

1 Supplemental Information

2 International media cover

3 A Google search yielded over a 100 media articles on the mass die-off of elephants in

4 Botswana and we list some of them here:

- 5 • <http://www.elephant-news.com/index.php?id=7412>
- 6 • <https://www.telegraph.co.uk/news/2020/07/01/hundreds-elephants-die-mysteriously-botswana-prompting-fears/>
- 7
- 8 • <https://www.thesun.co.uk/news/12105753/deadly-elephant-virus-jump-humans-experts-warn-africa/>
- 9
- 10 • <https://www.cbsnews.com/news/elephants-dying-in-africa-botswana-mystery-lab-results-expected-expert-warns-herd-could-be-decimated/>
- 11
- 12 • <https://www.livescience.com/elephant-mass-deaths-botswana.html>
- 13 • <https://thehill.com/changing-america/opinion/509867-to-botswana-you-are-the-last-great-hope-for-the-elephant-on-earth>
- 14
- 15 • <https://www.insider.com/botswana-death-three-hundred-elephants-is-mystery-after-inconclusive-tests-2020-8>
- 16
- 17 • <https://www.businessinsider.com/photos-390-botswana-elephants-found-inexplicably-dead-near-water-2020-7?r=US&IR=T>
- 18
- 19 • <https://www.express.co.uk/news/world/1308476/botswana-elephant-deaths-mystery-virus-new-pathogen-okavango-delta-coronavirus>
- 20
- 21 • <https://africageographic.com/stories/botswana-elephant-graveyard-mystery-death-toll-rises-to-400/>
- 22

23 **General references to the importance of poaching**

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61 **Poaching and human-elephant conflict in Botswana**

62 Reference documents illustrating that poaching of elephant and human-elephant conflict has
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113 **The role of diseases**

114 There are few published records of die-offs of elephants due to factors other than poaching.
115 These often are due to viral and bacterial diseases (*Grobler et al., 1995; Azeem et al., 2020*).
116 For instance, in South Africa's Kruger National Park, the encephalomyocarditis (EMC) virus
117 (EMCV-1; *van Sandwyk et al., 2013*) caused the death of at least 64 elephants during 1993-
118 1994. Apparently, it coincided with an outbreak in rodent numbers (*Grobler et al., 1995*).
119 High rodent numbers in an area where elephant densities are high, may provide the
120 ingredients for such a die-off. As yet, we have no evidence of such an outbreak in the
121 Seronga area. We can posit other infectious candidates such as the West Nile and Shuni
122 viruses (*Azeem et al., 2020*), elephant endotheliotropic herpesvirus (EEHV) which is an
123 infectious type of herpes virus found in elephants (*Richman et al., 1999*), hepatitis (*Basson et*
124 *al., 1971; McCully et al., 1971*), or an unlikely outbreak of tuberculosis (TB) due to slow
125 disease progression and/or chronic infection (*Obanda et al., 2013; ADS Bastos, 2020, pers.*
126 *comm.*).

127 Anthrax caused by *Bacillus anthracis* is an indigenous and endemic disease in sub-
128 Saharan Africa (*Hugh-Jones & de Vos, 2002*) that we cannot rule out as a cause of these die-
129 offs. In Etosha National Park, frequent outbreaks of anthrax apparently steer the demography
130 of the elephant population (*Lindeque, 1988*). Outbreaks of anthrax mainly affect elephants
131 during the end of the dry season (*Lindeque & Turnbull, 1994*). During the 2019 drought, 100
132 elephants died of anthrax in an area 150 km south of the present area
133 (<https://africanelephantjournal.com/>). In the same year and at the end of the dry season, media
134 reports indicated that the drought caused the death of 200 elephants in Hwange National Park

135 (Zimbabwe) along a part of its eastern border with Botswana. At least another 100 elephants
136 died from anthrax and at the end of the dry season in Botswana's Chobe National Park.
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170 Sources of aerial survey data

171 We extracted elephant population estimates from aerial surveys (*DWNP 1996, 1999, 2001,*
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202 **The debate about fences**

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