

INTERNATIONAL ELEPHANT FOUNDATION

FINAL REPORT - 2014



P. O. Box 101, Mtito Andei 90128, Kenya

Project Title: **LARGE ELEPHANT MONITORING PROJECT**
(Aerial reconnaissance supporting anti-poaching/elephant management)

Principal Investigator: **Richard Moller**
Chief Conservation Officer
TSAVO TRUST

Co-Investigators: **Mrs Tanya Saunders**
Chief Executive Officer
TSAVO TRUST

Budget: **Total Project Budget US\$ 100,023**
Total Requested & Received from IEF US\$ 10,000

Project Start Date: **January 2014**
Project End Date: **December 2014**
Project Present Status: **Completed 31st December 2014**

Project Category: **Field Conservation and Field Research**

Summary:

During the project period, January to December 2014, the Tsavo Trust purchased sixteen 55.5-gallon drums of aviation fuel (Avgas) and paid for transport costs from Nairobi to Tsavo to support aerial reconnaissance, anti-poaching and elephant management under the Large Elephant Monitoring Project.

The Tsavo Trust received US\$10,000 support funds from the International Elephant Foundation on 6th March 2014. However the purchase order for the Avgas was placed on 14th February 2014, following confirmation by the International Elephant Foundation that this grant had been approved. The thinking behind this was that the sooner the Avgas was received, the sooner aerial coverage could continue.

The Tsavo Trust's Large Elephant Monitoring Project receives generous funding support from various other conservation organisations and individuals including Save The Elephants/Wildlife Conservation Network – Elephant Crisis Fund who provide the main funding for this project.

For the first half of 2014 the Tsavo Trust's Super Cub, registration 5Y ACE, flew a total of 271 hours over the Tsavo Conservation Area (TCA) that covered 19,637 miles (as per the Interim Report submitted in June 2014). The second half of 2014 added a further 244 hours of reconnaissance flight and 18,845 miles were covered at an average speed of 75 miles per hour.

The total for the year equates to 515 hours of flight and 38,482 miles covered of which IEF has kindly provided Avgas costs for 112 hours that covered 8,400 miles of reconnaissance (9.3 hours per month) over Tsavo in 2014.

This aerial coverage is in support of the Kenya Wildlife Service (KWS), the governing wildlife agency in Kenya and the elephants of Tsavo. As well as regular aerial reconnaissance flights over Tsavo in collaboration with KWS, the Tsavo Trust's Super Cub aircraft and Chief Conservation Officer, Richard Moller also took part in the Tsavo-Mkomazi Aerial Count for Elephants and Other Large Mammals that took place between 3rd and 10th February 2014, where just over 11,000 elephants were counted within the Tsavo Ecosystem.

Unfortunately poaching pressure on Tsavo's elephants, during early 2014 was an enormous challenge to the authorities that manage this huge Protected Area along with their conservation partners. Numbers of fresh elephant carcasses found in the first half of 2014 was high. It was encouraging to note that in the second half, elephant poaching declined significantly as a result of greater efforts by KWS and their partners in stepping up security within the Tsavo's. For example, in May 2014 alone, 23 elephant carcasses were found, but in contrast, between June and end of December 2014 a total of only 20 elephant carcasses were found by the Tsavo Trust's aerial observations. This clearly shows some positive outcomes in the second half of 2014. Tsavo Trust aims to continue supporting KWS efforts to maintain this positive trend, despite increasing pressure on Kenya's elephant populations as elephant numbers across the continent continue to decline.

Without consistent aerial coverage over the vast and largely road-less expanse of Tsavo, an accurate picture of the situation on the ground could not be achieved.

