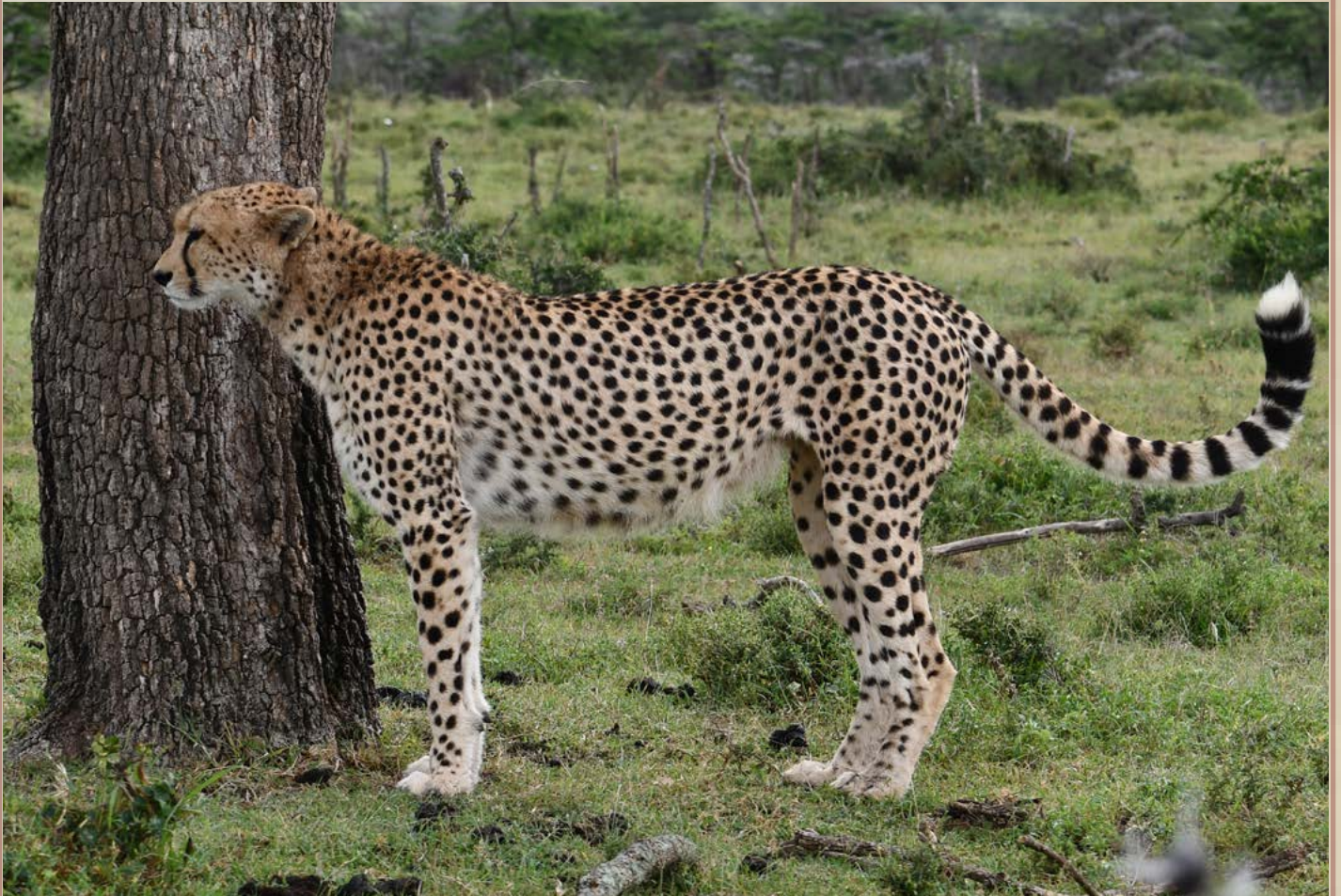


Q1 2022 UPDATED LION & CHEETAH FIGURES



MARA PREDATOR CONSERVATION PROGRAMME

We are pleased to present updated lion and cheetah figures from the 2021 survey period, which spanned from August 1st-October 31st

