DEVELOPMENT OF A NATIONAL LEVEL INFORMATION SYSTEMS (ATLAS) ON AAT AND ITS VECTORS IN KENYA

37th ISCTRC 15th – 19th September,2025, Nairobi Kenya

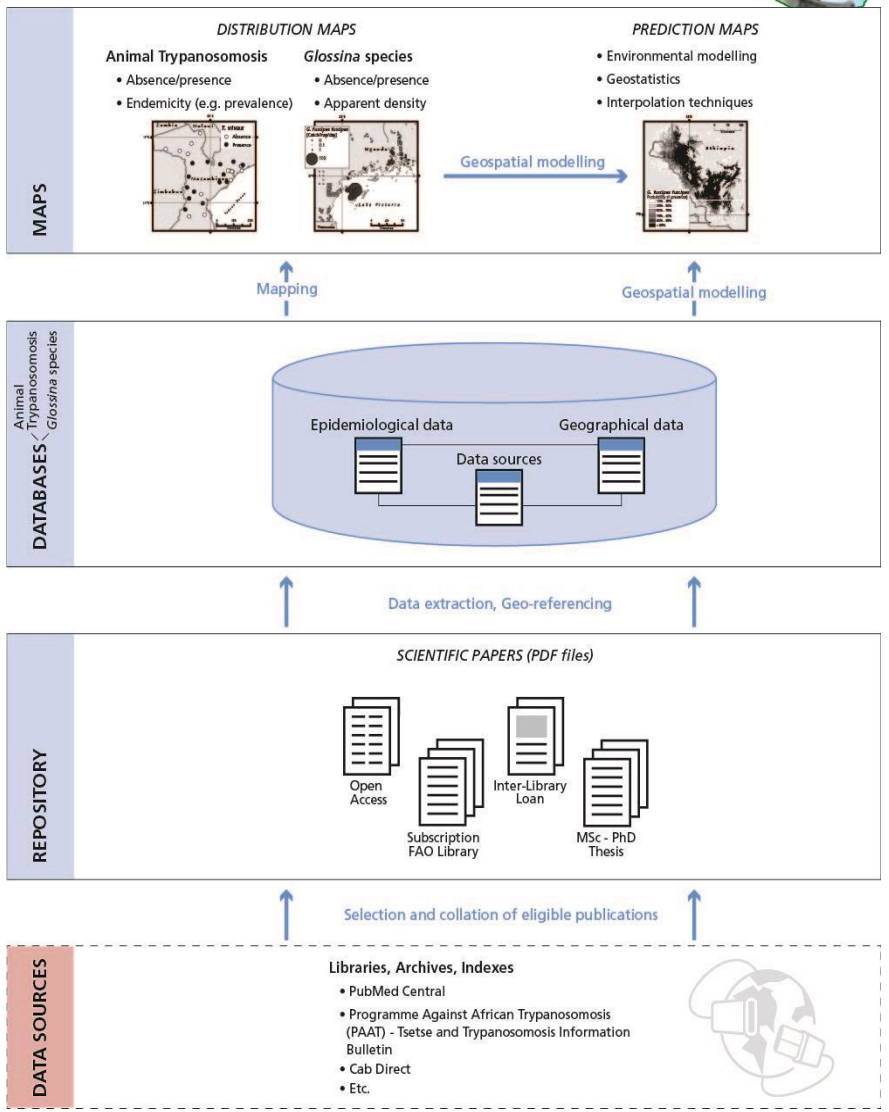
Nancy Ngari Miron

GIS and Data Management

Kenya Tsetse and Trypanosomiasis Eradication Council (KENTTEC)

What is the National atlas of tsetse and AAT?

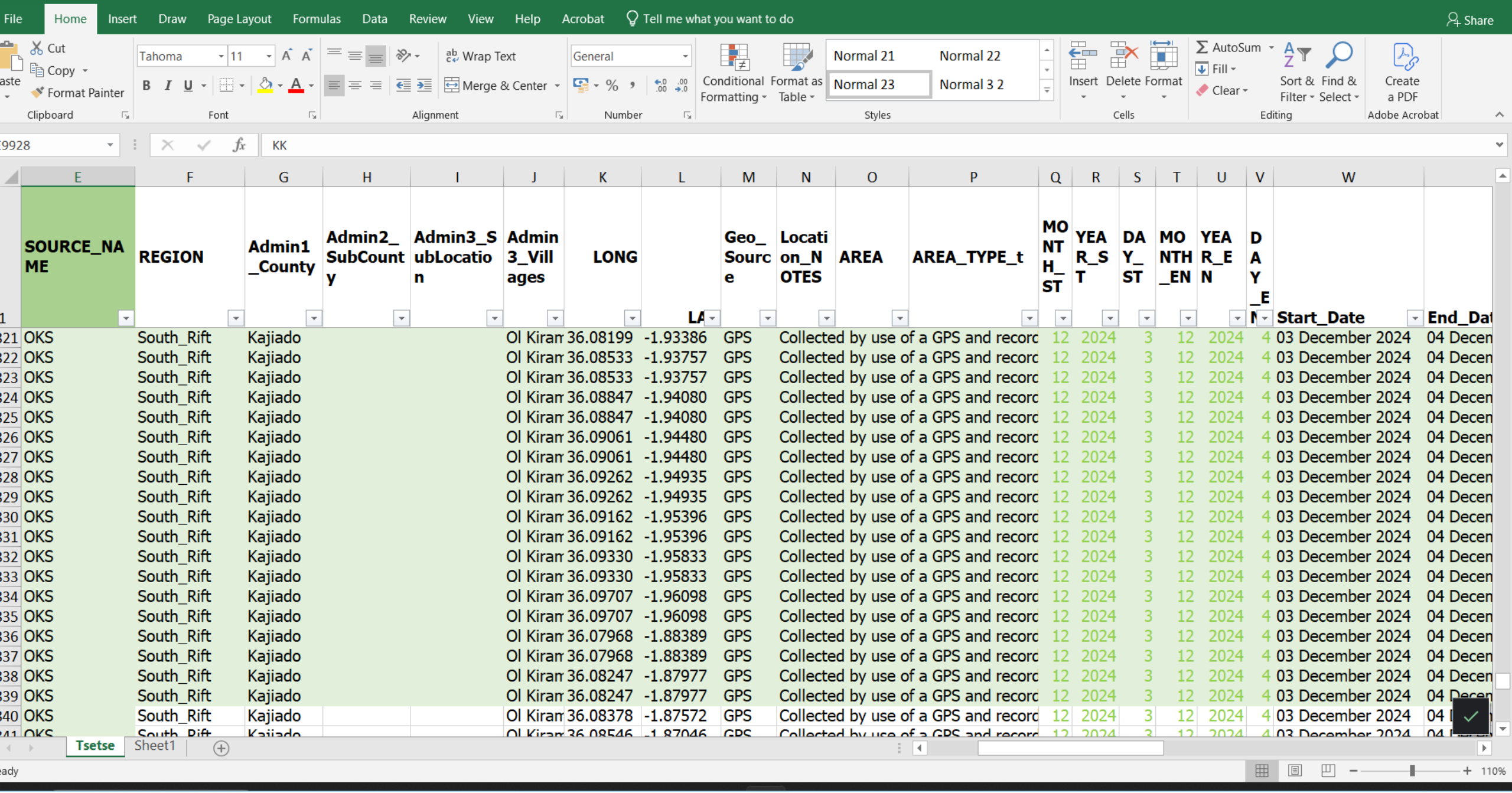
- An information system on the occurrence of AAT and its vectors in space and time.
- It assembles in one database comprehensive, harmonized information on AAT and its vectors
  - In areas where PATTEC-KENYA, KENTTEC and Stakeholders have been working
- Components
  - Data repository
    - Excel sheet of the data from the field datasheets Reports, Publications, Data sheets
  - Database
    - Harmonized, geo-referenced data (GIS-ready)
- Based on FAO methodology for Continental atlas with a few adaptations
- Period
  - 1st Edition: 2006-2019
  - 2nd Edition: Tsetse 2006- 2025
    AAT 1990-2025



