



## **Amboseli Trust for Elephants and Amboseli Elephant Research Project Report for 2006**

### **GENERAL CONDITIONS**

The rains have finally come to Amboseli. The rest of Kenya had been having serious floods but up until the end of November Amboseli had had only a few showers and we were getting worried that it was going to miss out on the rain. Then on December 1 the Park got a good drenching and by the end of the month the Park was very wet indeed. Amboseli received almost its average yearly rainfall in November and December alone.

It's a joy being with the elephants during and after the rainy season. They change personality completely. At the end of the dry season they husband their energy by moving very slowly from place to place, by resting when they can, and by foregoing any extra activities. For example, there is almost no play among the calves and very few greetings among the adults. Soon after the rains come all that changes. The elephants walk with a jaunty gait, holding their heads higher. Once the grass is growing and they are eating well, they start socializing and playing, adults and calves alike.



*Happy elephants in the rain*

### **AMBOSELI PARK AND ECOSYSTEM**

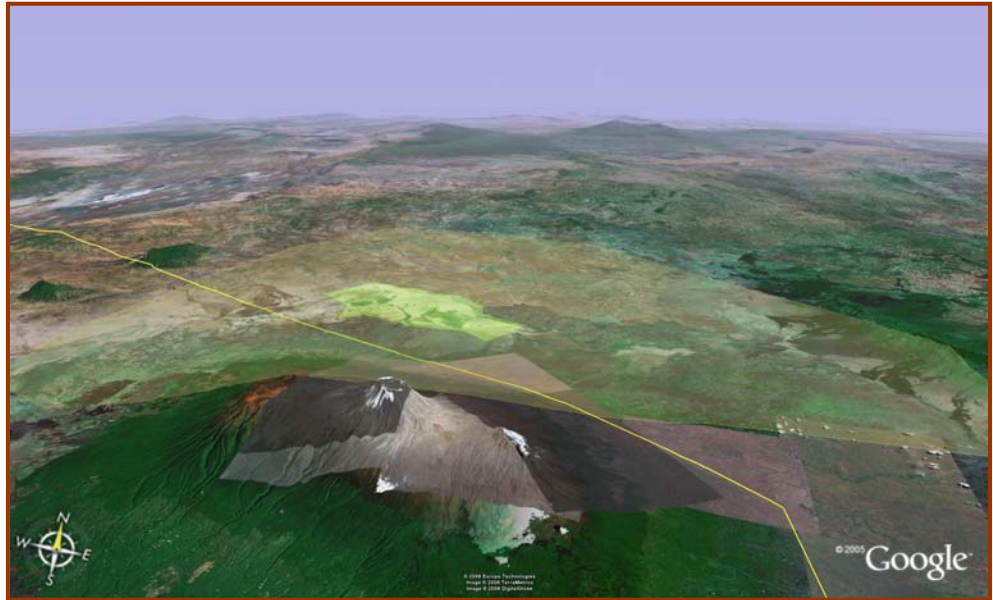
The status of Amboseli National Park has not yet been resolved. In my annual letter last year I reported that the Minister of Tourism and Wildlife of Kenya signed a decree de-gazetting Amboseli as a National Park and turning it over to the local government, the Olkejuado

County Council to be run as a National Reserve. This decree was issued on September 29, 2005. Since then a coalition of conservation organizations has brought a court case against the move on the grounds that the decree was issued in contravention of the Wildlife Act, which sets out the procedures needed to de-gazette a national park. The case remains in the High Court and we are awaiting the outcome. In the meantime, the Kenya Wildlife Service continues to run the Park.

Amboseli National Park is a small park by African standards. It is only 150 sq. miles. However, the ecosystem over which the migratory species roam is 3000 sq. miles. Amboseli is more or less in the center of this ecosystem. Wildlife concentrates around the permanent swamps in the Park in the dry season and then spreads out into the ecosystem in and after the rainy season. In 1991, in recognition of the special qualities of Amboseli's arid ecosystem combined with the miraculous life provided by the

waters that percolate down from the Kilimanjaro Forests, Amboseli was declared one of the world's 500-odd UNESCO (UN Educational, Scientific and Cultural Organization) Biosphere Reserves. A Biosphere Reserve includes a fully protected core area and buffer zones with more and less protection radiating out from that core.

