U.S. Fish and Wildlife Service
Division of Scientific Authority
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Record of Advice on Import Permit Application

Application Number:	84171D
Date Received by DSA:	October 5, 2020
DMA Contact:	Miguel Richardson
Applicant:	Todd Dennis Cusick Provo, Utah
Specimens and Species:	1.0 Leopard (*Panthera pardus*) Wild (Tanzania) One (1) personal sport-hunted trophy (life-sized mount; skin, skull, and claws)
Recipient:	Self
Type of Permit:	Appendix I Import (CITES)

ADVICE

After reviewing the above permit application, we find that the proposed import is likely to be for purposes that are not detrimental to the survival of the species.

Background:

The leopard (*Panthera pardus*) has one of the largest geographic ranges of any terrestrial mammal in the world and ranges from southern Africa, through the Middle East, to eastern Asia from South Africa to eastern China and Russian Federation (Stein *et al.* 2016). The African leopard (*P. p. pardus*) is one of about nine leopard subspecies and occurs primarily in sub-Saharan regions (Jacobson *et al.* 2016). A habitat generalist, the leopard – all subspecies considered – occupies mesic woodlands, grassland savannas, and forests (Hunt 2011). Trees are an essential habitat component. Leopards are solitary, nocturnal, and territorial (Hunt 2011).

Home ranges are about 13–35 km^2 (Hunt 2011). Ambush predators, leopards prey primarily on medium-sized ungulates, especially deer (Family Cervidae; Hanssen *et al.* 2017). They also scavenge prey taken by other carnivores. These carcasses are often cached in trees beyond the reach of smaller, more numerous predators (Stein *et al.* 2016). Adult leopards have few natural predators (Hunt 2011). The total population size of the leopard is unknown. In southern Africa, a regional range loss of approximately 21% has been reported (Stein *et al.* 2016). Given their larger body size, males are more desirable and thus more susceptible than females to being harvested by trophy hunters (Braczkowski *et al.* 2015). In general, the current population trend is declining due to harvest and habitat loss and fragmentation (Stein *et al.* 2016).

In 1975, the leopard as *Panthera pardus* was included in CITES Appendix I (UNEP 2020). In accordance with Resolution Conf. 10.14 (Rev. CoP16) on *Quotas for leopard hunting trophies and skins for personal use*, there are numerical limits to the quantity of trophies and skins from some sub-Saharan countries that have been approved by the CITES Parties that can be traded annually (CITES 2013).

In 1970, the leopard as *Panthera pardus* with (three subspecies) was listed as Endangered on the *United States' List of Endangered Foreign Fish and Wildlife*, the precursor to the Endangered Species Act of 1973, as amended (Service 1970). This listing was revised in 1972 with the three subspecies being deleted as separate listings and all leopard subspecies included with the species listing (*Panthera pardus*; Service 1972). This listing was modified in 1982 when certain populations were classified as Threatened (Service 1982; "In Africa, in the wild, south of, and including, the following countries: Gabon, Congo, Zaire, Uganda, Kenya"). The leopard currently is subject to a 90-day status review (Service 2016, 2017, 2020).

In 2016, the African leopard as *Panthera pardus* ssp. *pardus* was categorized as Vulnerable A2cd (ver 3.1) by the IUCN Red List (Stein *et al.* 2016). This range wide finding was based on loss of habitat and prey, and exploitation. These conservation threats are not well understood, have not ceased, and are likely to continue (Stein *et al.* 2016).

The leopard is part of a joint initiative by the Convention on Migratory Species (CMS) and CITES: Joint CMS-CITES African Carnivores Initiative (CMS 2017a,b). Recognizing the potential benefits of working together, the two organizations have agreed to conduct joint activities addressing shared species and issues of common interest. In this regard, the two organizations have prioritized actions on the leopard, as well as the African lion (*Panthera leo*), cheetah (*Acinonyx jubatus*), and wild dog (*Lycaon pictus*). The conservation threats to be addressed include: habitat loss and fragmentation, conflict with humans, depletion of the prey base, and unsustainable or illegal trade practices. Specific joint actions are being developed and will be implemented over the next several years (CMS 2017a). These actions include cooperative conservation programs for carnivores in the several range States, as well as specific conservation activities (e.g., illegal trade analyses, biological monitoring, and capacity building).

