



AMBOSELI TRUST
FOR ELEPHANTS

ANNUAL RESEARCH REPORT

2014

MISSION STATEMENT FOR ATE SCIENCE AND RESEARCH: *ATE is a trailblazing elephant research programme that contributes to knowledge of large mammal socioecology, provides a basis for public understanding and concern for elephants and their ecosystems, and communicates information enhancing conservation in the Amboseli ecosystem and for other elephant populations.*

Our annual report focuses on the three main research and conservation programmes of the Amboseli Elephant Research Project. The first of these is the basic behavioural and population monitoring of elephants in relation to ecology; the second theme concerns conservation activities associated with elephants in their ecosystem; our third major programme activity is engagement with the community and local stakeholders, including the elephants as a key stakeholder in the greater ecosystem.

I. ELEPHANT MONITORING

(a) Population trends in 2014

Births

During the year 2014, a total of 78 calves were born (44 females, 34 males). This very slight bias towards female births is normal in context of the 42 years of data from AERP, where in some years a predominance of male calves was found, while in other years more females were born (see Figure 1). Overall all years, 1185 females and 1152 males were born into the known families. One potentially interesting feature of calf sex ratios was the large pulse of female births among the 2010 cohort of calves that were born immediately post-drought. The potential replacement rate of reproductively active females that died in the 2008-09 drought might be enhanced by this pulse of female births, although the total number of births was small. However, it is most likely that female foetuses, with lower growth rates and reduced gestational costs to the mother, would have had better survival during a drought gestation, resulting in more live births of female calves in the 2010 cohort.

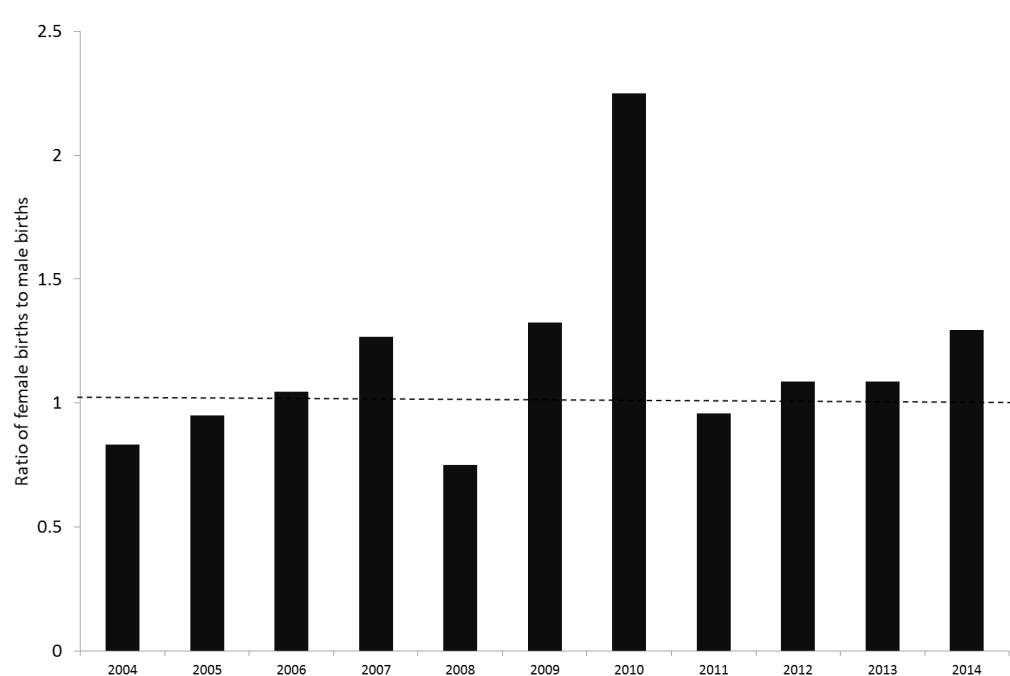


Figure 1: Sex ratio of calves born to known families for the last 10 years of the AERP study. Dotted line indicates 42 year mean ratio of 1.02 females to males.