SUMMARY of CONSERVATION ACHIEVEMENTS & IMPACTS:

The table below summarizes number of hours flown, miles covered, individual big “Tuskers” observed, ivory recovered, numbers of fresh and recent elephant carcasses, numbers of poachers camps/blinds/hides & platforms, number of joint TT/KWS arrests and number of aerial responses to armed situations for the Year 2014.

| Activity | Hours Flown | Miles Covered |
|---|---|---|
| <i>Aerial Reconnaissance 2014</i> | 515 Average 75 mph of low level flight | 38,482 Flights carried out jointly with KWS Officers/Rangers, thus current and live info. be relayed to ground units for action |
| <i>Monthly Average 2014</i> | Average of 43 hrs per month | Average of 3,207 miles per month |
| Big “Tuskers” | No. Observed | |
| 2014 | <ul style="list-style-type: none"> • Big Tuskers: 12 different bulls • Emerging Tuskers: 11 different bulls • Big Cow Tuskers: 5 different cows • Total: 23 bulls & 5 cows | |
| Ivory recovered | No. Recovered | |
| 2014 | 34 tusks recovered from poached, natural and unconfirmed causes of death. All jointly recovered by TT/KWS ground teams | |
| Elephant carcasses | No. Observed | |
| | Fresh | Recent |
| 2014 | 78 | 28 |
| Poachers camps & hides/blinds/platforms | No. Observed | |
| | Fresh | Recent |
| 2014 | 24 | 15 |
| Arrests following illegal activity inside the Parks | No. Arrests | |
| 2014 | <p style="text-align: center;">47</p> (Only those from within the National Parks and arrests made by KWS resulting from aerial observations by TT aircraft) | |
| Aerial responses to armed poaching gangs & backup to KWS | No. Responses | |
| 2014 | <p style="text-align: center;">17</p> (Both inside and outside the National Parks. These responses are all as aerial back up to KWS ground teams) | |
| Notable Occurrences | <ul style="list-style-type: none"> • TT aircraft and pilot took part in the tri-annual Tsavo Elephant Census between 3rd & 10th February 2014 • TT & KWS sign partnership MOU on 8th May 2014 • TT employs second pilot – Peter Lempatu – October 2014 • TT employs BTP Field Officer – Joseph Kimaile – October 2014 • Engine problems with 5Y ACE in November & December 2014 | |

Iconic “Tusker” Satao:

With great sadness, we reported the death of Satao, one of Tsavo’s most iconic and well-loved tuskers. This magnificent elephant was widely known in Tsavo East National Park, where he was observed in awe by many thousands of Tsavo’s visitors over the years. No longer will Tsavo and Kenya benefit from his mighty presence. Satao was shot dead by a poisoned arrow on 30th May 2014. The arrow had entered his left flank and he stood no chance of survival. We spotted his carcass on 2nd June but to avoid any potential false alarms, we first took pains to verify the carcass really was his. It was with enormous regret that we had to confirm there was no doubt that Satao was dead, killed by an ivory poacher’s poisoned arrow to feed the seemingly insatiable demand for ivory in far off countries. A great life lost so someone far away can have a trinket on their mantelpiece.

The Tsavo Trust’s full statement regarding Satao’s poaching was separately attached to the Tsavo Trust’s Interim Report (June 2014) to the International Elephant Foundation.

Large Elephant Monitoring Project:

The Large Elephant Monitoring Project started in early 2013 and is an ongoing project with no plans for a completion date. It is supported by other organisations including Save The Elephants (through the Wildlife Conservation Network/Elephant Crisis Fund), US Fish & Wildlife Service, Stuart Herd and many other individual enthusiasts and corporate sponsors.

The Tsavo Trust continues to play a very meaningful role in the day-to-day security of elephant within TCA via its aerial patrols and the Large Elephant Monitoring Project. Aerial reconnaissance flights continue to be carried out on a regular basis with the Tsavo Trust Chief Conservation Officer and a KWS rear seat observer. These KWS observers are mainly Security Officers from various sections and outposts within the TCA.