Since the last IUCN Assessment in 2008, leopard populations have declined in Tanzania especially in central part of the country (IUCN/SSC Cat Specialist Group 2017:34). Leopards are found throughout the Serengeti-Ngorogoro Crater system, and to the south and west of this area, but are thought to be absent from Lake Victoria's southeastern boundary to Central

Tanzania (Stein *et al.* 2016). The current range of leopards in Tanzania covers approximately 76% of the countryside of Tanzania, or about 672,100 km^2 (Jacobson *et al.* 2016, Supplemental Table 5). The Tanzania Wildlife Research Institute (TAWIRI) plans to conduct additional leopard surveys during 2018–2019 (CITES 2018c:3).

Range wide, the main conservations threats to leopards are habitat loss and fragmentation, reduced prey base, conflict with livestock and game farming, and trophy hunting if poorly managed (Stein *et al.* 2016:13). In Tanzania, the key threats to leopard conservation are direct persecution in retaliation for livestock losses and accidental capture in snares set for other animals (CITES 2018c:5). These threats are ongoing (Stein *et al.* 2016:3). In addition, according to Tanzania (CITES 2018c:5): 4–15 leopards are killed annually through the control of problem animals; incidental snaring or poaching is worth noting and may be under-reported; prey abundance does not appear to be an issue; and habitat loss is not a significant threat. According to the IUCN/SSC Cat Specialist Group (2017:126–127), however, prey species depletion, as well as habitat loss and agricultural conversion, may in fact be significant leopard conservation threats. The significance of hostility towards leopards by local tribes, as well as the illegal harvest of female leopards, may also be under-appreciated. Additional information about all leopard conservation threats in Tanzania is indicated.

Until recently, given the absence of substantial baseline data, leopard species accounts typically did not include precise national population size estimates, for example: Jacobson *et al.* (2016, Supplement to Document 1, p. 26), Stein *et al.* (2016:8–10), and IUCN/SSC Cat Specialist Group (2017:56). As an example for leopard management purposes, however, Tanzania presents a qualitative assessment of leopard abundance based on camera traps at 23 sites. Leopards were assessed as abundant at three sites and as common or fairly common at nine sites (CITES 2018c:4). Leopard population density estimates are also available for four sites in Tanzania. Based on these values, Tanzania calculated overall densities, extrapolated those values to the surface areas of lands inside and outside of protected areas, and estimated a total population size of 19,673 leopards in that country (CITES 2018c:5). While this value is less than previous estimates (> 30K leopards, see IUCN/SSC Cat Specialist Group 2017:56), it would not be categorized by the Red List as a very small or restricted population. According to the IUCN Red List assessment however, while healthy leopard populations may occur outside of human dominated areas, widespread habitat loss and prey loss inside protected areas are likely to have caused leopard declines of > 30% over the past three leopard generations (ca. 22 years) in sub-Saharan Africa, perhaps suggesting that a more endangered assessment is indicated (Stein *et al.* 2016:9–10).

BASIS FOR ADVICE

A. Applicant Information:

1. The applicant (Todd Dennis Cusick, Provo, Utah) requests authorization to import one male leopard (*Panthera pardus pardus*) personal, sport-hunted trophy from Tanzania.

2. The purpose of the proposed import is personal use. The leopard was taken from the wild at/near: Mbeya Region, Chunya Msami Open Area (near Arusha), Tanzania, with Professional Hunter Michael G. Angelides and with Outfitter Old Nyika Safaris, during a hunt on October 20, 2019. The leopard harvest was documented by Register of Game Killed No. 2013503 (Ministry of Natural Resources and Tourism/Wildlife Division) (copy submitted) and Game Hunting Permit No. 2013503 (Tanzania Wildlife Management Authority) of the United Republic of Tanzania.

B. Tanzania Information:

3. Conservation activities in Tanzania are managed in accordance with four general principles: responsibility principle, precautionary principle, adaptive management principle, and participatory principle (CITES 2018c:11). Furthermore, leopards are the beneficiary of several protective measures and are sustainably utilized under a regulated trophy hunting system (CITES 2018c:6–7; see below). Leopards are also the beneficiary of an extensive network of protected areas that encompass about 23.9 % of their range (Jacobson *et al.* 2016, Supplemental Table 5; CITES 2018c:3). These activities and measures provide a strong protective framework for the species in Tanzania.

