

CONVENTION ON INTERNATIONAL TRADE IN  
ENDANGERED SPECIES OF WILD FAUNA AND FLORA

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Monitoring the Illegal Killing of Elephants (MIKE)

MINUTES OF THE ELEVENTH MEETING OF THE MIKE TECHNICAL ADVISORY GROUP  
(NAIROBI, 23-24 APRIL 2012)

**In attendance:**

- Iain Douglas-Hamilton, MIKE TAG member, Eastern Africa
- Colin Craig, MIKE TAG member, Southern Africa
- Moses Kofi Sam, MIKE TAG member, West Africa
- Li Zhang, MIKE TAG member, Southeast Asia
- Raman Sukumar, MIKE TAG member, South Asia
- Liz Bennett, MIKE and ETIS TAG member
- Kenneth Burnham, MIKE TAG member
- Simon Hedges, MIKE TAG member
- Hugo Jachmann, MIKE and ETIS TAG member
- Esmond Bradley Martin, ETIS TAG member
- Tom Milliken, ETIS Director
- Julian Blanc, Acting Coordinator & Data Analyst, MIKE Central Coordination Unit (Chair)
- Louisa Sangalakula, ETIS Programme Officer
- Sebastien Luhunu, MIKE Subregional Support Officer (SSO), Central Africa
- Mahaman Sani Massalatchi, MIKE Subregional Support Officer (SSO), West Africa
- Tapera Chimuti, MIKE Subregional Support Officer (SSO), Southern Africa
- Edison Nuwamanya, MIKE Subregional Support Officer (SSO), Eastern Africa
- Margaret Onyango, MIKE Central Coordination Unit
- Claire Mogambi, MIKE Central Coordination Unit
- Diane Skinner, IUCN/SSC African Elephant Specialist Group
- Peter Mwangi, IUCN/SSC African Elephant Specialist Group
- Bob Burn, University of Reading, ETIS TAG *ex-officio* member
- Fiona Underwood, University of Reading
- Howard Frederick, consultant MIKE (for agenda item 8)
- Enrico Pironio, European Commission

**Absent with apologies:**

- Holly Dublin, MIKE and ETIS TAG member
- Martin Tchamba, MIKE TAG member, Central Africa
- Martha Bechem, MIKE Deputy Subregional Support Officer, Central Africa
- Tony Lynam, MIKE Subregional Support Unit, Southeast Asia

## Opening of the meeting

The Acting Coordinator opened the 11<sup>th</sup> meeting of the MIKE Technical Advisory Group (TAG11) by welcoming all participants and noting that it was the first meeting of the MIKE and ETIS TAG in which both MIKE and ETIS TAG members would attend both meetings. All four African SSOs were present, with only Martha Bechem, the Deputy SSO for Central Africa, unable to attend because she was completing the survey in Boumba Bek in Cameroon. He took note of the passing of Yaw Bofo, the Deputy SSO for West Africa. He welcomed the attendance of representatives from the IUCN/SSC African Elephant Specialist Group (AfESG), and an external expert, Howard Frederick, who would be reporting on a consultancy on building analytical capacity at MIKE sites. He provided apologies from Holly Dublin (MIKE and ETIS TAG member), Tony Lynam (who was carrying out SSO functions in Southeast Asia under contract with WCS) and Martin Tchamba (MIKE Subregional member for Central Africa). He also noted that Enrico Pironio from the European Commission would be attending on the second day of the meeting. As TAG11 would be the final TAG meeting of MIKE Phase II and with the necessity to hold both MIKE and ETIS TAGs within two days, rather than three, he warned that the agenda was very full.

### 1 Adoption of the agenda ..... TAG11 Doc. 1

The Acting Coordinator alerted the TAG to the incorrect numbering of two working documents, and then invited the TAG to comment on the agenda. There were no comments and the agenda was adopted.

### 2 Adoption of the working programme ..... TAG11 Doc. 2

The TAG was invited to comment on the working programme. There were no comments and the working programme was adopted.

### 3 Minutes of the 10th meeting of the Technical Advisory Group (TAG10) ..... TAG11 Doc. 3

The TAG was invited to comment on the minutes of TAG10. There were no comments and the minutes were approved.

### 4 Progress on the action points agreed to at TAG10 ..... TAG11 Doc. 4

The Acting Coordinator introduced and reviewed the action points outlined in document TAG11 Doc. 4:

- 5 action points had been completed: 1 of 5 action points under item 4; all action points under items 5 and 10; and 2 of 3 action points under item 12.
- 5 action points were ongoing: 2 of 5 action points under item 4; all action points under items 6 and 9; and 1 of 3 action points under item 12.
- 2 action points were not done: 1 of 5 action points under item 4; and all action points under item 13.
- 1 action point was no longer valid: 1 of 5 action points under item 4.

The TAG then discussed a number of items and action points in greater detail.

- *Item 4: progress on the action points agreed to at TAG 9 (TAG09 Doc. 4)*

The Acting Coordinator explained that the TAG had requested the CCU to look into the quality of MIKE data emanating from the sites, utilizing the knowledge of the SSOs. He informed the TAG that some work had been done to achieve this, and this would be discussed during TAG11, under agenda items 8 and 15.

Regarding the integration of data quality control functions into the TAG terms of reference (TOR), the Acting Coordinator explained that data quality control systems had been integrated into the draft revision of Resolution Conf. 10.10 (Rev. CoP15). Iain Douglas-Hamilton and Colin Craig expressed some concern that data needed to be shared with the TAG, and thought that this should be reflected

in the TOR of the TAG. The ETIS Director pointed out that including data review functions by the TAG in the Resolution would carry greater weight its inclusion in the TOR of the TAG.

Regarding TAG input into the revision of Resolution Conf. 10.10 (Rev. CoP15), the Acting Coordinator reminded the TAG that any detailed comments on the proposed revisions to the MIKE ETIS sections would need to be sent directly by TAG members to the USA Management Authority, which was leading the review of the MIKE and ETIS sections of the Resolution on request from the Chair of the MIKE-ETIS Subgroup, by 6 May 2012.

Regarding compilation of data on rates of natural elephant mortality for MIKE sites, it was noted that no progress had been made, but it was agreed that this was an important action item to complete. Raman Sukumar and Iain Douglas-Hamilton agreed to take on this task for Asia and Africa respectively.

**ACTION: Raman Sukumar and Iain Douglas-Hamilton to compile data on changes in natural elephant mortality for MIKE sites in Asia and Africa respectively.**

Regarding the final action item under this item, on informal sources of information and early warning systems, the Acting Coordinator updated the TAG on the CITES Standing Committee's decision at SC61 that an early warning system should not be integrated into MIKE. The action point was therefore no longer valid.