*A Google Earth satellite view of the Amboseli Ecosystem and beyond: Amboseli National Park is the light green area; the ecosystem is delineated by the next line out from the Park; Kilimanjaro is at the bottom; Mt. Kenya and the Aberdares are to the north*



Actually, there was some resistance initially at UNESCO's headquarters in Paris, largely because of commercial hotel activities at Ol Tukai right in the middle of the Park on a 400 acre plot belonging to the Olkejuado County Council. But the special character of Amboseli – the wonderful elephants in particular – obviously won the day.

Apart from Ol Tukai, Amboseli fits the Biosphere Reserve model to a tee: a relatively tiny protected core, Amboseli National Park, which is less than 5% of the nearly 3,000 mi<sup>2</sup> ecosystem) surrounded by a 'Buffer Zone', in which human activities are allowed as long as they are compatible with conservation. This certainly underlines our main conservation preoccupation these days, namely, helping to make certain that the Maasai group ranch members in the Buffer Zone remain tolerant to the presence of Amboseli elephants. Without their good will, not only the elephant population but the entire park would be doomed.

UNESCO's Man and the Biosphere program provides useful guidelines for us to extend our activities as far as resources allow into the Buffer Zone, since it calls for attention to be paid the three things: *conservation* (of landscapes, ecosystems, species and genetic variation); *development* (of economic and human activities that are socio-culturally and ecologically sustainable); and *logistics* (to provide support for research, monitoring, education and information). Obviously we cannot do all these good things alone, but it is gratifying to know that through our support to education and consolation (Community Relations, Consolation and Training below) in the ecosystem, and the respect in which our Maasai research staff are held locally, the Amboseli Trust for Elephants (ATE) is often singled out as a 'good NGO'.

That's probably why, after the announcement in October 2005 that the park was to be de-gazetted, UNESCO and KWS asked us as a neutral and well-respected NGO to make an inventory of the current Amboseli situation and describe the major actions required to apply Biosphere Reserve principles to its management. ATE's Trustee Harvey Croze and Project Manager Soila Sayialel took

on the task and are currently completing a report entitled: “*What’s On in the Ecosystem*”. This soon-to-be-published report will also be useful to other NGOs as well as government departments to help reduce duplication of effort and identify partners in research and conservation.

## ELEPHANT NEWS

The elephants are doing well this year. The population continues to grow slowly. So far 39 calves have been born and 26 elephants have died: six adult males, ten adult females and ten calves. The families also continue to grow. The average family size is now almost 20. When I was first studying the Amboseli elephants the average size was seven.

Several old females have died of natural causes and the loss of these old females is very painful. We have followed the lives of these individuals for over 30 years so it is something like losing an old friend. So far this year eight elephants have been speared of which two have died. (Two unknown males also died, but we think it was probably of poisoning when they were crop raiding in Kimana to the east of the Park and across the border in Tanzania.)

Other elephants have died of disease, but, unfortunately, we don’t know what the cause was. We only know that they get ill and then eventually die. Since they have no external injuries there is nothing a vet can do. One of the projects I would very much like to see in Amboseli is a study of elephant diseases through postmortem examination. At the moment no one has the facilities to carry out these studies.



Echo’s family is thriving. It now numbers 31. Echo’s daughter Eliot gave birth to her fourth calf this year. Sadly, all her previous calves have died. The first two died within days of being born and I feared that she was unable to have a healthy calf or she was a poor mother. Then she gave birth to a third a calf in 2002. This calf, named, Emilio was featured in the third “Echo of the Elephants” film. He was doing very well and Eliot was being a model mother, but when he was 20 months old, he wandered too close to an electric fence around one of the lodges and was electrocuted. Now Eliot has a new daughter and so far she is doing well. We’re all keeping our fingers crossed.

