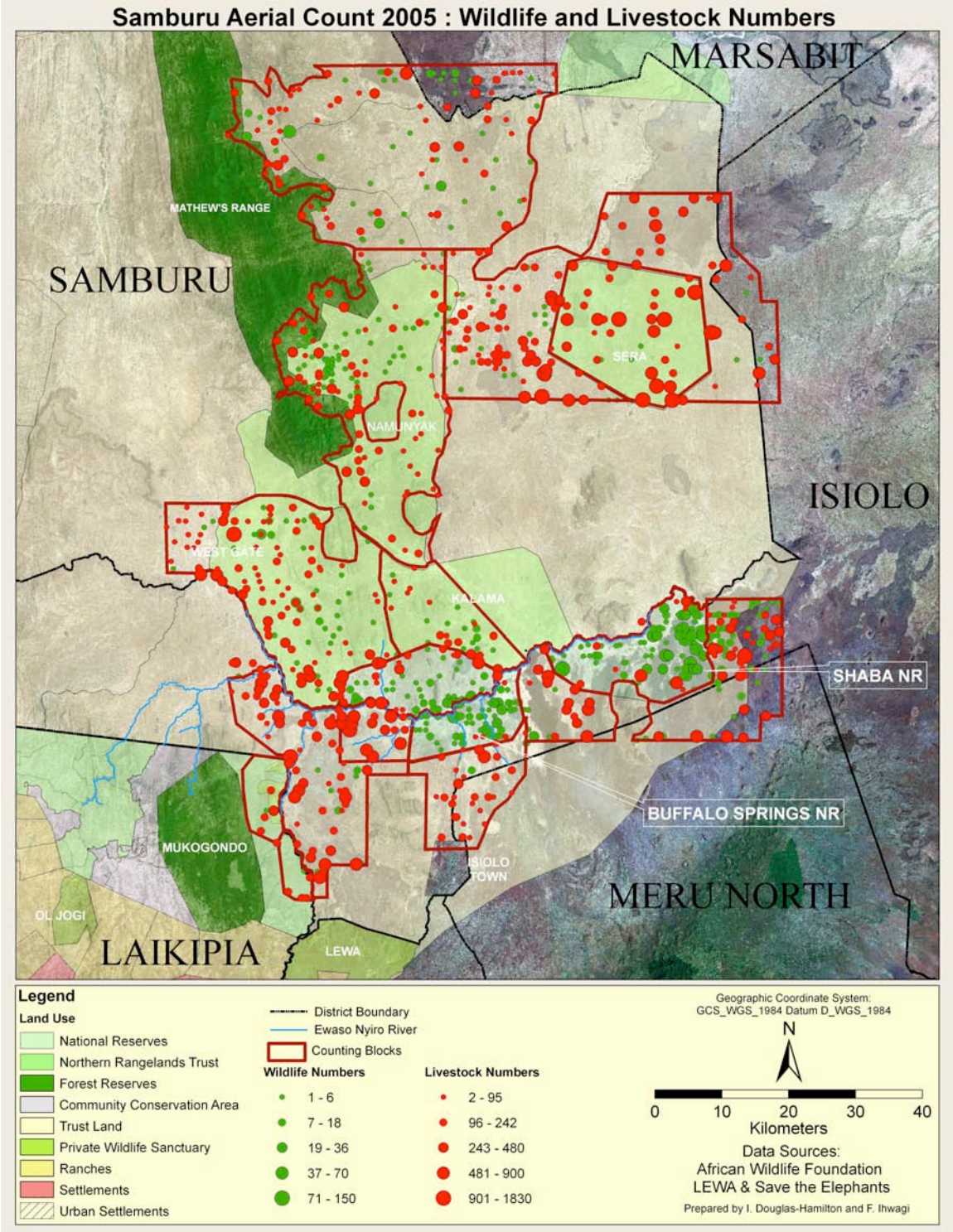
Discussion

The census provided valuable information for planning purposes, despite being a snap shot of the scenario. It would be even better to have similar censuses conducted regularly for better understanding of spatial and temporal changes in wildlife and livestock densities in the ecosystem. Kipsing and West of Buffalo Springs blocks which had high livestock densities are part of the area that emerged as the hottest spot for conservation at the joint planning workshop in January 2006. Present efforts by African Wildlife Foundation and Northern Rangelands Trust in supporting community conservation efforts are bound to be of significant contribution in shifting the livestock-wildlife balance in favor of the latter. The great discrepancy between the number of carcasses seen during the aerial survey and those collected by MIKE project officer on ground patrol is a clear indication that aerial censuses alone are not enough to monitor elephant deaths.