The total number of 2014 births represents the delay in fertility for those females who did not conceive or give birth at the end of the drought in 2010 or 2011, a number of first-time mothers who have matured in the last year, and a very small number of females who are producing a second post-drought calf with a 3-year inter-birth interval. In 2014, there were 515 females of reproductive age alive in the population. Of these females, 403 have reproduced at least once since the drought and there are 351 females with calves at the moment. The potential for reproduction in 2015 remains good, as over 100 females have yet to reproduce and some females will give birth for the second time.

The average inter-birth interval in the period after the drought has been shorter (mean = 47 months) by comparison those for to the drought period (mean = 56 months), when the lack of food resources reduced female capacity to conceive or gestate a calf.

Mortality

In 2014, survival of calves and adults has been excellent. Only 10 mortalities were recorded in 2014 for known family individuals. There have been other elephant deaths in the ecosystem, often to unidentified males (or a few females), but the average mortality rate has remained low over the last two years. Three of the 2014 deaths were known to be the result of human interactions outside the National Park – one female and one male speared when in proximity to livestock, and one male was shot by KWS after fatally injuring a member of the community.

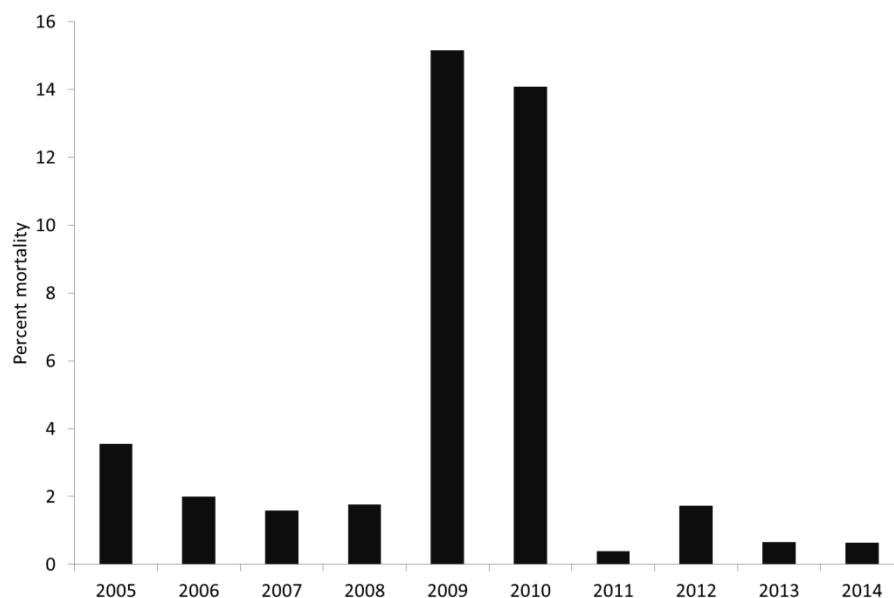


Figure 2: Percent mortality (of total elephant population) over the period leading up to the drought, during the drought and in the recovery period.

One of the more interesting results of our monitoring in recent years has been the very high calf survival. In previous non-drought years, up to 15% of calves may die in their first two

years of life. To date, the post drought calves have had exceptionally high survival of 96%. Whether this high survival continues will be an important part of our continued monitoring.

(b) Elephant social dynamics

Elephant groupings

Similar to most normal rainfall years, the numbers of elephants seen within the basin and the average group size varied seasonally during 2014, although variability in group sizes recorded remains high throughout the year (see error bars on Figure 3). When there are rains outside the central basin, elephants disperse and relatively few are found in the park's swamps. During the months following peak rains, the elephants often aggregate into large groups with several musth bulls and oestrous females. During the dry months, group sizes are small, but many groups are to be found using the central swamps for food and water. The largest group recorded in 2014 was 280 elephants, while the smallest cow-calf group was 1 (a single female in oestrus, separate from the rest of her family).

