



A herd of Beisa oryx on the Lewa – Borana Landscape, March 2021

LEWA-BORANA LANDSCAPE WILDLIFE COUNT REPORT
MARCH 2021

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1.0 Introduction

The Lewa-Borana Landscape (LBL) conducts a wildlife count each year using aerial and ground counting methods. The data dates from 1977 for Lewa and 1991 for Borana. A joint wildlife count in the landscape began in 2016 after the removal of the fence separating the two conservancies.

The main objectives of the annual wildlife count are to:

1. Determine species abundance.
2. Derive and compare past and current species population trends.
3. Propose conservation priorities.

2.0 Methodology

We combined aerial and ground counts during this exercise. The count was conducted from 7:00 am to 12:00 pm on 12th March 2021. The Landscape was divided into eight ground counting blocks and eight aerial counting blocks (Figure 1). The blocks were demarcated by either roads or other geographical features, primarily rivers, valleys, and hills. On each ground counting block, wildlife species were counted by a minimum of three observers in an open vehicle that traversed all the roads counting all animals sighted. All the wildlife sightings were recorded using a Cybertracker¹. In addition, hand-written data sheets were used to record the sightings which acted as a back-up for the Cybertracker.

The blocks that were counted from the air had relatively poor accessibility and reduced visibility from the ground. The aerial counting blocks were counted using a PA-18 Supercub (blocks 9a-9e) and a Cessna 180 aircraft (blocks 9f-9h) flown at an average height of 300 feet above the ground level. The speed of the aircrafts varied from 70 – 90 knots. Transects were maintained at 500-metres on either side of the aircraft and followed an east-west or north-south direction depending on the terrain, and direction of wind and sun. The aerial counting team used a dictaphone to record observations and a GPS unit to record geographic position data. The voice data was then downloaded onto a computer and transcribed onto a Microsoft Excel spreadsheet.

¹ Cybertracker is a software that uses a geographic positioning system (GPS) enabled personal digital assistant (PDA) such as smartphones to collect GPS data and wildlife observation data in a single unit.

Data from the GPS unit were downloaded and combined with that from Cybertracker for mapping.

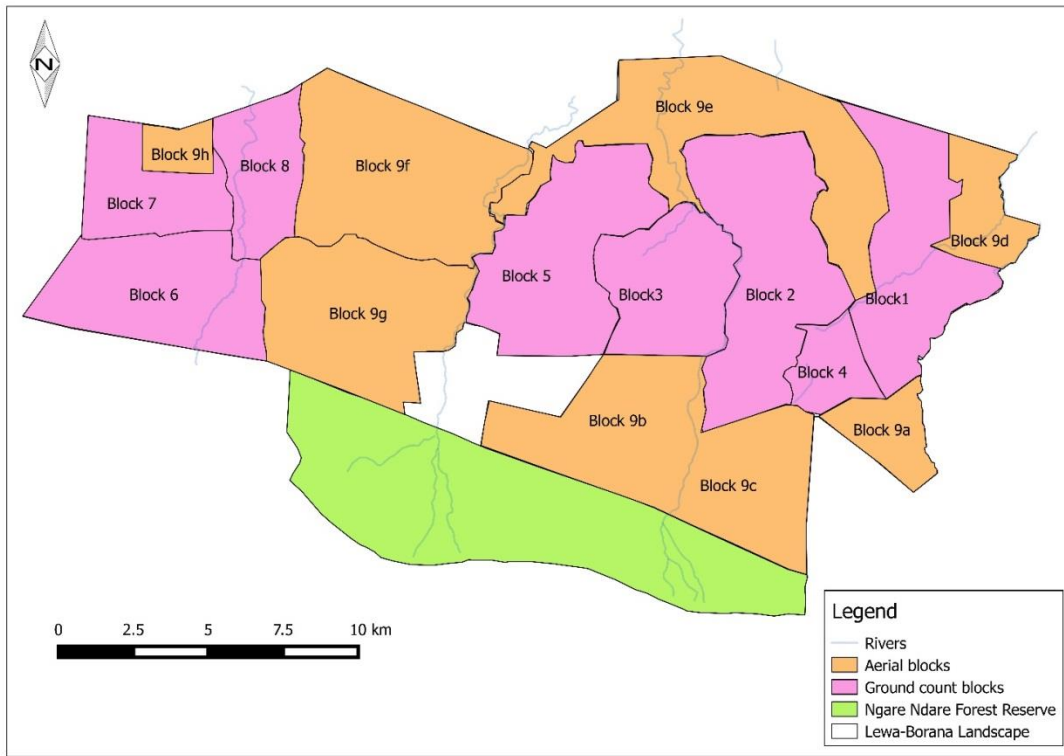


Figure 1: Map of the LBL showing the ground and aerial wildlife counting blocks, March 2021.

3.0 Results and discussion

The wildlife sightings from the aerial and ground counting blocks were combined to summarize the results (Table 1). We also created the wildlife distribution map (Figure 2), patrol effort map (Figure 3), wildlife trends (Figure 4), and distribution maps of selected wildlife species (Figure 5a & b).