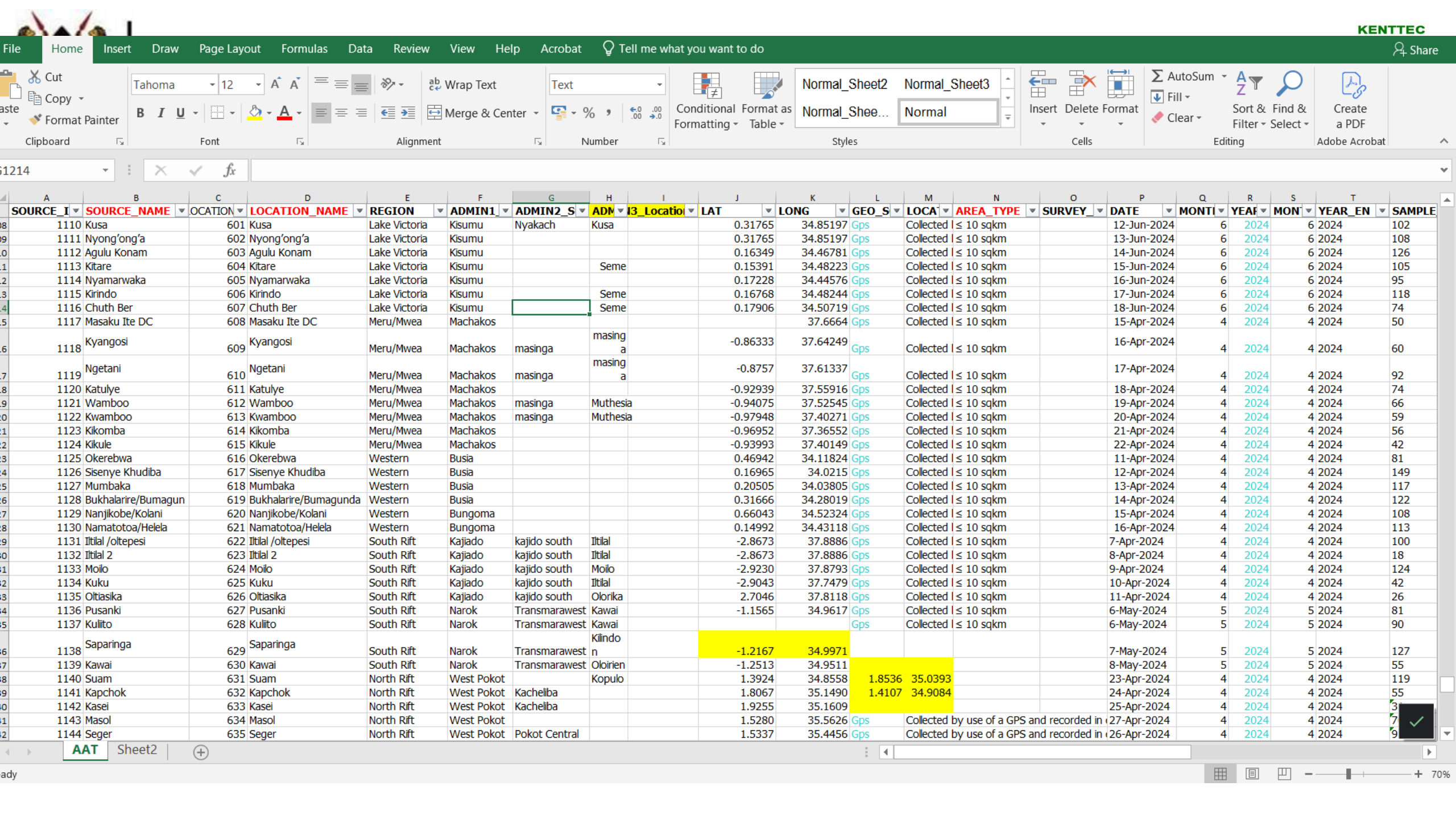
Data from stakeholders

- **Tsetse Data**
- KALRO
  - Biotechnology Research Institute(BIORI) (2000-2001,2005,2008,2016,2018-2019)
  - Veterinary Science Research Institute(VRSI)(2001,2005,2008,2019)
- International Centre for Insect Physiology and Ecology (ICIPE)2017,2018,2021)
- Universities
  - KU(2005,2008,2012
  - UoN (2011, 2012)
- Directorate of Veterinary Services(DVS)
  - Kiboko Zoological Investigations and Efficacy Trial Centre(2000,2004,2009-2010 -1996)
  - HQ -Kabete (2010-2011,2014)

- **AAT Data**
- ICIPE (2021)
- DVS
  - Kiboko Zoological Investigations and Efficacy Trial Centre (2000-2016)
  - National Veterinary Investigation Labs
    - Garissa(2011-2022)
    - Eldoret (1995-2022)
    - Mariakani (1990-2022)
- KALRO
  - Veterinary Science Research Institute(2010.2011,2013,20151993-1999)
  - Some work done in collaboration with KENTTEC



	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	
1	SOURCE_NAME	REGION	Admin1_County	Admin2_SubCounty	Admin3_SubLocation	Admin3_Villages	LONG	LA	Geo_Source	Location_NOTES	AREA	AREA_TYPE_t	MONTH_ST	YEAR_ST	DAY_ST	MONTH_EN	YEAR_EN	DAY_EN	Start_Date	End_Dat
321	OKS	South_Rift	Kajiado			Ol Kiran	36.08199	-1.93386	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
322	OKS	South_Rift	Kajiado			Ol Kiran	36.08533	-1.93757	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
323	OKS	South_Rift	Kajiado			Ol Kiran	36.08533	-1.93757	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
324	OKS	South_Rift	Kajiado			Ol Kiran	36.08847	-1.94080	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
325	OKS	South_Rift	Kajiado			Ol Kiran	36.08847	-1.94080	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
326	OKS	South_Rift	Kajiado			Ol Kiran	36.09061	-1.94480	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
327	OKS	South_Rift	Kajiado			Ol Kiran	36.09061	-1.94480	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
328	OKS	South_Rift	Kajiado			Ol Kiran	36.09262	-1.94935	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
329	OKS	South_Rift	Kajiado			Ol Kiran	36.09262	-1.94935	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
330	OKS	South_Rift	Kajiado			Ol Kiran	36.09162	-1.95396	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
331	OKS	South_Rift	Kajiado			Ol Kiran	36.09162	-1.95396	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
332	OKS	South_Rift	Kajiado			Ol Kiran	36.09330	-1.95833	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
333	OKS	South_Rift	Kajiado			Ol Kiran	36.09330	-1.95833	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
334	OKS	South_Rift	Kajiado			Ol Kiran	36.09707	-1.96098	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
335	OKS	South_Rift	Kajiado			Ol Kiran	36.09707	-1.96098	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
336	OKS	South_Rift	Kajiado			Ol Kiran	36.07968	-1.88389	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
337	OKS	South_Rift	Kajiado			Ol Kiran	36.07968	-1.88389	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
338	OKS	South_Rift	Kajiado			Ol Kiran	36.08247	-1.87977	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
339	OKS	South_Rift	Kajiado			Ol Kiran	36.08247	-1.87977	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04 Decen
340	OKS	South_Rift	Kajiado			Ol Kiran	36.08378	-1.87572	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04
341	OKS	South_Rift	Kajiado			Ol Kiran	36.08546	-1.87046	GPS	Collected by use of a GPS and record			12	2024	3	12	2024	4	03 December 2024	04