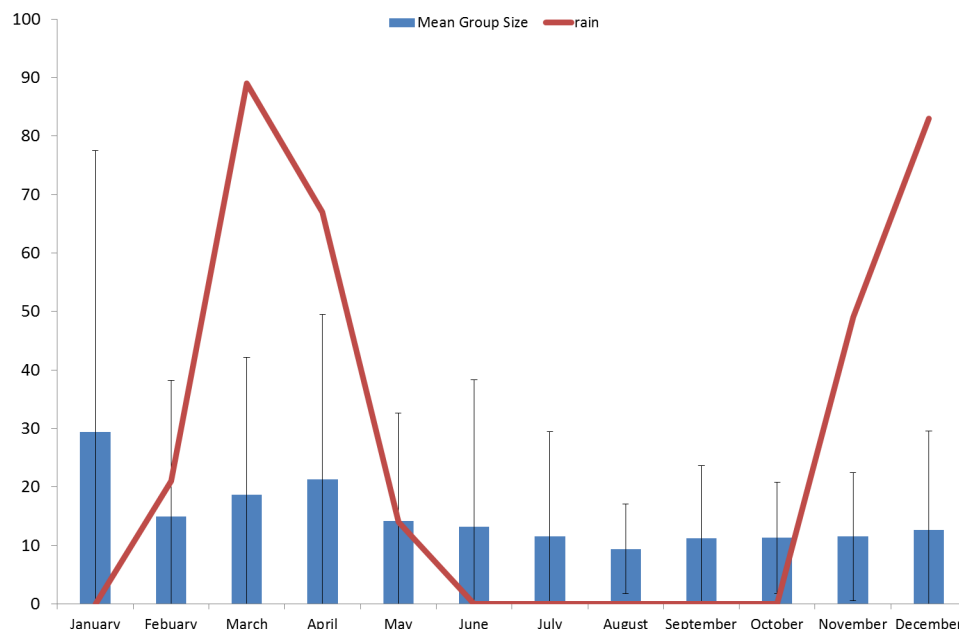


Figure 3: Female group size by month in 2014 (monthly rainfall in mm is shown by the line)

Males generally tend to be in small groups when with other males, and in 2014 males were most often found alone or in groups of 2, with a maximum bull-only group size of 11 (Figure 4). The number of males with cow-calf groups tended to be a relatively constant proportion of the overall group size at 16% (range 0-100), and some family groups are more tolerant of young males in particular. These tolerant groups tended to attract more males, especially the younger males in the highest risk age-groups (14-20).