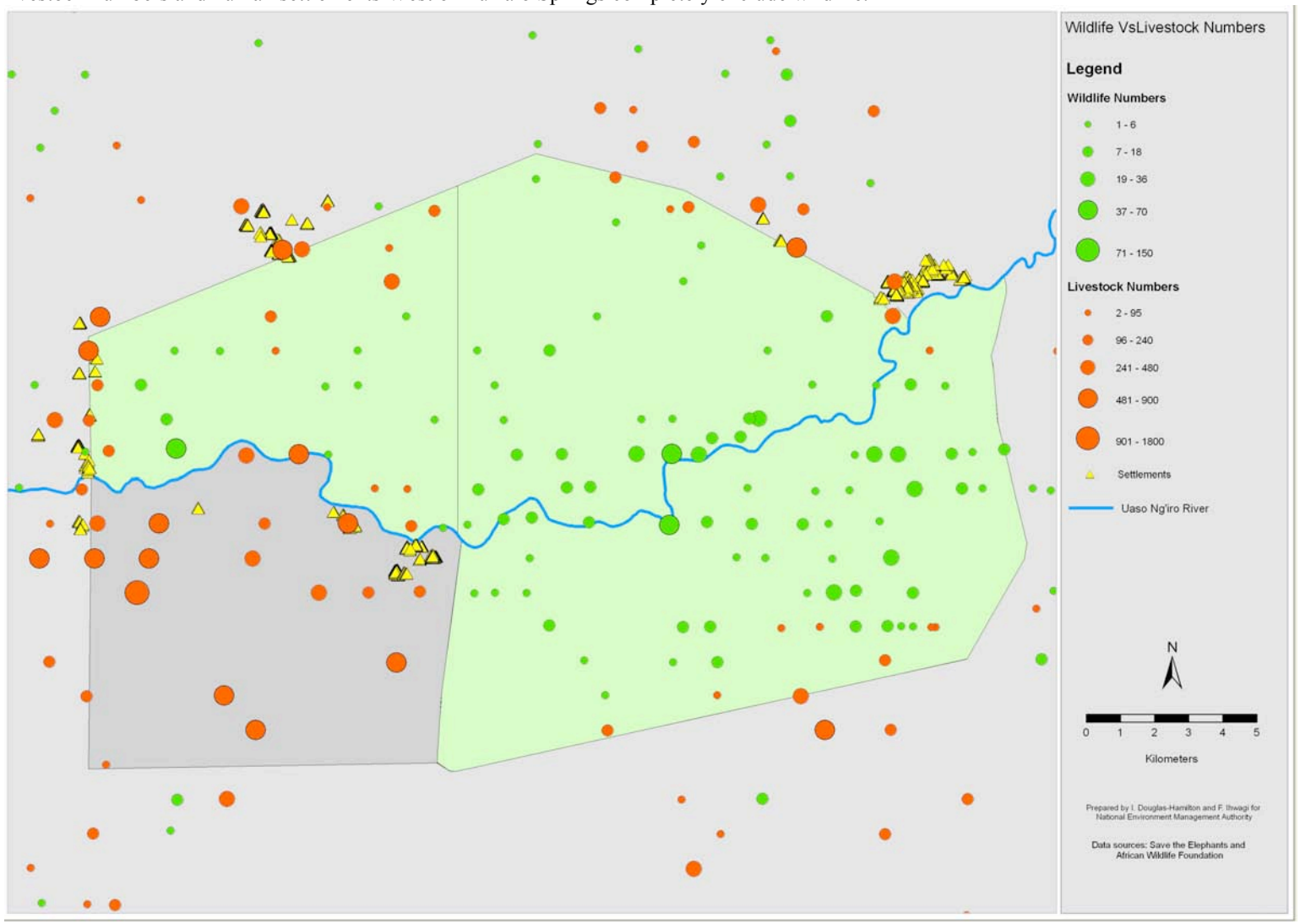
Map 1. Flight lines and re-devised census blocks for the 2005 Dry season counts in Samburu.