- *Item 5: Evaluation of MIKE Phase II in Africa (TAG 10 Doc. 5)*

The Acting Coordinator reminded the TAG that at TAG10, a working group had been formed to refine and expand criteria for adding new MIKE sites. Since TAG10, the MIKE CCU had worked with that working group to finalize these revised criteria, and they would be proposed to the MIKE ETIS Subgroup of the CITES Standing Committee.

**ACTION: MIKE CCU to prepare a document for the MIKE-ETIS Subgroup of the Standing Committee to consider the refined and expanded criteria for adding new MIKE sites.**

- *Item 6: Membership and terms of reference of the TAG (TAG 10 Doc. 6)*

The Acting Coordinator drew attention to TAG11 Doc. 7, which outlined proposed drafts to the TOR for the TAG.

- *Item 9: Outcome of the workshop 'Elephants and the trade in elephant specimens: a review of existing analytical and reporting systems and recommendations for a way forward' (TAG 10 Doc. 9)*

Bob Burn indicated that he had done some initial work to determine any relationship between PIKE and carcass ratios. It was agreed that this information would be discussed during discussion of agenda item 8.

- *Item 10: MIKE analysis for the 61<sup>st</sup> meeting of the Standing Committee (TAG 10 Doc. 10)*

The Acting Coordinator reminded the TAG that an action item had been identified to refine the list of research questions to validate PIKE-based inference so that they could be effectively addressed. The list of PIKE questions had been refined by the CCU in consultation with a working group established at TAG 10 to that effect, and a consultancy had been awarded to Hugo Jachmann to investigate a number of these questions. This information would be discussed under TAG11 Doc. 10.

- *Item 12: MIKE elephant survey standards (TAG 10 Doc. 12)*

The Acting Coordinator confirmed that work had been done on two of these action items. Ken Burnham had reviewed Appendix I of the MIKE aerial survey standards, and his findings would be discussed during agenda item 13. Likewise, a meeting had been held to review the aerial survey standards and the results of this meeting would also be discussed during agenda item 13.

Work on the review of options for the use of rainfall methods in large forested sites had started, and rainfall data were being collected as part of the survey of Boumba Bek National Park (Cameroon).

Simon Hedges had produced a document outlining some shortcomings of the rainfall method. The Acting Coordinator agreed to circulate this document to the TAG.

**ACTION: MIKE CCU to circulate Simon Hedges's document on the rainfall method to the Working Group for their review. (Martha Bechem, Julian Blanc, Ken Burnham, Simon Hedges, Moses Kofi Sam, Li Zhang)**

- *Item 13: Validation of the MIKE site sample (TAG 10 Doc. 13)*

This had not yet been done.

**ACTION: Ken Burnham to circulate a finalized version of his document on site validation to TAG.**

The Acting Coordinator asked for any additional comments on the action points. Simon Hedges requested that meeting minutes be circulated more promptly than had been the case in the past.

## **5 Revision of MIKE and ETIS Sections of Resolution Conf. 10.10 (Rev. CoP 15)..... TAG11 Doc. 5**

The Acting Coordinator introduced TAG11 Doc. 5, which outlined the proposed revisions to the MIKE and ETIS sections of Resolution Conf. 10.10 (Rev. CoP15). After SC61, the MIKE-ETIS Subgroup of the Standing Committee had asked the MIKE CCU and TRAFFIC to prepare suggested edits on the MIKE and ETIS sections of the Resolution and its Annexes. The proposed changes were reviewed by the Subgroup and had been circulated to all African and Asian elephant range States, as well as to the TAG. He noted that the deadline for written comments was 6 May 2012, and that comments should be sent directly and in writing to the USA Management Authority.

In the MIKE section, the Acting Coordinator drew attention in particular to the sections dealing with data access and release, roles and responsibilities and funding and operational support. The TAG was invited to provide comments.

Iain Douglas-Hamilton suggested that the wording should be consistent throughout, using 'illegal killing' rather than 'illegal hunting'. There was general agreement from the TAG on this. He also suggested that in paragraph (e) of the opening section of the MIKE and ETIS sections, the word 'killing' should be replaced with 'mortality'. Finally he noted that there was no reference to the private sector in that same paragraph (e), which he considered important.

Simon Hedges raised some issues about the other sections of the Resolution (not directly dealing with MIKE and ETIS). The Acting Coordinator noted that these comments needed to be sent to Vivek Menon, who was chairing a working group established at SC61 to oversee the review of the other sections of the Resolution.

Ken Burnham had a number of comments and agreed that he would send these directly to the USA Management Authority. In particular, the word "representative" should be removed from Annex 2 3. b), and "to the maximum extent possible" be added to the end of that sentence.. He also felt that a provision should be made for data to be disclosed to contractors under non-disclosure agreements as appropriate.

Fiona Underwood had a number of questions about data access and release in the MIKE section, which were resolved in the discussion.

The ETIS Director suggested that the language for MIKE reporting might be unnecessarily restrictive. If read very strictly, it might mean that MIKE analyses would only be allowed for meetings of the CITES Standing Committee and Conference of the Parties, as opposed to for any other meetings or needs. There was general agreement from the TAG that it would be better to have slightly less restrictive language surrounding MIKE's reporting mandate.

The ETIS Director introduced the edits to the ETIS section of the Resolution and invited comments.

Bob Burn asked whether country reports should be included in the Resolution as a specific reporting requirement. The ETIS Director responded that this was something to be considered. He acknowledged there was a general need to standardize across the MIKE and ETIS sections. In particular data access and release language needed to be included to reflect the new ETIS system.

Iain Douglas-Hamilton asked about the frequency of the reports that ETIS produces. The ETIS Director responded that the mandate and obligation was for the Conference of the Parties, and at any other time as

requested by the Standing Committee, but they also prepared country reports and other reports as necessary. Raman Sukumar asked how 'old' ivory is dealt with in the Resolution. The ETIS Director responded that this was a major issue, as ivory from stockpiles may leak into the illegal trade, potentially confounding the ETIS analyses. He noted that this was one reason why the linkage between MIKE and ETIS was essential. He also noted that other sections of the Resolution deal with stockpile management and that these sections also needed to be strengthened.

**ACTION: MIKE CCU to send in general TAG comments on draft MIKE and ETIS sections of Resolution Conf. 10.10 (Rev. CoP15) to the USA Management Authority by 6 May 2012.**

**ACTION: TAG members to send any detailed comments on draft MIKE and ETIS sections of Resolution Conf. 10.10 (Rev. CoP15) in writing directly to the USA Management Authority by 6 May 2012.**

**ACTION: ETIS Director to send necessary edits on ETIS data access and release sections of Resolution Conf. 10.10 (Rev. CoP15) in writing directly to the USA Management Authority by 6 May 2012.**

## **6 Long-term implementation of MIKE ..... TAG11 Doc. 6**

The Acting Coordinator introduced TAG11 Doc. 6, which outlined progress made towards the long-term implementation of MIKE.

