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:	PER0002384
Date Received by DSA:	January 04, 2021
DMA Contact:	Miguel Richardson
Applicant:	Sheldon Dewayne Alver Wildwood, Missouri
Specimens and Species:	1.0 male leopard (*Panthera pardus*) Wild (Namibia) One (1) personal sport-hunted trophy
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.

Species Background:

The leopard (*Panthera pardus*) is a large-bodied felid with a wide geographic distribution across Africa and Asia that includes southern Africa, the Middle East, and southeastern and eastern Asia (Stein *et al*. 2020). The distribution is not continuous, and leopards are now extinct in large parts of their historic range (Stein *et al.* 2020). The leopard occupies a variety of habitats, including mountainous environments, grassland savannas, deserts, and forests (Stein *et al.* 2020). Leopards prefer to prey on medium-sized ungulates (10-40 kg) but will also feed on a variety of other taxa, including larger ungulates, birds, monkeys, and rodents (Hayward *et al.* 2006). Leopards are generally solitary, territorial, and may be nocturnal or diurnal (Stein and Hayssen 2013).

Female leopards generally give birth to litter sizes ranging between 1 and 6 cubs (mode = 2 cubs, litters of 5 and 6 are rare; Stein and Hayssen 2013). Infanticidal behavior by male leopards has been documented, and this behavior could have negative impacts on populations when male turnover rate is elevated (Balme and Hunter 2013). Leopards are trophy hunted in parts of Africa, with males often targeted. Research has indicated that take of male leopards at least 6-7 years of age has a relatively low impact on populations (Packer *et al.* 2009), and although visually aging leopards can be challenging, methods for age estimation using photographs may help facilitate identification of older-aged individuals (Balme *et al.* 2012).

The total, global population size of the leopard is unknown, but the species has been categorized as Vulnerable A2cd by the IUCN Red List since 2016 (last assessed in 2015) and has a decreasing population trend (Stein *et al.* 2020). Stein *et al.* (2020) estimate that >30% of the global leopard range has been reduced in the last three generations (22.3 years). Conservation threats to leopards include loss of habitat and prey, and exploitation (*e.g.*, illegal wildlife trade, poorly managed trophy hunting). These threats are not well understood and will likely continue unless appropriate conservation efforts are implemented (Stein *et al*. 2020).

In 1975, the leopard as *Panthera pardus* was included in CITES Appendix I (UNEP 2021). 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).

<u>African leopards (*Panthera pardus pardus*)</u>

There are 8-9 subspecies of leopard currently recognized (Kitchener *et al.* 2017; Stein *et al.* 2020). All African leopard populations are considered to be a single subspecies: *Panthera pardus pardus*. Historically widespread, this subspecies' current range is primarily found in central, eastern and southern Africa. There have been notable dramatic reductions in the leopard's historic range in both North and West Africa (93.99-99% and 86-95%, respectively; Jacobson *et al.* 2016). Approximately 21% of the leopard's range has been lost in sub-Saharan Africa within the last 25 years, and populations have likely declined >30% over the last three generations (Stein *et al.* 2020). The African leopard subspecies, as well as the sub-Saharan population, potentially qualify as Vulnerable A2cd, while the North African population potentially qualifies as Critically Endangered (Stein *et al.* 2020).

The leopard is included in Appendix II of the Convention on Migratory Species (CMS) and is part of a joint initiative by the CMS and CITES: Joint CMS-CITES African Carnivores Initiative (ACI) (CMS 2017a,b). Recognizing the potential benefits of working together, CMS and CITES 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). The ACI will work closely with other conservation organizations, including the IUCN and its specialist groups, and implement CITES and CMS resolutions and decisions through a Programme of Work to be developed (CITES 2019a).