Lions

New lion figures

Table 1 shows estimates for lion density, abundance, and sex ratio for lions over the age of one year in the Masai Mara (National Reserve and the surrounding wildlife conservancies) for 2020 and 2021. As the table shows, the lion density and hence lion abundance decreased from 2020 to 2021. It is however important to emphasise that this is merely a fluctuation between two consecutive years and not a trend. All wildlife populations fluctuate naturally from year to year. What matters is how a population behaves over a 10-15 year period, where population trends can be analysed. The 2021 figure compares to the years 2014, 2017, and 2019 so there is nothing to be concerned about at this stage.. The female to male sex ratio is closer to 2 two for 2021, which is normal for lion populations.

Lions	2020	2021
Study area (km ²)	2,581	2,581
Lion Density	20.5	17.12
Lion Abundance	522	436
Sex ratio	1.70	1.94

Table 1: Lion density is given as lions/100km² > 1 year old, lion abundance is lions > 1 year old, sex ratio is female to male

Table 2 shows the same parameters for the respective management units.

Protected area	Abundance		Density	
	2020	2021	2020	2021
Enonkishu	7	5	21.4	15.4
Lemek	20	10	32.9	16.3
Mara North	55	44	18.7	14.9
Naboisho	35	47	16.8	22.3
Olarro (North+South)	8	9	10.1	11.6
Ol Chorro	15	8	27.5	14.7
Olderikesi	4	3	11.4	7
Ol Kinyei	14	11	21.5	16
Olare Motorogi	58	33	39.6	22.14
Siana	4	3	13.1	10.48
Mara Triangle	91	95	16.0	19.87
MMNR	235	187	22.4	17.78

Table 2: Lion abundance and density for the different management units for 2020 vs 2021

During our survey period, Naboisho and Olare-Motorogi conservancies scored highest with regards to lion density, followed by the Mara Triangle and the National Reserve.

The 2021 lion densities can be viewed in the form of a heat map as shown in figure 1.