- **Short term goals of this project are:**
 - Ensuring regular aerial surveillance of Tsavo’s “Tuskers” is maintained – through number of hours flown/miles covered and recording of flight paths taken that cover specific areas. ***ACHIEVED with 515 hours flown that covered 38,482 miles over the TCA and in so doing, 23 bull and 5 cow “Tuskers” regularly monitored over 2014.***
 - Assisting KWS in their conservation efforts within TCA – through real time aerial observations to direct rapid ground follow-up operations. ***ACHIEVED with 17 call outs in response to armed security situations and follow-ups. 47 arrests as a result of aerial coverage.***
 - Providing elephant related data for KWS, Save The Elephants and MIKE (Monitoring the Illegal Killing of Elephants) program under the Convention on International Trade in Endangered Species (CITES) – through numbers of elephant carcasses observed and verification of cause of death. ***ACHIEVED with recording specific data on 106 elephant carcasses seen from the air and many visited on the ground.***

- Through the number of elephant tusks recovered as a result of aerial observations, so these cannot fall into the “wrong hands” – ie. poachers. ***ACHIEVED with 34 tusks recovered.***
 - Being a regular observatory presence in areas that are desperate for on-going reconnaissance in the largely road-less expanse of Tsavo, in particular poaching “Hot Spot” areas. ***ACHIEVED by regular and consistent recce flights in collaboration with KWS Field Officers and Rangers as Rear Seat Observers during recce flights.***
 - Establishing further ground units such as “Tembo 2” team to provide regular “eyes and ears” on the ground in the big “Tuskers” known home ranges. ***ACHIEVED with deployment of newly established joint KWS/TT “TEMBO 2” team.***
- **Long term goals of this project:**
 - Striving to maintain the stability of Tsavo’s large “Tusker” gene pool by providing a regular “eye in the sky” in those known areas that the large bull elephant frequent. ***ACHIEVED with 515 hours flown that covered 38,482 miles over the TCA and observations of 23 iconic bull “Tuskers” and 5 cow “Tuskers”.***
 - Data recording of large “Tuskers” for future reference – through a basic database, date of individual elephant sighting, GPS location and any other pertinent information recorded. ***ACHIEVED by observations of 23 different individual bulls and 5 iconic cows plus positive identification of at least 8 new “Tuskers” to the Tsavo Trust “Tusker” data base.***
 - Data recording for MIKE purposes – through number of elephant carcasses observed and verification of cause of death. ***ACHIEVED with recording details of 106 carcasses observed from the air and many of them visited to confirm details on the ground.***
 - Private/Governmental conservation partnerships – an area as large as Tsavo can and does benefit hugely from such collaboration, it is too big and has too many challenges to be achieved under the Governing Agency. ***ACHIEVED with on-going partnerships with Kenya Wildlife Service, Save The Elephants, Tsavo Elephant Research Project, Tusk Trust and many individuals.***
 - Recording and relay of relevant elephant information to KWS database – through observations made from the air. ***ACHIEVED by regular and consistent recce flights in collaboration with KWS Field Officers and Rangers as Rear Seat Observers during recce flights.***
 - Establishing further ground units such as “Tembo 2” team to provide regular “eyes and ears” on the ground in the big “Tuskers” known home ranges. ***NOT ACHIEVED AS YET due to funding constraints.***

- Upgrade the Tsavo Trust’s old and ailing Super Cub aircraft with a more reliable aerial platform to work from. **NOT ACHIEVED AS YET. Funding support for this plan is in process.**
- To establish a “Big Tusker Museum” within the Tsavo Conservation Area in partnership with KWS to show case the Tsavo “Tuskers”. **NOT ACHIEVED AS YET due to funding constraints.**

Conservation Needs:

- Continued support for aerial reconnaissance over the vast TCA for all the reasons stated above and in the original proposal. **ON GOING.**
- Support to the governing wildlife agency in Kenya – the Kenya Wildlife Service. Joint conservation efforts (Government/NGO) have stronger conservation outcomes and in the process a more transparent approach is achieved where such partnerships have evolved. **On GOING.**
- Establishing further ground units such as “Tembo 2” team to provide regular “eyes and ears” on the ground in the big “Tuskers” known home ranges. This will raise the “Tuskers” profile, bring conservation partners together and in so doing provide specific focus on maintaining the existence of the “Tuskers” and their vibrant gene pool. **FUTURE PLANS.**
- Upgrade the Tsavo Trust’s old and ailing Super Cub aircraft with a more reliable aerial platform to work from. **ON GOING FUND RAISING PROCESS.**
- To establish a “Big Tusker Museum” within the Tsavo Conservation Area in partnership with KWS to show case the Tsavo “Tuskers”. **FUTURE PLANS.**

