ifaw

the state of the common hippo

july 2019

contents

acknowledgements and credits

authors

David Cowdrey
BSc, FRGS, Head of Policy & Campaigns, IFAW, &
Vice Chair of the LINK Wildlife Crime & Trade Group

Sarah Crudgington
BSc, MPhil, Principal Researcher and Lead Author, IFAW

reviewed by

Dr. Rebecca Lewison
Co-Chair of the IUCN SSC Hippo Specialist Group

Dr. Luke Gibson
Honorary Assistant Professor at The University of Hong Kong, and co-author of Andersson, A & Gibson, L. (2017) Missing teeth: Discordances in the trade of hippos' ivory between Africa and Hong Kong, *African Journal of Ecology*, vol. 56, issue 2, pp. 235–243.

letter from the president and ceo

The International Fund for Animal Welfare (IFAW) is helping animals and people thrive together. As part of our mission we are seeking to end the illegal wildlife trade and address the impacts threatening individual animals. The illegal trade in live and wild animal parts and the unsustainable utilisation of these animals poses a huge threat to many species on our planet today. Recently, huge strides have been made to protect animals like the elephant, by introducing comprehensive trade bans to protect the species from the ravages of poaching. Sadly, elephants are not the only ivory bearing species being poached or hunted.

The common hippopotamus population has been severely impacted in the past by poaching for its teeth. It is all too easy to imagine that poachers and organised gangs in the illegal wildlife trade based in Africa could easily switch from elephant ivory to hippo teeth, as an alternative when markets for elephant ivory such as that in Hong Kong SAR, China close in 2021.

This literature review provides a comprehensive summary of the population history of the common hippopotamus, its conservation status and the threats it faces. A key finding of this report is that we must take a precautionary approach when a species is being legally and illegally traded, especially when it is also being threatened by habitat loss and climate change.

The International Union for the Conservation of Nature (IUCN) estimates that there are only about 115,000 -130,000 common hippos left in the wild and describes their conservation status as vulnerable, while observing that there is a significant legal trade in their teeth. Trade data from the Convention on International Trade in Endangered Species (CITES) shows more than 770,000 kg of hippo ivory has been traded internationally since 1975 which represents approximately 146,850 individual animals, based on a formula developed by the University of Hong Kong. If that level of trade continues, in conjunction with the intensifying threats of habitat loss, climate change and water abstraction, the common hippopotamus has an extremely precarious future. We must take bold action now.

We are asking countries that have introduced some of the toughest ivory bans in the world to consider adding hippo ivory to their existing bans. We also encourage countries that do not have any ivory bans to introduce them while there is still time to save vulnerable species from being exploited for their ivory.

We are thankful for the work and input from our researchers and partners, as well as the advice and support of experts from the IUCN Hippo Species Survival Commission Group and the University of Hong Kong, all of which have been crucial to making this research report a reality. We are hopeful this report will act as a catalyst for change - to secure greater protection for the common hippopotamus, and encourage more research to be conducted on their status and plight.

Azzedine Downes
President & CEO
IFAW

about ifaw

The International Fund for Animal Welfare (IFAW) is a global non-profit helping animals and people thrive together. We are experts and everyday people, working across seas, oceans, and in more than 40 countries around the world. We rescue, rehabilitate, and release animals, and we restore and protect their natural habitats. The problems we're up against are urgent and complicated. To solve them, we match fresh thinking with bold action. We partner with local communities, governments, non-governmental organisations, and businesses. Together, we pioneer new and innovative ways to help all species flourish. See how at www.ifaw.org.

introduction

The common hippopotamus *(Hippopotamus amphibius)* is Africa's third largest terrestrial mammal, yet at a time where habitat loss, human wildlife conflict and illegal hunting for hippo teeth and meat are threatening their existence, there is a lack of up-to-date census data and current population estimates.

This report aims to review existing scientific literature on hippo population status and trends to highlight the very real risk the hippo ivory trade will pose to the species once elephant ivory bans come into force across the world.

methodology

A literature review of scientific research papers from 1975 to present, using the International Union for Conservation of Nature (IUCN) Red List bibliography, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) trade data, populations census data and peer reviewed research conducted by wildlife trade monitoring programmes.

▼ Chikolongo Community,
Liwonde National Park, Malawi.

©IFAW/Donal Boyd

executive summary

The common hippopotamus *(Hippopotamus amphibius)* is listed as vulnerable but stable, with a population estimate of 115,000–130,000, according to the most recent 2016 IUCN Red List assessment[1]. Once widely distributed throughout sub-Saharan Africa, the common hippo population has declined by between 7–20%, and its range reduced and fragmented during in the last century[1].

Once a stronghold for hippos, the Democratic Republic of Congo (DRC) and other West African countries have seen the sharpest decline in hippo populations. In the early 2000s, the world's largest population of hippos in the DRC dropped by more than 95% as hunters targeted them for their meat and teeth[2,3] (fig 1). While this particular population has since plateaued, it is only stable at 17% of its 1970's peak population.