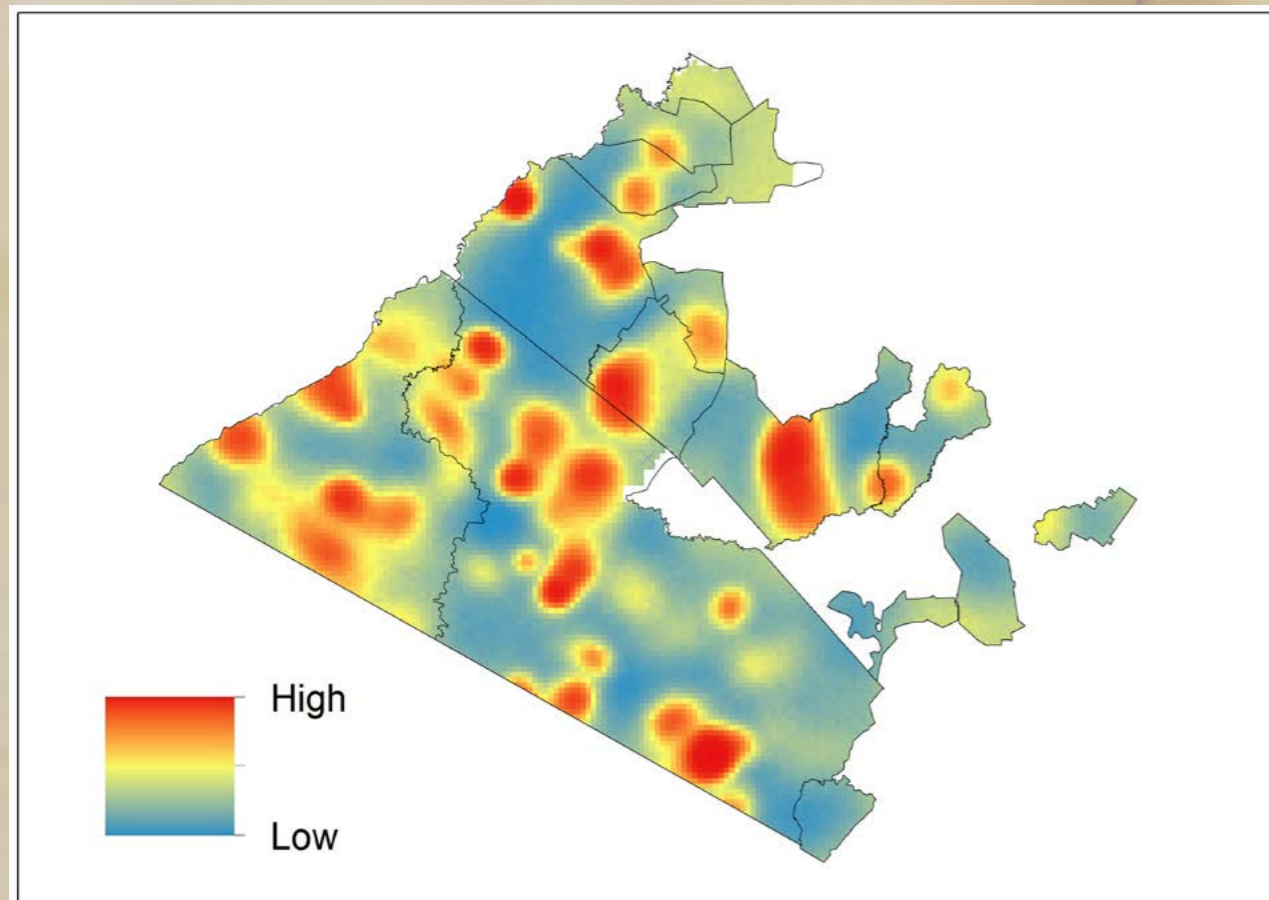


Figure 1. Lion density heat map

Cheetahs

New cheetah figures

Table 3 shows estimates for cheetah density, abundance, and sex ratio for independent resident adult cheetahs in the Masai Mara (National Reserve and the surrounding wildlife conservancies) for 2020 and 2021.

Resident independent cheetahs	2020	2021
Study area (km ²)	2,581	2,581
Cheetah Density	1.39	1.24
Cheetah Abundance	35	32
Sex ratio (F:M)	1.22	1.05

Table 3: Cheetah density is given as independent individuals/100km², cheetah abundance is for independent individuals, sex ratio is to males to females.

As table 3 shows, there is only a small fluctuation in cheetah numbers between the two years. Here, it is important to note that we are presenting numbers for resident cheetahs during the three-month survey period.

Cheetahs can have enormous ranging areas and there are a number of individuals that come into the wildlife areas that are transient or spend most of their time outside the Masai Mara protected areas, like the Serengeti. This explains why we can record a higher number of unique cheetah individuals during some surveys than the estimated number of cheetahs within the Mara.

As with the lion data, we have produced a cheetah density heat map, which is illustrated in figure 2.

