



Hong Kong's delayed ivory ban endangers African elephants

China and Hong Kong have recently taken essential steps toward the conservation of African elephants (*Loxodonta* spp; Figure 1a), which remain imperiled as a result of poaching for the ivory trade. China implemented a nationwide ban on the sale and processing of ivory at the end of 2017, and in January 2018, Hong Kong – a Special Administrative Region of China with its own management authority under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) – passed an amendment bill to ban all ivory trade by the end of 2021. However, as we show here, the delay in implementing Hong Kong's ban could be exploited by ivory traders, thereby threatening the persistence of African elephants.

Recent poaching has devastated elephant populations in Africa. Between 2010 and 2012, more than 100,000 elephants were killed by poachers (Wittemyer *et al.* 2014), coincident with continent-wide population declines recorded during the past decade. Among forest elephants (*Loxodonta cyclotis*), populations declined by 62% between 2002 and 2011 (Maisels *et al.* 2013), while savanna elephants (*Loxodonta africana*) declined by 8% each year between 2010 and 2014 (Chase *et al.* 2016). As elephant numbers in Africa

have fallen, hundreds of metric tons of elephant ivory have been shipped to Asia. Genetic tests of 28 major (>500 kg) ivory shipments confiscated during the past two decades confirmed that this ivory originated from African elephants (Wasser *et al.* 2015). Furthermore, radio-carbon dating of 14 major shipments intercepted between 2002 and 2014 reveals that ~90% of the ivory was derived from elephants killed within 3 years of the seizure (Cerling *et al.* 2016). Therefore, much of the ivory exported from Africa was obtained by recent poaching, in direct violation of the global proscription on its international trade subsequent to the inclusion of African elephants on CITES Appendix I in 1989.

Hong Kong is a global hub for wildlife trade (Andersson and Gibson 2018) and plays a major role in the import of ivory from Africa (Figure 1b). Of the legal trade monitored by CITES since 1975, 71% of African elephant ivory has passed through Hong Kong (UNEP-WCMC 2017). As party to CITES, it is illegal for Hong Kong to import ivory derived from elephants killed after the 1989 ban, but since 1996, Hong Kong authorities have intercepted at least 37 metric tons of smuggled ivory (Figure 2; WebTable 1). Five of the major ivory shipments examined by Wasser *et al.* (2015) and Cerling *et al.* (2016) were seized in Hong Kong. Additionally, a member of Hong Kong's Endangered Species Advisory Committee, who sits as a representative of local ivory traders, was recently prosecuted for the illegal sale of ivory derived from ele-

phants killed after the 1989 ban (Government of Hong Kong 2017a; Master 2018), demonstrating the poor regulation of Hong Kong's ivory market. Although China's nationwide ban has already been implemented, the delay in introducing similar regulation in Hong Kong allows continued unsustainable trade in ivory (Figure 1b), much of it illegal and mostly destined for China (Martin and Vigne 2015).

Under the Protection of Endangered Species of Animals and Plants Ordinance (Cap 586) in Hong Kong, trade in elephant ivory is regulated by the Agriculture, Fisheries and Conservation Department (AFCD). Ivory traders must obtain a "License to Possess" in order to possess ivory for commercial purposes; these licenses are normally valid for a period of 5 years. As of February 2017, there were around 380 active licenses in Hong Kong (AFCD 2017). In December 2016, when the Hong Kong Government announced a plan to phase-out trade in elephant ivory, all Licenses to Possess issued for elephant ivory afterwards would expire on or before 30 December 2021, giving traders a 5-year grace period to sell the remainder of their ivory. With the passing of the Hong Kong Ivory Ban Bill in January 2018, the countdown to a full closure of Hong Kong's domestic ivory market has begun. This deferral might be a blessing for traders, but could be a curse for the species already threatened with extinction; the postponement also seems superfluous given that no legally traded ivory could have been brought into Hong



Figure 1. Elephant ivory: living and lifeless. (a) A group of savanna elephants (*Loxodonta africana*) in Amboseli National Park, Kenya. (b) Processed elephant ivory on sale in a shop in Hong Kong, considered to be the global epicenter of wildlife trade.

