



Amboseli Conservation Bulletin

From seasonal migrations to permanent settlements among pastoralist in Amboseli: 1950-2024

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Abstract

Our study traces the transition from traditional livestock practices based on seasonal migrations to permanent settlements over the last half century. The number of settlements has grown seven-fold with the rising human population. The changing location, size, style and clustering of settlements and permanent houses reflects the changing lives and lifestyles of pastoralists in Amboseli choosing smaller family units close to social amenities.

ACP has documented the ecological degradation caused by subdivision in the Kaputei Section and permanent settlement in the Amboseli ecosystem. The heavy permanent grazing has caused loss of pastures, erosion and extreme flooding in Amboseli National Park.

A review of the Olgulului-Olorashi subdivision plans by National Environment Management Authority raised concerns over land loss and degradation caused by subdivision and sedentarization. Although the plans align with the Amboseli Ecosystem Management Plan 2020-2024, they should be incorporated into the Kajiado County Spatial Plan to ensure enforcement and compliance with the Presidential Decree and Governor of Kajiado's directive halt to land sales pending land conservation plans.

Introduction

Amboseli Conservation Program (ACP) began monitoring the number and location of Maasai settlements in the 1960s as a way to track the seasonal migrations, livestock distributions and pastoral households using the Amboseli area (Western, 1973, 1975, 1976). Monitored over the decades since then, the settlement study shows how families have changed their use of households in shifting from seasonal migrations to sedentary lives.

Traditional Maasai settlements (enjang, plural enjangiti) are thorn corrals enclosing an outer ring of dung-covered huts (ngaji plural ngajiki), a cattle compound, and inner rings of sheep and goat compounds. The diameter of a settlement approximates the number of livestock enclosed, the number of gates the number of families sharing the enjang, and the number of huts the total population in the compound based on four to five individuals in each hut.

Settlements are located strategically by herders to give their livestock ready access to water and grazing grounds. The location and occupation of settlements also track the seasonal migrations between wet and dry ranges, and the progression across pastures in the dry season.

ACP studies looked into the site selection of settlements and the impact of settlements on vegetation (Western & Dunne, 1979). Andrew Muchiru et al., 2008 and Muchiru et al., 2009 went on to look at the imprint of abandoned settlements on soil nutrients and plant and herbivore succession on abandoned sites up to a century later.

The settlement mapping program was extended across 8,700 km² of eastern Kajiado in 1974 using aerial sample counts (Western, 1976a). The counts included thatch and tin-roofed huts to track growth of permanent settlements in response to the spread of farms and land subdivision. The results can be found in (Western et al., 2021). We backdated settlement number and distribution to 1950 using high-resolution aerial photography conducted across southern Kenya by the British Royal Airforce.

We began total aerial count of the settlements in the Amboseli Basin dry season range in 1975 and continued the counts until December 2019 when we switched to Google satellite imagery after calibrating against ground and aerial counts.

Objectives

We use 70 years settlement counts to track the changing lives of the Amboseli Maasai transitioning from mobile pastoralism to sedentary lives. The settlements mirror the growing population, land ownership, livestock practices, social structure, lifestyles, and the exclusion of the Maasai from Amboseli National Park in 1978.

We review the impact of permanent settlements on pasture production and environment more generally.