The Acting Coordinator outlined the progress in securing funding for the next phase of MIKE in Africa. In July 2011, an initial draft of the MIKE Phase III project concept note was submitted to the European Union and the Secretariat of the African, Caribbean and Pacific Group of States (ACP), and in November 2011, the draft logical framework for MIKE Phase III was elaborated by the MIKE SSOs, MIKE CCU, IUCN ESARO and the IUCN SSC AfESG. When this concept was not funded under the March 2012 round of the 10th European Development Fund, a new project concept (branded MIKE 2.0) was developed and submitted to the EC Environment and Sustainable Management of Natural Resource Programme (ENRTP). This project, subject to funding restrictions because only Euro 2 million was available over two years, was reformulated with a revised and streamlined project focus.

MIKE 2.0 was being designed to build on the success of the first two phases, and to make the system more sustainable and less reliant on donor inputs. It also had a broader focus on biodiversity monitoring, not just elephants, partially due to the lesson learnt during Phase II that sustainability depends on the management relevance of the monitoring systems. Due to the possibility of reduced financing, the focus had been narrowed to priority activities.

The Acting Coordinator outlined the MIKE 2.0 draft project purpose, results and activities. The project purpose was described as: "Practical, field-based monitoring, analysis and reporting systems are strengthened and institutionalised to inform and drive site and national adaptive management processes as well as regional and international policy-making and action concerning conservation of elephants and other large mammals." The four results were: 1) Management oriented ranger-based biodiversity and threat monitoring systems are adopted and implemented in a growing number of African protected areas and national protected area systems; 2) Capacity for provision of training in field-based biodiversity monitoring, analysis and application is developed in appropriate African training institutions; 3) Protected area and biodiversity monitoring systems are relevant to and integrated with national and regional policies, systems and structures; and 4) Information generated by participating protected areas is effectively analysed and applied to inform and influence international biodiversity conservation mechanisms and policies.

Bob Burn and Fiona Underwood cautioned that, speaking from experience with the ETIS Darwin project, Activity 4.5 (Develop an analytical framework for better understanding the dynamics of the illegal ivory supply chain, in collaboration with ETIS, AfESG, the MIKE/ETIS Technical Advisory Group and the MIKE/ETIS Sub-Group of the CITES Standing Committee, including the generation of lessons learnt for other illegally traded wildlife products) seemed to be very ambitious, with even less funding available than before. There was general agreement that Activity 4.5 could be tightened.

Liz Bennett raised the possibility that MIKE would be asked for analyses of information it was not able to collect, such as for other species. The Acting Coordinator responded that they had been very careful with the wording in the proposal on that point, indicating that MIKE would only be able to provide such analyses if suitable data were supplied to the programme. Simon Hedges referred to the workshop on 'Elephants and the trade in elephant specimens: a review of existing analytical and reporting systems and recommendations for a way forward' when it was agreed that MIKE should be focusing on PIKE and carcasses and raised a

concern about the broadening, rather than the focusing, of MIKE. The Acting Coordinator noted that data on other species were being collected by range States as part of the implementation of MIST promoted by MIKE in Phase II, and that MIKE was only compiling and using a subset of those data to produce analyses based on PIKE. He also reminded the TAG about their concerns about the validation of PIKE and therefore the importance of continuing to collect effort data. It was agreed that the wording of Activity 4.2 (Compile and analyse biodiversity and threats data generated and supplied by participating protected areas) could be tightened by referring only to key species of large mammals.

The SSO for Southern Africa asked about what linkages were envisaged with BIOPAMA, the European Union project on protected area management in which IUCN is a partner. The Acting Coordinator noted that BIOPAMA would likely not include very much work on ranger-based monitoring, although there may be opportunities for linkages on capacity building.

The Acting Coordinator outlined the potential delivery mechanisms for MIKE 2.0, including the need to strengthen the partnership with IUCN, to build on existing MIKE capacity, national and regional engagement with MIKE, and to strengthen collaboration with relevant conservation agencies and supporters. There would be a formal partnership with IUCN in delivering MIKE 2.0 and greater integration of SSUs in IUCN regional offices, including the sharing of technical capacity with other IUCN biodiversity initiatives. A MIKE consortium could be established as a mechanism to engage partners in delivering the MIKE programme and ensuring its long-term sustainability.

The ETIS Director asked for further information on the proposed MIKE consortium and possible overlap with the MIKE-ETIS Subgroup of the Standing Committee. The Acting Coordinator clarified that the consortium would be for the day-to-day management and implementation of the MIKE 2.0 project and was mainly directed towards a better working relationship with the IUCN regional offices. The ETIS Director also asked whether ETIS would be included in MIKE 2.0, noting that it was important that ETIS be recognized as some component of this project, in order to enhance the idea that these are linked and collaborative programmes. The Acting Coordinator clarified that the budgeting had not yet been finalized, but ETIS was included as a part of Result 4.

The Acting Coordinator emphasized that building on lessons learned in Phase II, the priority was to have a bottom-up approach which to meet the needs of the range States first. Finally, the Acting Coordinator clarified that the Phase II would run until the end of 2012, and if the EUR 2 million were granted, the new project would commence in January 2013 and run for 2 years.

The Acting Coordinator then outlined progress towards implementation of MIKE in Asia. The project agreement for MIKE implementation in Southeast Asia was signed with WCS in December 2011, and would run until the end of 2013. The former MIKE Coordinator had visited India in June 2011 to meet with the Asian Nature Conservation Foundation to discuss the re-launching MIKE in South Asia. There were very limited funds available, but the Secretariat would undertake a needs assessment and evaluation in 2012, from which a multi-year programme of work would be developed.

## **7 Membership and Terms of Reference of the TAG ..... TAG11 Doc. 7**

The Acting Coordinator introduced TAG11 Doc. 7, which outlined proposed changes to the membership and terms of reference (TOR) of the TAG and invited comments from the TAG. He reminded the TAG that funding realities may mean that TAG meetings would not happen every year and requested ideas on ways in which the TAG could work in the absence of annual meetings.

Liz Bennett raised some concerns about term limits and turnover, noting that continuity could be lost with too much shuffling of the TAG. She also raised the importance of maintaining cross-institutional links, such as with the IUCN elephant Specialist Groups, as well as retaining irreplaceable expertise, such as that provided by the statisticians. The Acting Coordinator introduced comments sent to the CCU prior to TAG11 by Holly Dublin, in which she expressed concerns about continuity and suggested retaining the IUCN elephant Specialist Group Chairs as permanent TAG members. The coordinator also clarified that statistical expertise had been obtained through consultancy contracts since the beginning of MIKE. Simon Hedges supported Liz Bennett's comments on continuity, and also raised the point that the IUCN elephant Specialist Group Chairs change too, so continuity would not be assured by making Specialist Group Chairs permanent TAG members. Iain Douglas-Hamilton expressed support for turnover in the TAG while maintaining continuity. He also highlighted the importance of maintaining relationships with external institutions and academics. Finally, he asked whether individuals could apply to be members of the TAG. Colin Craig asked whether there was a requirement for TAG members to be involved in both MIKE and ETIS issues. The Coordinator responded that the involvement of TAG members in both MIKE and ETIS issues had been a suggestion of the TAG working group established to review the TAG TOR at TAG10.