SOURCE_I	SOURCE_NAME	OCATION	LOCATION_NAME	REGION	ADMIN1_	ADMIN2_S	ADM	I3_Locatio	LAT	LONG	GEO_S	LOCA	AREA_TYPE	SURVEY_	DATE	MONTI	YEAI	MON	YEAR_EN	SAMPLE
1110	Kusa	601	Kusa	Lake Victoria	Kisumu	Nyakach	Kusa		0.31765	34.85197	Gps	Collected	≤ 10 sqkm		12-Jun-2024	6	2024	6	2024	102
1111	Nyong'ong'a	602	Nyong'ong'a	Lake Victoria	Kisumu				0.31765	34.85197	Gps	Collected	≤ 10 sqkm		13-Jun-2024	6	2024	6	2024	108
1112	Agulu Konam	603	Agulu Konam	Lake Victoria	Kisumu				0.16349	34.46781	Gps	Collected	≤ 10 sqkm		14-Jun-2024	6	2024	6	2024	126
1113	Kitare	604	Kitare	Lake Victoria	Kisumu		Seme		0.15391	34.48223	Gps	Collected	≤ 10 sqkm		15-Jun-2024	6	2024	6	2024	105
1114	Nyamarwaka	605	Nyamarwaka	Lake Victoria	Kisumu				0.17228	34.44576	Gps	Collected	≤ 10 sqkm		16-Jun-2024	6	2024	6	2024	95
1115	Kirindo	606	Kirindo	Lake Victoria	Kisumu		Seme		0.16768	34.48244	Gps	Collected	≤ 10 sqkm		17-Jun-2024	6	2024	6	2024	118
1116	Chuth Ber	607	Chuth Ber	Lake Victoria	Kisumu		Seme		0.17906	34.50719	Gps	Collected	≤ 10 sqkm		18-Jun-2024	6	2024	6	2024	74
1117	Masaku Ite DC	608	Masaku Ite DC	Meru/Mwea	Machakos					37.6664	Gps	Collected	≤ 10 sqkm		15-Apr-2024	4	2024	4	2024	50
1118	Kyangosi	609	Kyangosi	Meru/Mwea	Machakos	masinga	masinga		-0.86333	37.64249	Gps	Collected	≤ 10 sqkm		16-Apr-2024	4	2024	4	2024	60
1119	Ngetani	610	Ngetani	Meru/Mwea	Machakos	masinga	masinga		-0.8757	37.61337	Gps	Collected	≤ 10 sqkm		17-Apr-2024	4	2024	4	2024	92
1120	Katulye	611	Katulye	Meru/Mwea	Machakos				-0.92939	37.55916	Gps	Collected	≤ 10 sqkm		18-Apr-2024	4	2024	4	2024	74
1121	Wamboo	612	Wamboo	Meru/Mwea	Machakos	masinga	Muthesia		-0.94075	37.52545	Gps	Collected	≤ 10 sqkm		19-Apr-2024	4	2024	4	2024	66
1122	Kwamboo	613	Kwamboo	Meru/Mwea	Machakos	masinga	Muthesia		-0.97948	37.40271	Gps	Collected	≤ 10 sqkm		20-Apr-2024	4	2024	4	2024	59
1123	Kikomba	614	Kikomba	Meru/Mwea	Machakos				-0.96952	37.36552	Gps	Collected	≤ 10 sqkm		21-Apr-2024	4	2024	4	2024	56
1124	Kikule	615	Kikule	Meru/Mwea	Machakos				-0.93993	37.40149	Gps	Collected	≤ 10 sqkm		22-Apr-2024	4	2024	4	2024	42
1125	Okerebwa	616	Okerebwa	Western	Busia				0.46942	34.11824	Gps	Collected	≤ 10 sqkm		11-Apr-2024	4	2024	4	2024	81
1126	Sisenye Khudiba	617	Sisenye Khudiba	Western	Busia				0.16965	34.0215	Gps	Collected	≤ 10 sqkm		12-Apr-2024	4	2024	4	2024	149
1127	Mumbaka	618	Mumbaka	Western	Busia				0.20505	34.03805	Gps	Collected	≤ 10 sqkm		13-Apr-2024	4	2024	4	2024	117
1128	Bukhalarire/Bumagun	619	Bukhalarire/Bumagunda	Western	Busia				0.31666	34.28019	Gps	Collected	≤ 10 sqkm		14-Apr-2024	4	2024	4	2024	122
1129	Nanjikobe/Kolani	620	Nanjikobe/Kolani	Western	Bungoma				0.66043	34.52324	Gps	Collected	≤ 10 sqkm		15-Apr-2024	4	2024	4	2024	108
1130	Namatotoa/Helela	621	Namatotoa/Helela	Western	Bungoma				0.14992	34.43118	Gps	Collected	≤ 10 sqkm		16-Apr-2024	4	2024	4	2024	113
1131	Iltilal /oltepesi	622	Iltilal /oltepesi	South Rift	Kajiado	kajido south	Iltilal		-2.8673	37.8886	Gps	Collected	≤ 10 sqkm		7-Apr-2024	4	2024	4	2024	100
1132	Iltilal 2	623	Iltilal 2	South Rift	Kajiado	kajido south	Iltilal		-2.8673	37.8886	Gps	Collected	≤ 10 sqkm		8-Apr-2024	4	2024	4	2024	18
1133	Moilo	624	Moilo	South Rift	Kajiado	kajido south	Moilo		-2.9230	37.8793	Gps	Collected	≤ 10 sqkm		9-Apr-2024	4	2024	4	2024	124
1134	Kuku	625	Kuku	South Rift	Kajiado	kajido south	Iltilal		-2.9043	37.7479	Gps	Collected	≤ 10 sqkm		10-Apr-2024	4	2024	4	2024	42
1135	Oltiasika	626	Oltiasika	South Rift	Kajiado	kajido south	Olorika		2.7046	37.8118	Gps	Collected	≤ 10 sqkm		11-Apr-2024	4	2024	4	2024	26
1136	Pusanki	627	Pusanki	South Rift	Narok	Transmarawest	Kawai		-1.1565	34.9617	Gps	Collected	≤ 10 sqkm		6-May-2024	5	2024	5	2024	81
1137	Kuliito	628	Kuliito	South Rift	Narok	Transmarawest	Kawai				Gps	Collected	≤ 10 sqkm		6-May-2024	5	2024	5	2024	90
1138	Saparinga	629	Saparinga	South Rift	Narok	Transmarawest	Kilindon		-1.2167	34.9971					7-May-2024	5	2024	5	2024	127
1139	Kawai	630	Kawai	South Rift	Narok	Transmarawest	Oloirien		-1.2513	34.9511					8-May-2024	5	2024	5	2024	55
1140	Suam	631	Suam	North Rift	West Pokot		Kopulo		1.3924	34.8558	1.8536	35.0393			23-Apr-2024	4	2024	4	2024	119
1141	Kapchok	632	Kapchok	North Rift	West Pokot	Kacheliba			1.8067	35.1490	1.4107	34.9084			24-Apr-2024	4	2024	4	2024	55
1142	Kasei	633	Kasei	North Rift	West Pokot	Kacheliba			1.9255	35.1609					25-Apr-2024	4	2024	4	2024	3
1143	Masol	634	Masol	North Rift	West Pokot				1.5280	35.5626	Gps	Collected by use of a GPS and recorded in			27-Apr-2024	4	2024	4	2024	7
1144	Seger	635	Seger	North Rift	West Pokot	Pokot Central			1.5337	35.4456	Gps	Collected by use of a GPS and recorded in			26-Apr-2024	4	2024	4	2024	9

Comparison of first and second editions of the Atlas

First Edition(2019)

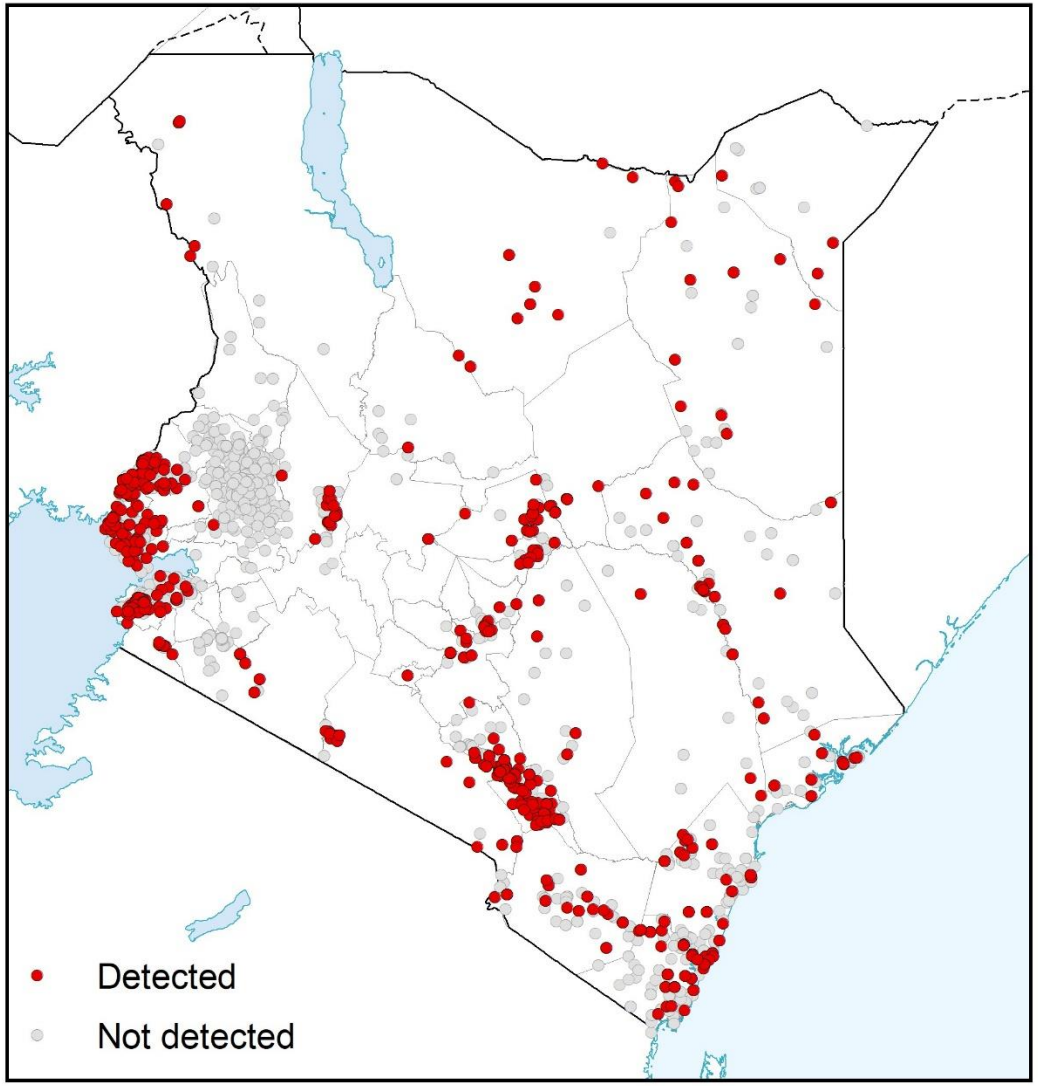
Datasheets		
AAT	Tsetse	
757	467	
21 Counties	21 Counties	
Fly Trapping events		
Baseline	1924	
Monitoring	4330	
Total	6254	
AAT Surveys		
Baseline	286	
Monitoring	612	
Total	898	