Summary of Progress, Goals, Objectives, Findings & Accomplishments to date:

The table below shows a breakdown/brief per month of 2014 of the number of hours flown, miles covered, numbers of large “Tuskers” observed, numbers of fresh (less than 3 weeks) and recent elephant carcasses (less than 1 year) observed, numbers of poacher hides, blinds, camps observed and ivory recovered jointly by KWS & Tsavo Trust:

| Month 2014 | No. Hrs flown | No. Miles covered | No. Tuskers observed | No. Fresh elephant carcasses | No. Recent elephant carcasses | No. Poachers camps, hides, blinds | No. Ivory recvd. |
|--------------|---------------|-------------------|--|-----------------------------------|-------------------------------|-----------------------------------|------------------|
| January | 38 | 2,715 | 7 (6 bulls, 1 cow) | 1 | 1 | 2 | 4 |
| February | 71 | 5,233 | 7 (6 bulls, 1 cow) | 4 | 8 | 8 | 2 |
| March | 51 | 3,648 | 6 bulls | 6 | 5 | 2 | 2 |
| April | 33 | 2,402 | 10 (9 bulls, 1 cow) | 10 | 3 | 4 | 2 |
| May | 47.5 | 3,428 | 12 (11 bulls, 1 cow) | 19 | 3 | 4 | 8 |
| June | 30.5 | 2,211 | 8 bulls | 8 | - | 1 | 4 |
| July | 40 | 2,978 | 10 (8 bulls, 2 cows) | 5 | 2 | 6 | 3 |
| August | 49.5 | 3,825 | 12 (10 bulls, 2 cows) | 2 | - | 3 | 3 |
| September | 38 | 2,883 | 9 (8 bulls, 1 cow) | 7 | 5 | 4 | 2 |
| October | 45.5 | 3,607 | 10 (bulls) | 1 | 1 | 3 | 4 |
| November | 28 | 2,266 | 11 (bulls) | 4 | - | 1 | - |
| December | 43 | 3,286 | 15 (13 bulls, 2 cows) | 1 | - | 1 | - |
| TOTAL | 515 | 38,482 | 23 different bulls & 5 cows | 68 s/total + 10 on ranches | 28 | 39 | 34 |

At an average speed of just under 75 miles per hour, it is this slow speed at low level (200 feet above ground) that is so important during aerial reconnaissance flights as it means the observers are able to visually recognize current observations for immediate ground follow up as necessary. The Super Cub is a perfectly suited platform for wildlife and anti-poaching related work, rather than faster aircraft that might carry more people, but many observations are missed due to a higher air speed and lack of low-level maneuverability.

The goals and objectives remain the same through this project and going forward there is no change.

Conservation Outcomes:

Having flown a total of 38,482 miles over 515 hours of flight, many areas, particularly poaching “Hot Spot” zones and areas where the known large “Tuskers” frequent, have been regularly covered and a presence there has been portrayed to potential poachers in the area, albeit from the air. From this the International Elephant Foundation has supported the Tsavo Trust by funding 112 hours or 8,400 miles of reconnaissance flight over the TCA. Largely Save The Elephants as well as other organisations and individual supporters have funded the remaining 403 hours of flight.

It is important to note here that due to the sheer size of Tsavo and the fact that so few roads exist in many places, it is impossible to cover and secure the entire area. The poaching of Satao clearly shows this. But what we can say is that without this aerial component the situation would be much worse with no “eyes in the sky” to assist KWS in ground deployments. It is difficult to quantify but the fact remains that without aerial presence an understanding of the threats and challenges to management would not be achievable. Regular aerial reconnaissance provides an absolutely vital conservation tool in the fight for wildlife protection.