Within the above framework, the CMS Secretariat commissioned the IUCN Species Survival Commission Cat Specialist Group to draft the *Roadmap for the Conservation of the Leopard in Africa*. It was presented at the first meeting of the Joint CITES-CMS African Carnivores Initiative in 2018, and Version 1.0 was finalized in 2019 (CITES 2020). The document is intended as "background for the development of transboundary Regional Conservation Strategies and subsequently National Action Plans for the implementation of conservation actions for the leopard in Africa under the auspice of the CMS and CITES in the frame of the African Carnivores Initiative" (IUCN/SSC Cat Specialist Group 2019:6). The *Roadmap* proposes four conservation regions in Africa (West, Central, East, and southern Africa) that might have different conservation priorities and proposes multiple objectives and activities for consideration in regional and national conservation programs. Objectives include surveying leopard populations, their prey base and threats; mitigating human-leopard conflict; ensuring trophy hunting is non-detrimental to leopard populations; and minimizing illegal trade of leopards (IUCN/SSC Cat Specialist Group 2019:26-27).

Leopard population in Namibia

Leopards in Namibia occur throughout the country except for the desert coast (Richmond-Coggan 2019:103). Previously thought to be absent from Namibia's southeast farmlands (Stein *et al.* 2011), a recent national leopard survey suggests leopards are more widespread in Namibia and present in this region (Richmond-Coggan 2019:103). Most of the leopard population in Namibia occurs outside of national parks (Richmond-Coggan 2019:120), and one of the primary threats to leopard conservation is excessive off-take, often illegal, of problem-causing animals due to human-wildlife conflicts (*e.g.*, livestock predation) (CITES 2018a:7; Richmond-Coggan 2019:117). For example, between October 2016 and December 2018, based on a national questionnaire, 342 leopards were removed from properties in Namibia; only 196 leopards were recorded as removed by the Namibian government's Ministry of Environment and Tourism (now Ministry of Environment, Forestry and Tourism) during this time (Richmond-Coggan 2019:121). Leopards usually are taken by affected livestock owners

(IUCN/SSC Cat Specialist Group 2017:116), but may also be trophy hunted (Richmond-Coggan 2019:69).

The recent national leopard survey estimates the leopard population in Namibia to be 11,733 individuals (root mean square error 5,949) (Richmond-Coggan 2019:57). This estimate is 17% lower than that obtained by a previous survey published in 2011 (14,154 individuals: Stein *et al.* 2011). The new analysis was based on data obtained using camera trap surveys and a questionnaire. Data were augmented with records of leopard presence and density estimates from multiple sources including government records, the Atlasing project (http://www.the-eis.com/atlas/), and published studies. Rather than representing an overall decline in Namibia's leopard population, Richmond-Coggan (2019:108) suggests that the current lower population estimate likely results from improved modelling methods and statistical analyses and represents increased accuracy.

Leopard densities in Namibia range between 0.25 and 13.5 leopards per 100 km^2. The upper end of the range is considered an outlier (densities are generally 0.25-5.6 leopards/100 km^2; Richmond-Coggan 2019:106-108), as it represents a private, enclosed reserve (Okonjima Nature Reserve); a more recent density estimate for the area is higher (14.51 leopards/100 km^2: Noack *et al.* 2019). Freehold farmland generally has higher densities compared to national parks (Richmond-Coggan 2019:110). Density estimates across regions differed between 2011 and 2019. The central and northern regions of Namibia have 40% and 16% higher densities in the most recent survey, respectively, compared to estimates in 2011 (Richmond-Coggan 2019:52). The southern region has a 38% lower density than estimated in 2011 (Richmond-Coggan 2019:51). The northeast region, previously considered a high density region (Stein *et al.* 2011), has been identified as an area of low density in the current survey (Richmond-Coggan 2019:109). Compared to other African countries, leopard densities across Namibia appear to be relatively low, but this result is also likely influenced by variation in survey effort (Richmond-Coggan 2019:106-108).

The results of this most recent national survey will be used in a national management strategy plan for leopards in Namibia (CITES 2018a:15).

BASIS FOR ADVICE

A. Applicant Information:

1. The applicant (Sheldon Dewayne Alver, Wildwood, Missouri) requests authorization to import one male leopard (*Panthera pardus pardus*) personal, sport-hunted trophy taken from the wild in Namibia.