Second Edition(2024)

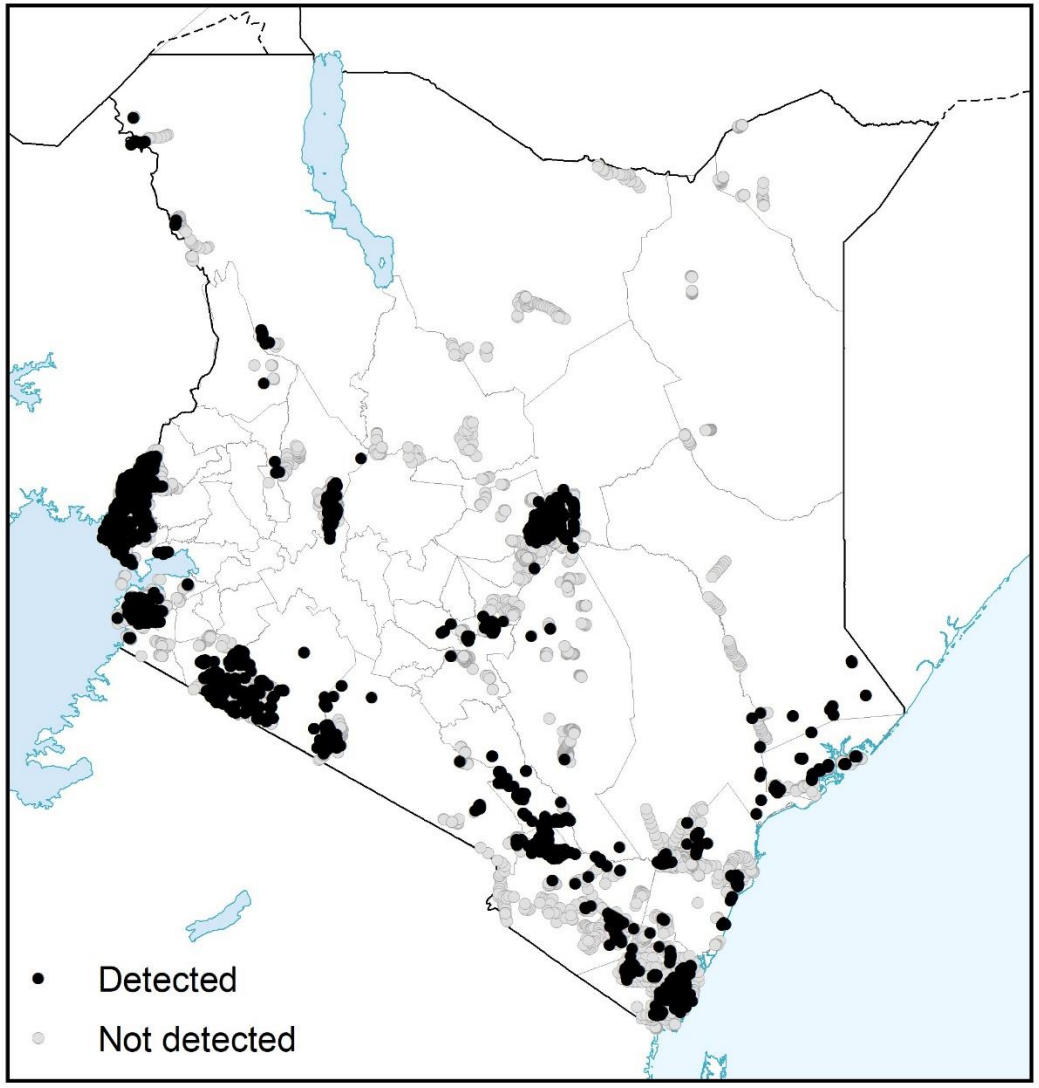
Datasheets/Reports		
AAT	Tsetse	
1519	1095	
40 counties	31 counties	
Fly Trapping events		
Baseline	2922	
Monitoring	6420	
Undefined	4696	
Total	14038	
AAT Surveys		
Baseline	379	
Monitoring	882	
Undefined	6773	
Total	8034	

Presence_Abscence maps of T&T in Kenya

Vector-borne animal trypanosomosis



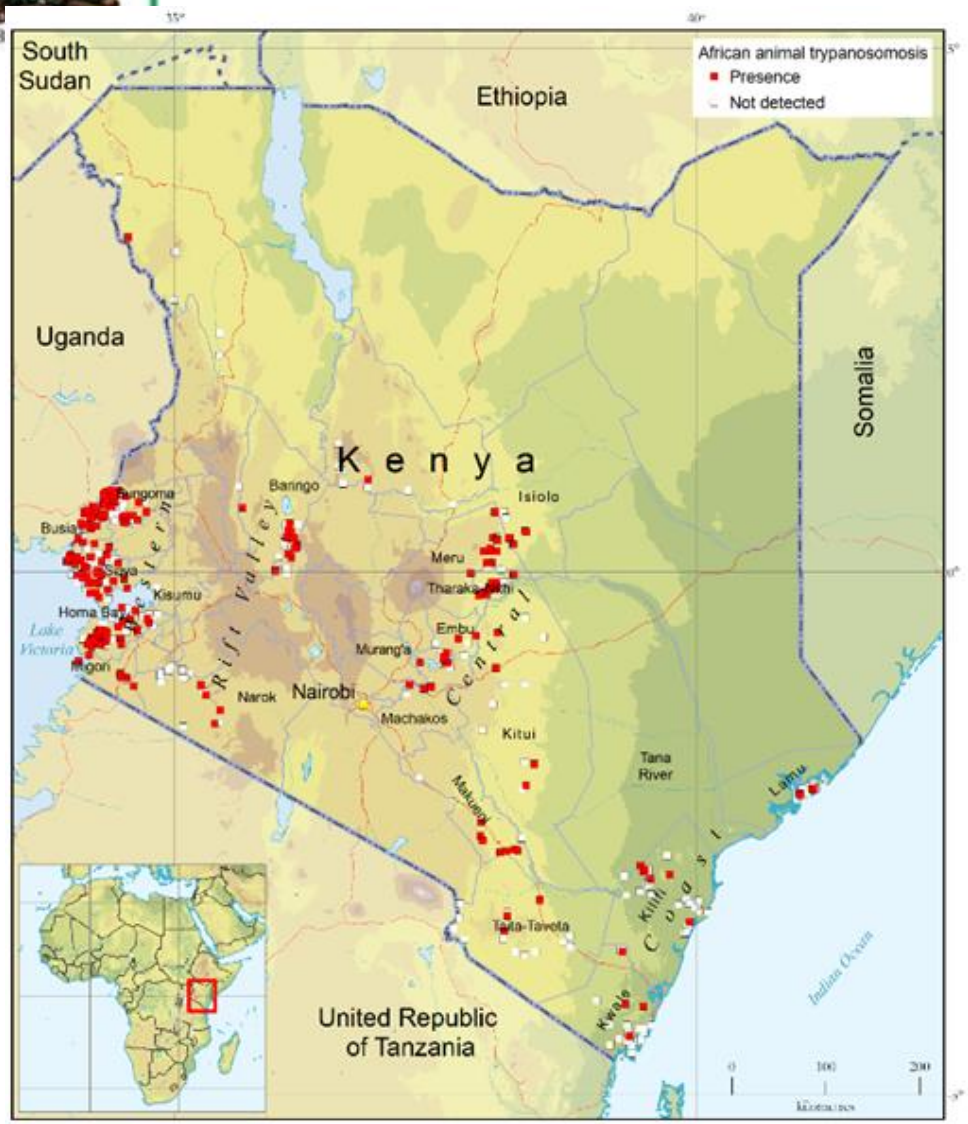
Tsetse flies (Genus *Glossina*)