Areas within the Tsavo Conservation Area covered by aerial reconnaissance flights:

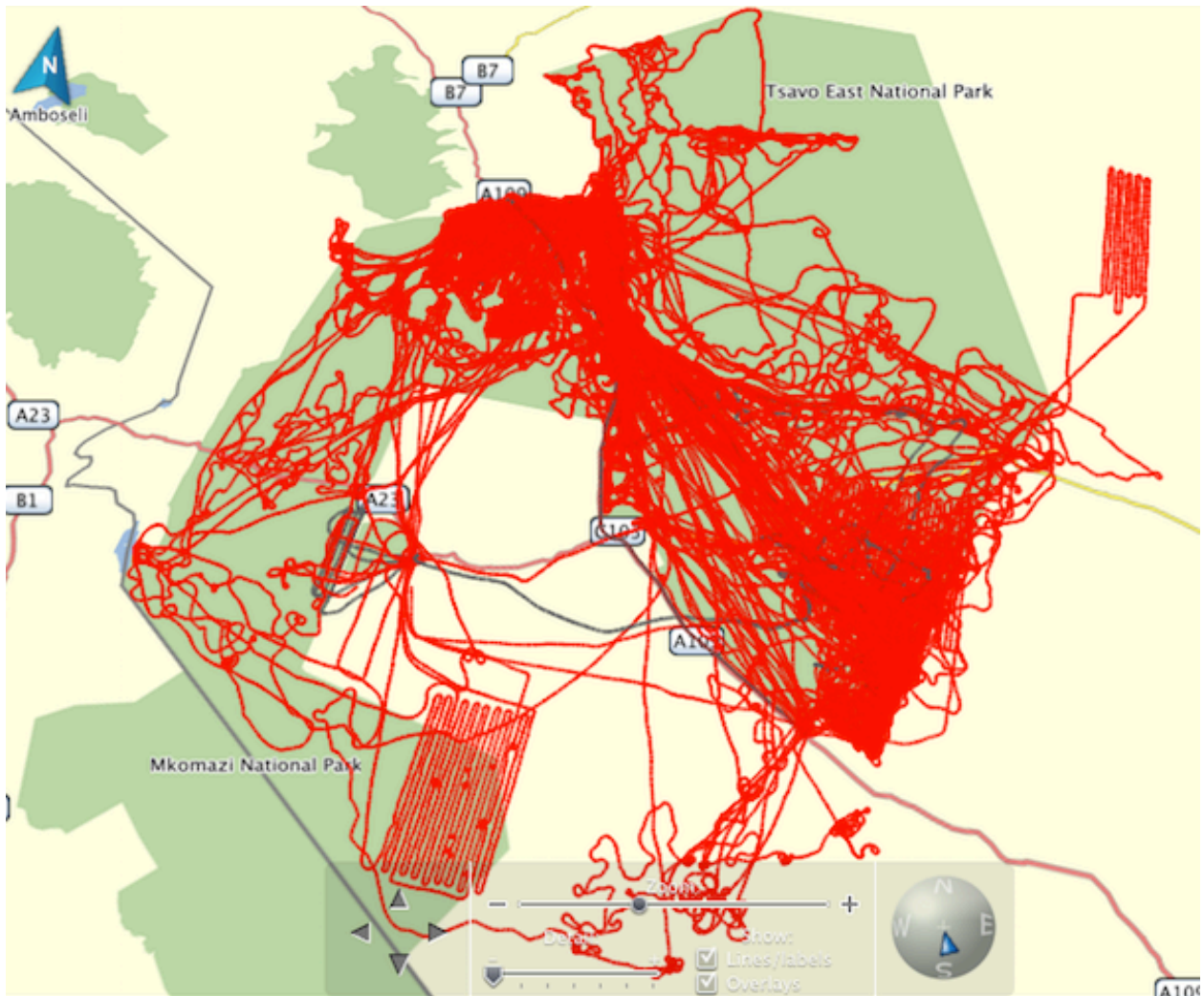
Tsavo East NP – Galana River, Athi River, Voi River, Tiva River, Tsavo River, Mtito lugga, Aruba, Satao, Mukuaju, Yatta plateau, Hand grenade valley, Gothoa, Masobo, Jimetunda, Macho Kombo, Kiasa, Bisadi, Roka, Tundani, Kasala, Kanziku, Ithumba, Umbi Hill, Tumbili, Sangayaya, Emusaya, Durusikale, Garasamuke, Huri, Balguda, Bachuma, Maungu, Murondo, Wagalla, Lugards, Tambanguji, Dika, Mukuaju, Ndara, Dakota (TENP Southern boundary), Sala Hill, Dabaduke, Kulalu Ranch/TENP boundary, east Manyani, Mudanda, Irima, Ndi, Voi, Maungu, Waduruma, Mbololo lugga, Ashaka, TE IPZ, Sobo, Ngiluni, parts of Galana Ranch (Lalli Hills), Kone and the Tsavo Triangle.