On the subject of continuity, the Acting Coordinator stated that turnover would be managed in such a way as to affect no more than half of the TAG members at any one time. The terms would align with CITES COP cycles. For the purposes of the first set of new appointments, at CoP16, it would be assumed that all current TAG members were serving their first term. If the new TOR were adopted by the Standing Committee, then the nominations process would start in advance of COP16, and nominations would be invited allowing individuals to express their interest, and the Secretariat would then appoint new members. Finally, he drew attention to the provision within the TOR that allows the creation of working groups and task forces with the engagement of external institutions and individuals.

There was a short discussion on modalities of engagement, in the context of funding shortages. It was suggested that meetings could be held using Skype, but only for shorter meetings and for working groups. An annual meeting could be spread out over a few weeks, with short sessions using Skype.

**ACTION: MIKE CCU to include the suggestion that Chairs of the IUCN elephant Specialist Groups be retained as permanent co-opted members in the draft TOR for the TAG.**

## Technical matters

### Analytical issues

#### **8 MIKE analysis for the 62<sup>nd</sup> Meeting of the Standing Committee (SC62) ..... TAG11 Doc. 8**

The Acting MIKE Coordinator introduced TAG11 Doc. 8, which described the results of the MIKE analysis for the 62nd meeting of the Standing Committee. The analysis only covered Africa as there were very few carcasses reported from Asia. There were also very few carcasses from West Africa, with only two sites in that subregion reporting any data for 2011. Spatial factors explained more variation in PIKE (59%) than temporal factors (18%), but the amount of temporal variation had more than doubled since the previous analysis. He then presented the continental trends for PIKE, which had been increasing since 2006, with 2011 displaying the highest continental PIKE level on record, and representing a statistically significant increase from 2010. The subregional PIKE trends showed that the increase in PIKE was clearly taking place in all four African subregions. For the first time, PIKE values exceeded 0.5 in all subregions in 2011.

The covariate analysis resulted in much the same list of covariates as the 2010 analysis, with a few exceptions. As in the previous analysis, there was a strong positive relationship between infant mortality (a proxy for poverty) at the site level and PIKE. Larger sites tended to have comparatively lower levels of poaching than smaller sites and there was a strong negative relationship between farming activity (livestock density and crop occurrence) and PIKE. Law enforcement capacity and research and monitoring, two new covariates obtained using standard Protected Area Management Effectiveness assessment methods, were also closely correlated with PIKE. Net primary production had dropped to insignificance. At the national level, governance was again the most important correlate with PIKE. Finally, at the global level, the annual growth in consumer spending in China (as a proxy for demand for ivory) was very strongly associated with PIKE levels. The annual growth in consumer spending in other countries had been tested in the previous analysis, but had not been found to be important. The above covariates, were fitted in a hierarchical model and all remained significant. Finally, the Acting Coordinator reviewed the section of the report that provided estimates of total numbers of elephants killed at MIKE sites, utilizing Ken Burnham's methodology (as outlined in TAG11 Doc. 11). He then invited comments from the TAG.

Colin Craig asked for more information on the results of the analysis with regard to the impact of the one-off sales, as one of the objectives of MIKE was to determine the impact of CITES decisions on illegal killing of elephants. The Acting Coordinator explained that 2005 and 2011 were the only two significant year effects in the data, with 2005 being the bottom of the trend and 2011 as the year where the trend was accelerating. Ken Burnham clarified that there was no discernable evidence of an effect of the one-off sale in the data available. Fiona Underwood and Bob Burn raised the issue that the question needs to be considered in the context of all other drivers. Colin Craig asked if more one-off sales would help. Ken Burnham responded that in order to investigate that, the policy interventions would have to be designed as a quasi-experiment; more sales (at least five) would be needed, as well as more data of different types. The Acting Coordinator also raised the point that the one-off sale represented both a sale and the start of a moratorium, constituting two opposite signals to the market. Therefore, even if there was a causal link and a discernible effect on the PIKE trend, it would be impossible to know whether it was due to the sale, or the moratorium.

There was a discussion about the rhino analogy that had been included in the report. The Acting Coordinator explained that it had been put in as a potentially useful comparative example. The ETIS Director argued that the confluence of factors surrounding the rhino poaching made it a unique situation, and therefore not a useful comparative example. He also thought it distracted from the extremely strong message already being

shown by the MIKE analysis. A number of TAG members agreed that including the rhino example could be a distraction from the elephant issues and it would perhaps not be strategically advisable to include it in the report.

Liz Bennett asked whether there was any analysis of PIKE levels in the 4 countries that sold ivory in 2008. The Acting Coordinator responded that PIKE values were still zero or negligible in two of the sites from those countries (Etosha and Kruger) and remained moderately low in Chobe, but were moderately high in the Zimbabwe sites and the Caprivi (the other Namibian site).

There was some disagreement over the ranges of natural mortality for savanna and forest sites that should be used in the calculations for estimating numbers of illegally killed elephants from PIKE. It was agreed that longer discussion on this item was necessary. A caveat should also be included in the SC62 document that further work on carcass ratios and natural mortality is required.

A number of comments were made on the conclusions in particular, and a working group was established to review those and report back on the second day of the meeting. The working group was composed of Iain Douglas-Hamilton, Raman Sukumar, Liz Bennett, Li Zhang, Tom Milliken, Simon Hedges and Fiona Underwood. This group also discussed parameters of natural mortality to include in the calculation of numbers of elephants killed.

Written comments were provided to the Acting Coordinator, but the main points are raised below.

- It was proposed that the name of the axis on the graphs be renamed from 'predicted PIKE' to 'estimated PIKE' to ensure that causal links are not being communicated inadvertently.
- It was recommended that, percentages of elephants illegally killed should be reported instead of absolute numbers, given the considerable uncertainty surrounding elephant population estimates.
- The MIKE CCU would consult Iain Douglas-Hamilton, Raman Sukumar, Ken Burnham and Colin Craig by email to determine natural mortality parameters to include in the SC62 document.
- It was suggested that the language around the mixed signals (i.e. one-off sale coinciding with the start of the moratorium) should be slightly reworded but should remain in the document.
- It was felt that some of the conclusions could be reworded for a clearer statement of what could be inferred from the results of the analysis.