Changes in settlement numbers

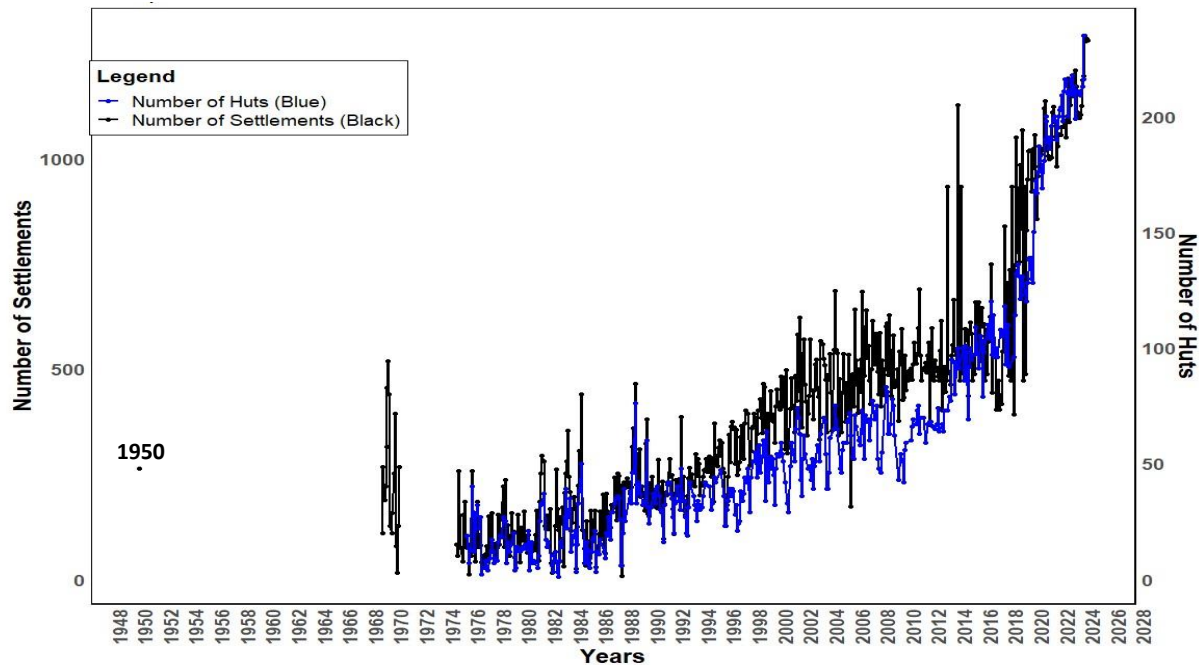


Figure 1: The number of Maasai settlements (black) and total number of huts (blue) in Amboseli from 1950 to 2024. The number of settlements grew slowly between 1950 and 1980 and were strongly seasonal, moving out of Amboseli on migrations during the rains and returning in the dry season. The sharp rises in settlements and huts in the late 2020s reflects spate of new settlements in anticipation of land subdivision.

The number of settlements using the Amboseli dry season area in the 1950s stood at around 20. The peak number grew slowly to the late 1960s when ACP began regular censuses. The early studies conducted between 1967 and 1971 recorded Maasai herders migrating out of the Amboseli Basin during the rains to wet season grazing grounds in the north. The pastoral herds shadowed the wildlife migrations through the seasons as they had done traditionally for generations, according to Maasai informers.

The seasonal migrations show up in the large oscillation in settlement number through the 1970s and early 1980s (Fig 1). Then, in an abrupt change, herders abandoned their seasonal migrations to set up permanent settlements around Amboseli. The abrupt change to sedentary lives shows up in the decline in the seasonality of settlement use (Fig. 2).

The steep increase in the number of settlements in the late 2010s and the simultaneous decline in the number of huts per settlement was prompted in part by the subdivision planning which began in 2014 and created expectation on individual land titles.