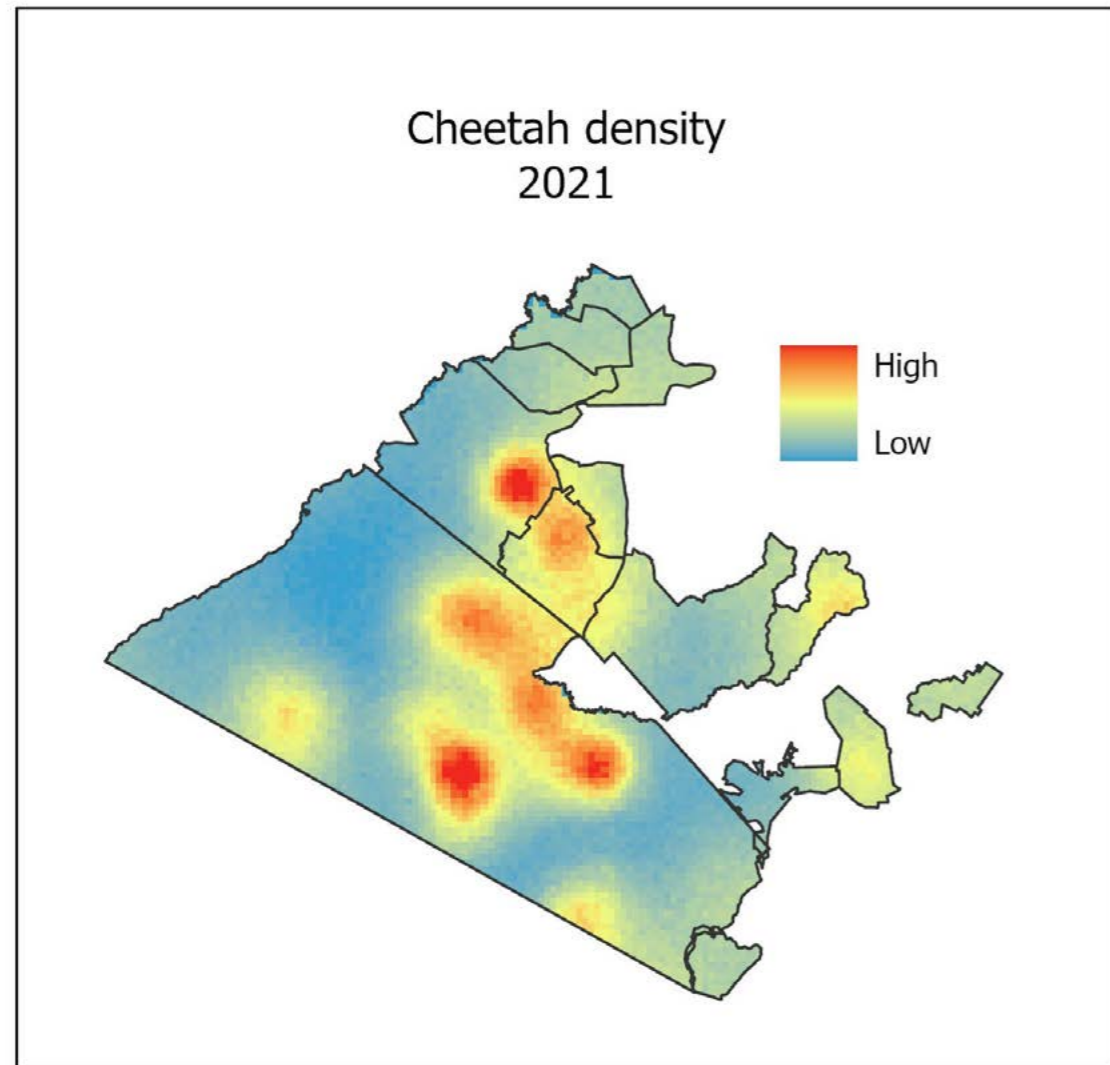


Figure 2: Cheetah density heat map.

The analyses were carried out by Femke Broekhuis using the computational facilities provided by the Wildlife Ecology and Conservation group at Wageningen University and Research in The Netherlands.

Broekhuis, F., N. B. Elliot, K. Keiwua, K. Koinet, D. W. Macdonald, N. Mogensen, D. Thuo, and A. M. Gopaldaswamy. 2021. Resource pulses influence the spatio-temporal dynamics of a large carnivore population. *Ecography* 44:358-369.