**ACTION: MIKE CCU to consider the incorporation of TAG's suggested edits in the final version of the MIKE report to SC62.**

**ACTION: Iain Douglas-Hamilton, Raman Sukumar, Ken Burnham, Colin Craig and the Acting Coordinator to work by email to determine natural mortality parameters to include in the SC62 document.**

## **9 Joint reporting by ETIS, CITES MIKE, IUCN and UNEP-WCMC for SC62..... TAG11 Doc. 9**

The Acting Coordinator introduced TAG11 Doc. 9 and requested the Programme Officer of the AfESG, Simon Hedges (as Co-chair of the Asian Elephant Specialist Group) and the ETIS Director to provide an overview of their sections of the joint document to the 62<sup>nd</sup> meeting of the CITES Standing Committee.

The AfESG Programme Officer summarized the content of the section on African elephant status, threats and conservation actions, including an outline of the list of survey reports collected by the AfESG and the CITES MIKE programme, recent published research, and a summary of responses to a questionnaire sent to the AfESG network to gather information on levels and dynamics of poaching. Analysis of the survey data was underway following the recruitment of a Database Officer in March 2012. Results from the questionnaire were in alignment with the results from MIKE and ETIS, but a point of concern was the high proportion of respondents who had asked to remain anonymous, presumably for fear of repercussions. The African elephant section also included updates on threats as well as conservation strategies and action plans.

Simon Hedges summarized the content of the Asian elephant section of the report. He highlighted that Sumatran elephants were listed on the IUCN Red List as Critically Endangered at the end of 2011. A number of new population surveys had been conducted, some of which were in MIKE sites, and a number of them representing second data points for those MIKE sites. He also reviewed the threats as well as conservation strategies and action plans completed and underway.



The ETIS Director summarized the content of the ETIS section, which concentrated on large-scale ivory seizures. The large number of ivory consignments leaving the African continent through either Kenyan or Tanzanian seaports was of major concern. This represented a major shift from West and Central Africa. China and Thailand were again identified as the primary destinations for the majority of large-scale ivory seizures. He also referred to the recent investigative work in China that indicated the erosion of enforcement of internal ivory trade controls, providing an avenue for illegal ivory to leak into legal channels. Further information would be provided during the ETIS TAG.

Li Zhang indicated that TRAFFIC China has done some work on domestic markets. The ETIS Director added that there were some sets of time series data for markets in cities in China. A lot of products were being sold without cards, indicating a breakdown of the internal ivory trade control systems.

The MIKE SSO for Eastern Africa asked for further information about the shift in the trade dynamic from West to East Africa. The ETIS Director responded that there appeared to be major issues with the sectors outside the wildlife sector, such as customs and police.

Iain Douglas-Hamilton asked whether there was any effective follow-up on seizures. The ETIS Director responded that ETIS does try to gather that information. One of the key findings was that in most of these large-scale ivory seizures, there was no evidence of successful law enforcement actions, and in most cases investigations were not completed. Additionally, information was rarely shared with the country of export or origin, and most importantly, arrests were not made, nor were deterrent penalties imposed.

#### Research issues

### **10 Validation of PIKE-based inference..... TAG11 Doc. 10**

The Acting Coordinator introduced TAG11 Doc. 10, which outlined work towards validating PIKE-based inference as requested at TAG10. A working group composed of Ken Burnham, Bob Burn, Simon Hedges, Raman Sukumar and the MIKE CCU had been created to consider and refine the list of PIKE questions presented at TAG10. The MIKE CCU had prepared a document expanding on the list of questions and had circulated it to the working group for comment. Following the revision of the document, incorporating comments from Ken Burnham, Hugo Jachmann was issued a contract by MIKE to conduct a pilot study to validate PIKE-based inference.

Hugo Jachmann then gave a presentation on his work to date. Using a small sample of sites, he looked at the reliability of the within-site sample used to compute PIKE, with a specific focus on data quality and ways to improve on it and an investigation into the relationship between cause of death and detection probability. He noted that due to the time constraints, it was not expected that the pilot study would lead to conclusive results on PIKE's reliability. For the pilot, sites needed to be small and well managed, with a road network and with elephants distributed evenly across the site. Sites also needed to have relatively good patrol coverage, be utilising MIST and cover a range of different habitat types Working with the MIKE SSOs, four sites were chosen: Kakum Conservation Area and Mole National Park in Ghana; and Queen Elizabeth National Park and Murchison Falls National Park in Uganda.

Dr Jachmann interviewed management and patrol staff on patrol strategy, intelligence, availability and use of GPSs, duplicate patrol routes, detection of carcasses, frequency of camp visits, etc. He scrutinized carcass and patrol sheets, inspected MIST and proportion of the patrols entered, extracted information from MIST and gathered data on rainfall and burning. He determined a methodology for estimating the mean maximum strip width for detecting carcasses on patrol. The results were: Kakum Conservation Area – 35 m; Mole National Park – 74 m; Queen Elizabeth National Park – 229 m; and Murchison Falls National Park – 258 m. Results for 2011 indicate that detection probability in Kakum, Mole and Queen Elizabeth was 1.0. He also discussed the different modes of detection at the different sites.

The results of the study indicated that, provided inaccuracies are kept at a minimum, for relatively small sites that are well managed and with good patrol coverage, PIKE is a sound measure to monitor trends in elephant poaching. However, the results may not apply equally well to large, poorly managed sites.

He made a number of recommendations, including: a) removing obstacles that may prevent a site from entering all patrol data in MIST, such as GPS and batteries; removable storage and frequent backups; brief manuals for repairing MIST; and guidelines/protocols for data submission; b) improving data quality, particularly for aggregated PIKE data using strict protocols; c) increasing frequency of field visits by MIKE staff; and d) improving data flow and administration.

The consultant closed by noting that the TAG needed to make a recommendation on whether to refine the method presented for estimating strip width or to adopt another. He noted that although it would be very expensive to do so, certain things would need to be done if the TAG were to recommend expanding on the method proposed. A larger sample of sites would be needed, to include poorly managed sites as well as more forest sites. Studies would need to be conducted in both dry and wet seasons to refine strip width. He also pointed out that it would be useful to model the effect of carcass age on strip width as well as to study the extent of duplicate patrol routes and collect additional information on mode of detection.

The Acting Coordinator thanked the consultant and noted that one of the criteria in selecting the sites was that both Ghana and Uganda had adopted MIST themselves. The consultant had raised the issue of discrepancies between the PIKE calculated from carcass forms and the aggregated carcass data reported to and held by the MIKE CCU over a few years. The Acting MIKE Coordinator noted that these discrepancies were identified and raised to the MIKE CCU, and a decision was made to keep the baseline data as originally reported to CITES. However, the Acting Coordinator noted that he was open to reviewing that decision.

Iain Douglas-Hamilton asked whether detection by aircraft was found to be common. The consultant replied that this was the method in one or two cases in the Uganda sites and in none in the Ghana sites. Simon Hedges asked whether detection probability varied with legal against illegal killing. He consultant responded that the sample size was too small to evaluate this.