4. Leopard hunting in Tanzania is regulated by three legislative measures (CITES 2018c:6): Wildlife Conservation Act No. 5 of 2009, Wildlife Conservation (Tourist Hunting) Regulations of 2015, and CITES Implementation Regulations of 2005. These measures implement several general procedures (quota control system), including: (i) Allocating a quota for each licensed hunting operator; (ii) Authorizing hunting of male leopards; (iii) Hunting supervised and verified by game scouts; (iv) Verified leopard harvests that are recorded on official quota control sheets; (v) Actual exports are supported by CITES Export Permits; and (vi) Export documents that are verified by wildlife inspectors at exit points (CITES 2018c:6). Leopard harvests are also subject to a minimum body length requirement of 130 cm (tip of the nose to the base of the tail (CITES 2018c:7). The implementation of these measures by Tanzania enhances leopard conservation in that country.

5. Tanzania also manages its leopard population in accordance with the Tanzania Carnivore Conservation Action Plan (TAWIRI 2009). This plan summarizes current information about leopard distribution, abundance, conservation threats, information needs, conservation needs, and research priorities. Based on these preliminary results, the group of species and subject matter experts identified several immediate leopard information needs, including: (i) information on anthropogenic threats targeting conflict hotspots; (ii) research on effectiveness of mitigation strategies; (iii) status in representative areas; (iv) addressing gaps in knowledge of distribution; (v) movement of leopards in parks and between game reserves; (vi) GIS resource maps; and

(vii) threats posed by trade in skins and parts (TAWIRI 2009:98–99). At the national level, biodiversity is managed within the context of the National Biodiversity Strategy and Action Plan (NBSAP) 2015–2020 (Tanzania 2015). Within the context of the Convention on Biological Diversity, this plan calls for the characterization and conservation of biodiversity – including the leopard and its habitat – at various levels, including: ecosystems, species, and protected areas. Together, these two plans guide the activities of leopard researchers and managers.

6. According to Tanzania, the leopard management program has been subject to monitoring at both the national and regional levels through questionnaires, camera-traps, call-ups and spoor counts (CITES 2018c:8). Presently, camera traps and spoor counts are being utilized as monitoring tools. These results inform the decisions of leopard managers with regard to the calculation of estimated leopard population sizes, characterization of human-leopard conflicts, confirmation of distribution outside of protected areas, and quantification of non-trophy hunting killings of leopards.

7. There are three general categories of areas in Tanzania where big game hunting is permitted (Tanzania Wildlife Management Authority; TAWA 2018; Tanzania Tourist Board 2018): (i) Game Reserves are areas which are declared for the purpose of conservation, including both consumptive and non-consumptive uses. Licensed tourist hunting and licensed non-consumptive tourist activities are permitted. (ii) Game Controlled Areas are areas declared for conservation of wildlife outside of village lands where activities detrimental to wildlife are prohibited, for example, residence and livestock grazing. (iii) Wildlife Management Areas are areas set aside for community-based wildlife conservation within village lands, but excluding protected areas. There are currently 63 Game Controlled Areas/Open Areas where hunting is permitted (CITES 2018c:3).

8. Tourist hunting is regulated by a block and quota system (CITES 2018c:7). Hunting blocks are areas within Game Reserves, Game Controlled Areas, or Open Areas and are allocated to a licensed hunting operator subject to an application process. For the period 2018–2022, there are 56 hunting blocks available and applicants can be allocated up to five hunting blocks (Vemma 2017). Applicants are required to demonstrate technical capability and financial stability. Successful applicants are subject to an annual performance review (Vemma 2017).

9. Quotas are set at the national level on an annual basis under the direction of the Wildlife Division (CITES 2018c:2). Leopard quotas are set annually by a Committee comprised of experts from the Wildlife Division, Tanzania Wildlife Management Authority (TAWA), Tanzania Wildlife Research Institute (TAWIRI), which is the CITES Scientific Authority in Tanzania, and some selected renown biologists from academic institutions (CITES 2018c:7). Quotas are based on available biological and management information, including: species distribution, natural history, recruitment rate, and population estimates (CITES 2018c:7). This information is generated by researchers, agency staffs, and concession operators.

10. Tanzania justifies the continuation of the present quota in accordance with the following circumstances (CITES 2018c:7): (i) observed conservation status of leopards in that country (large and widely distributed population; see: CITES 2018c:3 & 5); (ii) improvement in population monitoring (see: CITES 2018c:4 & 8); (iii) scientific assessment of the harvest

regime (see: CITES 2018c:9); and (iv) contribution of trophy hunting revenues to leopard conservation and the livelihoods of local communities (CITES 2018c:9–11). Based on these circumstances, according to Tanzania, the present quota should be continued.