*Eliot and her new calf, a female, born in August*

There are now nearly 300 independent males in the population. Of these 72 are over 30 years and regularly come into musth. When Joyce Poole did her study of musth in the late 70s there were only 13 elephants who were old enough to come into musth. They used to spread their musth periods throughout the year so there was a minimum of overlap. These days 10 or more bulls might be in musth at the same time. We have seen an increase in serious fights but not as many as I expected.

We’re finally getting to an interesting point in the long-term study. We know which families from which nearly 60% of the musth males come. During most of the study we have not known the family background of the males who were doing most of the mating. These males were already independent when the study began and so we had no idea whether they were mating with their sisters or aunts. We are just beginning to collect the necessary data to answer this question. Most of the males who

successfully father calves are still the big, old ones, but the young boys are certainly trying to compete.

## RESEARCH

### Monitoring

The AERP research team continues the basic monitoring of the population carrying out a full schedule of data collection. Soila Sayialel, Norah Njiraini and Katito Sayialel gather information on individuals, families, group size, location, activities, associations, births, deaths, matings, etc. These data form the backbone of the whole Amboseli project and are vital to our understanding of elephant social and ecological dynamics.

We now have 12 Maasai scouts working outside the national park in the greater Amboseli ecosystem. With GPS devices and data sheets they provide information on which areas the elephants are using. In more recent years the elephant population spends more of its time out of the Park than in it. A significant part of their range includes Tanzania.

We are very happy that there is an excellent student, Alfred Kikoti, keeping track of the elephants on the Tanzanian side of the border. In addition to ground work he has satellite radio collars on six elephants. Alfred was one of AERP's trainees several years ago. He is presently getting his Ph.D. at the University of Massachusetts. In September Norah and Soila visited Alfred in Longido (the area just across the border) and together they found several of our known individuals. Although previously resident in Kenya, many of these elephants have now taken up permanent residence in Alfred's study area. With a growing elephant population this increase in range, or more likely a return to former range, is welcome.

*Alfred Kikoti (far right) and his research team: Norah (left) and Soila (right) on field trip to Tanzania*



Harvey Croze and Keith Lindsay are maintaining the AERP's geographic information system, AmboGIS, developing a spatial picture of elephant use and occupancy throughout the ecosystem. This is becoming vitally important as our elephants are spending more time outside the park, and human demands for the same land are rapidly growing.

### Collaborative Research Projects

*Christine Browne-Nunez* completed her field work on human attitudes towards elephants and returned to the University of Florida in Gainesville to write her Ph.D. Somehow she managed to fit in having a baby, a lovely little girl named Mara.

*Winnie Kiiru*, a Kenyan, is conducting a study of human-elephant conflict study in the Amboseli area. After spending last autumn at the University of Kent where she is registered for a Ph.D., Winnie began her field work in January of this year. The total cost of her field work is being funded by ATE.

*Patrick Chiyo*, who is from Uganda, continues his study of male development and behavior with particular regard to how males become crop raiders. Patrick, who is registered at Duke University for a Ph.D., has completed much of his fieldwork. He will be returning to Duke at the end of December.

*Joyce Poole*, who is also AERP's Research Director, and *Petter Granli* are still working on elephant communication. Although both now live in Norway, they come out to Kenya for field work at least three times a year and while they're at home they carry out the analysis of the vocalizations at home.

*Phyllis Lee*, who has been involved in AERP since 1982, continues her work on growth rates in elephants. Recently here in September she completely updated our collection of elephant lower jaws which we use for ageing. Phyllis moved from Cambridge University in England to Stirling University in Scotland where we are proud to report she was promoted to full professor.

*Lucy Bates and Richard Byrne* from St. Andrews University in Scotland are sifting through our long term field notes to try to begin to understand elephant cognition.