2. The purpose of the proposed import is personal use. The leopard was taken from the wild on October 20, 2020 at the Farm Osombahe Nord #1019 in the Omaheke Region of Namibia, with Professional Hunter P. H. Jacobsz. The leopard was harvested under Namibia, Ministry of Environment and Tourism Permit to Hunt for Trophies No. 193330 [Tag # NAPP 39/250 (2020)]. No Export Confirmation Certificate was provided.

3. The estimated age of the leopard by the stated Farm Owner, Hunter, and Professional Hunter is 9 years. The skull size is stated to be 40 cm (25 cm long + 15 cm wide).

4. The area from which the leopard was taken is the Omaheke Region of Namibia (GPS coordinates – -22.154901, 18.074227 – correspond to the central-western area of the region). According to the most recent national leopard survey, the Omaheke Region has variable leopard densities (see Figure 4.8 below from Richmond-Coggan 2019:59) with highest density in the freehold farms in the central and southern parts of the region (Richmond-Coggan 2019:58). The location from which the leopard was taken appears to be in an area of mid-level leopard density for Namibia.

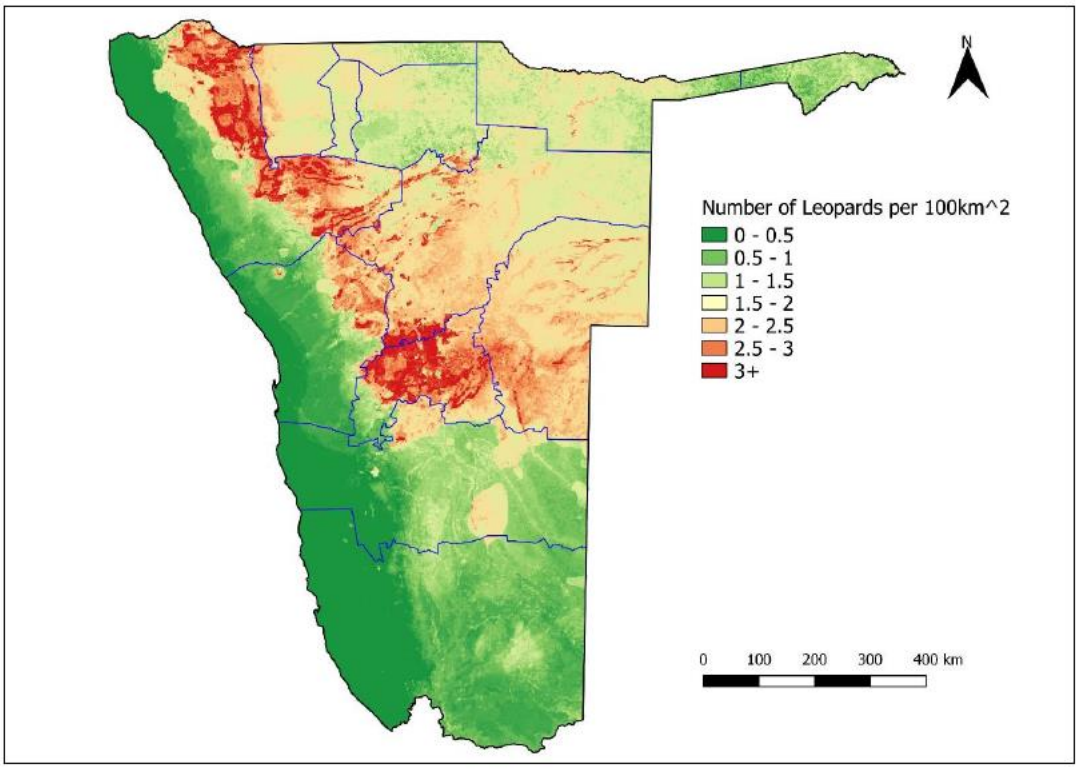

Figure 4.8. The variation in leopard density using seven density intervals across Namibia based upon the distribution model.