Most species indicate an increasing trend from 2016 to 2021 (Figure 4). Buffalo ($\chi^2 = 404.090$, $df = 5$, $p = 0.0001$), eland ($\chi^2 = 60.168$, $df = 5$, $p = 0.0001$), giraffe ($\chi^2 = 79.342$, $df = 5$, $p = 0.0001$), elephant ($\chi^2 = 369.28$, $df = 5$, $p = 0.0001$), and Plains zebra ($\chi^2 = 106.060$, $df = 5$, $p = 0.0001$) are increasing. Beisa oryx ($\chi^2 = 50.107$, $df = 5$, $p = 0.0001$) and impala ($\chi^2 = 327.77$, $df = 5$, $p = 0.0001$) showed a minor year to year oscillation. Also, Grevy's zebra ($\chi^2 = 3.342$, $df = 5$, $p = 0.6474$) showed a minor oscillation even after translocating 25 individuals (24 females and 1

male) to Sera Community Conservancy. Hartebeest numbers did not change significantly ($\chi^2 = 39.554$, $df = 5$, $p = 0.0001$).

Most species remain stable or increasing, which can be attributed to relatively adequate rainfall in 2019 and 2020. Hartebeest population is thriving and their distribution on the eastern part of the landscape has increased in terms of spatial extent, with the various groups no longer confined to specific territories. This may be an indication that this species is finding more suitable habitat across larger parts of the landscape.

We have compiled the wildlife abundance in each property (Lewa and Borana Conservancy) separately in Appendices 1 and 2. However, it should be noted that as far as possible, extrapolations should be made from the combined data set at the landscape and not at the individual property level, since wildlife cross from either side of the landscape to the other based on forage availability.

4.0 Conclusion and recommendations

Buffalo remain the most abundant species on the landscape, followed by Plains zebra and Grant's gazelle. It is important that an estimated carrying capacity for megaherbivores be determined to inform management actions when required. The aerial count is currently carried out using a PA-18 Supercub on the Lewa side and a Cessna 180 on the Borana side. This also needs to be standardized for consistency.