## SCIENTIFIC PUBLICATIONS & THESES

Completed research projects have produced some excellent scientific papers in highly-regarded journals over the past year two years:

- Archie, E.A., Morrison, T.A., Foley, C.A.H., Moss, C.J. & Alberts, S.C. (2006) Dominance rank relationships among wild female African elephants, *Loxodonta africana*. *Animal Behaviour*, 71: 117-127.
- Archie, E.A., Moss, C.J. & Alberts, S.C. (2006) The ties that bind: genetic relatedness predicts fission and fusion of social groups in wild African elephants. *Proceedings of the Royal Society B*, 273:513-522.
- Bradshaw, I.G.A., A.N. Schore, J.L. Brown, J. H. Poole & C. J. Moss. (2005) Elephant Breakdown. Social trauma: Early disruption of attachment can affect the physiology, behaviour and culture of animals and humans over generations. *Nature*, 433: 807.
- Buchan, J.C., Archie, E.A., Van Horn, R.C., Moss, C.J., Alberts, S.C. (2006) Locus size predicts the rate of allelic dropout in two large-scale noninvasive genotyping projects. *Molecular Ecology Notes*.
- McComb, K. Baker, L., & Moss, C. (2006) Elephants show high level of interest in the skulls and ivory of their own species. *Biology Letters*, 2: 26-28.
- Morrison, T.A., Chiyo, P., Moss, C.J., & Alberts, S.C. (2005). Measures of dung bolus size for known age African elephants: implications for age estimation. *Journal of Zoology*, (London) 266: 89-94.
- Poole, J.H., P. L. Tyack, A. S. Stoeger-Horwath & S. Watwood. (2005) Elephants are capable of vocal learning. *Nature*, 434: 455-456.

The Bradshaw, McComb and Poole papers created quite a stir and were covered in newspapers and magazines. All of the papers add to the wealth of knowledge about elephants that slowly and surely is suggesting that elephants as highly intelligent and social animals should be treated with respect.

Beth Archie and Julie Hollister-Smith both completed their Ph.D.s at Duke University. They studied relatedness and behaviour of elephants through DNA analysis and observations. Beth worked on the females and Julie and the males. Their results are fascinating and very important to the Project.

## **AMBOSELI BOOK**

I have some good news on the big scientific book we have been working on for so long. This book, entitled "The Amboseli Elephants: a Long-Term Perspective on a Long-Lived Species", brings together the scientists who have worked on the Project over the last 30+ years. There are 21 chapters ranging from ecological and behavioral results to elephant interactions with humans and the future of Amboseli. It will be published by the University of Chicago Press.

We first met to discuss the contents of this book in 1999 so we have been working on it for seven years. Sometimes we all felt that we would never finish, but this year we reached a break-through and we can actually see the end. In September, Joyce Poole and Phyllis Lee came out from Norway and Scotland respectively and joined Harvey Croze and I for a two-week writing retreat in Amboseli.



*Amboseli Writing Retreat in September: left to right, Cynthia Moss, Phyllis Lee, Harvey Croze & Joyce Poole in the AERP research camp's dining tent.*

We got a huge amount done. Of the 21 chapters 13 are complete and ready to go. Of the remaining eight all but three are in draft form and only need a bit of work. The authors of the remaining three chapters are working hard to produce drafts. If all goes well we should be able to send the bulk of the book to Chicago in the next few months.

## **COMMUNITY RELATIONS**

### Scholarships

*University:* AERP's scholarship program is flourishing. Two of our university students are in their second year at the University of Nairobi: Resiato Faith Oloitipitip is studying Business and Jacob Kipaa is doing a degree in Land Management. David Sitonik, who we supported through university, will complete a special post-graduate course in public relations. We also paid for this course as well as a living stipend which we do for all the university students.

We have added a fourth student to our program: John Kioko. Although not a Maasai, John has been working on human-elephant conflict in the Amboseli area for several years under the auspices of the School for Field Studies. ATE has a Memorandum of Understanding with the School to work together on various projects. John worked with Petter Granli and Winnie Kiiru on our Human Elephant Conflict Project, which has now been wound up. John started his studies for a Ph.D. in September at Moi University and we are paying his fees.

*Secondary School:* We are presently sending six Maasai girls through secondary school and will be adding two more in January.

## **CONSOLATION**

Our Consolation Program has now been running for nine years. Whenever an elephant kills a cow, sheep or goat we pay the owner for that loss. Elephants will kill livestock from time to time, usually during the dry season when wildlife and domestic animals are using the last of the resources. Previously the Maasai would retaliate by spearing elephants. Although there is still spearing for a variety of reasons, we estimate that the rate is much lower than it would have been without the consolation. So far this year we have paid for 30 cows, five sheep and three goats for a total of 490,000/- KShs or \$6,805. All but 12 of these animals were killed in the first three months of the year during which there was a severe drought. We find that this is a fairly typical pattern.

