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

Eighteenth meeting of the Conference of the Parties
Colombo (Sri Lanka), 23 May – 3 June 20

Species specific matters

Elephants (Elephantidae)

Report on Monitoring the Illegal Killing of Elephants (MIKE)

ADDENDUM TO THE REPORT ON MONITORING THE ILLEGAL KILLING OF ELEPHANTS (MIKE)

1. This document has been prepared by the Secretariat based on new information it received since the submission of document CoP18 Doc. 69.2. Specifically, this addendum provides an update on levels of illegal killing of elephants in Africa that includes an additional 1,235 records of elephant carcasses encountered in the course of 2018 at 42 MIKE sites in Africa.

2. MIKE evaluates relative poaching levels based on the Proportion of Illegally Killed Elephants (PIKE), which is calculated as the number of illegally killed elephants found, divided by the total number of elephant carcasses encountered by patrols or other means, aggregated by year for each site. While PIKE provides a robust measure of broad-scale poaching trends, it may be affected by a number of potential biases related to data quality, variation in carcass detection probabilities, variation in natural mortality rates and other factors.

Levels of, and trends in, illegal killing of elephants in Africa

3. Fifty-three MIKE sites reported during 2018 to the MIKE Central Coordination Unit. All the MIKE sites in Eastern and Southern Africa submitted reports, while 12 sites in Central Africa and 15 sites in West Africa submitted reports. Of the sites that reported, three sites in Central Africa, and seven in West Africa reported zero carcasses found in 2018. Compared to 2017, 439 fewer elephant carcass records were submitted in 2018 [see Figure 1. B)]. In 2017, the total carcass records received were 1,674 (an additional 72 carcass records for 2017 were received from MIKE sites) and 701 of the 1,674 carcasses reported were recorded as illegally killed. In 2018, the total carcass records received were 1,235, of which 520 were recorded as illegally killed.

4. The full dataset that is used for the trend analysis now consists of 19,139 records of elephant carcasses found between 2003 and the end of 2018 at 53 MIKE sites in 28 range States in Africa, representing a total of 634 site-years. The PIKE trend analysis is calculated using estimated marginal means of a linear model weighted by the total number of carcasses. More details relating to the methodology used is contained in the MIKE report to CITES CoP18 (CoP18 Doc. 69.2).

5. Figure 1. A) shows empirically-derived time trends in PIKE at the continental level for reporting MIKE sites in Africa, with 90% confidence intervals. The continental PIKE estimate in Figure 1. A) shows a steady increase in levels of illegal killing of elephants, starting in 2006 and peaking in 2011, and followed by a steady downward trend. The continental PIKE estimate remains essentially unchanged between 2017 and 2018.