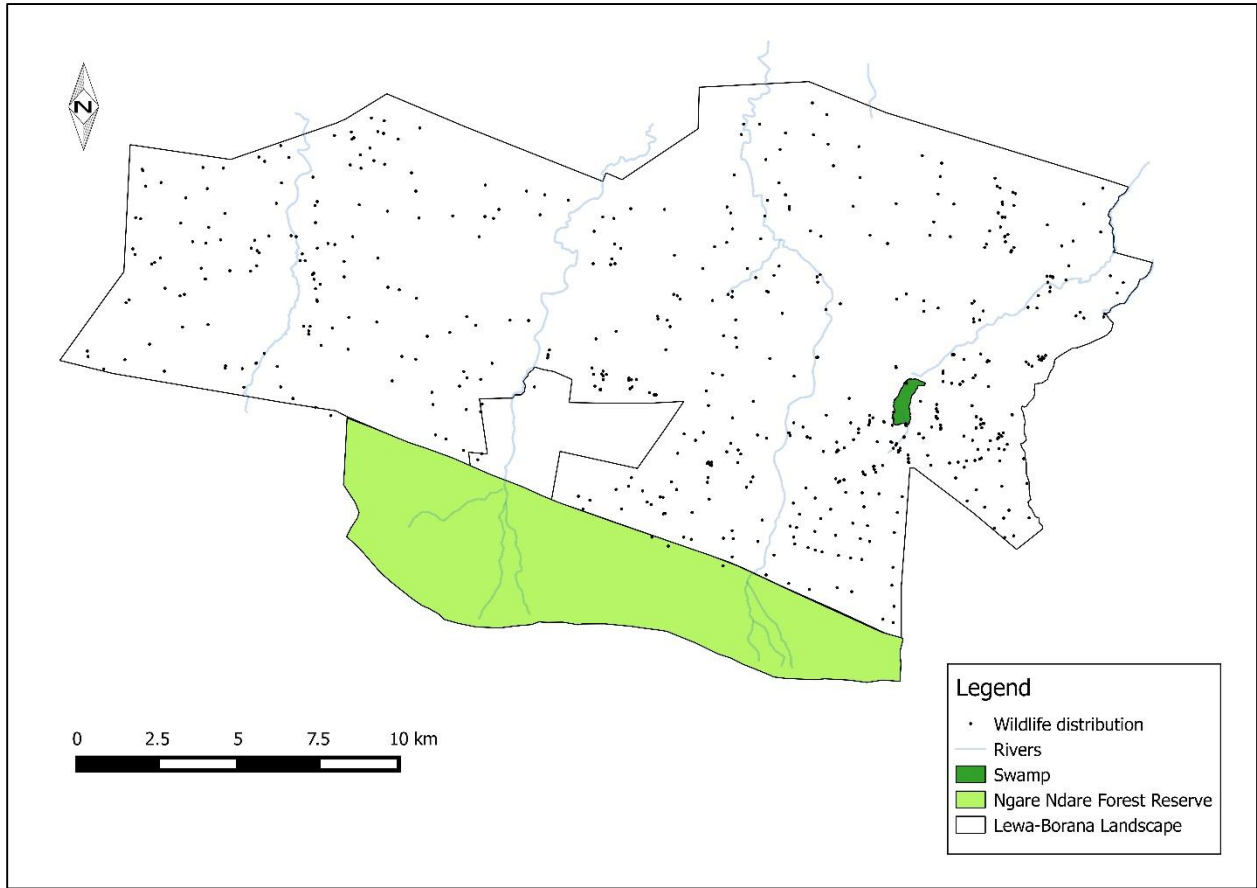


Figure 2: Combined distribution map of all wildlife sightings, March 2021

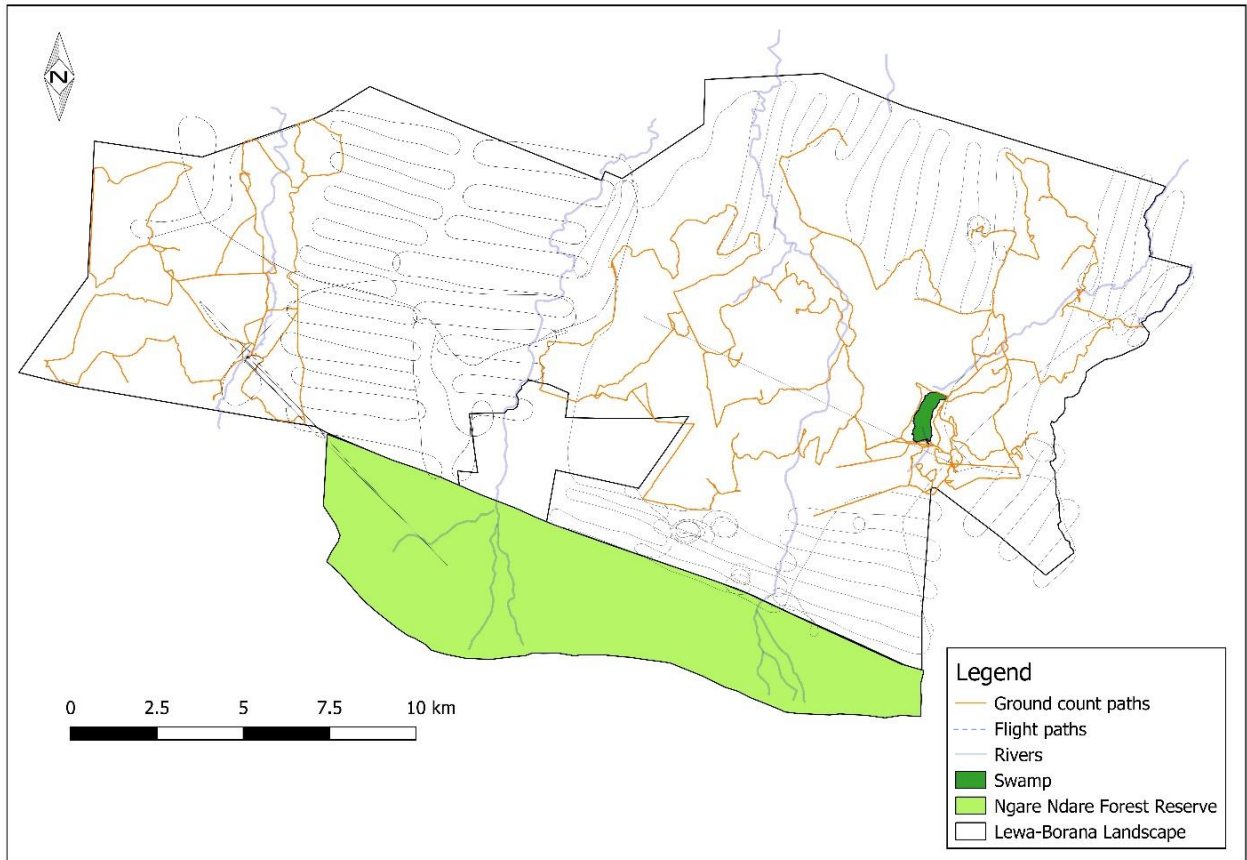


Figure 3: Patrol effort map/track logs during the wildlife count, March 2021. (**NB:** Most of the ground counting blocks especially on the central and western part of the landscape are open plains with few hills. The ground counting teams used these hills as observation points, hence, few tracks on the ground counting blocks)

Table 1: Wildlife numbers counted on Lewa–Borana Landscape, 2016 – 2021

Lewa - Borana Landscape Wildlife Count						
Dates: 2016 - 2021						
SPECIES	2016	2017	2018	2019	2020	2021
Beisa Oryx	179	220	178	227	307	239
Buffalo	1220	1391	1623	1753	2086	2153
Bush buck	15	17	16	15	15	15
Cheetah	8	1	4	5	6	7
Eland	280	192	322	291	245	358
Elephant	416	509	250	253	727	516
Gerenuk	10	10	11	10	10	11
Gazelle, Grants	348	443	415	718	1101	1145
Gazelle, Thompsons	27	4	7	10	16	16
Giraffe	273	251	127	167	178	172
Greater kudu	28	35	22	32	32	32
Hippo	2	2	2	2	2	2
Hartebeest	30	62	64	64	93	91
Hyena, spotted	0	0	122	133	136	134
Impala	1113	1096	1763	1817	1505	1568
Jackal (Silver backed)	9	12	6	7	14	22
Klipsringer	8	8	8	8	8	15
Leopard	7	8	9	9	9	9
Lion	17	44	45	47	53	61
Ostrich	51	44	41	52	65	83
Rhino, black	81	82	88	101	109	117
Rhino, white	70	75	80	87	97	107
Sitatunga	0	0	0	0	0	0
Warthog	68	85	140	161	168	162
Waterbuck	136	168	152	180	167	100
Zebra, Burchell	1262	1236	1228	1484	1599	1561
Zebra, Grevy's	299	292	308	313	331	322