Simon Hedges also raised the issue that ranger-based patrols rarely cover the protected area randomly or systematically, rather following particular fixed patrol routes. The consultant responded that in the 4 sites selected, this was not an issue because of the high intensity of patrol coverage, but would be a major source of spatial bias in places that are less well patrolled. Ken Burnham asked whether the consultant thought that carcasses found using prior information would have been found by routine patrolling. The consultant responded that in these 4 sites, with the high level of patrol coverage, he thought that they would have been found.

Iain Douglas-Hamilton asked how seasonal variability was incorporated. The consultant responded that they used burned and unburned areas as a proxy, but that it would definitely be better to repeat the work during the wet season. Iain Douglas-Hamilton challenged the idea that there was 100 % detection probability even in small, well-patrolled sites.

**ACTION: The working group (Ken Burnham, Bob Burn, Simon Hedges, Raman Sukumar and the MIKE CCU) will review the report, provide comments to the consultant, and decide on the next steps.**

The Acting Coordinator invited Bob Burn to give a brief presentation on the relationship between PIKE and carcass ratios, which was one of the action points from TAG10. Bob Burn had attempted to determine whether there was any statistical evidence of an association between PIKE and carcass ratios. There was only a very small data set, with 30 carcass ratio values available from 16 sites unevenly spread across years 2002 - 2009. The PIKE values used for the analysis were estimated by the model fitted in the TAG10 analysis. The relationship, if it at all existed, varied between sites. Therefore, he had used a hierarchical model with site as a grouping variable. Even then, it was difficult to say whether there was a general relationship, although there could be a site-specific relationship.

Iain Douglas-Hamilton warned that carcass ratios needed to be corrected in total counts. Colin Craig responded that if the search rate standards were met, the carcasses would be seen in total counts. Changes in the poaching situation were more likely to be readily detectable from changes in carcass ratios than from changes in elephant population estimates. The general problem was that aerial surveys were generally infrequent, and that carcass ratio data were not being collected uniformly. Carcass ratios could be used as a measure of illegal killing, and using the right assumptions, it should be possible to work out a measure analogous to PIKE based on carcass ratios. The Acting Coordinator noted that this might be useful at the site or national level, but not for the global analysis, given that there is no equivalent measure to the carcass ratio for forest habitats. The Acting Coordinator suggested that it might be useful for the AfESG to enter old carcass information into the AAED. The AfESG Programme Officer agreed to take note of that need, but noted that there were currently more urgent priorities for the AAED..

## **11 Estimating numbers of illegally killed elephants from PIKE ..... TAG11 Doc. 11**

The Acting Coordinator introduced TAG11 Doc. 11, which outlined Ken Burnham's methodology for estimating numbers of illegally killed elephants from PIKE and George Wittemyer's modifications to assist with dealing with carcasses for which the cause of death is unknown. The Acting Coordinator also noted that

a collaboration was ongoing with Dr. Fred de Boer of Wageningen University to develop a model of elephant population dynamics. Ken Burnham outlined the methodology and the Acting Coordinator invited comments.

Dr Wittemyer had suggested a Bayesian modelling approach to deal with the unknowns, but it was pointed out that the proportions of unknowns were low and decreasing and they were not perceived to be a significant problem.

There was also a discussion about whether to include Dr Burnham's method and its results in the document to the 62<sup>nd</sup> meeting of the Standing Committee (see TAG11 Doc. 8 and TAG11 Doc. 9). It was agreed that it should be included, but utilizing a percentage, rather than actual numbers. There was also further discussion of natural mortality rates and the impact of PIKE on natural mortality. These discussions are captured in the discussion of TAG11 Doc. 8.

## **12 Collaboration with the IUCN/SSC AfESG and AsESG.....No document**

The Acting Coordinator invited the Programme Officer of the AfESG and the co-Chair of the AsESG to update the TAG on collaboration with MIKE.

The Programme Officer of the AfESG provided an update on the African and Asian Elephant Database (AAED), which was now available at <http://elephantdatabase.org>. The AfESG had secured funding to hire a Database Officer, Peter Mwangi, who had started in March 2012. His focus was on entering the backlog of African elephant data, much of which was now available online. Analysis was starting, with a focus on MIKE sites.

She also updated the TAG on the other key areas of collaboration. The elephant meat study had been published and copies were available for TAG members. Pachyderm 50 had been published, with a special commemorative issue. MIKE and ETIS updates continued to be regularly included in Pachyderm. The AfESG continued to provide support to the African elephant meetings and the present TAG meeting.

Simon Hedges noted that work was continuing on the Asian component of the AAED. The range data was available online, and work was ongoing to finalize the analytical framework for Asian data in the AAED.

### Processes and operational issues

## **13 Revision of the MIKE elephant aerial survey standards..... TAG11 Doc. 13**

The Acting Coordinator introduced TAG11 Doc. 13, which outlined progress towards revising the MIKE aerial survey standards. The MIKE CCU had contracted the AfESG to organize a workshop to review the standards, and this had been held in March 2012. Debbie Gibson and Colin Craig were contracted to make the necessary amendments to the standards following recommendations from that workshop. The Acting Coordinator invited Colin Craig to review the changes and to alert the TAG to any areas requiring further discussion.

It was noted that the survey standards were not designed to be a manual, and that a number of manuals already existed. Regarding total counts, Iain Douglas-Hamilton noted that there were ways to reduce the problems associated with total counts, referring specifically to experiments conducted in 1994 that determined the bias issues around total counts.

**ACTION: Iain Douglas-Hamilton to provide language on total counts to Colin Craig for incorporation into the aerial survey standards.**

Regarding sampling intensity, Colin Craig noted that the survey standards were designed to detect a 30% decline with a probability of 90%, which is equivalent to a Percentage Relative Precision (PRP) of 25%. He felt that it would be best to include in the standards both the power to detect change and the required PRP, which are equivalent.

Colin Craig informed the TAG that an explanatory note had been added to explain the importance of reporting family groups and bulls separately in survey reports. The TAG agreed with this logic, and it was recommended that an additional explanatory note should be added to explain the importance of collecting information on and reporting of carcass ratios.

**ACTION: Colin Craig to add explanatory note on the importance of collecting and reporting carcass ratios.**

There was some discussion around the impact of using different aircraft types in aerial surveys. Colin Craig asked whether the TAG considered it important to include a note on the need for research on this topic in the standards. The TAG did not feel that such calls for research would belong in the standards. Regarding cameras, Howard Frederick noted that using a suction mount allows observers to use cameras with very little training or experience. Iain Douglas-Hamilton noted that whenever methodologies are changed they should be done in parallel before making the shift permanently.

Regarding height, Colin Craig noted that he would prefer to keep the standard at 300ft and no higher. There was general agreement on this. A question was raised about how the height impacts the counting of carcasses.