Hippos are listed on CITES Appendix II and recorded as primarily threatened by illegal and unregulated hunting for their ivory and meat, as well as habitat loss and degradation[1]. They are now rarer than the African elephant. Worryingly, of the 37 countries where hippos are found, more than 42% have reported declining population trends[1] (fig 2), and just under a quarter of countries have unknown population trends[1].

Due to the number of threats facing hippos, the global hippo population is projected to decline by a further 30% over the next 30 years[1].

Hippo ivory is considered easier to carve and cheaper to obtain than elephant ivory. According to CITES trade databases, 771,000 kg of hippo ivory has been traded internationally for commercial purposes since 1975[4]. Hong Kong SAR, China is the primary importer of hippo ivory, and has traded more than 90% of this quantity, with more than 75% of the hippo ivory originating from Uganda and Tanzania[4].

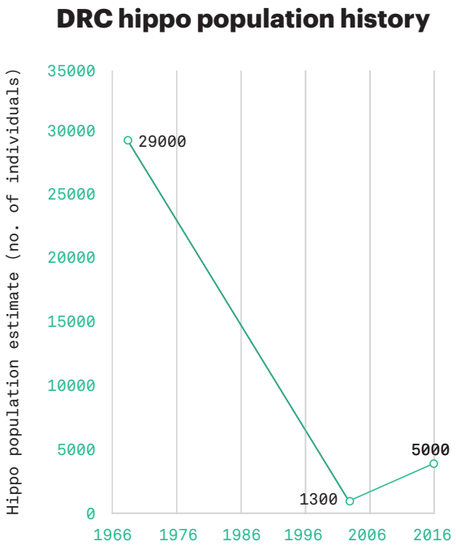

Figure 1 - Democratic Republic of Congo hippo population declines 1970-2016[2,3]

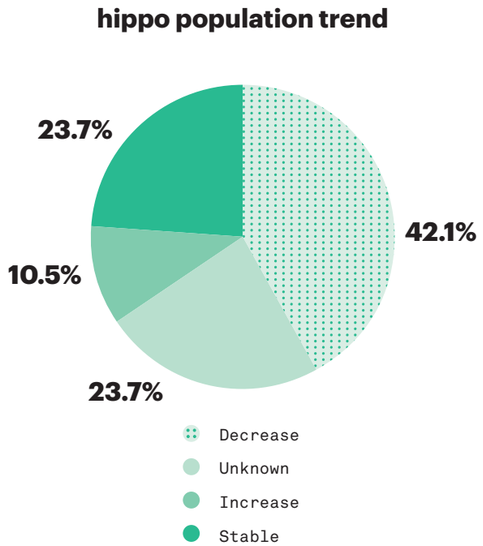

Figure 2 - IUCN supplementary information 2016[1]

[1] Lewison, R. & Pluháček, J. (2017) Hippopotamus amphibius. The IUCN Red List of Threatened Species 2017: https://www.iucnredlist.org/species/10103/18567364

[2] Hillman Smith, A.K., Merode, E., Smith, F., Ndey, A., Mushenzi, N., & Mboma, G. (2003) Virunga National Park – North Aerial Census of March 2003. http://www.assets.panda.org/ downloads/virungaaerial count.pdf

[3] DR Congo's hippos face extinction (2005), BBC News Article: http://news.bbc.co.uk/1/hi/world/africa/4240420.stm

Using the methodology developed by researchers at the University of Hong Kong[4], we have estimated that the 771,000 kg of ivory traded internationally during the past 40 years equates to more than **146,857 hippos**[4].

However, Andersson and Gibson (2018) examined patterns in the trade of hippos and discovered a huge discrepancy between export and import data of hippo ivory between Uganda and Hong Kong SAR, China[4]. Since 1975, there has been an additional amount of 14,000 kg of hippo teeth unaccounted for, which represents 30% of Uganda's total hippo population, and 2% of the global hippo population[4]. Researchers at the University of Hong Kong speculate that these discordances in the hippo ivory trade between Uganda and Hong Kong SAR, China are a result of illegal trade[4].

The discordance of import and export data of hippo ivory between source and market, combined with a lack of current population estimates for hippos, and the ever-increasing threat of climate change, makes assessing the sustainability of the legal hippo trade extremely difficult. What's more, where there is legal trade, there will be illegal trade.

The 1989 global ban on the elephant ivory trade saw a huge surge in demand for hippo ivory as a legal substitute[5,6]. A similar elephant ivory ban is due to be enforced in 2021 in Hong Kong SAR, China – the predominant importer of hippo ivory. Without concurrent reduced demand and increased enforcement efforts from all exporting range states and importing countries, there is a serious and pressing risk that hippo populations will suffer once again, targeted as a legal substitute for elephant ivory.