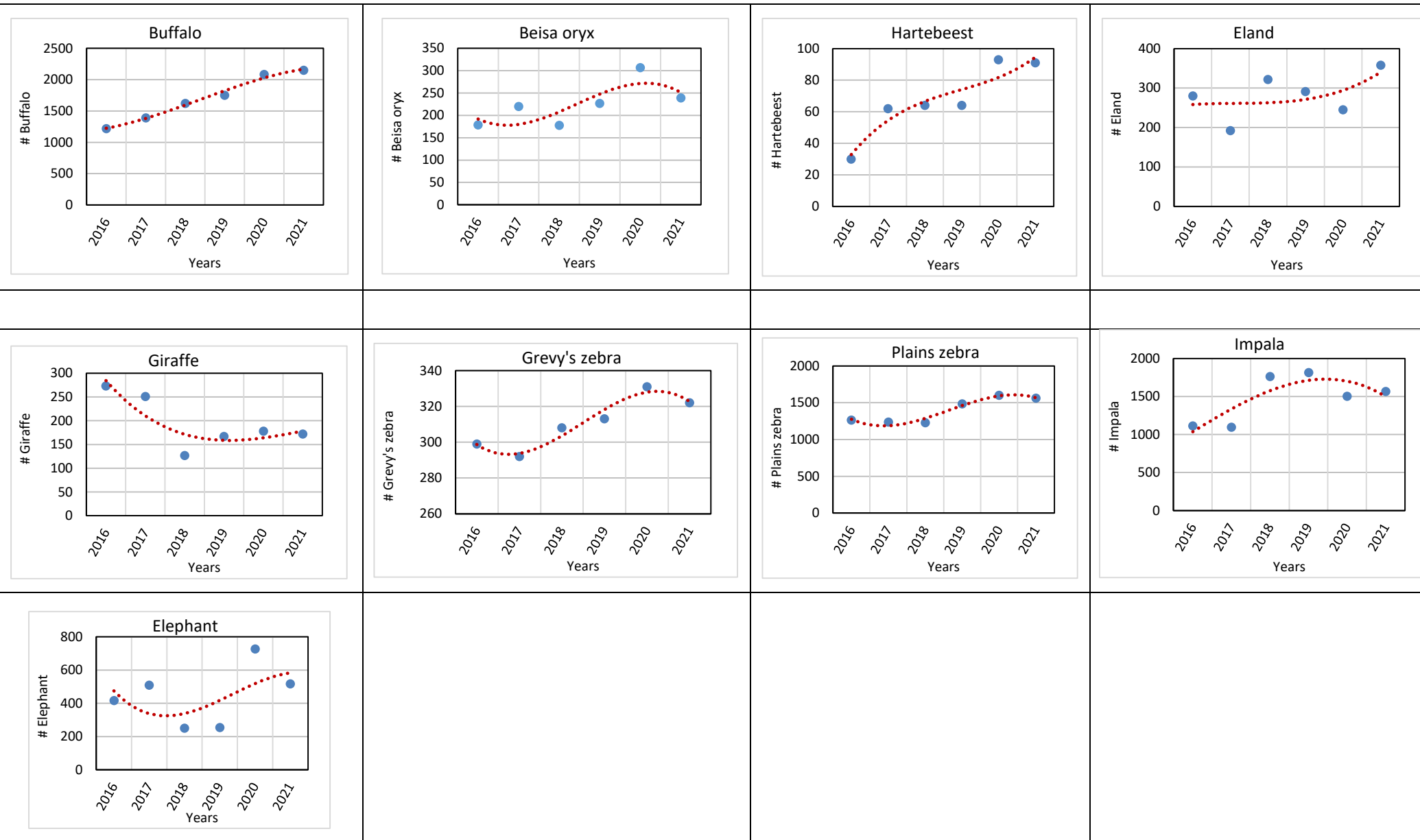


Figure 4: Wildlife trends of selected species on LBL - 2021

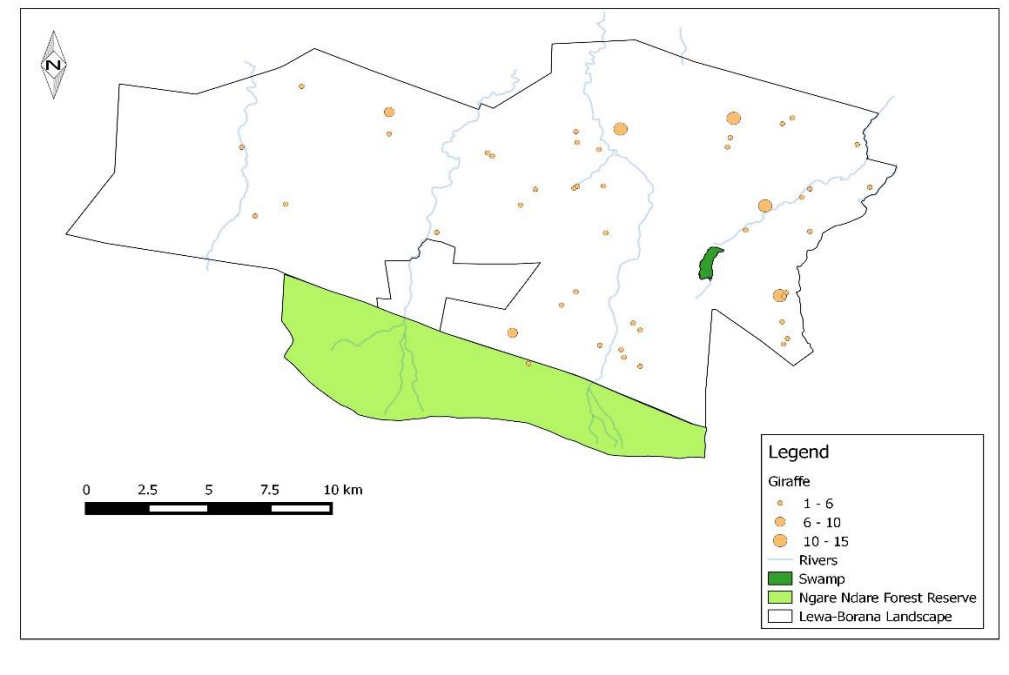