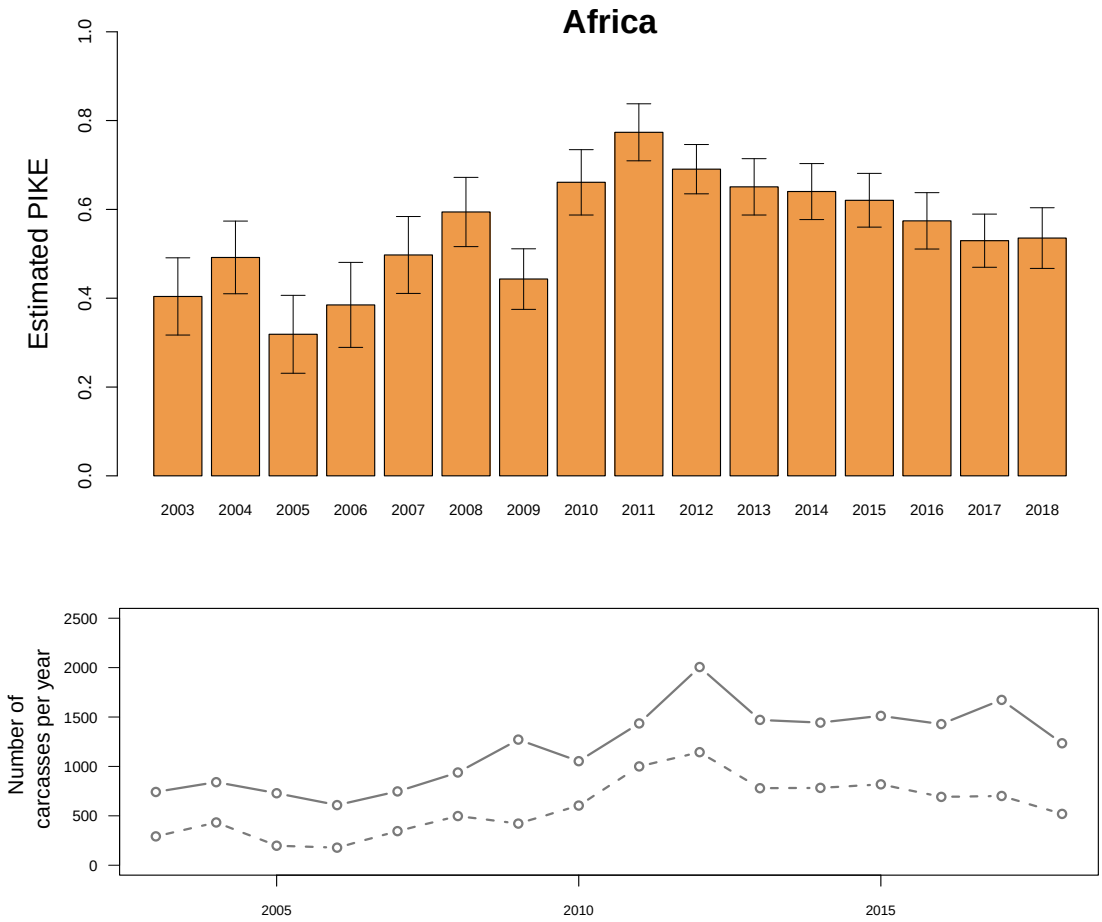

Figure 1. A) PIKE trend in Africa with 90% confidence intervals, based on 19,139 *reports of elephant carcasses (illegally killed or otherwise) reported for the period 2003-2018. B) The total number of carcasses reported by year, irrespective of cause of death (solid line); and total number of carcasses of elephants illegally killed reported by year (dash line).*

6. Sites with the highest PIKE across MIKE sites in Africa are: Nouabalé-Ndoki National Park (Congo), that reported 56 illegally killed elephants from a total of 59 carcasses, giving a PIKE of 0.95; and Niassa Game Reserve (Mozambique), that reported 17 illegally killed elephants from a total of 23 carcasses, giving a PIKE of 0.74. It should be noted that the total number of carcasses reported by Niassa Game Reserve was substantially down from the 129 carcasses reported in 2017.

7. Ten MIKE sites reported a PIKE equal to one (i.e. all carcasses found were illegally killed), and eight sites reported a PIKE of zero (i.e. no carcasses found were illegally killed), while the remaining sites (57%) fell between these extreme values of PIKE. It is challenging to make inferences about the sites with PIKE equal to zero or one, because often these have small populations of elephants and therefore PIKE estimates are subject to potentially random variation from year to year. As part of the review of the MIKE analytical methodology referred to in the MIKE report to the 18th meeting of the Conference of the Parties (CoP18 Doc. 69.2), the CITES Secretariat will explore other statistical approaches which are able to deal more effectively with datasets of this type.

Subregional trends

8. PIKE estimates at the subregional level are shown in Figure 2. The subregional PIKE estimate for **Eastern Africa** increased from 0.23 in 2017 to 0.32 in 2018, although the 2018 value is still within the bounds of error for 2017 and is very similar to the 2016 figure (Figure 2.A). The dip in PIKE in 2017 is attributed to the 2016 (November) – 2017 drought in Kenya, which impacted Tsavo Conservation Area and Samburu-Laikipia MIKE sites, as reported in document SC70 Doc. 49.1, Annex. Depending on the severity, drought can increase the number of deaths due to natural causes, thereby reducing PIKE despite there being no change in underlying poaching rates. The current MIKE dataset allows for comparison between the number of natural deaths found during the 2016 (November) – 2017 drought, and the number after the drought in 2018. For Samburu-Laikipia MIKE (Kenya), this shows that deaths due to natural causes amounted to 169 during the drought, and 109 after the drought. A similar pattern is found in Tsavo Conservation Area where the number of deaths due to natural causes was 308 during the drought, and 117 thereafter. Changes in environmental conditions

and other factors may therefore have contributed to the observed changes in trend to the subregional PIKE estimate for Eastern Africa over the last two years.