In essence, hippo populations are precarious. The cumulative threats of climate change, habitat loss and the legal and illegal trade in hippo teeth are seriously challenging the persistence of hippo populations.

key points at a glance

ivory traded internationally during the past 40 years equates to more than 146,857 hippos

- The common hippo is listed as vulnerable according to the latest 2016 IUCN Red List assessment. Although the population is described as stable – more than 42% of countries where hippos are found have *reported population declines*, and more than 23% have *unknown population trends*. The term 'stable' reflects that the largest declines are no longer continuing; however, hippo populations in many countries remain at heavily reduced post-decline levels.
- According to CITES databases, 771,000 kg of hippo ivory has been traded internationally since 1975. This equates to an estimated 146,857 hippos.
- Since 1975 more than 90% of global hippo teeth trade is imported to, and re-exported from, Hong Kong SAR, China. Of that, over 75% originated in Tanzania and Uganda.
- Disparities between countries reporting of import and export quantities of hippo ivory poses a challenge to regulatory measures, and challenges the persistence of hippo populations in Africa.
- Hippo ivory is considered easier to carve, cheaper to access and easier to trade than elephant ivory.
- The 1989 global ban on the elephant ivory trade was followed by a surge in demand for hippo ivory as a legal substitute. Hong Kong SAR, China is set to ban elephant ivory in 2021, and there is a real risk that hippo ivory will become a legal substitute again.
- There is a lack of up-to-date hippo population data and discrepancies between import and export data of hippo ivory – data that is crucial for policy and trade decisions.
- Hippos and elephants are sympatric, so infrastructure, trade routes and networks already exist because of the elephant ivory trade.

[4] Andersson, A & Gibson, L. (2017) Missing teeth: Discordances in the trade of hippo ivory between Africa and Hong Kong, *African Journal of Ecology*, vol 56, issue 2, pp. 235–243.

[5] Weiler, P., De Meulenaer, T., & Vander Block, A. (1994) Recent trends in international trade of hippopotamus ivory. TRAFFIC Bulletin, 15, 47–49

[6] Williamson, D. F. (2004) Tackling the ivories: The status of the US trade in elephant and hippo ivory. TRAFFIC North America: World Wildlife Fund

biology and behaviour

◄ A grazing hippo in Botswana.

The common hippopotamus *(Hippopotamus amphibius)* is one of only two extant species in the Hippopotamidae family – the other being the pygmy hippopotamus *(Choeropsis liberiensis)*[1]. Found throughout Africa, they are social, polygynous animals with herd sizes ranging from 10 to 100 individuals[1]. The common hippo is the third largest terrestrial mammal, after the rhinoceros and the elephant, and the largest living member of the order Artiodactyla (even-toed ungulates), with males weighing in at around 1,500kg, and females at 1,300kg[2]. Despite the hippo's resemblance to pigs, this semi-aquatic, mega-herbivorous mammal is most closely related to cetaceans [3].

Hippos have extremely large canine teeth, which can reach 50cm in size[4]. They are barrel-shaped and have almost hairless bodies, and have a reputation for being one of the most aggressive and most dangerous animals in Africa[5]. As they are semi-aquatic mammals, they require access to some form of permanent water source as their skin must remain moist. They are unable to sweat but instead secrete a substance known as 'blood-sweat', which is red in colour and protects the animal from sunburn[6,7]. Hippos can live for up to forty years, but have a slow reproductive rate, with females generally producing only one calf every two years[1].

The hippo is a **'keystone species'**, as its behaviours and foraging activities have a disproportionately large effect on the terrestrial and aquatic ecosystems within its habitat, relative to its abundance[8,9]. The hippo's excretion of organic matter into freshwater systems has a significant effect on their biochemistry[10]. In lakes in Virunga, for example, this phenomenon has affected the ecosystem of the fish species, tilapia *(Tilapia sparrmanii)*. A single hippo can produce as much as 25 kg of dung per day, which the tilapia feed on. A reduction of hippos in this area could therefore have a direct impact on the tilapia population of Virunga[11].

the common hippo is the third largest terrestrial mammal, after the rhinoceros and the elephant

[1] Lewison, R. & Pluháček, J. (2017) Hippopotamus amphibius. The IUCN Red List of Threatened Species 2017.

[2] Stewart Keith Eltringham (1999) The Hippos: Natural History and Conservation. T & A D Poyser Natural History.

[3] Ursing B.M. & Arnason U. (1998) Analyses of mitochondrial genomes strongly support a hippopotamus–whale clade, *Proceedings of the Royal Society*, volume 265, issue 1412, pp. 2251–2255.

[4] Estes, R. (1992) The Behavior Guide to African Mammals: including hoofed mammals, carnivores, and primates. University of California Press. pp. 222–26.

[5] Gonzalez, L.M., Montoto, F.G.D., Mereck, T., Alves, J (2016) Preventing crop raiding by the Vulnerable common hippo potamus Hippopotamus amphibius in Guinea–Bissau, Oryx, volume 51, Issue 2, pp. 222–229.

[6] Saikawa, Y. et al. (2004) The red sweat of the Hippopotamus, *Nature*, volume 429, pp. 363–321.