B. Namibia Information:

5. Leopards in Namibia are managed under a sustainable use program that includes trophy hunting and are the beneficiary of several protective measures. Under national legislation in Namibia, the leopard is listed as Protected Game (Nature Conservation Ordinance 4 of 1975, Controlled Wildlife Products and Trade Act, 2008) (CITES 2018a:8). No person may kill, hunt, or possess a leopard, or trade in leopard products without a permit. However, owners or occupiers of land may kill leopards in defense of human life or to protect their livestock and must report the killing to the Ministry of Environment and Tourism (CITES 2018a:8). The export of specimens from leopards categorized as problem animals and destroyed is not

allowed (CITES 2018a:8). Leopards are protected under legislation that provides for stiff penalties for illegal possession, poaching, and trade in controlled wildlife products (see: IUCN/SSC Cat Specialist Group 2017:144-145). Despite these measures, many leopards are killed illegally (*e.g.*, Richmond-Coggan 2019:69).

6. Richmond-Coggan (2019:118) notes that problem-animal removal is high in Namibia and will impact leopard populations and long-term survival of the species. The high quantity of leopards killed/removed as problem animals in Namibia may present management challenges because ≤50% of problem animals killed/removed are reported to government wildlife officials who manage trophy hunting (Stein *et al.* 2011; Richmond-Coggan 2019:69). Problem-animal removal is also less discriminating than current trophy hunting practices in Namibia and includes removal of female leopards (97 females removed between October 2016 and December 2018 based on a national questionnaire: Richmond-Coggan 2019:68). Accurate estimates of problem-animal mortality are essential to the management of the leopard trophy hunting system.

7. Namibia has a well-established leopard trophy-hunting system with management practices regarding quota allocation, hunt monitoring, and trophy take and export (CITES 2018a:8-10).

8. The overall leopard harvest quota (250 leopards/year) is allocated by the Ministry of Environment and Tourism among hunting concessions, taking into account the size of the parcel and any relevant scientific information, such as estimated population size, density, and habitat (CITES 2018a:9). Larger parcels with healthier leopard populations, supported by monitoring results, are awarded higher quotas. In the absence of population estimates, trophy quality and trend assessments are used as a guide (CITES 2018a:9).

9. According to the U.S. Department of State (State 2018), Namibia uses a rigorous, science-based system for quota setting for hunting in communal conservancies. This practice ensures wildlife sustainability. The quota process begins by combining hunting data from the previous year with current information for the species. An initial quota is adjusted taking into account five factors that are indicated on a Quota Setting Sheet (*e.g.*, population estimate, species status, and population trend). The quota setting process is a team effort by local conservancy committee members, the Ministry of Environment and Tourism, and conservation NGOs. Initial data compilation takes about 6 months.

10. The State Department (2018) reports that results of the quota setting process are confirmed through site visits by technical advisors to the conservancy. The quota setting process and data are discussed during a day-long visit to the conservancy with team members. After considering the data and local knowledge, the finalized requested quota is submitted to local ministry representatives for review and comment. Once the quota request sheet is agreed upon and signed by the respective parties, it is submitted to central ministry representatives for final approval. Throughout the year, monitoring of species utilization and benefits continues. At the end of the year, an annual report is generated for each conservancy. These results inform the next quota setting cycle.

11. Leopard hunting off-take is well-monitored (CITES 2018a:9). Hunting is not allowed during the months of December and January (Republic of Namibia 2016:Regulation 116). An individual leopard hunting permit must be obtained prior to the hunt. This permit is only valid for a specific site and time period (CITES 2018a:9). At least 7 days prior to a hunt, the hunting operator must give notice to the Ministry of Environment and Tourism, and the results of the hunt must be reported within 72 hours regardless of the success of the outing (CITES 2018a:9). The hunting guide must also submit a detailed leopard record sheet (CITES 2018a:10). These measures assist ministry officials to track trophy hunts.