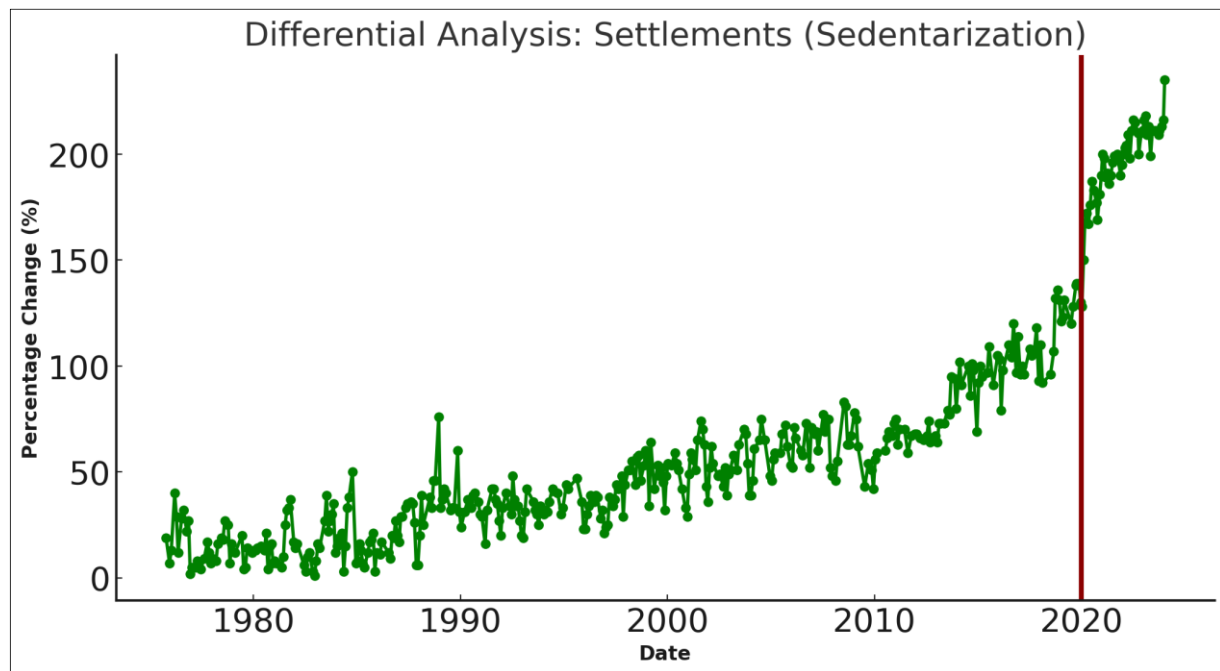


Figure 2: The change from seasonal migrations to sedentary lives shows up in the sharp drop in the month-to-month variation in settlement numbers in Amboseli. Until the late 1980s, settlements were abandoned in Amboseli when families left on migration and occupied when they returned in the dry season.

The abandonment of the seasonal migrations saw the monthly settlement number double through to the late 1990s. From then on, little seasonal movement occurred except in 2009 when many families moved out of Amboseli to avoid the extreme drought which killed two thirds of all sheep and goats and three quarters of the cattle died of starvation. After a full recovery in the following few years, the number of settlements more than doubled to 140 by 2024.

Changes in settlement social composition

The number of huts mirrors the seasonal migration before the late 1980s, and the transition to permanent settlements in the following years. The number of huts in a settlement has, however, fallen steadily due kinship groups and stock associates which traditionally shared settlements breaking down into smaller family compounds.

The downsizing of settlements sizes is shown in Fig. 3.

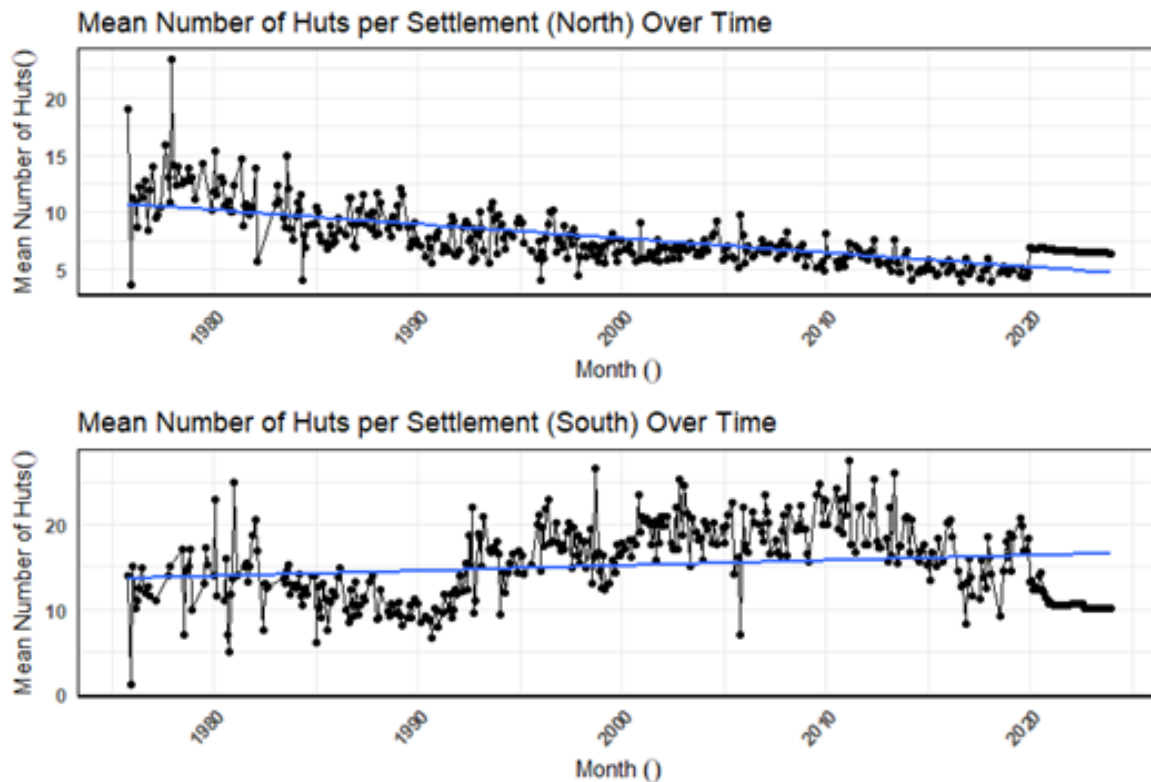


Figure 3: Changes in settlement sizes north and south of Amboseli over the last half century. The declining number of huts in the northern settlements tracks the changes from collective herding to nuclear families. The southern settlements track an increase in the size of settlement clustering around social facilities in the 1990s through to the 2010s, then a decline as villages break up into satellite compounds.