[7] Klingel, H. (1991) "The social organization and behaviour of Hippopotamus amphibius" in African Wildlife: Research and Management, edited by I. B. Kayanja.

[8] Dudley, J.P., Mudenda Hang'Ombe, B., Leendertz, F.H., Dorward, L.J., Castro, J., Subalusky, A.L., Clauss, M (2015) Carnivory in the common hippopotamus Hippopotamus amphibius: implications for the ecology and epidemiology of anthrax in African landscapes, *Mammal Review*, volume 46, issue 3, pp. 193–203.

[9] Subalusky AL, Dutton CL, Rosi-Marshall EJ, Post DM. (2015) The hippopotamus conveyor belt: vectors of carbon and nutrients from terrestrial grasslands to aquatic systems in sub-Saharan Africa, Freshwater Biology, vol. 60, pp. 512–525.

[10] Stears, K, McCauley,D.J., Finlay J.C., Mpembad, J., Warringtone, I.T., Mutayobaf, B.M, Powerg, M.E., Dawsong, T.E., Brashares, J.S. (2018) Effects of the hippopotamus on the chemistry and ecology of a changing watershed, *Proceedings of the National Academy of Sciences o the United States of America*, vol. 115, no. 22, pp. E5028–E5037.

[11] "Conservation Efforts to Save Hippos May End Ongoing Tilapia Shortage in DRC", Global Press Journal Article (2018) https://globalpressjournal.com/africa/democratic–republic–of–congo/conservation–efforts–save–hippos–may–end–ongoing–tilapia–shortage–drc-lakes/

current hippo population and status

The most recent IUCN Red List assessment of common hippos was updated in 2016, and classifies hippos as 'vulnerable' yet stable, with a population of approximately 115,000 – 130,000 individuals[1]. They are found throughout sub–Saharan Africa (table 1), with the eastern region of Africa being home to more than 77% of the total population (fig 3). Zambia and Tanzania are home to the largest population of hippos, with populations of 40,000 and 20,000 respectively.

global total:
114,790 - 130,190

common hippo population distribution by country and region

East	
Burundi	500 – 1000
Ethiopia	2500
Kenya	5000 – 7000
Malawi	3000
Mozambique	3000
Rwanda	1000
Somalia	50
South Sudan	2000 – 3000
Tanzania	20000
Uganda	7000 – 10000
Zambia	40000 – 45000
Zimbabwe	5000
Total	**89,050 - 100,550**

West	
Benin	500
Burkina Faso	1500 – 2000
Gambia	40
Ghana	150 – 200
Guinea	500
Guinea Bissau	200 – 500
Ivory Coast	500 – 600
Mali	100
Niger	150 – 200
Nigeria	100 – 200
Senegal	500
Sierra Leone	100 – 200
Toga	250 – 500
Total	**4,590 - 6,040**

Central	
Angola	500
Cameroon	1500 – 2000
Central African Republic	200 – 500
Chad	500
Congo	50
Democratic Republic of Congo	5000
Equatorial Guinea	50 – 100
Gabon	200 – 300
Total	**8,500 - 8,950**

South	
Botswana	2000 – 4000
Namibia	3500
South Africa	7000
Swaziland	150
Total	**12,650 - 14,650**

Table 1 - IUCN Red List assessment 2016 hippo population estimates by country[1]

[1] Lewison, R. & Pluháček, J. (2017) *Hippopotamus amphibius. The IUCN Red List of Threatened Species 2017.*

▲ Young hippo at Amboseli National Park.

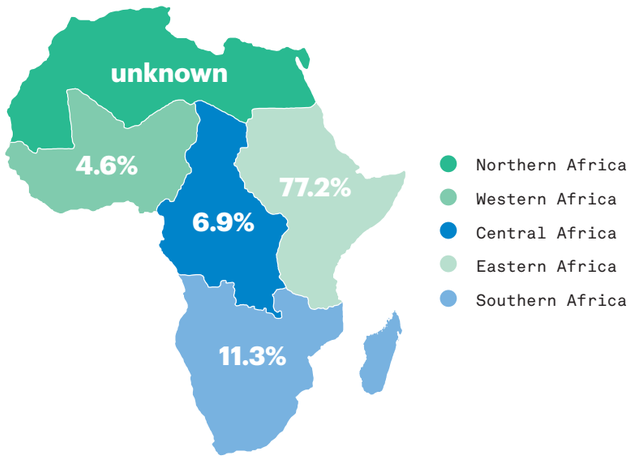

Figure 3 - Hippo population distribution throughout Africa[1]

the eastern region of Africa is home to more than 77% of the total hippo population

population history

In the last century, the common hippo's range has declined and fragmented, and its population size has reduced by between 7–20%[1]. The Democratic Republic of the Congo and West African countries have seen the sharpest declines in hippo numbers.