11. According to Tanzania (CITES 2018c:12–13):

> *Upon considering all the factors illustrated in this document and in accordance with Article IV of CITES and CITES Resolution Conf.16.7, the Scientific Authority of Tanzania has advised the Management Authority that the low level of off-take generated by safari hunting is not detrimental to the survival of the leopard in Tanzania and enhances its survival and the amount of revenues generated by this low level of off-take are of crucial importance for the conservation of the species also because of the benefits it provides to rural communities.*
>
> *It concludes by indicating that the quota for leopard in Tanzania found in Resolution Conf. 10.14(Rev. CoP16) is sustainable and at levels which are non-detrimental to the survival of the species in the wild.*

C. CITES Export Quota Program

12. Within the context of CITES, Tanzania initially had an approved export quota of 60 individuals (1983–1997; CITES 1983; CITES 2018a,b). That value – however, according to the United Republic of Tanzania – was not based on actual scientific data (CITES 2002:2). Given the absence of scientific data at that time, the quota was justified instead in large measure by trophy hunting considerations. Based on several additional factors, the leopard quota was increased in 1997 to 250: (i) more than 90% of Tanzania was considered to be excellent leopard habitat; (ii) leopard hunting was limited to that by tourists and for control purposes; (iii) 301–645 leopards were harvested annually for leopard control purposes with no apparent negative effect on the population; and (iv) there was no evidence of illegal trade (CITES 2002:2; UNEP 2020). By 2003, when the quota was increased for a third time, limited scientific data were available, including: (i) total population size (ca. 39,000 leopards); (ii) estimated annual harvest (390 individuals); and (iii) estimated potential safe harvest (5%; 1,827 individuals; CITES 2002:3). Although this quota has been increased, actual hunting trophy exports have been less than the corresponding quota. Since 2008, according to UNEP-WCMC (2020), reported gross exports have averaged about 190 trophies annually and 46 skins annually (total = 236 leopards; about 47% of the annual quota) *versus* the annual quota of 500.

13. Given that leopard export quotas are developed using various methods, the Parties at CoP17 adopted four interrelated decision on Quotas for leopard hunting trophies (see AC29 Doc. 16; CITES 2017a,b). According to Decision 17.114:

> Parties, which have quotas, established under Resolution Conf. 10.14 (Rev. CoP16) on *Quotas for leopard hunting trophies and skins for personal use* are requested to review these quotas, and consider whether these quotas are still set at levels which are non-detrimental to the survival of the species in the wild, and to share the outcomes of the review and the basis for the determination that the quota

is not detrimental, with the Animals Committee at its 30th meeting (July 2018).

14. The results of these reviews were considered by the Animals Committee at AC30 (CITES 2018d). During this time, a working group reviewed information submitted by leopard range states and made recommendations concerning quotas for 12 African countries to the Animals Committee. For Tanzania:

> "*The WC recommends to the Animals Committee to inform the Standing Committee that it considers that the quotas for Leopards for Tanzania, as mentioned in Resolution Conf. 10.14 (Rev. CoP16), are set at levels which are non-detrimental to the survival of the species in the wild*."

15. The Animals Committee adopted this recommendation (CITES 2018e:6).

16. At the 70th meeting of the Standing Committee (SC70; Sochi, October 2018), the Chair of the Animals Committee submitted a document SC70 Doc. 55 on *Quotas for leopard hunting trophies (Panthera pardus): Report of the Animals Committee*. In the document, the Animals Committee informed the Standing Committee of the above recommendation. The Standing Committee noted the evaluation of the Animals Committee concerning the quotas for Zambia in Resolution Conf. 10.14 (Rev. CoP16) and invited the Secretariat to propose to the Conference of the Parties draft amendments to Resolution Conf. 9.21 (Rev. CoP13) on *Interpretation and application of quotas for species included in Appendix I* concerning approaches to review quotas for Appendix-I species, taking into consideration the recommendations of the Animals Committee in paragraph 5 f) of document SC70 Doc. 55 and opportunities to provide assistance to range States (CITES 2018d). These results were taken up by the 18th meeting of the Conference of the Parties in Geneva, Switzerland, August 17 – 28, 2019, under document CoP18 Doc. 46 on *Quotas for Leopard Hunting Trophies*.