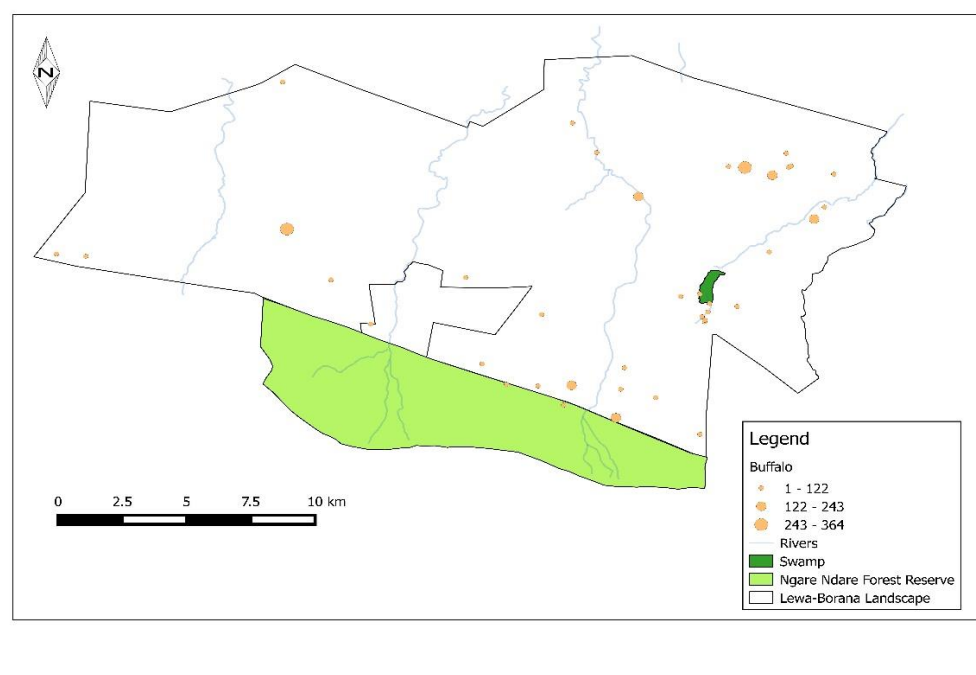
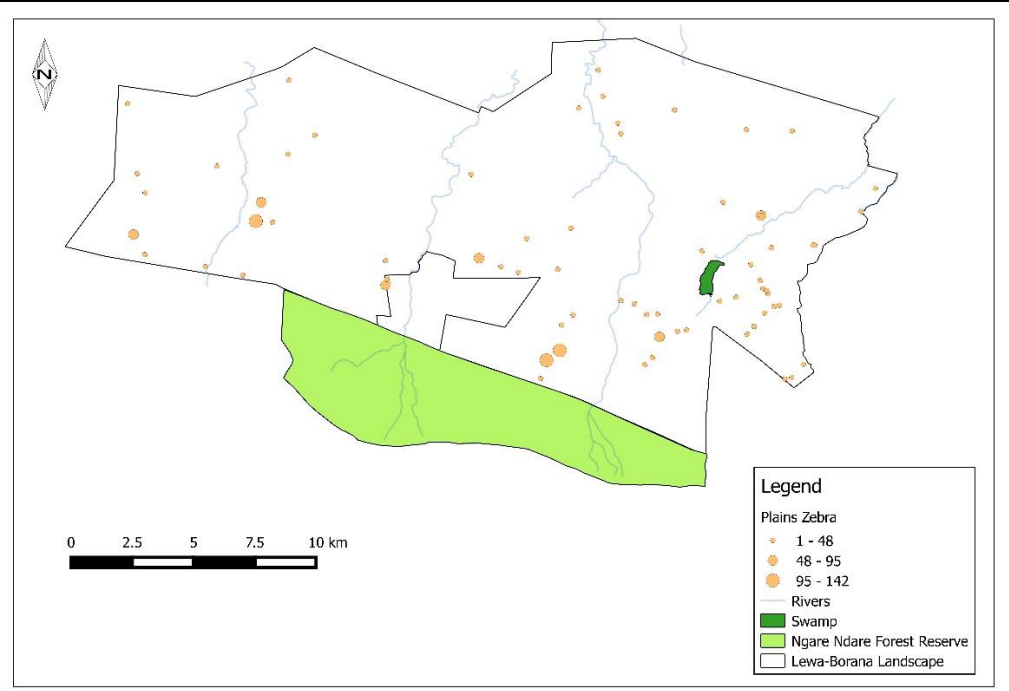
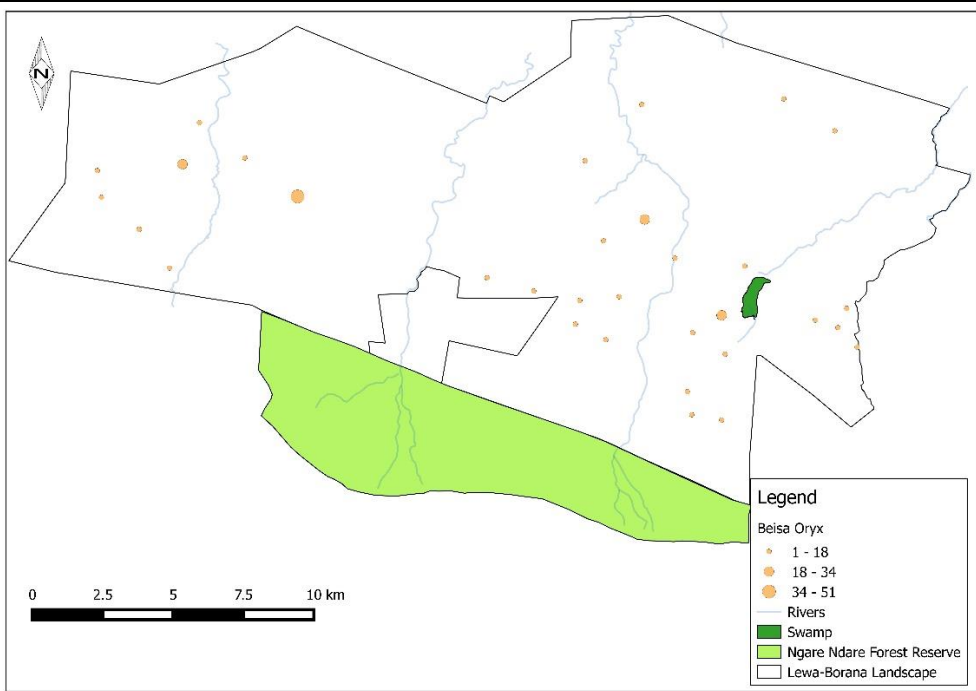