During the 1970s to the 1990s, Lake Edward in the Democratic Republic of Congo (DRC) was home to the largest population of hippos in the world with a population estimate of roughly 29,000 hippos[2,3]. However, in the early 2000s, the population fell by 95% as a result of hunting during eight years of civil unrest[4]. Armed groups sold hippo teeth and meat to fund themselves during the war[1]. While hippo numbers are increasing in the DRC, the current population is estimated at just 5,000 and ongoing violence in the region makes progress uncertain. Currently, the population is only stable at 17% of its 1970's peak[5,6] (fig 4) .

the common hippo's range has declined and fragmented and its population size has reduced by 7-20% in the last century

DRC hippo population history

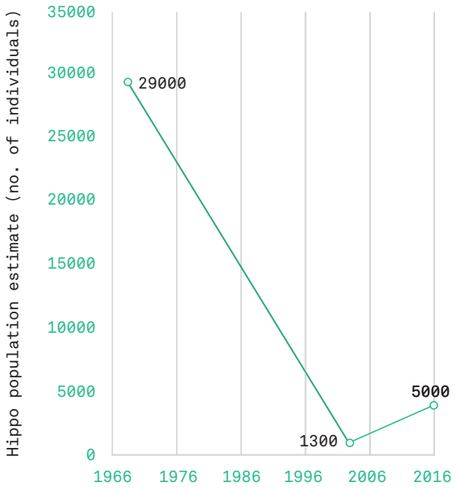

Figure 4 - Hippo population estimates from 1970-2016 in the Democratic Republic of Congo[2,4]

global hippo population

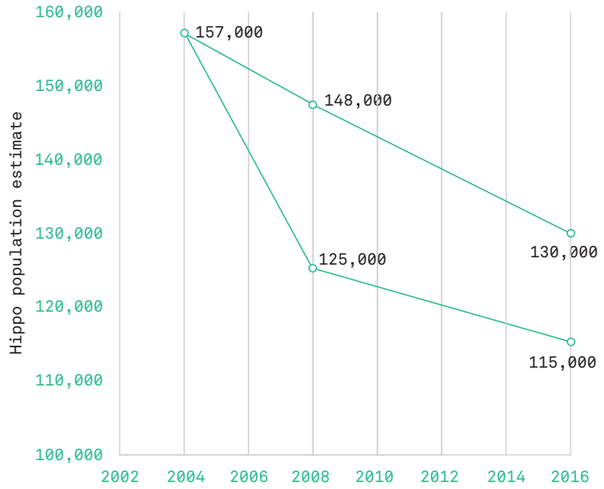

Figure 5 - Global hippo population trends from 1970-2016 showing the range esitmates[5,6]

[1] "Poaching causes hippo population crash", New Scientist Article, Fred Pearce (2003) https://www.newscientist.com/article/dn4109-poaching-causes-hippo-population-crash/

[2] "DR Congo's hippos face extinction" BBC Article (2005) http://news.bbc.co.uk/1/hi/world/africa/4240420.stm

[3] Plumptre, A.J., Nangendo, G., Ayebare, S., Kirunda, B., Mugabe, H., Nsubuga, P. & Nampindo, S. (2017) Impacts of Climate Change and Industrial Development on the long-term changes in Wildlife Behavior in the Greater Virunga Landscape, WCS & GVTC Report. Available at: http://www.greatervirunga.org/IMG/pdf/gvtc-wcs_report_on_behaviour_changes_to_development_and_climate_changes-final_draft_2017_11.pdf

[4] Hillman Smith, A.K., Merode, E., Smith, F., Ndey, A., Mushenzi, N., & Mboma, G. (2003) Virunga National Park – North Aerial Census of March 2003. Available at: http://assets.panda.org/downloads/virungaaerialcount.pdf

[5] Lewison, R. & Pluháček, J. (2017) *Hippopotamus amphibius.* The IUCN Red List of Threatened Species 2017.

[6] Anon (2004). Report to Zambia Wildlife Authority on the hippopotamus survey, Chinzombo Research Centre, Chilanga reference, read in: Population status of the common hippopotamus *(Hippopotamus amphibius)* in Luangwa River, Zambia (2012): http://www.academicjournals.org/app/webroot/article/article1380107420_Chomba%20et%20al.pdf

Finding up-to-date global population estimates for hippos after 2016 is extremely difficult, with IUCN assessments only undertaken in 2016, 2008, 2006 and 1992. Global figures for hippo populations since the early 2000's show a downward trend, but there is also a plateau between the 2008 and the 2016 IUCN Red List assessments (fig 5), which is why they are listed as vulnerable yet stable.

According to the supplementary data provided by the IUCN Red List assessment in 2016[5], there is concern regarding the conservation status of hippos in more than 64% of the countries where they are found. More than 42% of countries where hippos live are showing population declines, and more than 23% of countries have unknown hippo population trends (fig 6).

Just under a quarter of countries have stable populations, and just 10% of countries have populations that are increasing. There is a projected population decline of 30% over the next 30 years.