12. Several measures regulate the actual take of the trophy leopard. For example, hunts are conducted under the supervision of registered hunting guides (CITES 2018a:8). In addition, only adult, free ranging male leopards with a minimum skull size (length + width: Richmond-Coggan 2019:90) of 32 cm may be harvested (Republic of Namibia 2016:Regulation 114C). These latter measures, introduced in 2010, have resulted in a large reduction of female take in recent years. Females represented 0.7% (8 individuals) of trophy hunted leopards between 2011 and 2018 compared to 32% (476 individuals) between 2001 and 2010 (Richmond-Coggan 2019:78-79). Similarly, small males (skull size <32 cm) represented 0.7% (5 individuals) of trophy hunted males between 2011 and 2018 compared to 7.1% (104 individuals) prior to implementing the new measures (Richmond-Coggan 2019:96). The age range of leopards hunted between 2013 and 2018 was 2-20 years. The majority of hunted leopards (71.8%) were 7 years or older, followed by 4-6.5 year old leopards (26.7%), and 2-3.5 year old leopards (1.52%) (Richmond-Coggan 2019:84).

13. Additional tracking measures prior to export also apply to the monitoring system. All harvested leopard trophies, for example, must be presented to the Ministry of Environment and Tourism for inspection and tagging (CITES 2018a:10). This step is compulsory for the issuance of a CITES Export Permit (CITES 2018a:10). The leopard's skin must have the scrotum attached to confirm sex. Skins without a scrotum attached are assumed female and will not be permitted to be exported (Republic of Namibia 2016:Regulation 114D). All skulls are also photographed and measured in order to assess age and physical condition (CITES 2018a:10-11). Small, young, or unhealthy leopards (for instance, due to disease or injury) should not be harvested. Between 2016, when these regulations were introduced, and 2018, no hunted trophies were reported to be female (Richmond-Coggan 2019:79). However, at least one skull of a trophy hunted leopard appears to be below 32 cm during this same time (see graph below – Figure 4.25 from Richmond-Coggan 2019:97). Accordingly, after establishing the recent trophy take and export regulations in 2010 and 2016, take of females and small males has been reduced; records of leopard trophy hunting indicate that both have rarely been trophy hunted since 2011 (Richmond-Coggan 2019). According to Namibia's regulations, such trophies would not be exported.

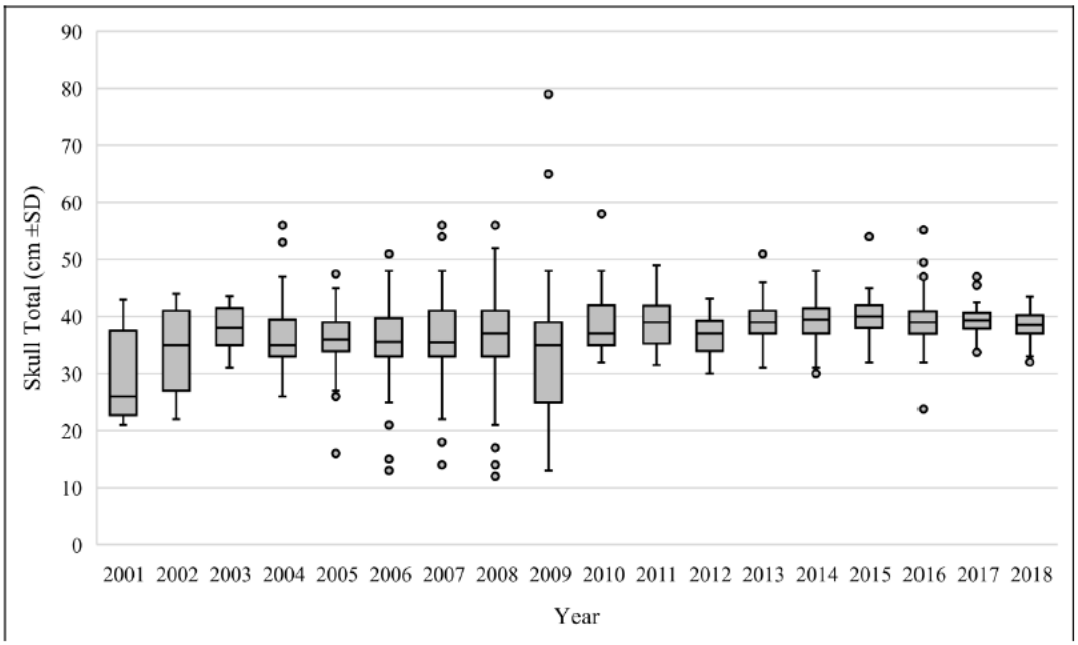

Figure 4.25. The skull total (cm) measurements for trophy hunted leopards between 2001 and 2018.