17. Based on the discussions regarding Doc. 46 at CoP18, the Chair of Committee I established a working group to consider the revision of Resolution Conf. 9.21 (Rev. CoP11) in Annex 2 and draft decisions 18.AA to 18.HH in Annex 3 to document CoP18 Doc. 46. The working group, chaired by the United Kingdom of Great Britain and Northern Ireland, also included Botswana, the Central African Republic, Chad, Ethiopia, the European Union, Finland, Germany, Israel, Liberia, Malawi, Namibia, Senegal, South Africa, Spain, Uganda, the United States of America, and Zimbabwe; United Nations Environment Programme (UNEP); International Council for Game and Wildlife Conservation; International Union for Conservation of Nature (IUCN); and Cheetah Conservation Fund, Conservation Force, Dallas Safari Club, European Federation of Associations for Hunting and Conservation, Human Society International, International Professional Hunters Association, IWMC-World Conservation Trust, Safari Club International, San Diego Zoo Global, World Wildlife Fund and Zoological Society of London (CITES 2019a). The working group prepared document CoP18 Com. I. 10 on the basis of document CoP18 Doc. 46 after discussion in the second session of Committee I (CITES 2019b). At the conclusion of CoP18 (i.e. plenary), the amendments to Resolution Conf. 9.21 (Rev. CoP17) on *Interpretation and application of quotas for species included in Appendix I* contained in the in-session document CoP18 Com. I. 10 had been accepted in Committee I and were adopted. The eight draft decisions in Annex 3 to document CoP18 Doc. 46 had also been accepted in Committee I

and were adopted. Decisions 17.114 to 17.117 were deleted (CITES 2019c).

18. Therefore, based on the above information, we find that the current harvest levels are sustainable. As such, we advise that this import is likely to be for purposes that are not detrimental to the survival of the species.

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Braczkowski, A.R., G.A. Balme, A. Dickman, D.W. Macdonald, J. Fattebert, T. Dickerson, P. Johnson, and L. Hunter. 201. Who bites the bullet first? The susceptibility of Leopards *Panthera pardus* to trophy hunting. PloS one 10, no. 4 (2015): e0123100. Available online at: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0123100; accessed on: September 2, 2020.

Caro, TM, Young, CR, Cauldwell, AE, and Brown, DDE. 2009. Animal breeding systems and big game hunting: Models and application. Biol. Conserv. 142(4):909–929. Available online at: http://www.cryoung.org/www/pdfs/Caro_BiolCon_2009.pdf; accessed on: August 7, 2018. [No longer available online.]

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 1983. Trade in leopard skins. Conf. 4.13, 2 pp.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2002. Amendment to the Quota of the United Republic of Tanzania. CoP12 Doc. 23.1.2, 7 pp. Available online at: https://www.cites.org/sites/default/files/eng/cop/12/doc/E12-23-1-2.pdf; accessed on; September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2013. Conf. 10.14 (Rev. CoP16) on Quotas for leopard hunting trophies and skins for personal use. Available online at: https://cites.org/sites/default/files/document/E-Res-10-14-R16_0.pdf; accessed on: September 2, 2020 .

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2017a. Summary Record. AC29 summary record. Available online at: https://cites.org/sites/default/files/eng/com/ac/29/sum/E-AC29-SR.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2017b. CITES Secretary-General's statement for the Twelfth meeting of the Conference of the Parties to the Convention on Migratory Species, Opening Plenary - Manila, Philippines. Available online at: https://cites.org/eng/news/sg/CITES_SG_opening_speech_Twelfth_CoP_Convention_on_Migratory_Species_23102017; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018a. CITES National Export Quotas: *Panthera pardus*. Available online at: https://cites.org/eng/resources/quotas/export_quotas?field_party_quotas_tid=United+Republic+of+Tanzania&field_full_name_tid=Panthera+pardus&field_export_quotas_year_value%5Bvalue%5D%5Byear%5D=2018&items_per_page=50&=Apply; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018b. Quotas for leopard hunting trophies. AC29 Doc. 16. Available online at: https://cites.org/sites/default/files/eng/com/ac/29/E-AC29-16.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018c. Export Quota Review – (Tanzania). AC30 Doc. 15 Annex 4. 14 pp. Available online at: https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-15-A4.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018d. Quotas for leopard hunting trophies. AC30 Com. 10. 3 pp. Available online at: https://cites.org/sites/default/files/eng/com/AC/30/com/E-AC30-Com-10.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018e. Executive Summary. AC30 Sum. 3. 6 pp. Available online at: https://cites.org/sites/default/files/eng/com/AC/30/sum/E-AC30-ExSum-03.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018f. Executive Summary. SC70 Sum. 10 (Rev. 1). 3 pp. Available online at: https://cites.org/sites/default/files/eng/com/sc/70/exsum/E-SC70-Sum-10-R1.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2019a. Summary record of the second session for Committee I (CoP18 Com. I. Rec. 2. Available online at: https://cites.org/sites/default/files/eng/cop/18/Com_I/SR/E-CoP18-Com-I-Rec-02_.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2019b. In-session document from Committee I on *Quotas for leopard hunting trophies* (Document 46) (CoP18 Com. I. 10). Available online at: https://cites.org/sites/default/files/eng/cop/18/Com_I/E-CoP18-Com-I-10.pdf; accessed on: September 2, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2019c. Summary record of the third plenary session (CoP18 Plen. Rec. 3 (Rev. 1)). Available online at: https://cites.org/sites/default/files/eng/cop/18/Plen/SR/E-CoP18-Plen-Rec-03-R1.pdf; accessed on: September 2, 2020.