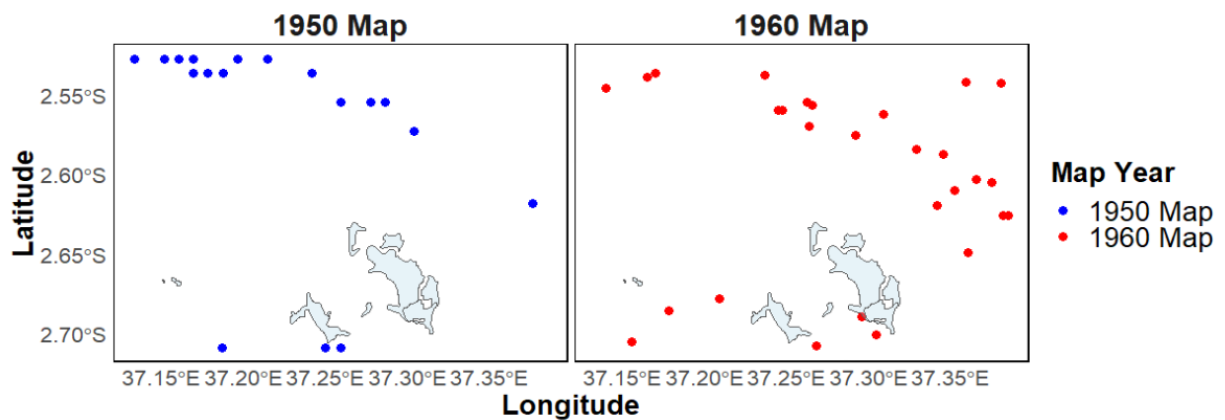
The differences in the traditional use of northern and southern settlements needs explaining. The ecological study of pastoralism in Amboseli in the 1960s when the Maasai were still migratory showed big differences in settlement sizes north and south of the Amboseli Basin (Western, 1973). The northern settlements were located in a long line along the Eremito Ridge between 8 and 10 kilometers from the permanent water and late season grazing in the Amboseli swamps. Herders used a two-day watering system. One day livestock were watered and grazed along the way, the next grazed on pastures up to 16 kilometers from water. Donkeys tended by women carried water to the settlement for their families and young animals. The northern herders built small widely spaced settlements to reduce competition on the sparse northern pastures.

The southern settlements were located close to the swamps where abundant forage supported large herds of cattle with little competition. The settlements were, consequently, large and closely spaced around corridors leading into the swamp pastures.

The ecological setting explains the changes in settlement patterns north and south of Amboseli over the decades. The northern settlements show a steep decline in the number of huts in a settlement from an average of 12 when herders migrated seasonally to five since 2015. The decline is due to the steady reduction in the number of livestock per family, the number of families sharing a compound, and loss of collective herding practices. The strong social bonds forged in collectively building and sharing settlements has weakened as herders shifted to individual family settlements. The combined trends for all settlements from the 1950s to 2020 are shown in Fig. 3.

The southern settlements initially showed the same downsizing as northern settlements after the cessation of migrations in the late 1980s, then increased and levelled off through to the late 2010s. The increase was due to the growth in the size of settlements close to permanent water and schools, and the clustering of households in villages offering cultural tourism, several numbering over 70 huts. The clusters began breaking up into small compounds in the 2010s.