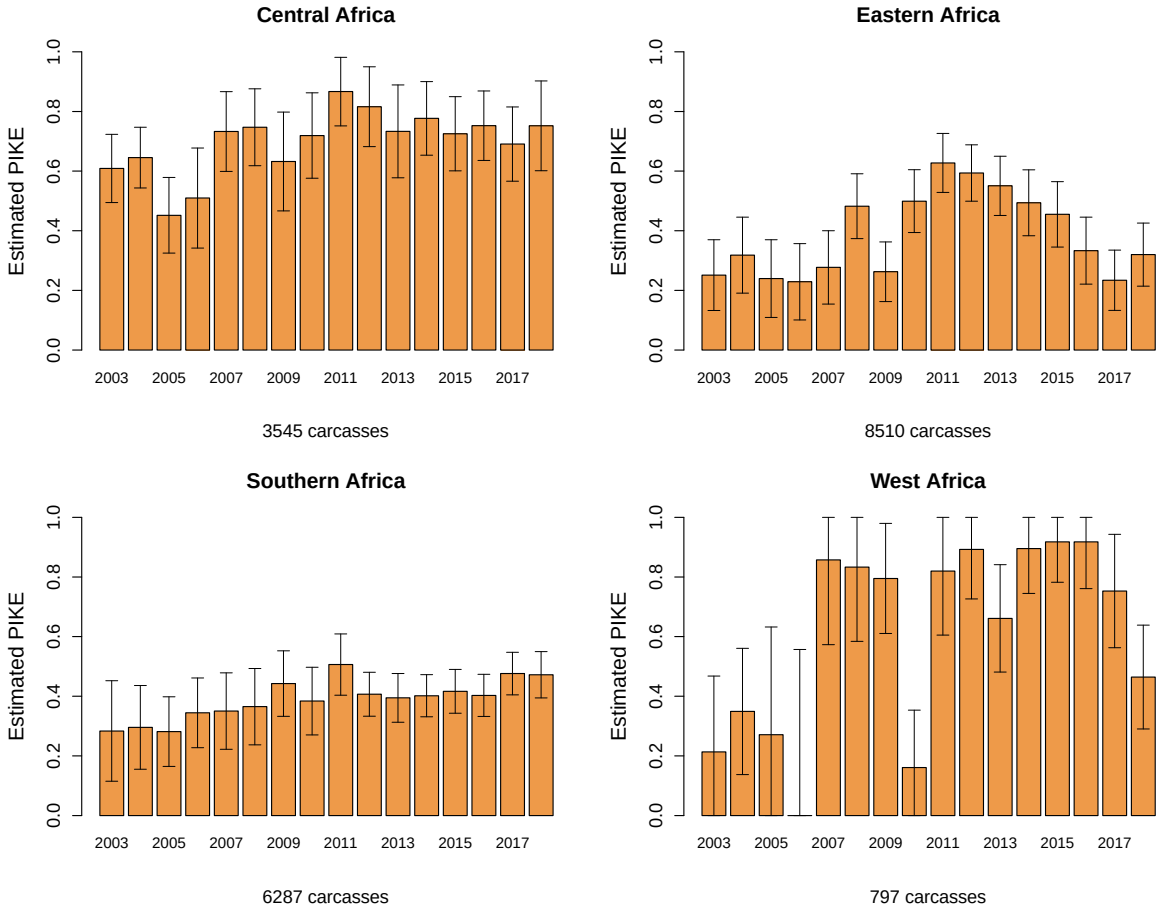

Figure 2. Subregional PIKE trends with annual 90 % confidence intervals (A – D). The total numbers of carcasses on which the graphs are based are shown at the bottom of each graph.

9. PIKE estimates for the **Southern Africa** subregion are shown in Figure 2.C. PIKE increased from 2016 to 2017, and has remained relatively unchanged in 2018. As reported in document SC70 Doc. 49.1, Annex, the increase in PIKE from 2016 to 2017 was largely due to a rise in site-level PIKE values at several sites in the region, such as Chobe National Park (Botswana), Kruger National Park (South Africa), South Luangwa National Park (Zambia), and Niassa Game Reserve (Mozambique). The PIKE estimate for the subregion in 2018 remains unchanged due to the high PIKE values in Niassa Game Reserve (Mozambique) and South Luangwa National Park (Zambia). Conversely, Etosha National Park (Namibia) reported 20 carcasses in 2018, none of which were illegally killed.

10. The subregional PIKE estimate in **Central Africa** remains concerningly high, with an average PIKE estimate of 0.73 over the last three years (Figure 2.A). The MIKE site in the subregion with a particularly high level of PIKE and more than 20 carcasses reported in 2018 is Nouabalé-Ndoki National Park (Congo), with a PIKE of 0.95, while Minkébé National Park (Gabon) and Virunga National Park (Democratic Republic of the Congo) reported 16 and 12 illegally killed carcasses respectively, and no natural mortality carcasses. By contrast, two sites reported 20 or more carcasses per year in both 2017 and 2018 and had a reduced PIKE in 2018: Lopé National Park (Gabon) from 0.20 to 0.11 and Garamba National Park (Democratic Republic of the Congo) from 0.72 to 0.30.

11. The subregional PIKE estimate for **West Africa** decreased from 0.75 in 2017 to 0.46 in 2018, although the 2017 and 2018 confidence intervals still overlap. About 70% of all the carcasses in the subregion (58 carcasses reported in subregion) were reported from Pendjari National Park and Biosphere Reserve (Benin) in 2018, compared to 29% of the 40 carcasses reported in the subregion in 2017. This high contribution to the total number of carcasses from a single site, and the PIKE level of 0.25 for the site in 2018, may be responsible for the subregional trend, given that the PIKE for this site reduced from 0.42 in 2017 to 0.25 in 2018. However, it is particularly hard to make reliable inferences based on the year-to-year trend in this sub-region due to the low level of reporting from several sites. Various factors may impact the ability of the sites to report as well as the quality of the data; including the level of monitoring and protection of populations at

the various sites. In addition, the populations are small, fragmented and isolated. Compared to the other subregions, West Africa has the total lowest number of carcasses reported – 797 over 16 years (Figure 2. D). Nonetheless, it is possible to say that the PIKE value of 0.46 in 2018 is significantly lower than the PIKE values being reported in 2014-2016, which averaged 0.91 (Figure 2. D). The MIKE programme will undertake targeted actions to improve the understanding of the situation relating to MIKE implementation in West Africa.

Recommendation:

12. The Conference of the Parties is invited to note the report.