CMS (Convention on Migratory Species). 2017a. Joint CMS-CITES African Carnivores Initiative. UNEP/CMS/COP12/Doc.24.3.1.1; 22 May 2017. Available online at: http://www.cms.int/sites/default/files/document/cms_cop12_doc.24.3.1.1_african-carnivores-initiative_e.pdf; accessed on: September 2, 2020.

CMS (Convention on Migratory Species). 2017b. Decisions of the Conference of the Parties to CMS in Effect After its 12th Meeting. 25 pp. Available online at: http://www.cms.int/sites/default/files/document/cms_cop12_decisions_e_0.pdf; accessed on: September 2, 2020. [See: Decisions 12.55–12.60; p. 15]

Hanssen, L., P. Funston, B. Alfred, and S. Alfred. 2017. Large Carnivore Survey; Bwabwata National Park, Namibia, August 2017. Kwando Carnivore Project, Kyaramacan Trust, Panthera, and Namibia Ministry of Environment and Tourism. 9 pp. Available online at: http://www.the-eis.com/data/literature/Report_Bwabwata%20Large%20Carnivore%20Survey_2017.pdf; accessed on: September 2, 2020. [See also: http://the-eis.com/elibrary/search/9341; accessed on: September 2, 2020.]

Hunt, A. 2011. "*Panthera pardus*" (On-line), Animal Diversity Web. Accessed September 2, 2020, at http://animaldiversity.org/accounts/Panthera_pardus/

IUCN/SSC Cat Specialist Group. 2017. Regional Assessment for the leopard in selected countries of Africa. Muri bei Bern, Switzerland. 207 pp.

Jacobson, A.P., *et al.* 2016. Leopard (*Panthera pardus*) status, distribution, and the research efforts across its range. PeerJ, 4, e1974. Available online at: https://peerj.com/articles/1974/; accessed on: September 2, 2020.

Service (U.S. Fish and Wildlife Service). 1970. Part 17: Conservation of Endangered Species and Other Fish or Wildlife. Federal Register 35(106):8491–8498. [June 2, 1970] Available online at: https://ecos.fws.gov/docs/federal_register/fr21.pdf; accessed on: September 2, 2020.

Service (U.S. Fish and Wildlife Service). 1972. Part 17: Conservation of Endangered Species and Other Fish or Wildlife: List of Endangered Foreign Fish and Wildlife. Federal Register 37(62):6476. [March 30, 1972] Available online at: https://ecos.fws.gov/docs/federal_register/fr29.pdf; accessed on: September 2, 2020.

Service (U.S. Fish and Wildlife Service). 1982. Endangered and Threatened Wildlife and Plants: Threatened Status for the Leopard in Southern Africa. Federal Register 47(19):4204–4211. [January 28, 1982] Available online at: https://ecos.fws.gov/docs/federal_register/fr573.pdf; accessed on: September 2, 2020.

Service (U.S. Fish and Wildlife Service). 2016. Endangered and Threatened Wildlife and Plants: Notifice of petition findings and initiation of status reviews. Federal Register 81(230):86315–86318. [November 30, 2016] Available online at: https://www.gpo.gov/fdsys/pkg/FR-2016-11-30/pdf/2016-28513.pdf; accessed on: September 2, 2020.