Changes in settlement distribution



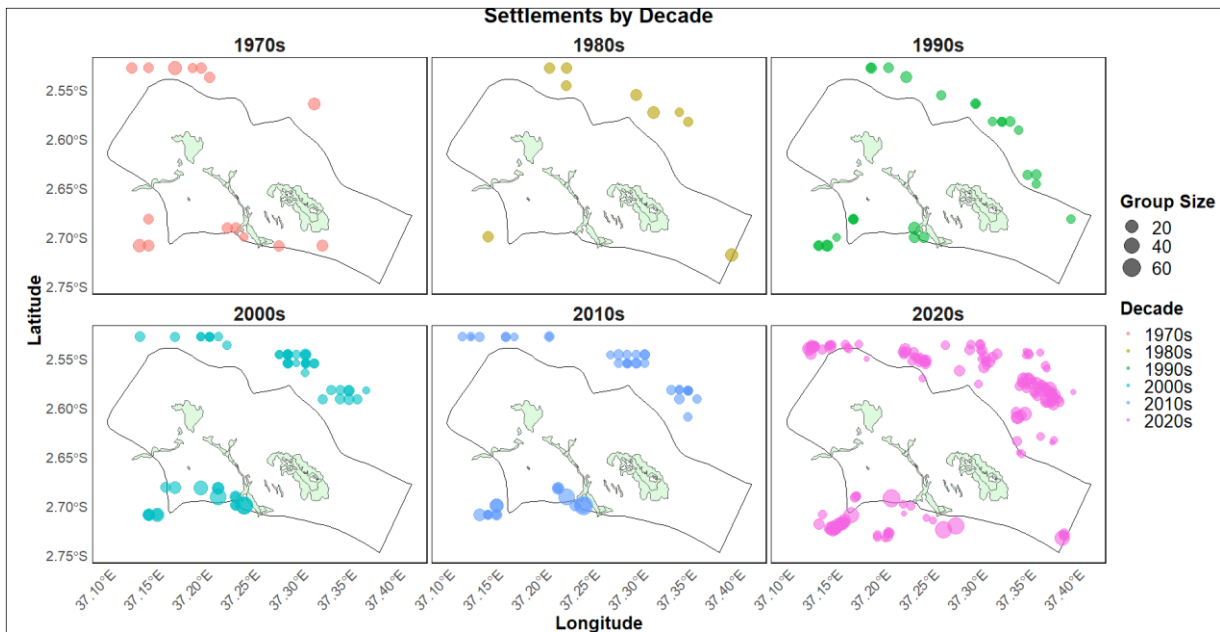


Figure 4: The distribution of Maasai settlements in the Amboseli dry season range for access to permanent water in the swamps. Representative distributions of settlements are given for each decade from the 1950s to 2020s. The number of settlements grew seven-fold over the decades and became smaller and more clustered around social services as the season migrations ended and families set up permanent homes.

The growing concentration and clustering of settlements around social services shows up clearly in heat maps (Fig. 5).

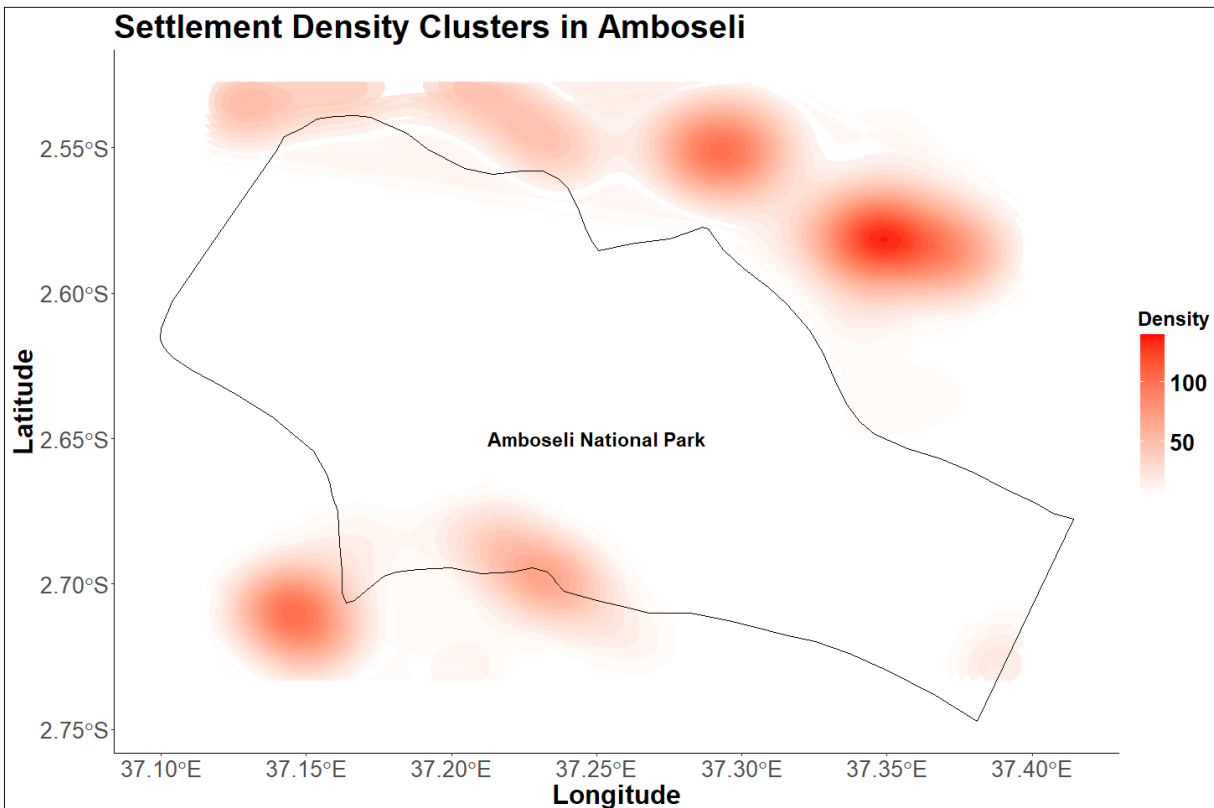
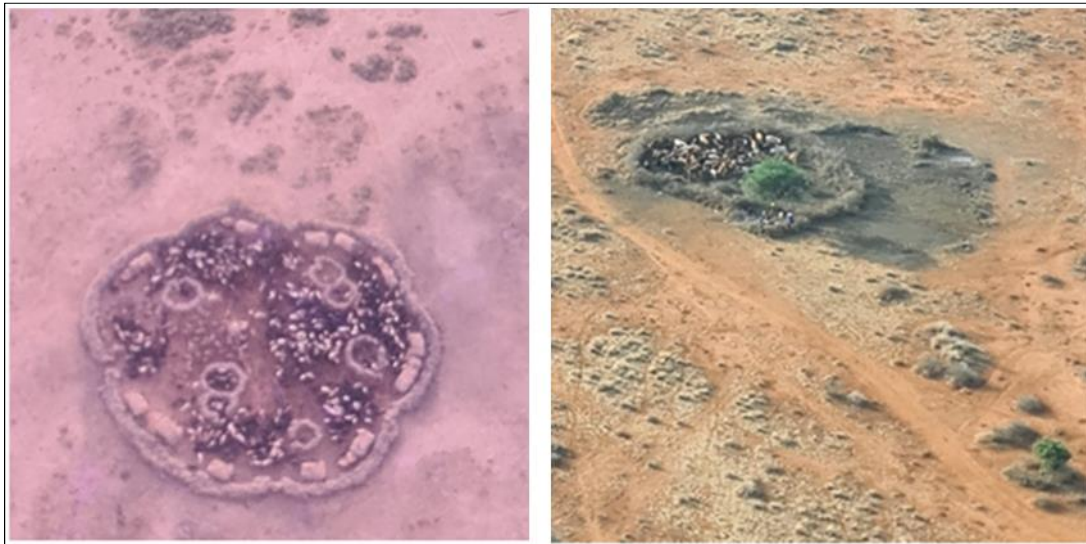