## **TRAINING**

AERP continues to hold training courses for African nationals who are working on elephant research projects or have the intention of starting new projects. We have trained researchers from all over Africa in techniques for studying elephants. Norah Njiraini, AERP's Training Coordinator, conducted a training session for ten days from the June 19 to 29<sup>th</sup> for two Kenyans, Tobias Ochieng and Steven Macharia Mwangi, both from the Ewaso Ng'iro Elephant Research and Conservation Programme, which operates in the Laikipia and Mt. Kenya region of Kenya and is headed up by Max Graham. Max himself came for training a few years ago before he started his program.

In addition to training elephant researchers, AERP has also been helping to train the Amboseli Tsavo Group Ranch Association (ATGRA) Game Scouts. There are seven group ranches (each held communally by Maasai) and each of these ranches has hired game scouts to patrol the ranches with the main aim of anti-poaching. There are presently 88 scouts protecting the Amboseli ecosystem. We have now held four courses totaling 48 scouts and plan to train the remaining 40 scouts as well. The

scouts have been remarkably successful in their anti-poaching and surveillance activities. See table below for their achievements in 2005 alone:

<b>Achievement</b>	<b>2005</b>	<b>Remarks</b>
Poachers arrested	253	Fined or jailed
Snare destroyed	968	destroyed
Bows/arrows recovered	20	Destroyed
Hunting spotlights recovered	10	Confiscated
Bicycles recovered--used by poachers in transporting game meat	16	Forfeited to state
Pangas (machetes), spears, axes and saws	15	Forfeited to state
Vehicles impounded--used in transporting African log of sandalwood which is rapidly becoming extinct due to illegal exploitation.	7	Forfeited to state
Habitat destroyers	56	Fined or jailed
Trophies--elephant tusks and cheetah skins.	20	Forfeited to state
Others (charcoal bags).	150	

*ATGRA game scouts graduation at AERP Research camp: Soila, Cynthia & Norah at center*

In addition to these activities, AERP's Project Manager, Soila Sayialel, spends a great deal of her time attending community related meetings and Kenya Wildlife Service meetings. Conserving the Amboseli ecosystem is essential for the survival of the elephants and Soila's skillful diplomacy is key to working out the various challenges involved in balancing human and wildlife needs.



**DIRECTOR'S ACTIVITIES**

I have had a busy but productive year. I continue to direct the overall research project and the activities of the Amboseli Trust for Elephants in Kenya and the US. In recent years I've had tremendous help from Trustee, Harvey Croze, who has taken over all the onerous tasks such as maintaining the vehicles and the camp and overseeing the accounting and other administrative nightmares along with our excellent administrator, Purity Waweru. As Research Director of AERP, Joyce Poole has relieved me of considerable duties in overseeing the scientific projects. Nevertheless, I still don't seem to have enough hours in the day to accomplish everything I would like to.

Lectures and Events

In February I flew to New Delhi where I gave a lecture at the Wildlife Trust of India's annual awards ceremony. The awards go to individuals who have shown distinction in conservation and welfare activities in India. After the ceremony, WTI's Executive Director, Vivek Menon, and one of their trustees, Ashok Kumar took me and one of ATE's trustees, Don Young, for a four day safari to see

wild Asian elephants. Don happened to be in New Delhi for business and was delighted to be able to come along. We went to Rajiji National Park and Corbett National Park and saw elephants and tigers. The tigers were a first for me, but, of course, the elephants were my priority.

In March I gave a lecture at the Royal Geographic Society in London for the Born Free Foundation. I spent 10 days in the UK and visited colleague Keith Lindsay who lives in Oxford. Phyllis Lee drove down from Scotland and we spent a weekend working the scientific book. Keith is writing several chapters on elephant ecology for the book. He did both his masters and Ph.D. in Amboseli.