Current data suggests that hippo populations in Western Africa are at the highest level of risk due to the fragmented nature of their distribution and the high frequency of hippo–human conflicts[6].

hippo population trend

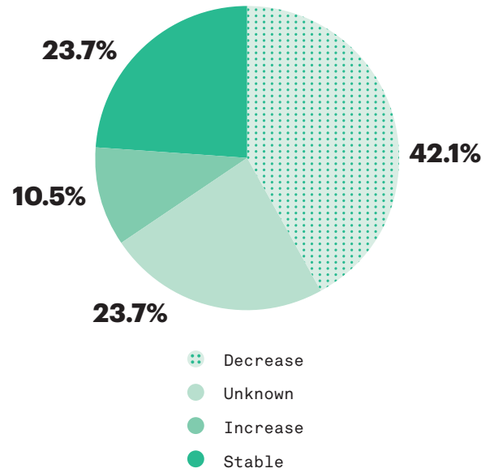

Figure 6 - Country population trend data from the 2016 IUCN Red List supplementary data[5].

©Michael Murphy

▲ Hippo in Botswana.

threats

The hippo's primary threats are habitat loss, habitat degradation, climate change and the unregulated trade in their teeth and meat[1].

Hippos have several behavioural and physical characteristics that exacerbate these threats, which are outlined below (table 2).

behaviour or physical characteristic	threat	contribution to threat
Large teeth	– Ivory trade	Hippos have large teeth which are easier to carve and easier to trade than elephant ivory.
Aggressive	– Human-wildlife conflict	Human overpopulation leads to encroachment on hippo habitats. Hippos will kill humans, and this can lead to retaliatory killing from people.
Semi-aquatic	– Ivory trade – Bushmeat trade – Human-widllife conflict – Climate change	Hippos are reliant on a permanent body of water and grassland. This makes them easy to find. It also makes them extremely vulnerable to climate changes such as drought. These environmental requirements also put hippos in direct competition with humans for water, land and natural resources.
Slow reproductive rate		Hippos will have difficulty recovering from over-exploitation

Table 2 - Hippopotamus physical and behavioural characteristics, and associated threats

hippo teeth trade

legal trade

Hippo teeth can reach up to 50cm in size[2] and are a source of ivory considered easier to obtain and transport in comparison with elephant ivory. They are also considered luxury goods and easier to carve into sculptures and other ornaments.

The trade in hippo ivory is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Hippos have been listed on CITES Appendix II since 1995. Appendix II species are not necessarily threatened with extinction, but trade must be controlled to avoid over-exploitation or utilisation incompatible with their survival. To trade or export hippo parts, an export permit may be issued only if the specimen was legally obtained and if the export will not be detrimental to the survival of the species. No import permit is needed unless required by national law[3].

Currently, trade quotas and hunting regulations differ across African range states. In 2014, Uganda became the only source country to ban the trade in hippo teeth.

[1] Lewison, R. & Pluháček, J. (2017) *Hippopotamus amphibius*. The IUCN Red List of Threatened Species 2017: https://www.iucnredlist.org/species/10103/18567364

[2] Estes, R. (1992) The Behavior Guide to African Mammals: Including hoofed mammals, carnivores, and primates. University of California Press. pp. 222–26.

[3] CITES website https://www.cites.org/eng/app/appendices.php

sustainability of the legal trade

In order to assess and monitor sustainability of the legal hippo trade, up-to-date scientific population estimates are required to inform trade and policy decisions. Unfortunately, these are lacking. Accurate trade data, such as import and export quantities is also essential to monitor sustainability. Discordance in such data poses a challenge in implementing regulatory measures, and therefore the persistence of hippo populations in Africa.

Andersson and Gibson (2018) examined the discordances between import and export data on the legal, commercial trade in hippo ivory as specified in the CITES Trade Database, accessed in April 2016[4]. They noted that 771,000 kg of hippo ivory has been traded internationally for commercial purposes since 1975.

Using the most conservative method available to estimate individual hippo numbers using the weight of hippo teeth, as specified in Williamson's 'Tackling the ivories: The status of the US trade in elephant and hippo ivory' report[5], we estimate that this volume of ivory equates to a shocking 146,857 hippos. According to Andersson and Gibson's research paper[4], 90% of this volume was imported by and re-exported from Hong Kong SAR, China, representing 132,171 hippos traded to Hong Kong SAR, China alone between 1975 and 2016. More than 75% of these hippo ivory imports originated from two countries; Tanzania (41%) and Uganda (35%).

Additionally, 97% of all the CITES-registered commercial trade of hippo teeth into or out of Hong Kong SAR, China since 1975 is specified as 'wild caught', with less than 2% listed as captive-bred, ranched or pre-convention, which equates to roughly 128,206 wild hippos.