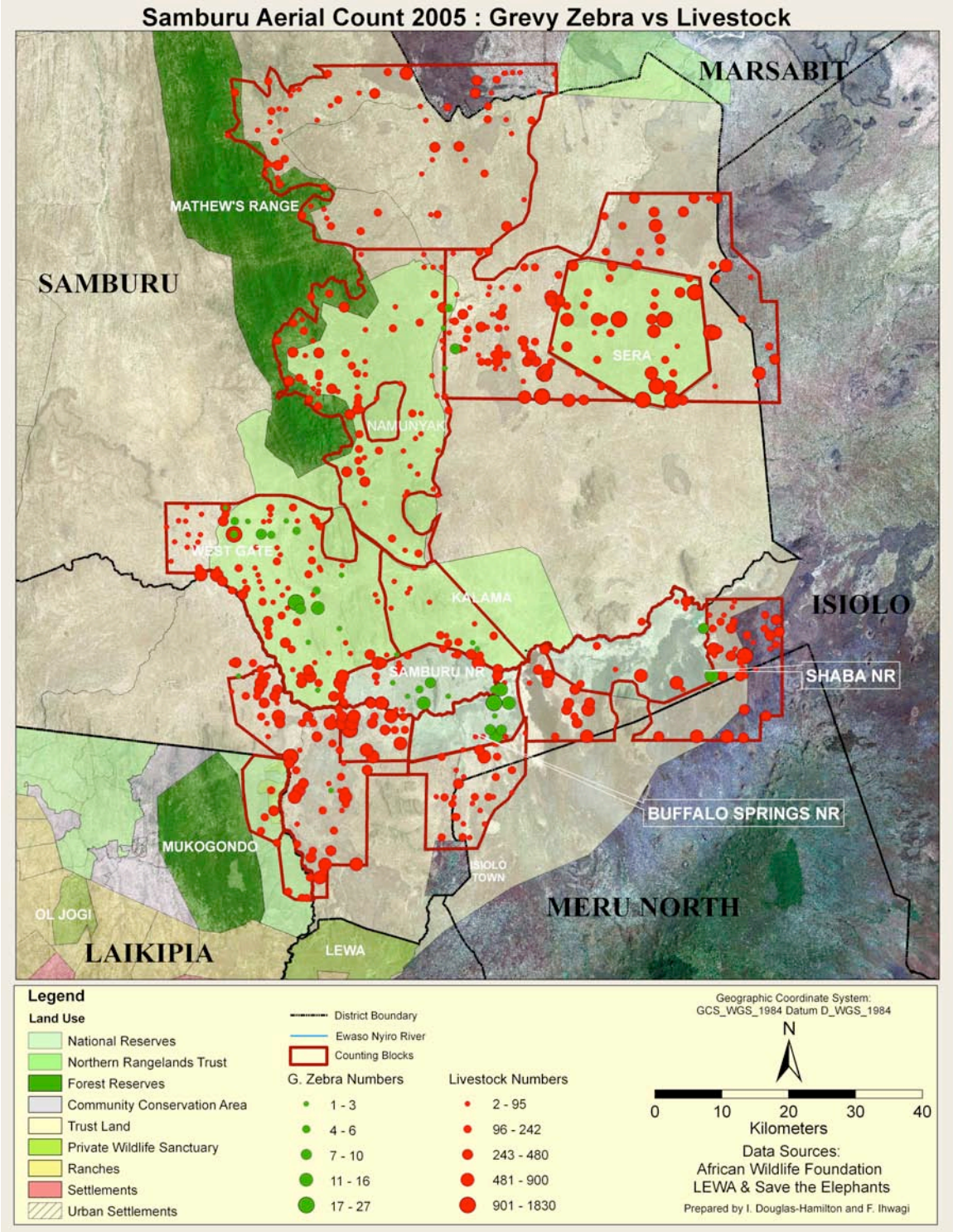
Map2. Wildlife and Livestock numbers in the census zone. Jenks Natural classification showing the herd sizes in five classes for comparison of livestock and wildlife abundance and distribution.