Figure 5: Heatmap shows areas of varying settlement densities. The highest densities in the south are large settlements clustering into small villages. The northern clusters are small settlements more evenly dispersed but with the darkest area being a large cluster of settlements along the access road into the national park.

The clustering shows families are choosing to be near communal facilities as lifestyles change, most children go to school, and social services have become more available. Fewer families are choosing to live in remoter locations, even where they afford easier access to good grazing.

Changes in settlement style

Changes in the style of settlements over the decades is capture in a selected series of photos over the period.



The left photo taken on an aerial census of settlement in 1968 shows a typical traditional enkang enclosing cattle, and the smaller compounds sheep and goats. The gates indicate the number of families. The right photo show an enkang oonkishu, a temporary cattle camp used in the late dry season to graze animals up to 20 kilometers from water.



The two photos taken in 2024 show the transition from large collective settlements when the Maasai still migrated to the small nuclear settlements which sprang up after herders switched to permanent settlements. The left shows the growing trend to tin huts, the right a new style of square corrals. In both cases herders have separated the herds from family houses with an inner fence.



In 2019 ACP switched from counting Maasai settlements on aerial counts each month to using Google Earth satellite imagery. The photos show the growing use of tinned roof and tiled housing in the settlements, and the separation of livestock compounds within the enkang.



A photo taken in October 2024 shows the growing cluster of family settlements around permanent waters sources, schools and social services.

Amboseli reflects the wider regional changes

Aerial counts of the 8,700 km² region ACP has conducted across eastern Kajiado since the early 1970s show a similar change settlement pattern to those in Amboseli. The transition from temporary seasonal homesteads following seasonal pastures to permanent settlements is captured in the changing numbers of traditional Maasai huts and permanent thatch and tin huts (Fig. 6).