The researchers also uncovered a huge disparity between what is reported as imported and exported between countries. Over 14,000 kg of hippo teeth was unaccounted for between Uganda and Hong Kong SAR, China, representing more than 2,700 hippos. This represents 2% of the global hippo population, and nearly 30% of Uganda's total hippo population, which is currently estimated at 7,000–10,0004[4].

illegal trade

Concern about the falling hippo numbers led Uganda to ban the trade in hippo teeth in 2014, but wildlife authorities have reported that since the ban, the flow of hippo ivory to international markets has continued due to the long-established transcontinental trade networks, structures and mechanisms that had previously been in place[4]. Similarly, the existence of the legal trade in elephant ivory pre-1989 provided fertile grounds for illegally traded ivory[6,7]. It is feared the same will happen to the hippo ivory trade, with trade continuing illegally under the guise of 'legal trade'[4].

During the period following the 1989 global ban on elephant ivory trade there was a surge in demand for hippo ivory as a legal substitute[5,6]. Hong Kong SAR, China, the world's biggest importer of hippo ivory[4] is set to implement a domestic elephant ivory ban in 2021. It is wholly possible that this will encourage buyers to look to hippo ivory as a substitute. Without appropriate demand reduction and enforcement efforts, this could lead to the decimation of an already vulnerable wild hippo population.

©Xinhua/Alamy Live News

771,000 kg of hippo ivory has been traded internationally for commercial purposes since 1975, and 90% of this volume was imported by and re-exported from Hong Kong SAR, China

◀ An officer arranges piles of hippo teeth at the headquarters of the Ministry of Natural Resources and Tourism in Dar es Salaam, Tanzania.

[4] Andersson, A. & Gibson, L. (2017) Missing teeth: Discordances in the trade of hippos ivory between Africa and Hong Kong, *African Journal of Ecology*, vol 56, issue 2, pp. 235–243.

[5] Williamson, D. F. (2004). Tackling the ivories: The status of the US trade in elephant and hippo ivory. TRAFFIC North America: World Wildlife Fund. https://www.traffic.org/site/assets/files/4054/tackling_the_ivories.pdf

[6] Knights, P., Hofford, A., Andersson, A., & Cheng, D. (2015) The illusion of control: Hong Kong's 'legal' ivory trade. San Francisco, USA, WildAid. Retrieved from : http://wildaid.org/sites/default/files/resources/The%20Illusion%20of%20Control-Full%20Report.pdf

[7] Hsiang, S. & Sekar, N. (2016). Does legalization reduce black market activity? Evidence from a global ivory experiment and elephant poaching data, *National Bureau of Economic Research*, No. w22314. Accessed at: https://www.nber.org/papers/w22314

©IFAW/Donal Boyd

▲ Chikolongo Community, Liwonde National Park, Malawi.

protecting threatened wildlife species in key African countries

The EAGLE Network (Eco Activists for Governance and Law Enforcement) aims to protect threatened wildlife species in key African countries from large-scale poaching, by increasing the level of wildlife law enforcement in each country and deterring poachers and traffickers. The EAGLE Network has representatives in Congo, Gabon, Guinea, Togo, Benin, Senegal, Ivory Coast and Burkina Faso. They have reported evidence of illegal trade in hippo teeth as recently as January 2019, with 4 traffickers caught smuggling hippo ivory in Cameroon[8] and a trafficker attempting to trade in hippo teeth in Uganda. The EAGLE Network's 2018 annual report documented the arrest of traffickers who were attempting to traffic more than 230 pieces of hippo ivory[9].

human-induced environmental changes

Hippos rely on a permanent body of water to submerge themselves, and grasslands to graze[10]. This niche environmental requirement puts hippos in competition with an ever-increasing human population for natural resources, water and land – which can lead to increased instances of human–wildlife conflict. It also makes them extremely vulnerable to the effects of climate change[11].

Droughts can be extremely devastating for hippos[13]. In 2006, severe drought conditions killed 60–80 hippos in the Masai-Mara National Reserve[14]. In Kenya, during a 12-year period between 1997 and 2008, there were more than 4,490 recorded reports of human-hippo conflict incidences, exacerbated by droughts[15].

Climate change models of the predicted impacts in the Virungas of East Africa anticipate that hippo populations residing here would be seriously affected from an increase in droughts and human demand for water[11].

Additionally, a lack of grass foraging areas for hippos due to human encroachment would also threaten their existence[12].

8 EAGLE (Eco Activists for Governance and Law Enforcement) January Briefing (2019) Accessed at: http://www.eagle-enforcement.org/data/files/eagle-briefing-january-2019-public.pdf

9 EAGLE (Eco Activists for Governance and Law Enforcement) Annual Report (2018) Accessed at: http://www.eagle-enforcement.org/data/files/eagle-network-annual-report-2018.pdf

10 Stommel, C., Hofer, H. and East, M.L. (2016) The effect of reduced water availability in the Great Ruaha River on the vulnerable common hippopotamus in the Ruaha National Park, Tanzania. *PloS* one, vol. 11, issue 6, p.e0157145.