We have completed the analysis of cheetah densities from 2014-to 2021, with two surveys per year from 2015-to 2018. This is illustrated in figure 3. Again, as for lions and other wildlife populations, it is important to collect long-term data to look at population trends and not just these natural fluctuations as shown in the graph.

Because of a low cheetah density and hence a small sample size, a sudden increase or decrease in cheetah individuals like a disease outbreak will cause large fluctuations within the population.

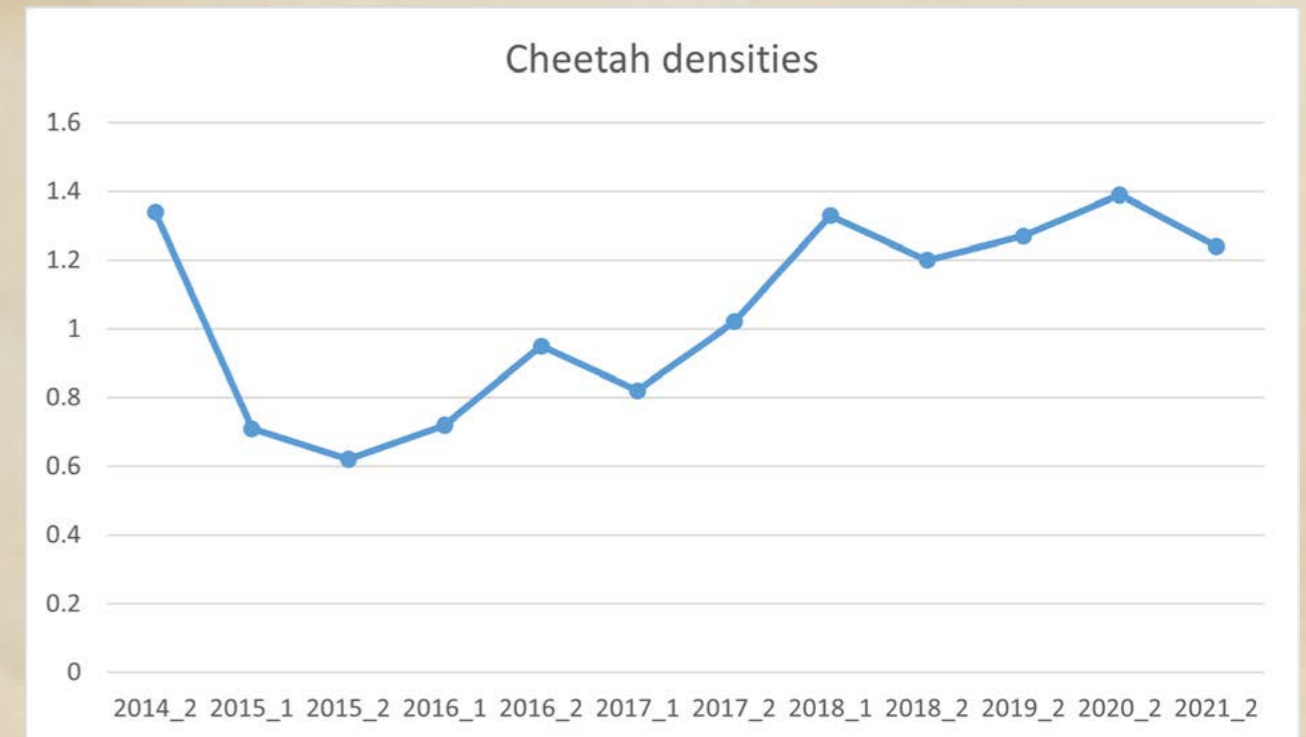


Figure 3: This graph shows cheetah densities (without the error margins) from 2014-to 2021. There was one survey in 2014, 2019, 2020 and 2021 (01August-31October), and two surveys in 2015-2018 (01February-30April & 01August-31October).



Mara Predator Conservation Programme
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