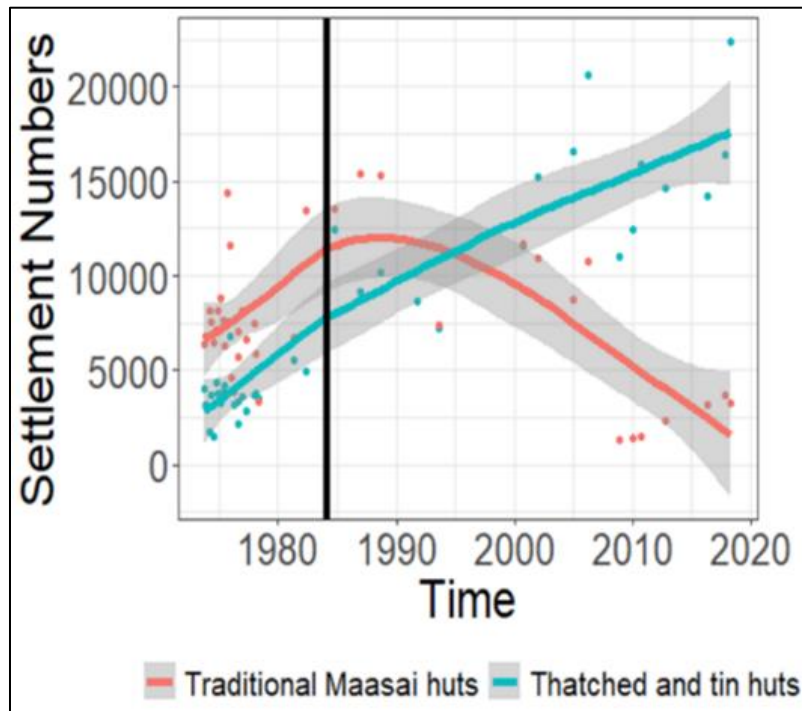


Figure 6: The transition from traditional temporary mobile Maasai settlements across eastern Kajiado occurred rapidly after the 1980s when families began settling and building permanent homes with tin and thatch roofing. The solid line shows the statistical change point when the transition began (Western & Mose, 2021)

A total count of all settlements in eastern Kajiado using Google Earth imagery for May 2023 (Fig. 7) shows the extremely high density of settlements north of Amboseli in the Kaputei region, south of Amboseli on the slopes of Kilimanjaro, and along the pipeline road connecting the two farming areas. Except for the Emotoroki area along the Ol Kajiado River north of Amboseli, the areas around Amboseli National Park and Mbirikani have far fewer settlements and remains relatively open to wildlife migrations.