Tsavo West NP – TW Intensive Protection Zone (IPZ), TW Ngulia Rhino Sanctuary, Ngulia Valley, Mungai Hill, Ndawe, Mombasa Highway between Mtito Andei and Tsavo River bridge, TW Triangle, Tsavo River, Ziwani River, Kangechwa, Lake Jipe, Toloa, Kanjaro, Maore, Murka, Finch Hattons, TW Maji ya Chumvi lugga, Mtito Lugga, Kyulu area, Ngulia East, Kinyek, Athi River and south end of Chyulu Hills Nat. Park.

Ranches & areas outside the Parks – TE: Galana, Shaka Hola, Bombi, Danisa, Kisiki Cha Mzungu, Dakadima, Dakadakotha, Kone, Kulalu, Dakota, Teita, Satao Rocks, Amaka, Taru, Kalonzo, Jogoo, Bura, Mbale, Rukinga, Dere, Sagala TW: Mbulia, Oza, Lualenyi, Kishushe, Kasigau, Kuku, Iltal, Rombo, Taveta and Salaita.

All flight paths and relevant GPS coordinates are logged and recorded in the TT database records and all reces and observation details are GPS'd and relayed to KWS accordingly.

The map below shows flight paths covering 38,482 miles (515 hours) over many parts of the Tsavo Conservation Area in the Tsavo Trust's Super Cub aircraft 5Y ACE between January and December 2014. The green background shows Tsavo East and West National Parks and the red lines the flight path during reconnaissance flights.