Service (U.S. Fish and Wildlife Service). 2017. Endangered and Threatened Wildlife and Plants: Notification of petition findings and initiation of status reviews. Federal Register

82(243):60362–60366. [December 20, 2017] Available online at: https://www.gpo.gov/fdsys/pkg/FR-2016-11-30/pdf/2016-28513.pdf; accessed on: September 2, 2020.

Service (U.S. Fish and Wildlife Service). 2020. ECOS: *Panthera pardus*. Available online at: https://ecos.fws.gov/ecp0/profile/speciesProfile.action?spcode=A01J; accessed on: September 2, 2020.

Stein, A.B., Athreya, V., Gerngross, P., Balme, G., Henschel, P., Karanth, U., Miquelle, D., Rostro-Garcia, S., Kamler, J.F., Laguardia, A., Khorozyan, I. & Ghoddousi, A. 2019. *Panthera pardus* (amended version of 2016 assessment). *The IUCN Red List of Threatened Species* 2019. Available online at: https://www.iucnredlist.org/species/15954/163991139; accessed on: September 2, 2020.

Tanzania (United Republic of Tanzania). 2015. National Biodiversity Strategy and Action Plan (NBSAP): 2015–2020. Vice President's Office, Division of Environment. 137 pp. Available online at: http://tz.chm-cbd.net/implementation/nbsap/nbsap-final-october-2015.pdf; accessed on September 2, 2020.

Tanzania Tourist Board. 2018. Conservation Areas. Available online at: http://tanzaniatourism.go.tz/en/places-to-go/category/conservation-areas; accessed on: September 13, 2018. See also: Game Controlled Areas at: http://tanzaniatourism.go.tz/en/places-to-go/category/game-controlled-areas; See also: Game Reserves at: http://tanzaniatourism.go.tz/en/places-to-go/category/game-reserves; See also: National Parks at: http://tanzaniatourism.go.tz/en/places-to-go/category/national-parks; See also: Wildlife Management Areas at: http://tanzaniatourism.go.tz/en/places-to-go/category/national-parks; See also: World Heritage Sites at: http://tanzaniatourism.go.tz/en/places-to-go/category/national-parks; accessed on: September 2, 2020.

TAWA (Tanzania Wildlife Management Authority). 2018. Protected areas in Tanzania. Available online at: http://www.tawa.go.tz/conservation/protected-areas/; accessed on: September 2, 2020.

TAWIRI (Tanzania Wildlife Research Institute). 2009. The Tanzania Lion and Leopard Conservation Action Plan. Pp. 64-111 in Tanzania Carnivore Conservation Action Plan. TAWIRI, Arusha, Tanzania. Available online at: http://www.darwininitiative.org.uk/documents/11007/4347/11-007%20FR%20App5%20Lion%20and%20Leopard%20CAP.pdf; accessed on: September 2, 2020.

UNEP. 2020. CITES Species Database: *Panthera pardus*. Available online at: https://speciesplus.net/#/taxon_concepts/8619/legal; Downloaded on: September 2, 2020.

UNEP-WCMC. 2020. CITES Gross Export Trade Report: *Panthera pardus*. Available online at: https://trade.cites.org/en/cites_trade/download/view_results?filters%5Btime_range_start%5D=2009&filters%5Btime_range_end%5D=2018&filters%5Bexporters_ids%5D%5B%5D=33&filters%5Bimporters_ids%5D%5B%5D=all_imp&filters%5Bsources_ids%5D%5B%5D=112&filters%5Bpurposes_ids%5D%5B%5D=116&filters%5Bpurposes_ids%5D%5B%5D=120&filters%5Bterms_ids%5D%5B%5D=84&filters%5Bterms_ids%5D%5B%5D=97&filters%5Btaxon_concepts_ids%5D%5B%5D=8619&filters%5Breset%5D=&filters%5Bselection_taxon%5D=taxonomic_cascade&web_disabled=&filters[report_type]=gross_exports; Downloaded on: September 2, 2020.

Vemma (Vemma Consult Attorneys). 2017. The allocation of tourist hunting blocks for the period of 2018–2022 announced by the Government of Tanzania. Available online at: http://vemmaattorneys.co.tz/2017/05/05/allocation-tourist-hunting-blocks-period-2018-2022-announced-government-tanzania/; accessed on: September 2, 2020.

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