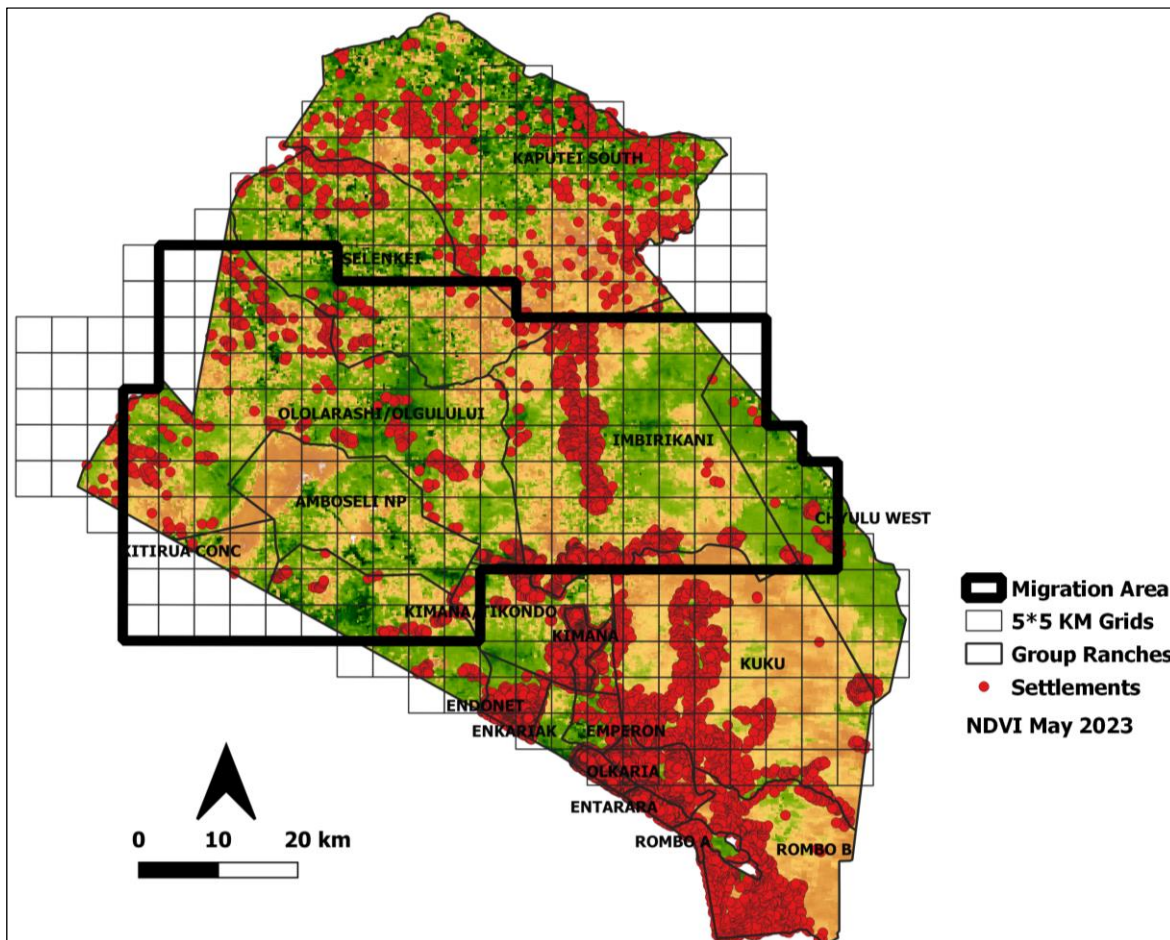


Figure 7: The distribution of settlements in eastern Kajiado in May 2023 shows the high density in the arable areas north and south of Amboseli relative to the national park and ecosystem

The implications for the Amboseli ecosystem

The transition from seasonal migrations to permanent settlements reflects the changing lives and lifestyles of pastoralists in Amboseli. The settlements housing several families and stock associates collectively managing herds under traditional pastoral practices have broken down into smaller family units. Settlements strategically located for access to pasture and water prior to permanent settlement have begun relocating and clustering. The clustering shows a growing family preference for permanent houses close to schools, permanent water sources, clinics and other services. The changes began ahead of the subdivision plans for Ololarashi Ogulului which divides the pastoral areas into 23-acre allotments, restricts use to livestock and wildlife management, and allocates services centers for permanent settlement (Olgulului Ololarashi Land use and Subdivision Scheme Plan (OGR LUSP)).

The intent of OGR subdivision plans is to provide resident families security of tenure through private ownership, and ensure the sustainability and integrity of the pastoral and wildlife lands in compliance with the Amboseli Ecosystem Management Plan 2020-2030.

ACP has documented the ecological degradation caused by subdivision in Kaputei Section (Western et al., 2009) and permanent settlement in the Amboseli ecosystem (Groom & Western, 2013). The studies distinguish the impact of subdivision from permanent settlement. Subdivision need not cause rangeland degradation if livestock continues to use pastures seasonally and rotationally, giving pastures time to recover. In contrast, permanent settlement, even on unsubdivided lands, causes severe pasture losses due to heavy continuous grazing.

The impact of heavy grazing has been well documented in Amboseli (Dunne et al., 2011). Heavy persistent grazing over pastoral areas on OGR has resulted losses of up to a third of pasture production (Western et al., 2015), large areas of bare ground, gullying and heavy flooding (Kimiti et al., 2018). The erosion has degraded pastoral areas and caused extreme flooding in Amboseli National Park (Western, 2020).

A review of AEMP commissioned by AET and conducted by NEMA (2023) drew the following conclusion which bear directly on the future of the park and ecosystem:

“The greatest threat to Amboseli’s wildlife is habitat loss and degradation through the ongoing group ranch subdivision and increasing sedentarization of the Maasai pastoralist community that lives in the park’s dispersal areas.”

All the group ranches in Amboseli are subdividing. Fortunately, the ranches have developed land use plans that, if implemented, will ensure that the subdivided ranches will still support a mix of pastoralism and wildlife conservation (Kimiti et al., 2016). For instance, Olgulului-Ololarashi Group Ranch bordering the park on the south, north and west has subdivided but it has set aside four conservancies and corridors to allow wildlife dispersal to the rest of the ecosystem. If measures are not taken to ensure conservancies contribute to community livelihood and income, the park could becoming an “ecological island.”

The review notes that the land zoning under the subdivision plans for each group ranch were aligned with AEMP. The land use plans should, however, be fully incorporated into the Kajiado County Spatial Plan to ensure the zoning and enforcement needed to secure the rangelands for pastoralism and wildlife.

The Kajiado County Spatial Plan should address the concerns raised by NEMA in order to enact the provisions of the Presidential Decree and Directive by the Governor of Kajiado calling a halt to land sales pending land conservation plans for the Amboseli region.

The recommendations should be a core goal of the Kajiado County in realigned park plans in line with the Transition of Amboseli National Park to Kajiado County Government. A Strategy and Vision for a Third Generation Park 2024-2026.

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