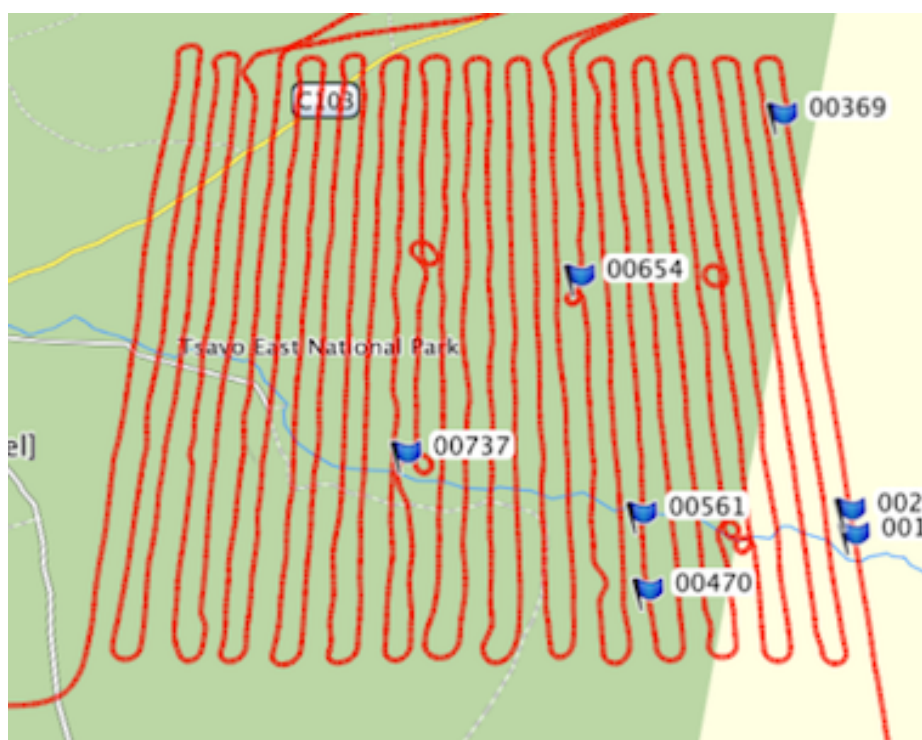


- A total of 106 elephant carcasses have been observed during 2014 (78 fresh – less than 3 weeks old and 28 recent – less than 1 year old).
- Joint recovery by KWS/Tsavo Trust of 34 elephant tusks, all of these tusks having been observed from aerial flights between January and December 2014. By collecting this ivory for safekeeping, it denies the poachers more ivory to fuel the illegal trade. The weight of ivory recovered so far is in excess of 550 kilograms, equivalent to US\$ 96,000 on the illegal market at source here in Kenya.
- Over 2014, a total of 12 known different individual iconic bull “Tuskers” were observed, 11 emerging bull “Tuskers” (the icons of tomorrow) and 5 exceptional cow “Tuskers” have been observed and relevant information recorded. The total number of sightings of these known and named/coded elephant has been 226 sightings (215 bulls and 12 cows).

- However it is with deep regret that Satao, one of Tsavo’s iconic bulls fell to a poacher’s poisoned arrow on 30th May 2014. He had been seen no less than 9 times in May 2014 alone, but even with this coverage the poachers managed to get through the security net and poach him right on Tsavo East’s southern boundary.
- The Tsavo Trust is pleased to announce a further collaborative project in Tsavo East National Park between KWS and Tsavo Trust by establishing the Big Tusker Project (formerly the Large Elephant Monitoring Project in 2014) ground-monitoring unit called “Tembo 2”, that was deployed in early December 2014. This unit works alongside and in partnership with TCA KWS Research Department with a particular emphasis on monitoring the big Tuskers on the ground as well as other endangered species such as Hirola, Grevy’s zebra and wild dog. Tembo 2 will operate in tandem with aerial reconnaissance findings and with this a far stronger presence and understanding of the Tuskers and their movements will be achieved and by so doing a greater level of security for the Tuskers will be accomplished. This valuable project will also advance further the already existing working partnership between KWS and TT.
- ***Tsavo-Mkomazi Total Aerial Count:***
Following an invitation by KWS to the TT to partake in the Tsavo-Mkomazi Total Aerial Count, TT Super Cub aircraft 5Y ACE flew 41 hours and 3,035 miles covering 4 counting blocks, training flights and transit. The count took place between 3rd and 10th February 2014, based out of Taita Hills Lodge on the edge of Tsavo West National Park (TWNP). Several aircraft and personnel from other supporting organisations took part to support KWS during this important joint exercise. The count area totals a massive 48,000-kilometer square mass, home to Kenya’s largest single elephant population. During the first 2 days, training exercises and aircraft streamer calibrations took place with counting crews so that a more accurate and professional count could ensue. Most blocks covered 900 kilometers squared and were counted in 1 kilometer transects (see map below). This meant that during the counting days many hours are flown, especially in the slower aircrafts. The TT crew covered the following blocks:

Block TW17 (TWNP, East Kanjaro, 8.5 hours, 635 miles covered on 6/2/2014).
Block TE26 (TENP, Voi River, Satao, Dika, 10.5 hours, 820 miles covered on 7/2/2014)
Block TW41 (TWNP, Kamboyo, Ndawe, Mungai, Triangle, 9 hours and 664 miles on 7/2/2014)
Block GA55 (Galana Ranch, Dakadima, Dakadakotha, Sala, 6 hours and 451 miles on 9/2/2014)
Training & transit flights (7 hours and 465 miles)

Map below shows 1 kilometer transects flight path flown by TT aircraft over census block TE26 on 7th February 2014 covering 900 kilometers squared during 10.5 hours of flight.