Figure 5a: Wildlife distribution maps of selected species on LBL - 2021

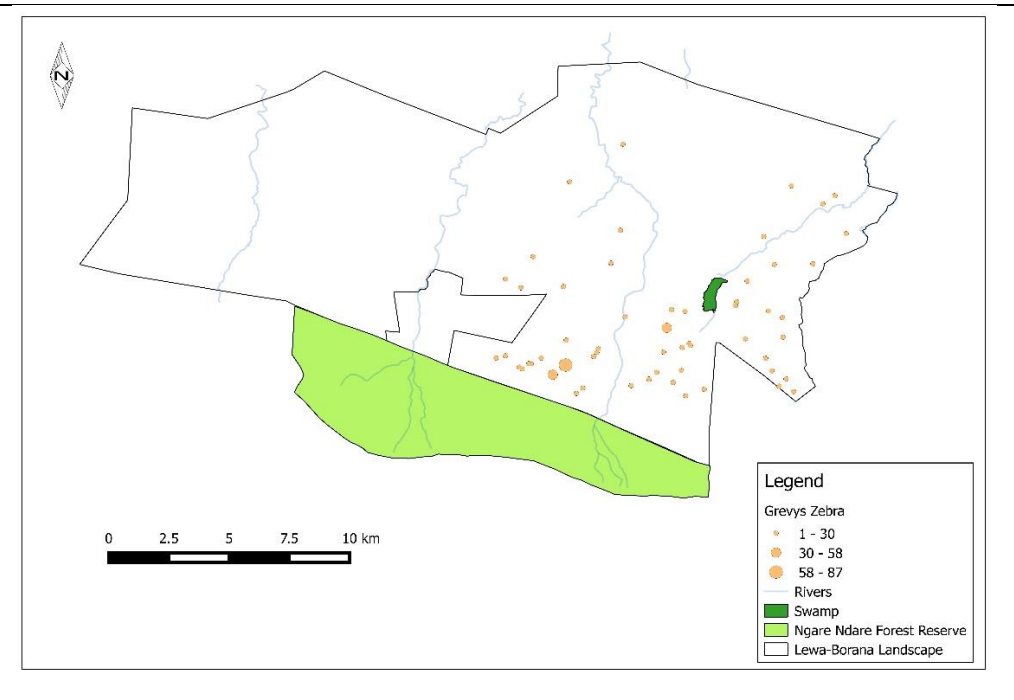
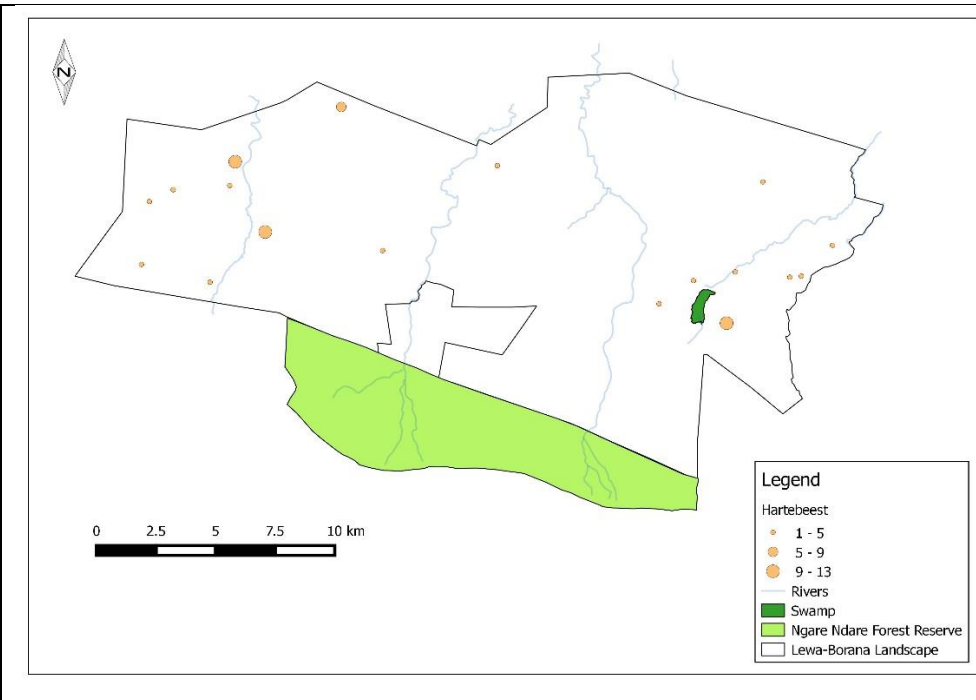