I spent six weeks in the US from early May to mid-June. I started in New York City where our newest Board Member Lynn Chase gave a very successful funding raising event at Riverhouse. We raised over \$45,000 on the night and more over the next weeks. Trustee Don Young acted as auctioneer and we "sold" the privilege to name four Amboseli calves as well as other items such as jewelry and the gorgeous tableware that Lynn Chase designs. The bidding for the calves was hot and people who didn't get one of the four calves signed up to name a calf. (See Naming below)

From New York I went to California where I lectured and participated in the Oakland Zoo's 10<sup>th</sup> Anniversary Celebrating Elephants Day. The Zoo has been raising money specifically for AERP on one weekend every spring for the last 10 years. Once again I was impressed and appreciative of all the work they put into this event, particularly Joel Parrott, Colleen Kinzley and Chris Allen. This time they managed to raise the highest amount yet--\$30,000.

From California I went to Florida where Betsy Swart, ATE's US Executive Director, lives. In fact, she was in the process of finding a new house and office for us. I was fortunate to be with her when she found a wonderful house in central Florida. She has since moved there and set up our office. (For the time being, our address is still in Newburyport, Massachusetts so all mail should continue to be directed there.) While in Florida Betsy and I worked together on organizational matters and strategies for ATE. We had a board meeting by conference call and almost the whole board was able to participate.

Finally I flew to Jackson Hole, Wyoming where Ann Smith very kindly hosted me and organized a lecture at the Museum of Wildlife Art. She also held a fund-raising luncheon party at her house. But the most exciting thing she did was to arrange for me to see wild wolves with some of the scientists who work on them. That was a fantastic experience. First of all it is just so intensely beautiful there in the Tetons and then to see wolves on top of that. There was a den with nine cubs. We stayed well away and watched them with spotting scopes.

## **FUNDING STATUS**

Fund-raising was particularly difficult for us in 2005 and 2006 because of all the other disasters and tragedies in the world. We were having trouble making ends meet and I sent out a special plea for help. We greatly appreciated your response. Thank you so much for coming through and making it possible for the Amboseli project to go on for another year. Of course, now we have to find enough funds for 2007. It never stops.

We have two organizations with 501(c)3 status: the Amboseli Trust for Elephants, which is the operating arm; and the African Elephant Conservation Trust, which is the endowment that we hope will eventually fund the research and conservation project. This year we hit a milestone with the endowment. It now holds just over \$1 million. To be effective we need \$10 million but we are happy nonetheless to have raised this much so far.

We still very much need your help in keeping this unique and highly valuable project going. Donors are listed in our website and report under our four giving categories: Ol Tukai - \$1,000 to 4,999, Longinye - \$5000 to 9,999, Kitirua - \$10,000-24,999, and Kilimanjaro - \$25,000. All other donations are also welcome. When you send your donation please make the check out to either ATE or AECT depending on where you would like your donation to go. We thank you in advance.

## **NAMING PROGRAM**

One of the more enjoyable ways to support the Amboseli Project is to name a calf in the research population. The program works as follows:

There are 53 families in Amboseli and each family has a letter of the alphabet and all the individuals in the family have names starting with the family letter. We generally don't name calves until they are four years old. Before that the calf has a code name based on its mother's name and year of birth, but for the naming program we will name calves as young as 18 months to two years. There are currently 289 unnamed calves in all the families. Since most of the common Christian names have been used, although not all of them, it is best to provide three possible names. We suggest using a nick name or a family name or an unusual spelling of a name.



No other calf will have this name; it is a very exclusive program, not like an adoption program in which hundreds of people might adopt the same elephant or whale or whatever; this name will go down in the research project records and be used forever; this is why the name has to be unique.

The namer will receive a recent photo of the calf, a naming certificate, and a description and history of the calf's family. The namer will also get periodic updates over the years. To name a calf requires a donation of \$2500. Those interested should contact Betsy at [ESwart@elephanttrust.org](mailto:ESwart@elephanttrust.org).

Our work is vital to the future of Amboseli's elephants and your support is the only way we can continue.

My colleagues and I wish you peace and prosperity for the New Year.

***Cynthia Moss***  
***January 2007***