11 Plumptre, A.J., Nangendo, G., Ayebare, S., Kirunda, B., Mugabe, H., Nsubuga, P. & Nampindo, S. (2017) Impacts of Climate Change and Industrial Development on the long-term changes in Wildlife Behavior in the Greater Virunga Landscape, WCS & GVTC Report. Available at: http://www.greatervirunga.org/IMG/pdf/gvtc-wcs_report_on_behaviour_changes_to_development_and_climate_changes-final_draft_2017_11.pdf

12 Eksteen, J., Goodman, P., Whyte, I., Downs, C., Taylor, R., (2016) *A conservation assessment of Hippopotamus amphibius*. In Child, M.F., Roxburgh, L., Do Linh San, E., Raimondo, D., Davies-Mostert, HT., eds. *The Red List of Mammals of South Africa, Swaziland and Lesotho*. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa, Accessed at: https://www.ewt.org.za/wp-content/uploads/2019/02/11.-Hippopotamus-Hippopotamus-amphibius_LC.pdf

13 Kenya's hippos hit hard by drought (2009) Francois Auseill, Phys Org Article, Accessed at: https://phys.org/news/2009-08-kenya-hippos-hard-drought.html

14 Bogonko, B., & Lee, M. (2006, January 16) News about planet Earth: The Drought Kills Hippos in Kenyan Wildlife Reserve. Terra Daily; referenced in: Kilungu, H., Leemans, R., Munishi, P.K. and Amelung, B. (2017) Climate change threatens major tourist attractions and tourism in Serengeti National Park, Tanzania. In *Climate Change Adaptation in Africa* (pp. 375–392). Springer.

15 Kanga, E.M., Ogutu, J.O., Piepho, H.P. and Olff, H. (2012) Human–hippo conflicts in Kenya during 1997–2008: vulnerability of a megaherbivore to anthropogenic land use changes, *Journal of land use science*, vol. 7 issue 4, pp.395–406.

conclusion

Only 10% of the hippo populations across Africa are growing, and more than 65% of populations have decreasing or unknown population trends. Hippos are classified as vulnerable yet stable by the IUCN, yet the term 'stable' also reflects populations that have dramatically declined and not recovered after previous poaching incidents. The Democratic Republic of Congo once held the world's largest population of hippos, but this population declined by 95% due to civil unrest in the region in the early 2000s. These incidents demonstrate the devastating impact of poaching on population numbers over a small period of time.

The closure of the domestic elephant ivory market in Hong Kong SAR, China presents a real threat to hippos after 2021. There is potential for a parallel trade to grow in hippo ivory as a substitute for elephant ivory, as was seen after the 1989 ban on elephant ivory. Furthermore, the current discrepancies in trade data shown by Andersson and Gibson (2018) and the lack of up-to-date population estimates makes the sustainability of the legal hippo trade extremely difficult to discern.

With cumulative threats from climate change, habitat loss and human–wildlife conflict, hippo populations could become more vulnerable than they are today, with some reports projecting population declines of 30% in the next 30 years. Increasing frequencies of drought spells due to climate change threaten this species, as do a reduction in grazing areas which can force hippos into surrounding agricultural landscapes, which in turn lead to increased incidents of human–hippo conflicts, persecution and poaching.

It is strikingly evident that there needs to be more research to understand common hippo populations continent-wide, and it is essential that precautionary measures are put in place to protect populations which are in decline, and ensure better trade controls are introduced.

IFAW calls for hippo ivory to be added to all current elephant ivory bans, before 2021. This precautionary measure will ensure that the closure of elephant ivory markets does not impact hippos. In concurrence, demand reduction and increased enforcement efforts are required in consumer nations.'

As Dr. Alexandra Andersson, research scientist at the University of Hong Kong, comments"... hippos may not survive a quadruple-threat of increased demand for their teeth, mismanaged legal trade, continued poaching, and climate change." [1]

we must take bold action now.

[1] "Incomplete Trade Records Imperil Hippo Populations", Illegal Wildlife Trade.net article, Andersson, A. (2018) Accessed at: http://www.illegalwildlifetrade.net/2018/04/03/incomplete-trade-records-imperil-hippo-populations/

action you can take

- Support adding hippo ivory to the Ivory Act.
- Support IFAW's campaign on social media using #EndWildlifeCrime.
- Ensure demand reduction and enforcement efforts accompany any bans.

further recommendations

- Improve monitoring and protection of hippo populations.
- Conduct up-to-date census/population estimates on current hippo populations, certainly in countries where trafficking is rife and areas that have experienced or are experiencing civil unrest. A new population estimate could change their IUCN and CITES conservation status.
- Improve the accuracy of import and export data reports and encourage the exchange of data from market and source countries.
- Should populations continue to decline, up-listing hippos from CITES Appendix II to Appendix I should these populations meet the relevant criteria.

International Fund for
Animal Welfare

The State of
the Common Hippo

87-90 Albert Embankment
London
SE1 7UD

Registered Charity No. 1024806
Registered Company No. 2701278

Australia
Belgium
Canada
China
France
Germany
Kenya
Malawi
Morocco
Netherlands
South Africa
United Arab Emirates
United Kingdom
United States
Zambia

ifaw