14. A non-detriment report from Namibian officials in 2018 concluded that trophy hunting in Namibia is sustainable and non-detrimental to the leopard population (CITES 2018a:15-16). This finding was based on multiple factors, including that the trophy hunting program is strictly controlled (see management practices outlined above). Moreover, the national leopard survey at that time indicated the leopard population in Namibia was stable, increasing in size, and widely distributed (CITES 2018a:15-16). According to the most recent national survey, the leopard population is widely distributed in Namibia and extends beyond the current range recognized by the IUCN (Richmond-Coggan 2019:55), but the leopard population estimate is 17% lower than that obtained in 2011, a result attributed to greater accuracy rather than population decline (Richmond-Coggan 2019:108,115). Based on the previous leopard population estimate (14,154 individuals), the annual quota of 250 leopards represented ~1.8% of the population and ~3-4% of the male population assuming a 1:1 sex ratio (Stein *et al.* 2011). Based on the most recent population estimate (11,733 individuals), the annual quota of 250 leopards represents ~2.1% of the population and ~4.3% of the male population assuming a 1:1 sex ratio. Richmond-Coggan (2019:4,115) recommends retaining the 250 leopard quota based on additional factors, including that leopard hunting trophy off-take has remained well-below the quota after the implementation of new regulations in 2010 (see #16 below).

15. The 2019 national survey suggests that the current trophy hunting system in Namibia could be detrimental to some populations. Richmond-Coggan (2019:113) cites information for the Nyae Nyae Conservancy, located in the northeast of the Otjozondjupa Region, in which a recent survey identified the oldest leopards as 3-4 years old. Richmond-Coggan (2019:113) states that removal of these ages in the Nyae Nyae Conservancy would be highly detrimental to the population's long-term viability.

16. In 2020, the Namibia Professional Hunting Association launched an Age-Related Trophy Hunting System intended to incentivize hunting of individuals that are older and past their prime to reduce negative effects of trophy hunting on populations. The initial launch appears largely focused on bovids, but includes elephants, suids, and carnivores. For carnivores, scoring is determined by skull size multiplied by the age (NAPHA Newsletter, Issue 31/2020 and associated video). Details regarding the implementation and impact of the system on leopard trophy hunting are unknown at this time.

C. CITES Export Quota Program:

17. Within the context of CITES, Namibia initially had an approved export quota of 100 individuals (CITES 1992). That quota was modified in 2004 and increased to the current total of 250 leopards per year (UNEP 2021). Although this quota was increased, actual trophy hunted leopards have been less. During 2004-2018, on average approximately 159 leopards were harvested per year (about 63.6% of the annual quota; see Table 4.18 below from Richmond-Coggan 2019:79). When the number of trophy hunted leopards exceeded 250 in 2008 (Table 4.18, Richmond-Coggan 2019:79), Namibia instituted a temporary harvest moratorium, assessed population data, evaluated their hunting management strategy, and ultimately revised their hunting regulations. The quota of 250 leopards was maintained. Under the new regulations introduced in 2010, hunting of female leopards and use of dogs were outlawed, and individual operator harvest limits were set (CITES 2018a:11). Between 2011 and 2018, an average of 138 leopards were harvested each year, with the highest number of leopards harvested in 2017 (161 individuals) (Richmond-Coggan 2019:79, Table 4.18).

Table 4.18. The number of male and female leopards trophy hunted across Namibia between 2001 and 2018.

	Leopard sex			
Year	**Male**	**Female**	**Unknown**	**Total**
2001	23	10	2	**35**
2002	61	27	1	**89**
2003	61	34		**95**
2004	65	32	6	**103**
2005	86	43	1	**130**
2006	138	68	3	**209**
2007	126	72	4	**202**
2008	262	123	5	**390**
2009	151	64	2	**217**
2010	27	3		**30**
2011	111	4		**115**
2012	105	1	1	**107**
2013	114	2		**116**
2014	149			**149**
2015	148	1	1	**150**
2016	160			**160**
2017	161			**161**
2018	143			**143**
Total	**2091**	**484**	**26**	**2601**

18. Between 2006 and 2018, according to UNEP-WCMC (2021), reported gross exports have averaged approximately 166 trophies (169 including bodies), 7 skins, and 7 skulls annually.