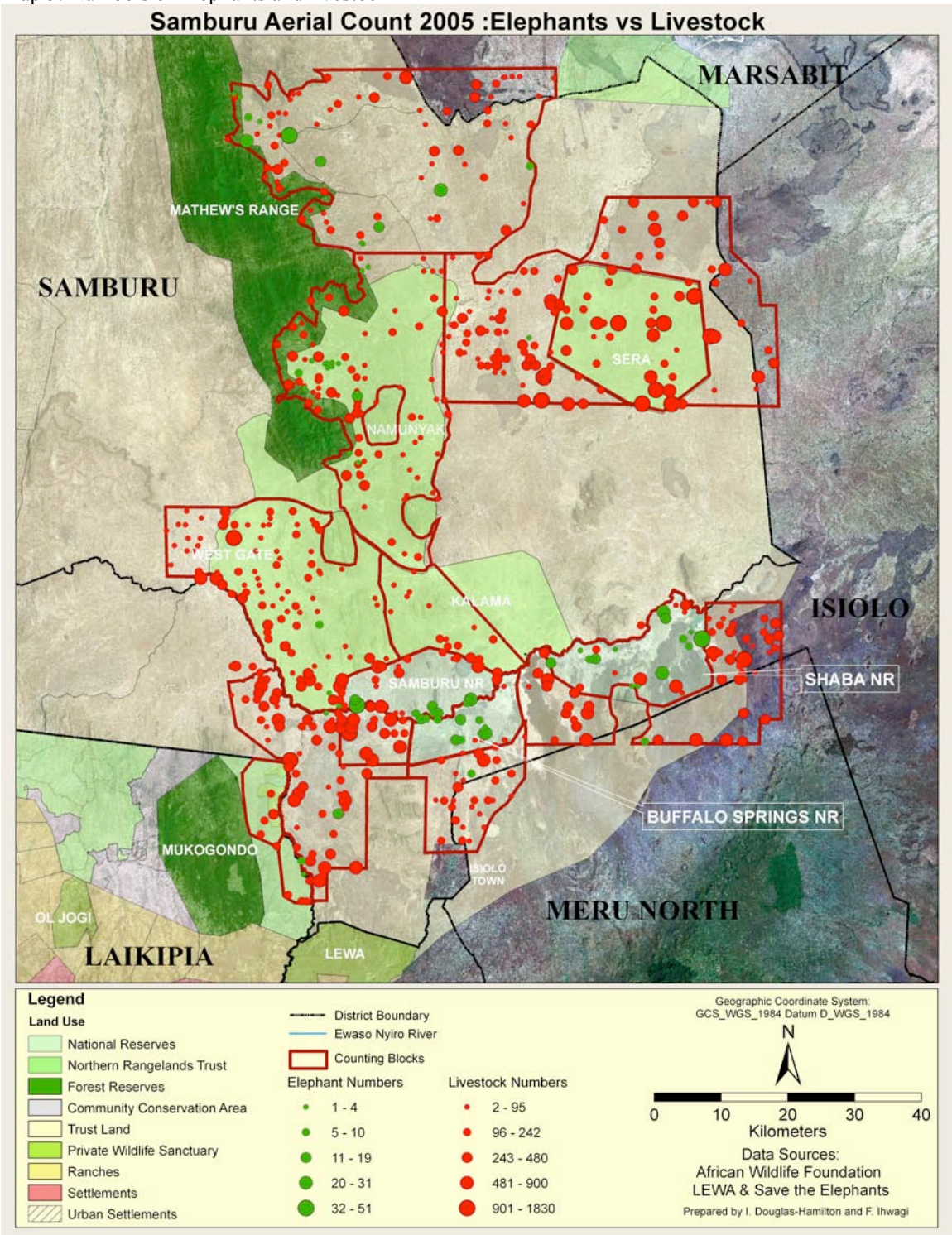
Map 3. Wildlife and livestock numbers in Samburu and Buffalo Springs National Reserves and their immediate vicinity. High livestock numbers and human settlements West of Buffalo Springs completely exclude wildlife.



Map 4. Numbers of Grevy Zebra and livestock. Note the high numbers of Grevy Zebra in areas with relatively smaller livestock herds.



Map 5. Numbers of Elephants and livestock



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