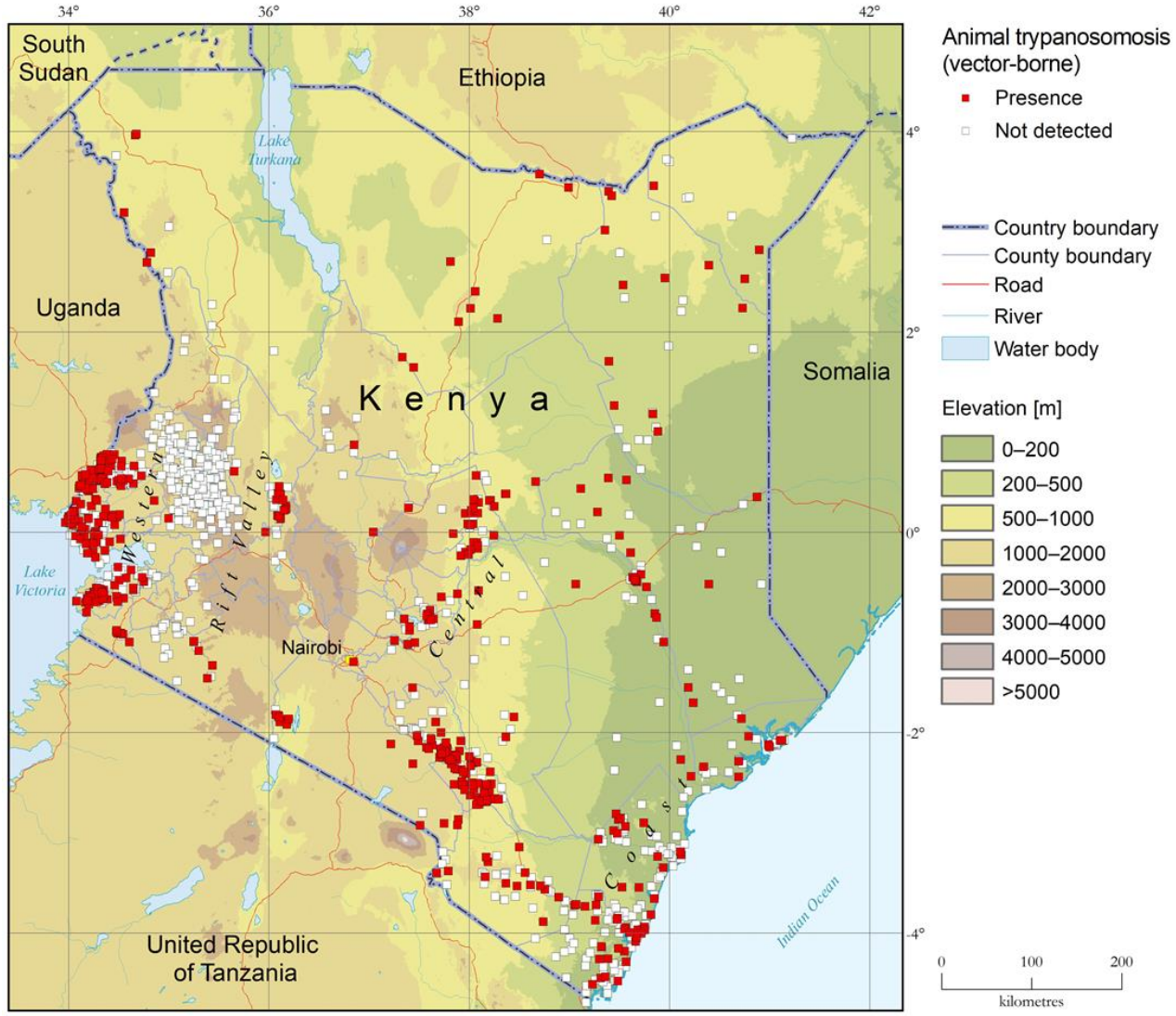


Summary of the AAT Atlas

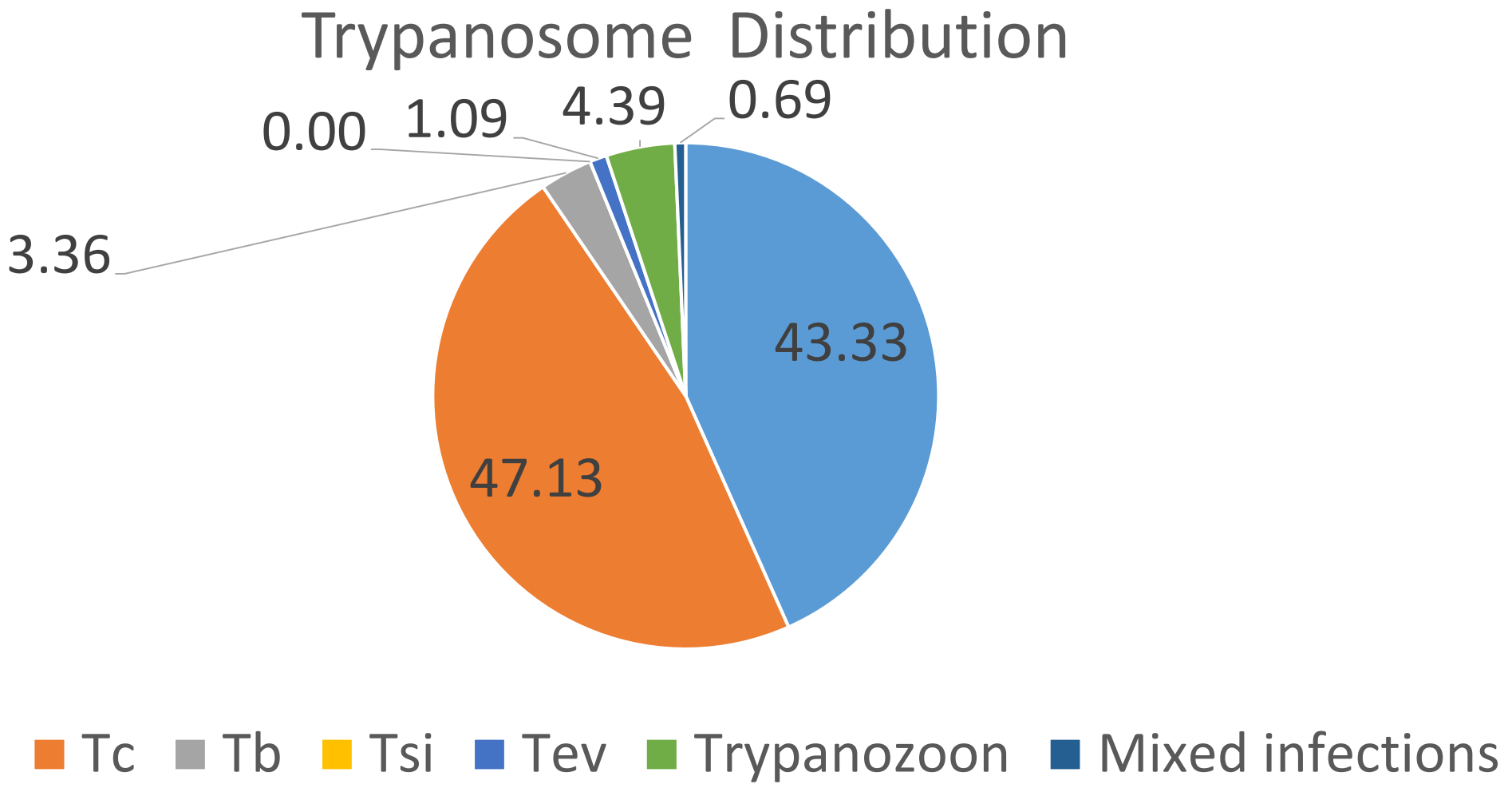
Species_AN	Number Screened	Representation	Positives	% positive per Spp.
Bovine	120600	90.87895	5436	4.507463
Camelidae	3236	2.43851	203	6.273177
Canine	828	0.623945	33	3.985507
Caprine	5915	4.457288	111	1.876585
Equine	398	0.299916	9	2.261307
Ovine	1529	1.152188	7	0.457816
porcine	198	0.149204	46	23.23232
	132704		**5845**	**4.404539**