**ACTION: Colin Craig to maintain the standard for height at 300ft, with the caveat that where a long time series is not at 300ft, it is better to maintain the time series.**

There was some discussion of the use of tape recorders, with a number of TAG members noting that it was not necessary at most elephant densities, while recognizing it could be important for other species. It was agreed that research was needed to determine the elephant densities at which the tape recorders would become useful.

Regarding data validation, Colin Craig agreed that certain things had been omitted from the standards, including search rates, comparison of inter-observer differences, and ground speed. Surveyors could be encouraged to submit full metadata sets to allow audit and external data validation.

Regarding section 4.4 of the standards (speed), it was agreed that this should refer to 'ground speed'.

**ACTION: Colin Craig to revise section 4.4 of the standards to refer to 'ground speed' rather than 'speed'.**

Following this discussion, Colin Craig felt that the changes could now be made and the standards finalized. It was suggested that a short article could be prepared for Pachyderm that explained the changes to the standards, and also to draw attention to the various manuals available.

**ACTION: Colin Craig to make the agreed changes to the standards and finalize these for submission to the MIKE CCU.**

The Acting Coordinator then reminded the TAG that Ken Burnham had done some preliminary work on the optimal allocation of survey effort. He asked Ken and Colin to discuss this as a mini working group and report back to the TAG on the second day of the meeting. Colin Craig clarified that the challenge was to allocate sampling among strata to get the best precision. What was originally included in the standards was from work conducted in Alaska and rested on an assumption that turned out not to be true for elephants. Using a weight for each stratum to divide up total available sampling time, it was possible to calculate how much effort needed to be devoted to each stratum. Ken Burnham noted that the key part of this was to use the variance:mean ratio as the weight. This could be plugged into the effort allocation formula, including the area of the stratum and the density of objects based on any prior information available.

**ACTION: Colin Craig to make the necessary amendments regarding optimal allocation of survey effort to Appendix I of the survey standards.**

#### **14 Software tools for data capture and management ..... TAG11 Doc. 14**

The Acting Coordinator introduced TAG11 Doc. 14, which outlined progress on developing software tools for data capture and management. He introduced, SMART (Spatial Monitoring and Reporting Tool) a new system which was being developed by a consortium of NGOs with partial support from MIKE. SMART 1.0 was scheduled to be delivered at the end of 2012. At the same time, MIST had been re-written and a new version released under an open source license. MIKE would conduct an evaluation of both systems when available and would make recommendations to the range States for adoption. Either way, the range States would need to migrate to either the new MIST or SMART, as the previous version of MIST was being discontinued. SMART would allow easy importing of data from MIST, Cybertracker and other systems, and training materials were being developed as part of the SMART project. He then invited comments from the TAG.

Ken Burnham noted that while MIST was a good stepping stone, SMART seemed to be the future for data management and reporting. Colin Craig asked about the integration with MOMS. The Acting Coordinator clarified that part of the next phase of MIKE was to develop a simple integration between SMART and the

paper-based MOMS. The SSO for Southern Africa asked about systems that do not use GPS. The Acting Coordinator clarified that it should be possible to use map grid systems with SMART. The SSO for Eastern Africa asked whether MIKE was in a position to influence the compatibility between MIST and SMART. The Acting Coordinator clarified that this was indeed the case, and it was a priority for MIKE.

Iain Douglas-Hamilton cautioned that some MIKE sites were very complex, including both official protected areas and non-protected areas. While KWS uses a radio message observation system, conservancies in northern Kenya use an adaptation of MOMS. The Acting Coordinator clarified that MIKE Phase II had not been trying to impose any system on wildlife authorities, and would not do so in the future. MIKE had offered MIST, but if countries had a preferred system they were free to use it as long as data standards for MIKE carcass data were met. The goal of any system, whether MIST, MOMS, or SMART, was to assist with site management, and to produce MIKE data as a by-product. Regarding Kenya, he clarified that KWS had in fact adopted MIST and had recently launched it as its official system.

Moses Kofi Sam raised the worry of announcing SMART before it was available. The Acting Coordinator agreed, but noted that it was important to be transparent with the range States and prepare them for the change, which would be inevitable with due to the discontinuation of the current version of MIST.

### **15 Options for building analytical capacity at MIKE sites ..... TAG11 Doc. 15**

The Acting Coordinator introduced TAG11 Doc. 15, which described work towards determining analytical capacity needs at MIKE sites. He noted that this was one of the activities contemplated in the MIKE Phase II project, but given that MIKE Phase II saw the transition from the MIKE database to MIST, it had been felt appropriate to wait until a number of sites were fully up and running with MIST before initiating this work. Howard Frederick had been hired to undertake the analysis.

Mr Frederick presented his work on analytical capacity needs at MIKE sites. He had used the 2009 survey of MIKE implementation developed by the CCU as a starting point. The results of that survey had indicated that, while paper forms were generally being completed, data were not being entered into the MIKE database. . The adequacy of the site budget was the number one factor influencing whether or not data was entered into the computer. The antiquity of the site officer (how long the site officer had been on site) also influenced whether or not data entry was occurring. If the site had no budget, then very little was happening. If there was a small budget, then training and experience of the officers was important in terms of data entry occurring and the quality of that data entry.

Mr Frederick visited a number of sites (South Luangwa, Magoe, Queen Elizabeth National Park, Waza, and Virunga) to see how data were being handled and to observe what kinds of analyses were being done. There are a variety of situations at different sites, in particular in data storage capabilities. A change was noted from the narrative style of reporting patrols to more systematic ways of recording data in forms. The importance of commitment from management was illustrated in the following quote from an officer: "if the warden isn't interested in data, little will happen to collect it and it won't be used." Data collection and reporting with MIST was found to fit directly into the reporting needs of sites and wardens because wardens were now being asked to provide tables and maps, and MIST helped them to do that. Additionally, the availability of good spatial data let wardens design patrol routes and intensity more efficiently.

In order to obtain an updated picture of site analytical capacity needs, Mr Frederick adapted the 2009 survey on MIKE implementation and sent it out to respondents, with results still coming in at the time. In 2012, almost 80% of the sites were using MIST, since MIKE began promoting it in 2009. As a result, data entry was happening much more regularly. Data flow to the SSO was also taking place more regularly and not only when SSO visited sites, as had been the case in the past. The MIST database system was a clear asset to work in the field. In some places, where budget was still limited, it would take longer to have smooth data entry, analysis and reporting. There were a lot of young officers with computer experience who were excited about the possibilities offered by these systems. Mr Frederick made the following observations: backups were still rare; data were being entered regularly if not immediately; data from GPS units were only occasionally downloaded; there was little data validation at the country level; and data from remote observation posts only made it slowly to park headquarters. Site officers seemed to be on site longer, but there was still considerable turnover in national officers – they moved to other jobs more frequently and were more difficult to contact. This pattern was the reverse of what had been found in the 2009 survey.