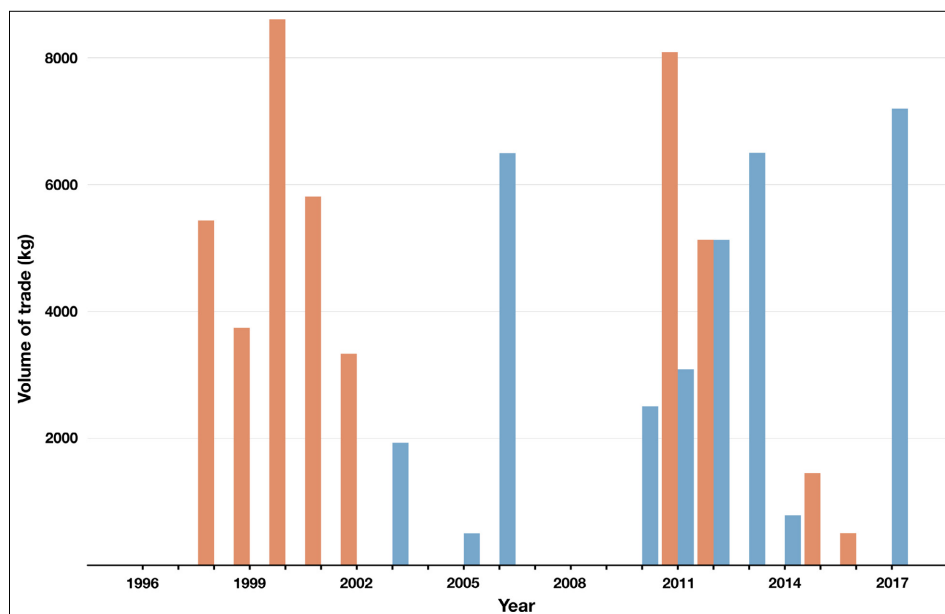


Figure 2. Volume of trade (in kilograms) of elephant ivory seized from major shipments (>500 kg) within China (orange bars) and Hong Kong (blue bars) between 1996 and 2017. Data compiled by the Environmental Investigation Agency (EIA) and provided during October 2017 (see WebTable 1).

Kong after the 1989 ban, and pre-ban stocks should have already been exhausted (Knights *et al.* 2015).

Because China prohibited the ivory trade at the end of 2017, there are concerns that the trade will now shift to Hong Kong – and records show this is already happening (Government of Hong Kong 2017c). Seizures of ivory in China and Hong Kong over the past two decades are negatively correlated (Figure 2; WebTable 1; $\rho_s(15) = -0.53$, $P = 0.018$), suggesting that shipments – following the same trade route – are sometimes seized in Hong Kong, and other times intercepted only after crossing the border into mainland China. Alternatively, increased enforcement on one side of the border might push the trade to the other, a definite possibility given the existence of criminal syndicates moving ivory shipments between Hong Kong and China (EIA 2014). If this is the case, Hong Kong's poorly regulated market could be exploited by ivory traders avoiding the closed market across the border. Such “leakage” could undermine global efforts to reduce the extent of the trade in elephant ivory (Bennett 2015), diluting the potential positive effects of China's ban on the conservation of African elephants. The seizure of >7 metric tons of ivory in Hong Kong in the middle of 2017

– the largest seizure on record since the 1989 global ban – again demonstrates the threat posed by inadequate regulation of Hong Kong's ivory market (Government of Hong Kong 2017b).

The science clearly indicates that the future of elephants in Africa will depend largely on far-sighted action in Hong Kong. We applaud the Hong Kong Legislative Council's decision to pass the Hong Kong Ivory Ban Bill, but given the susceptibility of the continued “legal” ivory trade to serve as a conduit for illegal trade, we urge the Hong Kong Government to implement a complete ban with immediate effect.

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■ Supporting Information

Additional, web-only material may be found in the online version of this article at <http://onlinelibrary.wiley.com/doi/10.1002/fee.1921/supinfo>



Precipitation could spell peril for penguins

An Adélie penguin (*Pygoscelis adeliae*) is almost completely buried in snow while incubating its eggs at a breeding colony on the Antarctic Peninsula. The large amounts of snow are the result of a storm earlier that day. Heavy precipitation poses a challenge for these birds during the breeding season, as they must keep their eggs both warm and dry if the embryos inside are to survive to hatching.

Increased runoff from rain or snowmelt can flood penguin nests, leading to nesting failure. Even once they've hatched, penguin chicks are at risk from these precipitation events. Prior to acquiring their waterproof adult plumage, chicks have only downy feathers to insulate them from the cold. Once wet, such feathers provide little insulation, leaving the young penguins in danger of freezing to death. Recent climate-change-related increases in precipitation in the Antarctic Peninsula region and increased variability in weather events worldwide suggest an uncertain future for many Adélie penguin populations.

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doi:10.1002/fee.1946