Comparison of AAT Distribution in 1st and 2nd atlas editions





Trypanosomes Mapped out from the atlas



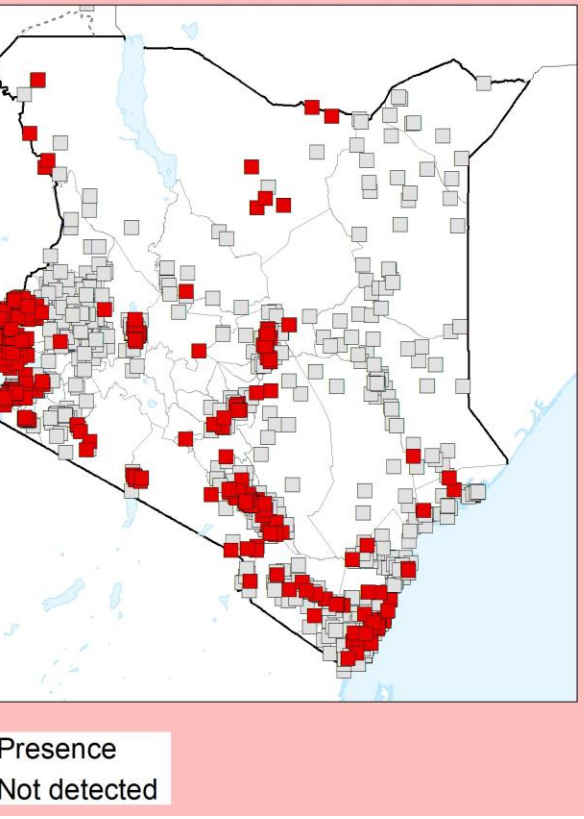
AAT Trypanosomes Distribution

Animal trypanosomosis (vector-borne)