19. Given that leopard export quotas are developed using various methods, the Parties at CoP17 adopted four interrelated decisions 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).

20. The results of these reviews were considered by the Animals Committee at AC30 (CITES 2018b). 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 Namibia:

"*The WC recommends to the Animals Committee to inform the Standing Committee that it considers that the quotas for Leopards for Namibia, 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*."

21. The Animals Committee adopted this recommendation (CITES 2018c:6).

22. 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. 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*. There were no recommended amendments to the approved quotas for Namibia.

23. During CoP18, a working group was established to consider leopard quotas set by the CoP. 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, Humane 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 2019b). This working group resulted in a consensus recommendation, later adopted by CoP18, to establish a regular process for reviewing quotas (every 9 years or sooner if determined necessary) for species included in Appendix I established by the Conference of the Parties.

24. 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, subject to the following conditions.

<u>Conditions</u>

a. The leopard to be imported must have been harvested and exported in accordance with all relevant laws and regulations established by the government of Namibia and comply with United States import law.
b. The leopard to be imported must be a male leopard and comply with Namibia's minimum skull size requirement (length + width).

* * * * *

Balme, G.A., & Hunter, L.T.B. 2013. Why leopards commit infanticide. *Animal Behaviour* 86: 791-799.

Balme, G.A., Hunter, L., & Braczkowski, A.R. 2012. Applicability of age-based hunting regulations for African leopards. *PLoS ONE* 7: e35209. Available online at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0035209; accessed on: December 29, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 1992. Conf. 8.10 on Quotas for leopard hunting trophies and skins for personal use as part of Resolutions adopted at CoP8, pp. 26-27. Available online at: https://cites.org/sites/default/files/eng/cop/08/E-Resolutions.pdf; accessed on: March 04, 2021.

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: March 04, 2021.

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: March 02, 2021.

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: March 02, 2021.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018a. Export Quota Review – Namibia. AC30 Doc. 15 Annex 2. 19 pp. Available online at: https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-15-A2.pdf; accessed on: March 02, 2021.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018b. 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: March 02, 2021.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2018c. 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: March 02, 2021.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2019a. African Carnivores Initiative. CoP18 Doc. 96. 8 pp. Available online at: https://cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-096.pdf; accessed on: December 23, 2020.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2019b. 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: March 04, 2021.

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2020. Leopards (*Panthera pardus*) in Africa. AC31 Doc. 29.1. 3 pp. Available online at: https://cites.org/sites/default/files/eng/com/ac/31/Docs/E-AC31-29-01.pdf; accessed on: December 22, 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: https://www.cms.int/sites/default/files/document/cms_cop12_doc.24.3.1.1_africa n-carnivores-initiative_e.pdf; accessed on: December 18, 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: March 02, 2021. [See: Decisions 12.55–12.60; p. 15].

Hayward, M.W., Henschel, P., O'Brien, J., Hofmeyr, M., Balme, G., & Kerley, G.I.H. 2006. Prey preferences of the leopard (*Panthera pardus*). *Journal of Zoology* 270: 298-313.

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

IUCN/SSC Cat Specialist Group. 2019. Roadmap for the conservation of leopards in Africa. September 2019. Version 1.0. Muri/Bern, Switzerland. 35 pages. Available online as part of UNEP/CMS/COP13/Doc.26.3.1/Rev.1: https://www.cms.int/sites/default/files/document/cms_cop13_doc.26.3.1_rev.1_african-carnivores-initiative_e.pdf; accessed on: December 22, 2020.

Jacobson, A.P., Gerngross, P., Lemeris, Jr., J.R., Schoonover, R.F., Anco, C., Breitenmoser-Würsten, C., Durant, S.M., Farhadinia, M.S., Henschel, P., Kamler, J.F., Laguardia, A., Rostro-García, S., Stein, A.B., & Dollar, L. 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: December 23, 2020.