Figure 6b: Wildlife distribution maps of selected species on LBL - 2021

Appendix 1: Wildlife count figures on Lewa Wildlife Conservancy: 1977 – 2021

SPECIES	Aug-77	May-90	Apr-91	May-92	Feb-93	Jun-94	Feb-95	Mar-96	May-97	Mar-98	Feb-99	Feb-00	Jan-01	Jan-02	Feb-03	Feb-04	Feb-05	Mar-06	Mar-07	Mar-08	Feb-09	Feb-10	Mar-11	Mar-12	Mar-13	2014	Feb-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21
Beisa Oryx	7	68	80	68	74	57	100	65	165	127	141	126	84	86	62	85	49	69	91	115	65	76	72	76	74	102	140	138	138	101	122	174	147
Buffalo	78	71	128	197	37	74	113	203	236	159	245	238	125	161	203	233	255	339	343	349	402	403	332	269	547	695	707	941	1046	1262	1363	1459	1774
Bush buck	0	0	0	17	7	10	3	6	3	0	6	0	0	0	>20	>20	>20	>20	>20	>20	>20	>20	>20	20	20	15	15	15	15	15	15	15	
Cheetah	4	0	1	0	2	0	4	7	7	10	4	21	10	7	8	8	8	8	5	6	6	5	11	12	7	12	5	8	1	4	5	2	1
Eland	94	260	274	135	435	128	190	146	273	227	299	228	151	121	108	137	214	169	248	255	218	165	123	95	162	204	207	173	134	231	250	205	330
Elephant	62	102	10	220	149	15	199	178	110	247	170	193	150	28	157	216	297	392	256	177	211	207	184	297	166	151	150	187	186	162	131	399	276
Gerenuk	24	31	36	77	35	37	42	50	55	5	16	4	17	15	11	7	11	11	~10	~10	~10	~10	9	7	6	7	12	10	10	10	10	10	11
Gazelle, Grants	174	322	332	274	583	174	159	133	327	181	176	132	162	192	167	261	258	320	362	452	376	371	378	386	292	337	288	322	315	259	537	648	842
Gazelle, Thompsons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Giraffe	190	440	367	588	361	229	334	196	202	186	240	237	236	245	215	177	173	147	189	243	293	252	243	241	158	163	182	199	157	102	112	127	136
Greater kudu	24	14	40	34	25	27	19	30	53	22	30	13	38	37	33	36	>20	>20	>20	12	17	16	24	3	8	28	26	21	22	20	20	20	20
Hippo	0	0	0	0	0	0	0	0	0	0	0	0	1**	2**	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hartebeest	25	63	106	45	40	46	60	35	50	58	45	28	9	7	4	2	2	2	2	2	24	5	7	5	10	12	11	20	18	22	27	38	47
Hyena, spotted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Impala	231	379	501	475	486	729	594	508	821	698	825	733	627	749	760	679	836	739	829	922	1029	1227	953	895	563	1021	814	880	777	1078	1294	952	1134
Jackal (Silver backed)	0	0	0	0	0	2	2	2	0	8	0	0	0	0	>15	>12	>12	>12	>12	>12	>12	>12	>12	8	3	9	9	9	10	4	6	4	12
Klipspringer	0	0	0	0	0	0	0	0	12	4	8	>8	>8	>8	>8	>8	>8	>8	>8	>8	>8	>8	>10	2	6	8	8	8	8	8	8	8	10
Leopard	0	0	0	0	0	3	0	0	1	1	10	0	1	7	>8	>8	8	8	>8	8	8	8	10	12	6	8	8	7	7	8	9	9	9
Lion	4	0	0	0	2	0	5	0	7	2	11	0	8	20	18	28	24	16	12	12	16	19	17	21	23	22	26	17	23	23	23	19	22
Ostrich	16	40	34	38	48	37	73	45	75	66	85	84	119	98	65	68	48	36	48	74	44	50	20	41	26	37	43	51	42	41	44	60	67
Rhino, black	0	17	14	15	19	21	21	21	21	20	25	26	29	29	32	36	40	48	53	55	64	65	62	71	69	67	72	61	60	63	73	80	78
Rhino, white	0	0	0	5	11	0	19	23	23	25	28	32	30	31	32	32	39	36*	36	38	45	46	53	58	56	63	65	70	72	80	85	91	101
Sitatunga	0	0	0	0	0	0	0	10	11	11	12	12	21	21	16	16	14	14	<10	<10	<10	<10	2	1	0	0	0	0	0	0	0	0	0
Warthog	15	124	142	230	310	110	213	147	272	233	367	304	88	194	136	129	170	140	163	277	160	162	114	50	31	59	48	68	33	69	82	55	87
Waterbuck	59	147	326	223	408	171	104	226	300	242	220	474	149	170	64*	52	116	134	93	173	175	96	171	102	96	98	92	117	101	117	133	97	68
Zebra, burchell	241	1291	1452	1375	1302	1372	1387	1428	1647	1552	1756	1467	1264	1039*	1025	1102	1094	970	1098	1184	1288	1164***	908	1151	946	956	836	991	653	694	985	725	1050
Zebra, Grevy's	106	287	259	380	262	236	140	387	470	517	632	497	556	487	462*	435	448	399	430	370	364**	343***	371****	378	296	284	325	299	286	308	313	331	321