Nagana

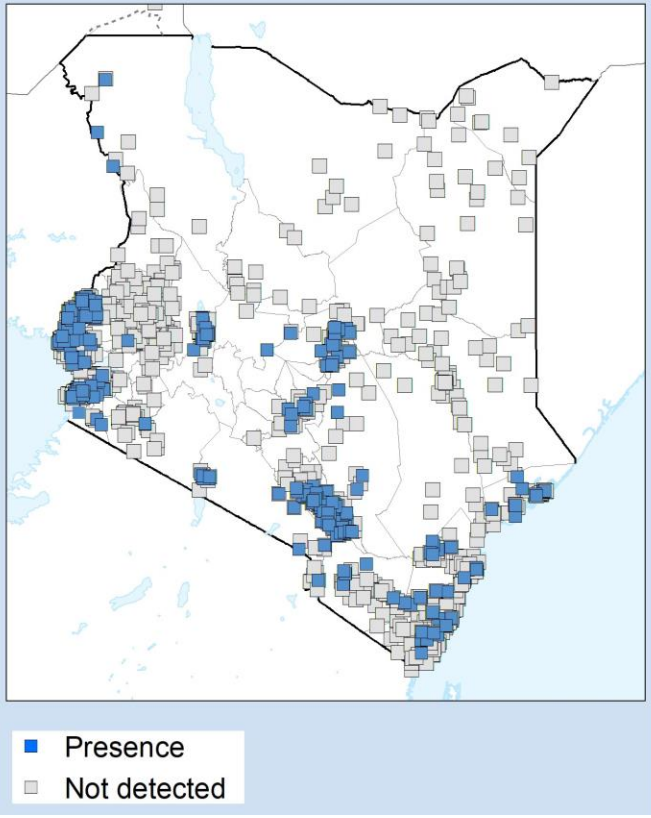
Duttonella

Trypanosoma vivax



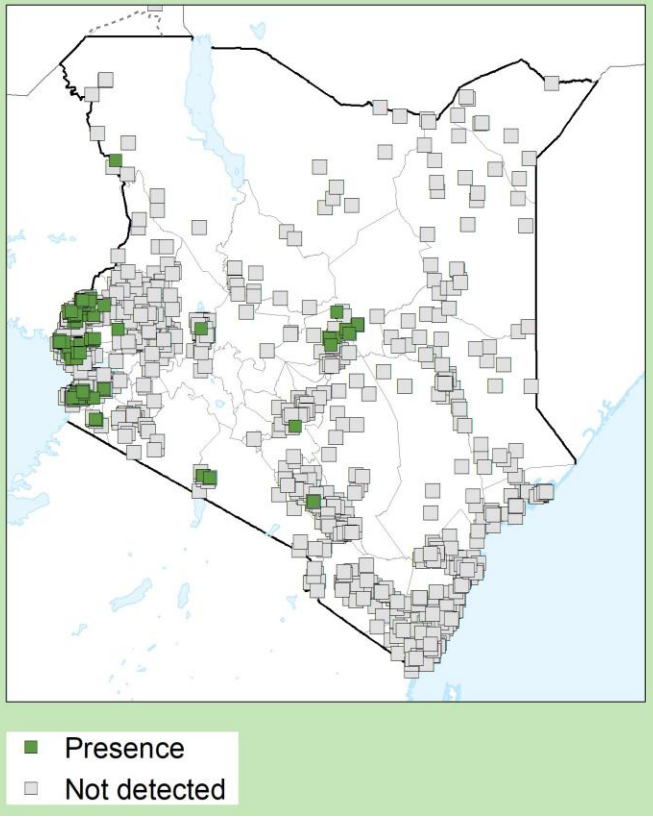
Nannomonas

Trypanosoma congolense



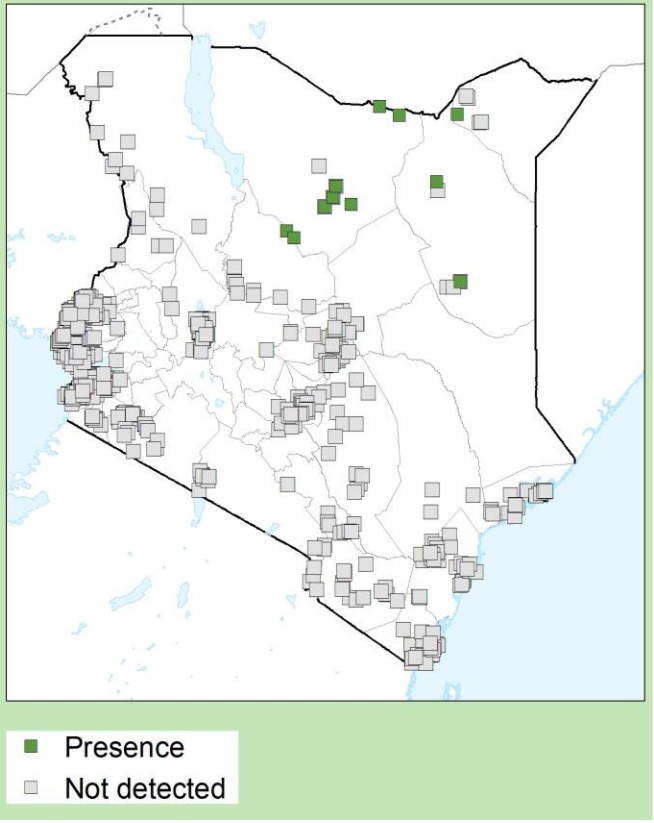
Trypanozoon

Trypanosoma brucei



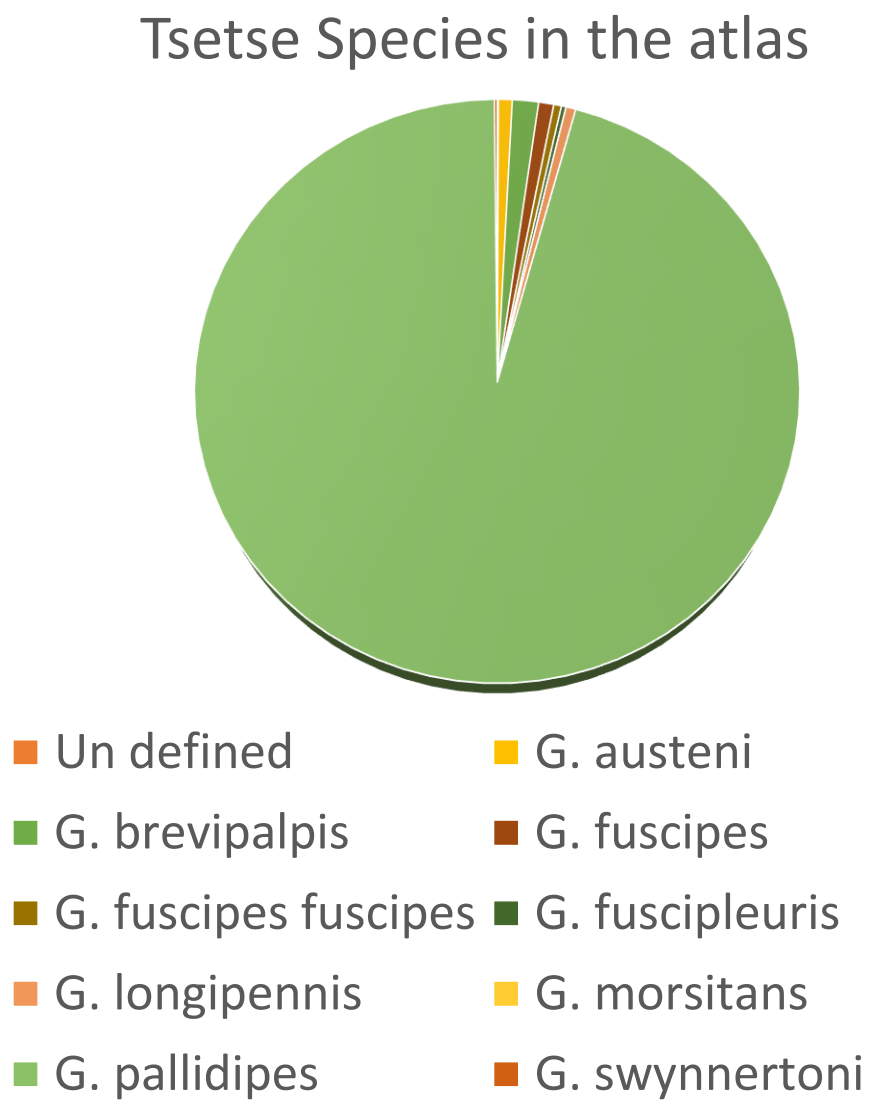
Surra

Trypanosoma evansi



Summary of the Tsetse Atlas

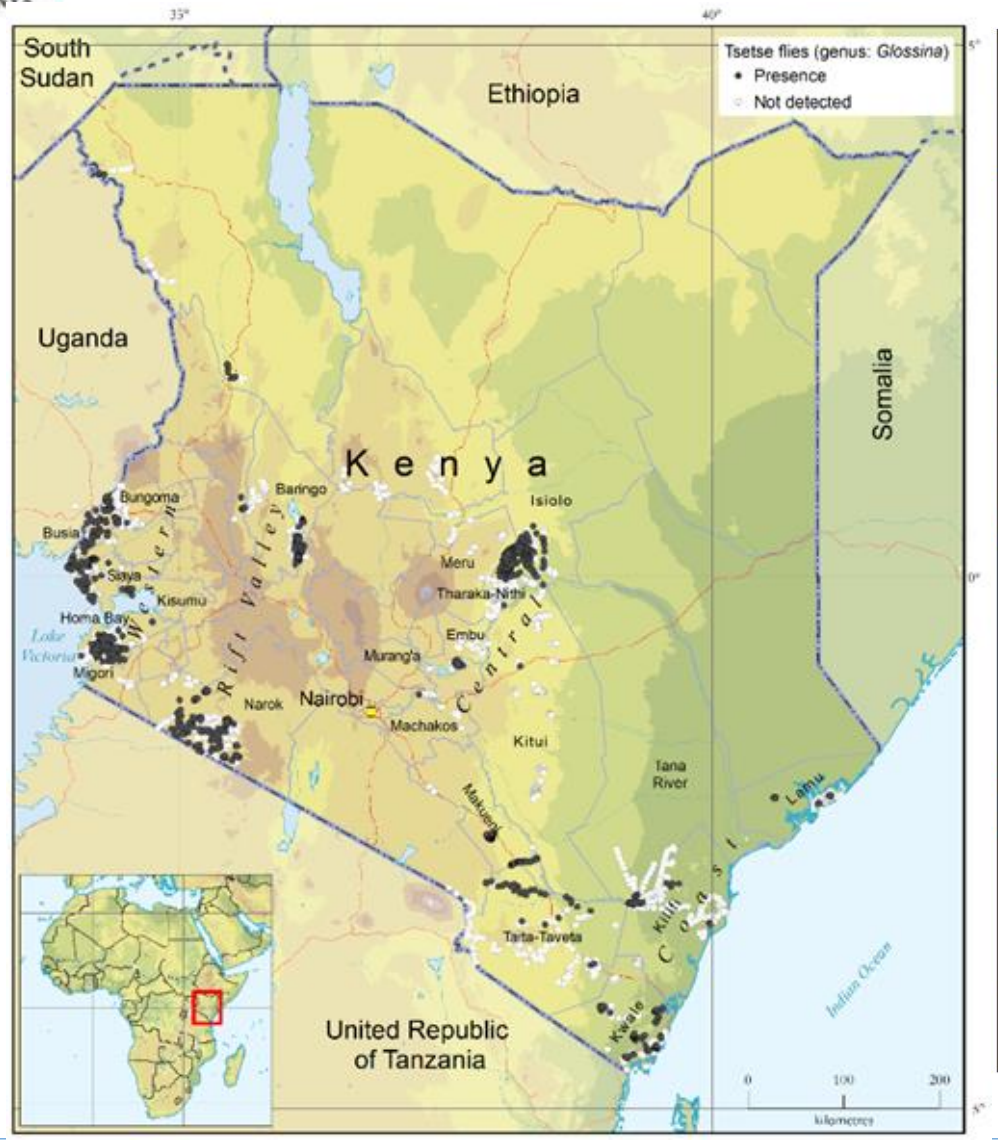
SPECIES	Number of flies caught
Undefined	348
G. austeni	4859
G. brevipalpis	9203
G. fuscipes	5304
G. fuscipes fuscipes	2693
G. fuscipleuris	1600
G. longipennis	3486
G. morsitans	1
G. pallidipes	608096
G. swynnertoni	1024

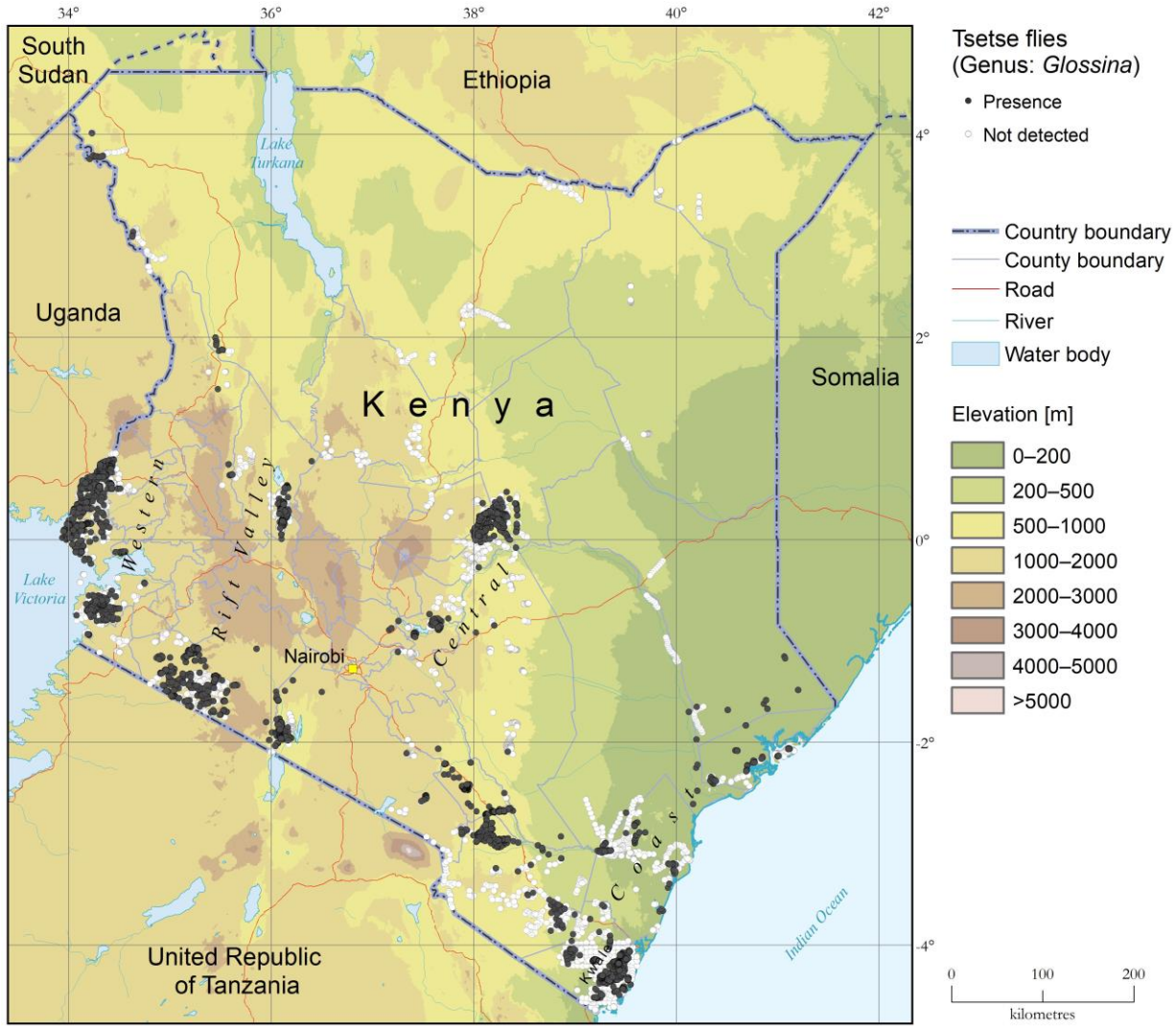


Species Average FTD per Region

REGION	SumOfTrap_int_days	AvgOfAD_Gp	AvgOfAD_Gl	AvgOfAD_Ga	AvgOfAD_Gb	AvgOfAD_Gf	AvgOfAD_Gs
Lake Victoria	4851	272.0642				1.7688	
Meru_Mwea	5950	26.4726	8.3833		2.5214		
North_Coast	1901	57.3222	3.1449	5.5385	1.7661		
North_Eastern	186	94.1188		3.2500	5.3125		
North_Rift	3382	52.0717	0.1333				
South_Coast	12611	24.9780	0.7922	3.5121	1.4386		
South_Rift	2286	111.0109	1.9367		0.2019		1.9738
Western	7280	5.7478				2.0584	