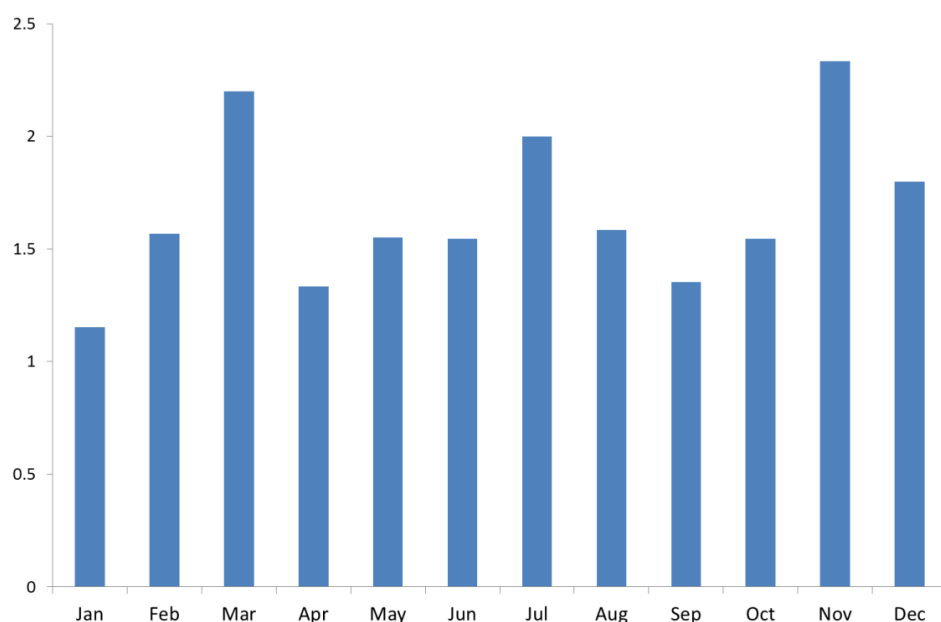


Figure 4: Mean male group size by month in 2014

(c) Allied science / research projects

In 2014, Dr Vicki Fishlock completed her fourth year of IFAW-funded research on the consequences of the mass drought mortality for social disruption among the Amboseli families. This project remains a benchmark for elephant studies, as understanding the consequences of natural mortality compared with the consequences of mass deaths caused by poaching will be vital to predicting the recovery capacity of elephant populations elsewhere in Africa. Her preliminary analyses on variable calf survival between families that suffered various levels of disruption in the 2008-09 drought has been somewhat hampered by the extremely calf survivorship for the post-drought cohort. She will therefore examine inter-birth intervals and age at first reproduction as alternative measures of disruption to reproduction. Data collection for these analyses is ongoing.

II. CONSERVATION ACTIVITIES

(a) Tracking elephant movements and distributions:

Since our research is focused on the central basin swamps, the majority of our physical sightings of elephants were within this area. Our knowledge of dispersal areas and corridors for movements is based on the 5 collared females tracked in 2013, with additional data from the recently collared female (Fleur, born in 1983 into the FA family, and collared by KWS/IFAW/SFS as Mailua Female in 2014). ATE's collared elephant data have been summarised in detail in a second report (appended) on corridors and movements. Here (Figure 5) we illustrate the primary locations of known families in central areas of the park.

It is clear that some families have relatively restricted core areas that they use intensively within the Park; other families range more widely across the protected swamps.

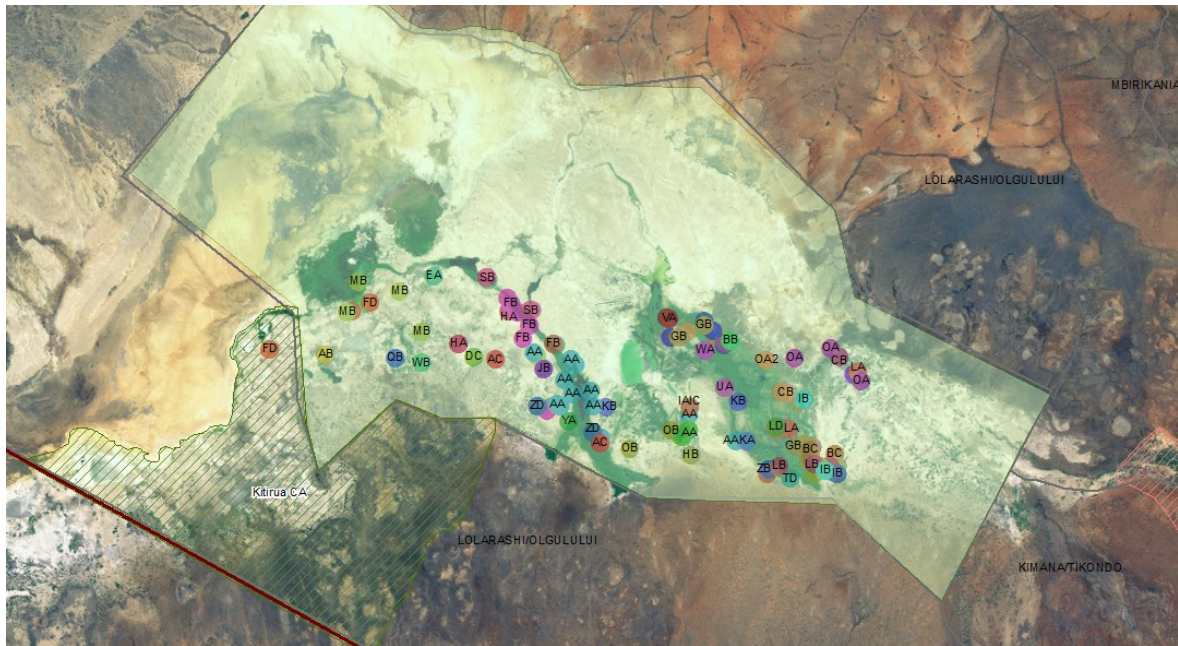


Figure 5: Family unit primary areas of central swamp use for 2014 from basin sightings.