* (census after individuals translocated out of Lewa)
 ** Excludes 56 GZ counted in LMD and II Ngwesi area on 28/2/09
 *** Excludes 51 GZ & 102 PZ counted in LMD & II Ngwesi on 21/03/2010
 **** Does not include count from LMD area, 16/03/2011

Appendix 2: Wildlife count figures on Borana Wildlife Conservancy: 1977 – 2021

SPECIES	Aug-77	May-90	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Aerial count		Total aerial & ground count				
																												Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	
Beisa oryx	-	-	38	112	-	-	47	101.5	88	111	-	-	-	-	-	-	-	70	-	-	-	30	25	19	26	29	33	41	82	77	105	133	92	
Buffalo	-	-	78	66	-	-	127	196.5	222	165	-	-	-	-	-	-	-	380	-	-	-	122	133	141	190	229	228	279	345	361	390	627	379	
Bushbuck	-	-	20	18	-	-	6	8	0	0	-	-	-	-	-	-	-	0	-	-	-	0	1	1	0	1	3	0	2	1	0	-	-	
Cheetah	-	-	0	0	-	-	1	2	0	0	-	-	-	-	-	-	-	3	-	-	-	0	0	1	0	0	0	0	0	0	0	4	6	
Eland	-	-	105	257	-	-	176	203.5	185	372	-	-	-	-	-	-	-	104	-	-	-	37	34	51	53	60	59	107	58	91	41	40	28	
Elephant	-	-	0	35	-	-	27	91.5	9	29	-	-	-	-	-	-	-	67	-	-	-	60	59	105	85	106	94	229	323	88	122	328	240	
Gerenuk	-	-	0	0	-	-	0	0	0	0	-	-	-	-	-	-	-	0	-	-	-	1	1	1	0	1	2	0	0	1	0	0	0	
Gazelle, Grants	-	-	88	140	-	-	94	93.5	109	55	-	-	-	-	-	-	-	74	-	-	-	12	14	16	30	30	26	26	128	156	181	453	303	
Gazelle, Thompsons	-	-	0	0	-	-	0	0	0	0	-	-	-	-	-	-	-	0	-	-	-	0	2	1	0	0	0	27	4	7	10	16	16	
Giraffe	-	-	77	120	-	-	102	166.5	153	151	-	-	-	-	-	-	-	105	-	-	-	60	61	63	78	56	63	74	94	25	55	51	36	
Greater kudu	-	-	48	36	-	-	32	40	32	1	-	-	-	-	-	-	-	18	-	-	-	5	5	8	9	9	11	7	13	2	12	12	12	
Hippo	-	-	0	0	-	-	0	0	0	0	-	-	-	-	-	-	-	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0
Hartebeest	-	-	18	43	-	-	22	23	27	43	-	-	-	-	-	-	-	11	-	-	-	4	6	5	8	10	12	10	44	42	37	55	44	
Hyena, spotted	-	-	3	13	-	-	10	5	0	0	-	-	-	-	-	-	-	0	-	-	-	0	0	0	0	0	0	0	0	3	0	2	2	
Impala	-	-	77	217	-	-	206	176	415	166	-	-	-	-	-	-	-	311	-	-	-	115	161	198	190	165	174	233	319	685	523	553	434	
Jackal (Silver backed)	-	-	11	7	-	-	18	8	0	0	-	-	-	-	-	-	-	0	-	-	-	0	0	0	0	0	0	0	2	2	1	10	10	
Klipsringer	-	-	0	0	-	-	0	0	0	0	-	-	-	-	-	-	-	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	5
Leopard	-	-	4	7	-	-	5	6	0	0	-	-	-	-	-	-	-	6	-	-	-	0	0	0	0	9	0	0	0	0	0	-	0	
Lion	-	-	0	6	-	-	5	7.5	5	0	-	-	-	-	-	-	-	20	-	-	-	2	10	8	3	3	2	0	21	22	24	34	39	
Ostrich	-	-	0	0	-	-	0	0	14	14	-	-	-	-	-	-	-	0	-	-	-	0	0	0	0	0	0	2	0	0	8	5	16	
Rhino, black	-	-	0	0	-	-	0	0	0	0	-	-	-	-	-	-	-	0	-	-	-	0	0	0	21	21	20	20	22	25	28	29	39	
Rhino, white	-	-	0	0	-	-	0	0	0	0	-	-	-	-	-	-	-	0	-	-	-	0	0	0	0	0	2	0	3	0	2	6	6	
Sitatunga	-	-	0	0	-	-	0	0	0	0	-	-	-	-	-	-	-	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0
Warthog	-	-	0	0	-	-	19	30	25	51	-	-	-	-	-	-	-	6	-	-	-	6	7	6	9	9	7	0	52	71	79	113	75	
Waterbuck	-	-	149	110	-	-	50	139.5	150	116	-	-	-	-	-	-	-	51	-	-	-	17	26	25	37	45	43	19	67	35	47	70	32	
Zebra, burchell	-	-	524	1036	-	-	867	831	675	714	-	-	-	-	-	-	-	635	-	-	-	276	265	241	271	297	284	271	583	534	499	874	511	
Zebra, Grevy's	-	-	0	0	-	-	0	1	2	0	-	-	-	-	-	-	-	1	-	-	-	0	0	0	0	0	0	0	6	0	0	0	1	