Comparison of tsetse Distribution in 1st and 2nd atlas editions



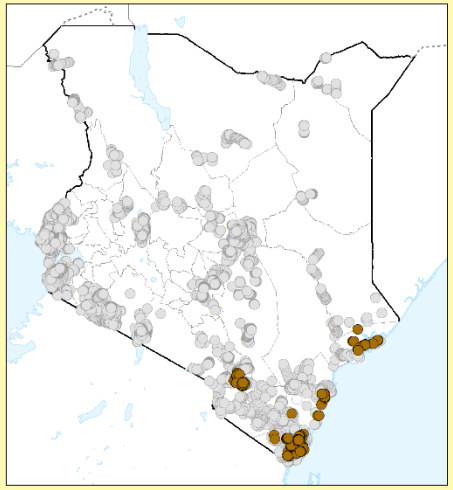


Tsetse Species Distribution

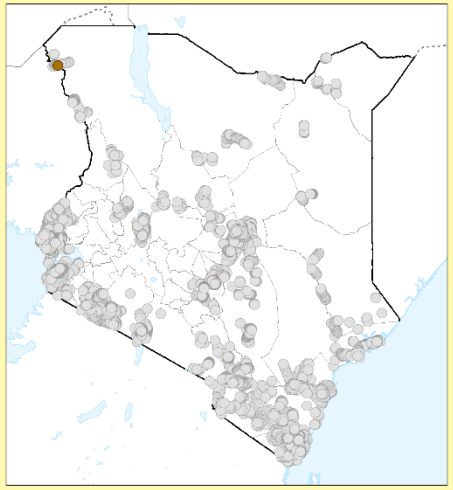
Tsetse flies (Genus: *Glossina*)

***Morsitans* group**

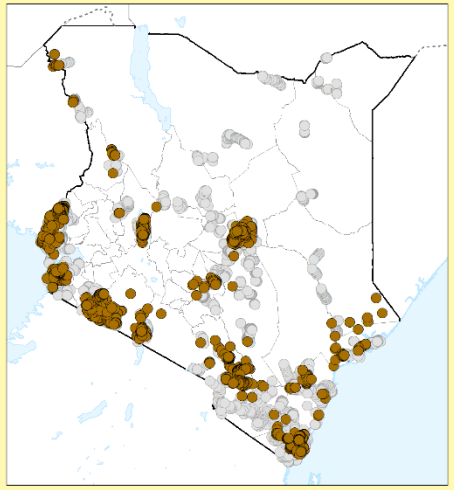
Glossina austeni



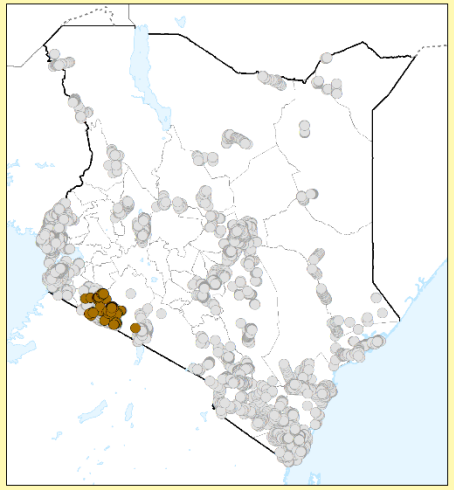
Glossina morsitans



Glossina pallidipes

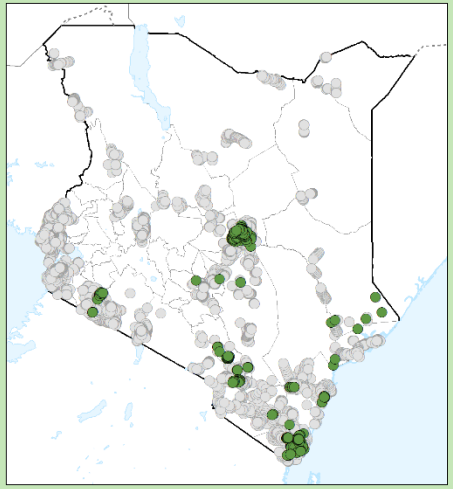


Glossina swynnertoni

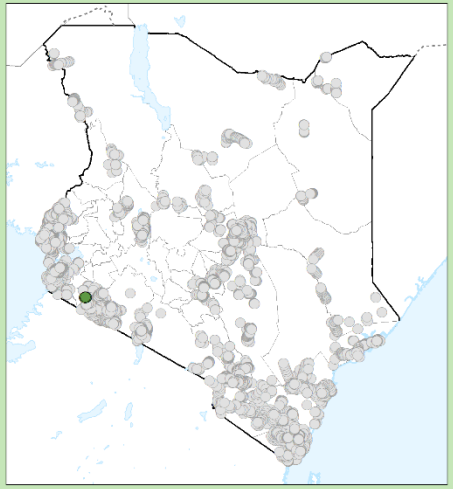


***Fusca* group**

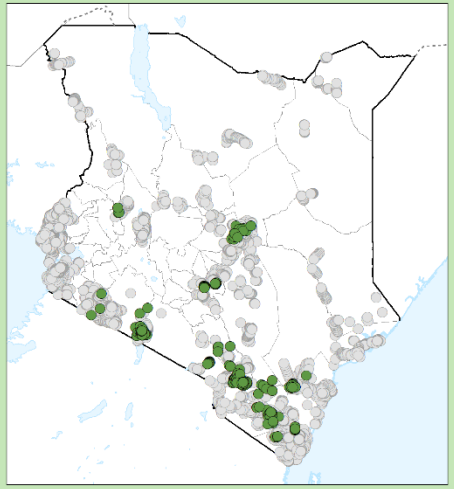
Glossina brevipalpis



Glossina fuscipleuris

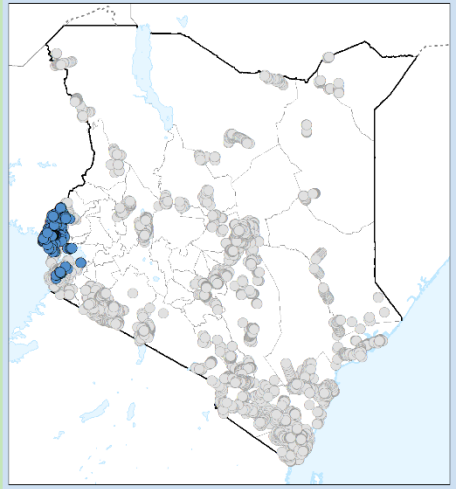


Glossina longipennis



***Palpalis* group**

Glossina fuscipes



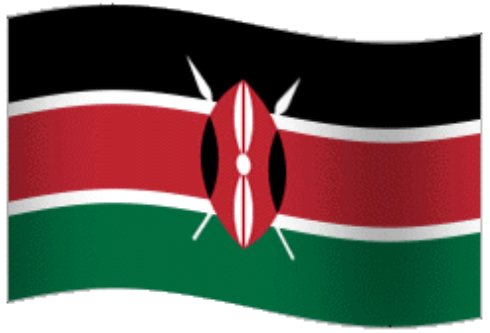
Challenges /Weaknesses in the atlas

- Diagnosis used is mainly BCT and Microscopy
- Bovine is the main Livestock screened
- Spatial and temporal gaps
- Huge AT dataset not sampled randomly
  - AT Prevalence not calculated
- Incompleteness of the atlases
  - Trap type
  - Dates
  - Coordinates

Way forward on the T&T Atlas for Kenya

- Maintain up-to-date databases
- Collate and process data from other institutions
- New surveys in areas where there is no data
- Publish second edition of the atlas
- In-depth analysis of the atlas data including productivity aspects
    - Modelling of T&T distribution in Kenya
    - Modelling the impacts of control programs of T&T programs in Kenya
    - Refine the PCP modelling

Acknowledgement





REPUBLIC OF KENYA

COMBAT

Food and Agriculture Organization of the United Nations

SUSTAINABLE DEVELOPMENT GOALS

BILL & MELINDA GATES foundation

Thank you | Merci | شكراً لك | Obrigado | Gracias | Asante

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