Time Line:

The time line for this project is now complete as it commenced in January 2014 and ended in December 2014.

The purchase of 16 drums (210 litres per drum totals 3,360 litres) of Avgas took place in February 2014 that has enabled the Tsavo Trust to carry out 112 hours of flight that covered 8,400 miles in support to KWS over the TCA. The Tsavo Trust Super Cub aircraft, registration 5Y ACE, used 30 litres of Avgas per hour. This amounted to 3,360 litres at an average cost of US\$ 625 per 210 litre drums in Kenya in February 2014.

Video Clip and Photos:

Attached separately are the following:

1. A short video clip of the iconic big “Tuskers” coded as KA1 at a water hole in Tsavo.
2. A short video clip showing 4 poached elephant found from the air and stating that funding support from the International Elephant Foundation has enabled Tsavo Trust’s aerial unit to carry out reconnaissance flights that resulted in such observations.
3. Photo of an exceptional cow elephant carrying long ivory.
4. Photo of ivory recovered this year.
5. Photo of the big iconic “Tusker” coded as LU1.
6. Photo of the Tsavo Trust aircraft during aerial reconnaissance flight over Tsavo.
7. Photo of the Tsavo Trust’s aircraft following engine trouble in November 2015.

On behalf of Tsavo Trust and the elephants of Tsavo – a huge thank you for your support to this project.

Budget:

This project is supported with matching funds from Save The Elephants as well as Tsavo Trust itself (see budget table below). The project requested funding from International Elephant Foundation that covers one aspect; the purchase of 16 drums of Avgas (3,360 litres). The funding amount received was US\$ 10,000. The total combined project value is US\$ 100,023.

Budget table showing Total Project Costs (All figures in US\$)

| Budget Item | Amount requested from IEF \$ | Matching Funds TT \$ | Secured from other partners | Balance Required (not incl. IEF funds) | TOTAL PROJECT COSTS (US\$) |
|--|------------------------------|----------------------|-----------------------------|--|----------------------------|
| Purchase of 16 drums Avgas from Nairobi @ \$625 p/drum | 10,000 | - | - | Nil | |
| Transport costs Nbi to Tsavo @ \$ 500 per load of 16 drums | - | 500 | - | Nil | |
| Avgas purchase of 50 drums for 350 hours by STE | - | - | 31,250 | Nil | |
| Transport of 50 drums – 4 trips @ \$ 500 | - | - | 2,000 | Nil | |
| Aircraft insurance, hull and 3 rd party liability | - | - | 5,724 | Nil | |
| Aircraft engine oil | - | 540 | - | Nil | |
| Aircraft maintenance, 5 x 50hr checks @ \$ 2,000 | - | - | 10,000 | Nil | |
| Aircraft maintenance, 2 x 100hr checks @ \$ 3,000 | - | - | 6,000 | Nil | |
| Aircraft annual C of A check | - | - | 8,750 | Nil | |
| Pilots accident insurance cover, annual | - | - | 3,800 | Nil | |
| Misc. aircraft spare parts | - | - | 6,000 | 6,000 | |
| Engine, propeller, tire depreciation | - | 6,574 | - | Nil | |
| Airfield attendant | - | - | 2,260 | Nil | |
| Annual Nav. Fees, Landing Fees | - | - | 625 | Nil | |
| TOTAL COST US\$ | 10,000 | 7,614 | 76,409 | 6,000 | 100,023 |

Budget Justification:

At the time of purchase, 1 x 210 litre drum of Avgas costs US\$ 625 at the aviation fuel supply depot at Wilson Airport in Nairobi. The purchase of 16 drums will therefore equate to US\$ 10,000. This provided a total of 112 hours of flight and given the fact the aircraft consumes 30 litres of fuel per hour (US\$ 89.28 per hour) the total cost to cover the 112 hours under this application is a fraction under US\$ 10,000.