Kitchener, A.C., Breitenmoser-Würsten, C., Eizirik, E., Gentry, A., Werdelin, L., Wilting, A., Yamaguchi, N., Abramov, A. V., Christiansen, P., Driscoll, C., Duckworth, J.W., Johnson, W., Luo, S.-J., Meijaard, E., O'Donoghue, P., Sanderson, J., Seymour, K., Bruford, M., Groves, C., Hoffmann, M., Nowell, K., Timmons, Z., & Tobe S.2017. A revised taxonomy of the Felidae. The final report of the Cat Classification Task Force of the IUCN/SSC Cat Specialist Group. Cat News Special Issue 11, 80 pp.

NAPHA Newsletter. 7 August 2020. Namibia's own trophy hunting measurement system. Issue 31/2020.

Noack, J., Heyns, L., Rodenwoldt, D., & Edwards, S. 2019. Leopard density estimation within an enclosed reserve, Namibia using spatially explicit capture-recapture models. *Animals* 9: 724. Available online at https://doi.org/10.3390/ani9100724; accessed on March 02, 2021.

Packer, C., Kosmala, M., Cooley, H.S., Brink, H., Pintea, L., Garshelis, D., Purchase, G., Strauss, M., Swanson, A., Balme, G., Hunter, L., & Nowell, K. 2009 Sport hunting, predator control and conservation of large carnivores. *PLoS ONE* 4: e5941. Available online at: https://doi.org/10.1371/journal.pone.0005941; accessed on: December 29, 2020.

Republic of Namibia, Annotated Statutes. 2016. Regulations made in terms of Nature Conservation Ordinance 4 of 1975 section 84. Available online at: http://extwprlegs1.fao.org/docs/pdf/nam188576.pdf; accessed on December 22, 2020.

Richmond-Coggan, L. 2019. The Namibian Leopard: National Census and Sustainable Hunting Practices. In cooperation with The Ministry of Environment and Tourism, 177 pp.

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: March 02, 2021.

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: March 02, 2021.

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: March 02, 2021.

Service (U.S. Fish and Wildlife Service). 2016. Endangered and Threatened Wildlife and Plants: Notice 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: March 02, 2021.

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.govinfo.gov/content/pkg/FR-2017-12-20/pdf/2017-27389.pdf#page=1; accessed on: March 03, 2021.

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: March 02, 2021.

State (U.S. Department of State). 2018. Namibia: Meticulous Analysis Produces Sustainable Hunting Quotas. Department of State; Cable; 18 WINDHOEK 326; April 23, 2018. 3 pp.

Stein, A.B., & Hayssen, V. 2013. *Panthera pardus* (Carnivora: Felidae). *Mammalian Species* 45:30-48.

Stein, A.B., Andreas, A., & Aschenborn, O. 2011. Namibian National Leopard Survey; 2011 Final Report. Available online at: https://downloads.regulations.gov/FWS-HQ-ES-2016-0131-0709/attachment_6.pdf; accessed on: December 22, 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. 2020. *Panthera pardus* (amended version of 2019 assessment). *The IUCN Red List of Threatened Species* 2020: e.T15954A163991139. https://www.iucnredlist.org/species/15954/163991139 Downloaded on December 14, 2020.

UNEP. 2021. CITES Species Database: *Panthera pardus*. Available online at: https://speciesplus.net/#/taxon_concepts/8619/legal; accessed on: March 01, 2021.

UNEP-WCMC. 2021. 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=2006&filters%5Btime_range_end%5D=2020&filters%5Bexporters_ids%5D%5B%5D=114&filters%5Bimporters_ids%5D%5B%5D=all_imp&filters%5Bsources_ids%5D%5B%5D=all_sou&filters%5Bpurposes_ids%5D%5B%5D=all_pur&filters%5Bterms_ids%5D%5B%5D=all_ter&filters%5Btaxon_concepts_ids%5D%5B%5D=8619&filters%5Breset%5D=&filters%5Bselection_taxon%5D=taxonomic_cascade&web_disabled=&filters[report_type]=gross_exports; accessed on: March 02, 2021.

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