Field, data were being collected and there was primary validation of metadata and correct usage of codes. There was only some secondary validation (initial analyses to detect outliers, particularly in spatial data). Reporting of PIKE, descriptive statistics and coverage maps was only just starting to happen, with many officers experimenting and keen to gain skills and knowledge on this front. Advanced analysis (trends, spatial

variation, comparisons) were not happening at all yet. Few officers had yet acquired the skills to customise or administer the system.

In the next phase of MIKE, it would be useful to provide more training and instruction manuals and guides, in parallel with the steps outlined above. Patrol data guides are in existence, and in use. Data entry and validation guides were available. Secondary validation and reporting were less well covered, and a 'cookbook' or 'how-to' guide was considered necessary. Advanced analysis was not happening at the site, and any guide should be separate from the reporting cookbook above. Data officers were taking data into other programmes and tools for analysis, such as QGIS, Excel, and ArcGIS, and so it was felt that guidance on these tools was also needed. There was also a need for customisation and administration manual. A few things were missing from the basic analyses currently being conducted: confidence intervals; catch per unit effort; patrol coverage; and PIKE. Additionally, secondary validation was very important and needed to be enhanced.

Mr Frederick also visited wildlife colleges (Mweka in Tanzania, Garoua in Cameroon and Nyamaluma in Zambia) to assess their capacities, their curricula and student profiles. The results of these visits indicated that working with the colleges may not be as valuable as had been anticipated. Garoua and Mweka had a reduced number of foreign students. Site officers were usually university graduates and not graduates of the wildlife colleges.

Mr Frederick then invited questions and comments from the TAG. The SSO for Central Africa noted that it was not a question of what was currently missing from the basic analyses, but rather of what was next in terms of capacity building on analyses. The consultant agreed with this comment.

Tom Milliken noted that the work showed such positive progress, and yet was coming at a time when the MIKE budget was about to be seriously reduced. Mr Frederick agreed that MIKE had succeeded in creating momentum but, more importantly, the demand now clearly existed from the wardens and central offices. Combined with the fact that the computer literacy had been increasing, it was possible that producing and distributing step-wise manuals could have an impact now that would not have been possible 10 years before.

Moses Kofi Sam asked how to improve the work of the National Officers. Mr Frederick responded that the basic and advanced analyses should be understood by the National Officers. The Acting Coordinator noted that to date, MIST was being rolled out with an emphasis on the site level. However, with 16 range States interested in or already in the process of implementing MIST across the national protected area networks, there would be more demand for National Officers to interact more closely with the system and the data. The main problem currently was that most National Officers were mid-level to senior managers and were not necessarily involved in dealing with data at all.

Iain Douglas-Hamilton asked about the role of NGOs. Howard responded that information on NGO involvement was being collected, and those data would be analysed upon completion of the survey. It was clear, however, that the more advanced analyses were occurring where there was NGO involvement. The Acting Coordinator agreed that there was a need for greater collaboration with NGOs wherever they were present. Simon Hedges noted that Tony Lynam was working on producing manuals under contract from MIKE, and that it would be important for Tony Lynam and Mr Frederick to link their work.

Liz Bennett congratulated Mr Frederick and the MIKE team on the work. She suggested that a key question would be how far the system was from being self-sustaining and how much senior technical oversight would still be needed. Mr Frederick referred the question to the SSOs. Edison Nuwamanya said that for new entrants, it was too early for the system to be sustainable. It had taken Uganda 8-10 years for MIST to become sustainable. The first 3 years there were challenges of resistance to change and, only once that hurdle was overcome, could the focus move to implementation and enhancing analytical ability.

On the subject of finding sustainable partners to impart training on data management systems, the Acting Coordinator mentioned that the staff of many wildlife authorities in Africa go through military training, and that perhaps it would be worth exploring embedding training on data collection, management and analysis as part of that training. Mr Frederick agreed that operational training for most countries did seem to be paramilitary and this was definitely something to explore.

**16 Operation of MIKE in African and Asian subregions .....No document**

Due to time constraints, the Acting Coordinator asked the SSOs to update the TAG on issues that required TAG attention, i.e. specific questions that the SSO needed the TAG to help answer.

The SSO for Central Africa updated the TAG on the large mammal survey in Boumba Bek National Park, which was being undertaken using the MIKE dung survey standards. A training course for dung decay studies and protocol for line transects had been carried out in November - December 2011. Dung decay studies for the site had been started in December 2011. Four rainfall stations had also been mounted in December 2011, but all four locations were at least 10km from the park boundaries. The survey plan for Boumba Bek consisted of a total of 106 1-km long transects. The park had been stratified into three strata using dung encounter information derived from the data from the two last large mammal surveys in 2004 (MIKE) and 2008 (WWF). The high encounter rate area had 72 km of transects, covering an area of 1,015 km<sup>2</sup>, the medium encounter rate area had 34 km of transects covering an area of 1,062 km<sup>2</sup> and the zero encounter rate area had no transects and covered 284 km<sup>2</sup>.

The question for the TAG was regarding the overlap of the dung decay study with the timing of the transect walks. Simon Hedges clarified that the dung standards rely on the anticipation that about 90% of the dung piles would have disappeared by the mid-point of the transect walks. If dung piles in the decay experiment had been classified using the 'S system' categories, then analysis was possible based on the dung piles that did decay fully, although that would have the effect of reducing sample size.

Colin Craig said that it would be good to see the results calculated with and without the dung study. The Acting Coordinator clarified that this was one of the objectives of the survey, and that rainfall data had been collected to develop a model based on the Barnes rainfall method. Thus both the analyses would be done.

**ACTION: Sebastien Luhunu to circulate the data and the analyses to the Rainfall working group (Julian Blanc, Simon Hedges, Martha Bechem, Moses Kofi Sam, Li Zhang)**

The SSO for West Africa updated the TAG on progress towards conducting a survey of the WAPOK ecosystem. He showed a map of the proposed area and indicated one stratum where only 5% of the population was seen during the last survey. Due to financial constraints, he hoped to drop this stratum from the survey, and wanted to know whether the TAG would advise this. Colin Craig advised that it should not be dropped because even 5% of the population makes a difference and the recommendation is always to do a survey comparable to the previous one. Colin Craig recommended that, given the funding constraints, a block count should be conducted instead of a total count.

#### Conclusion of the meeting

**17 Any Other Business .....No document**

The Acting Coordinator thanked all TAG members and other participants for their work at the meeting. The Acting Coordinator was thanked for running an extremely enjoyable and productive TAG meeting.

**18 Determination of the time and venue of the next TAG meeting.....No document**

The Acting Coordinator noted that, with the funding uncertainties, it was not known when the next TAG meeting would be, although once scheduled, it would likely be in Nairobi. Alternatively, it was possible that future meetings would be held via video conferencing as had been discussed at the meeting.