Basin mammal counts (in collaboration with KWS)

Maasai Scout ecosystem monitoring (in collaboration with Big Life Foundation)

Training programme

In 2014, ATE resumed training of Kenyan and other African range state elephant experts in elephant identification, ageing and behavioural and individual record keeping. KWS staff Yussuff Wato (Warden, Tsavo) and Elizabeth Esiromo (Elephant conservation programme manager) were trained by ATE (see Photo). Training events were also run for Big Life game scouts in June and Sept 2014 and Honey Guide scouts (Tanzania) in July 2014. Princeton University students (March/April 2014) engaged with ATE when planning projects on elephant conservation.



Borderlands Conservation Initiative

The Borderlands Conservation Initiative began their active phase in 2014 with a meeting in Arusha in March to establish the structure of the partnership and sustain conversations between governmental partners (KWS, TANAPA, TAWIRI), NGOs and Trusts (e.g. ATE) and community groups. Working groups were established covering elephants, lions, community organisations dealing with land-use and livelihoods, and the activities of the governmental conservation agencies. All working groups report to a central Steering Committee to coordinate efforts. In August 2014, the first meeting of the elephant working group was held in Namanga to identify information gaps on elephant numbers and distributions, and to assess the threats to continued free movement of elephants in the cross-border areas of Kenya and Tanzania.

III. COMMUNITY ENGAGEMENT

(a) Consolation scheme

Our consolation scheme, which addresses the loss of cattle, sheep and goats as a result of interactions with elephants outside the protected area of Amboseli National Park, had few reports in the first half of 2014. However in the final quarter of 2014, with very patchy rainfall over the wider ecosystem, livestock and elephants were concentrated in the same small areas to the south of the basin on the slopes of Kilimanjaro. As a result a number of interactions resulting in livestock injuries or fatalities took place (Figure 6).

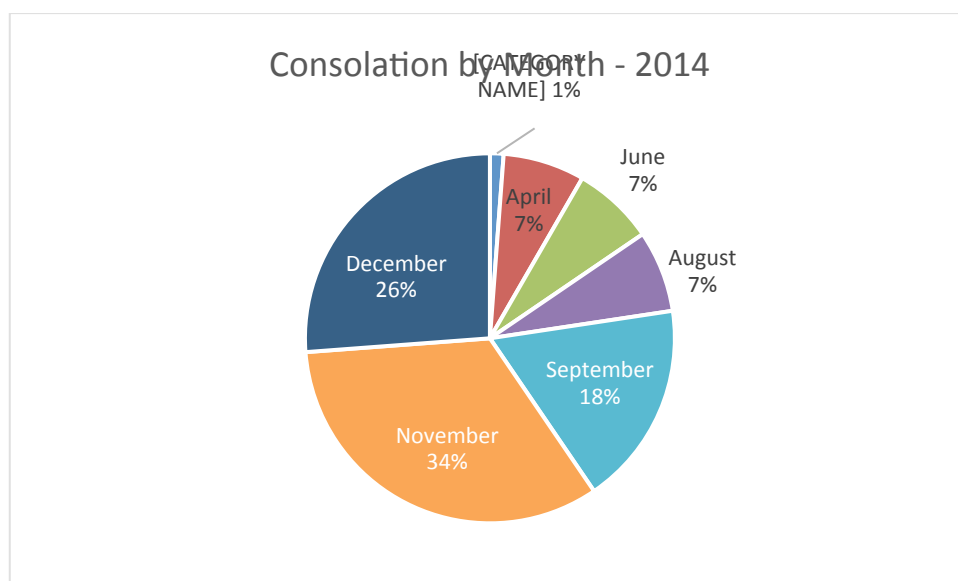


Figure 6: Monthly consolation for 2014.

(b) Capacity building within communities (Scholarships)

ATE fosters livelihood development among women by funding secondary students from Olgulului. Currently we have 10 girls in secondary school as part of this early capacity building initiative. We also fund 5 male and female University students from the communities who are completing a mix of undergraduate and post-graduate courses. These scholarships again build capacity across many different areas of learning and professional training for members of the Maasai communities who share their lives with the elephants.

Cynthia J. Moss, Director ATE

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