Billing Code 4310-55-P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R9-ES-2012-0025]

[450 003 0115]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the African Lion Subspecies as Endangered

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the African lion (*Panthera leo leo*) as endangered under the Endangered Species Act of 1973, as amended (Act). Based on our review, we find that the petition presents substantial scientific or commercial information indicating that listing this subspecies may be

warranted. Therefore, with the publication of this notice, we are initiating a review of the status of the subspecies to determine if listing the African lion is warranted. To ensure that this status review is comprehensive, we are requesting scientific and commercial data and other information regarding this subspecies. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

DATES: To allow us adequate time to conduct this review, we request that we receive information on or before **[**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]**. The deadline for submitting an electronic comment using the Federal eRulemaking Portal (see **ADDRESSES** section, below) is 11:59 p.m. Eastern Time on this date. After **[**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]**, you must submit information directly to the Branch of Foreign Species (see **FOR FURTHER INFORMATION CONTACT** section, below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

- Electronically: Go to the Federal eRulemaking Portal: http://www.regulations.gov. In the Search field, enter Docket No. FWS-R9-ES-2012-0025, which is the docket number for this action. Then click on the Search button. You may submit a comment by clicking on "Comment Now!" If your comments will fit in the provided comment box, please use this feature of *http://www.regulations.gov*, as it is most compatible with our comment

review procedures. If you attach your comments as a separate document, our preferred file format is Microsoft Word. If you attach multiple comments (such as form letters), our preferred format is a spreadsheet in Microsoft Excel.

- By hard copy: U.S. mail or hand-delivery: Public Comments Processing, Attn: FWS-R9-ES-2012-0025**,** Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We will not accept comments by e-mail or fax. We will post all comments on *http://www.regulations.gov*. This generally means that we will post any personal information you provide us (see the **Information Requested** section, below, for more information).

FOR FURTHER INFORMATION CONTACT: Chief, Branch of Foreign Species, Endangered Species Program, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 420, Arlington, VA 22203; telephone 703-358-2171. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Information Requested

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (conduct a status review). For the status review (also called a "12-month finding") to be

complete, and based on the best available scientific and commercial information, we request information on the African lion from governmental agencies, the scientific community, industry, and any other interested parties. We seek information on:

(1) The species' biology, range, and population trends, including:

(a) Habitat requirements for feeding, breeding, and sheltering;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species and its habitat.

(2) The factors that are the basis for making a listing determination for a species under section 4(a)(1) of the Act (16 U.S.C. 1531 *et seq*.), which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; and

(e) Other natural or manmade factors affecting its continued existence.

(3) Data that support or refute:

(a) Panmixia (having one, well-mixed breeding population), including evidence of genetic differentiation that may result in traits such as selective growth, sex ratios, increased vulnerability to threats, or habitat preferences;

(b) Existence of population structure to the degree that a threat could have differentiating effects on portions of the population and not on the whole species; and

(c) Statistically significant long-term African lion population declines.

(4) Information on the correlation between climate change and African lion population dynamics, including, but not limited to:

(a) Climate change predictions as they relate to drought, desertification, and African lion food availability, either directly or indirectly through changes in regional climate; and

(b) Quantitative research on the relationship of food availability to the survival of the species.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include. Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made "solely on the basis of the best scientific and commercial data available."

You may submit your information concerning this status review by one of the methods listed in **ADDRESSES**. If you submit information via *http://www.regulations.gov*, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov*.

Information and supporting documentation that we received and used in preparing this finding is available for you to review at *http://www.regulations.gov*, or by appointment during normal business hours at the U.S. Fish and Wildlife Service, Branch of Foreign Species, Endangered Species Program, Arlington, VA (see **FOR FURTHER INFORMATION CONTACT**).

Evaluation of Information for a 90-day Finding on a Petition

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

In making this 90-day finding, we evaluated whether information regarding threats to the African lion, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is "that amount of information that would lead a reasonable person to believe that the measure proposed in the

petition may be warranted" (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly initiate a species status review, which we subsequently summarize in our 12-month finding.

Petition History

On March 1, 2011, we received a petition dated March 1, 2011, from the International Fund for Animal Welfare, the Humane Society of the United States, Humane Society International, the Born Free Foundation/Born Free USA, Defenders of Wildlife, and the Fund for Animals, requesting that the African lion subspecies be listed as endangered under the Act. The petition clearly identified itself as such, and included the requisite identification information, as required by 50 CFR 424.14(a). We acknowledged receipt of the petition in a letter to Mr. Jeff Flocken dated July 17, 2011. This finding addresses the petition.

Previous Federal Action(s)

Although the Asiatic lion (*Panthera leo persica*) has been listed as endangered under the Act since 1970, the African lion (*Panthera leo leo*), is not listed as either endangered or threatened under the Act. The African lion is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). A discussion of its listing with respect to CITES can be found under the **Conservation Status** section below.

Species Information

The African lion belongs to the class Mammalia in the family Felidae. There are two recognized subspecies of lion: Asiatic lion (*Panthera leo persica*) (Meyer 1826) and the African lion (*P. leo leo*) (Linnaeus 1758).

The African lion subspecies is a habitat generalist, which historically excluded it only from areas such as rainforest and the arid interior of the Sahara (Ray *et al.* 2005, p. 66; Nowell and Jackson 1996, p. 19). They live in groups called prides, which usually contain between 5 and 9 adult females (Petition, p. 17). This species inhabits arid habitats such as the Kalahari Desert and the Kunene region of northwest Namibia; however pride sizes are typically smaller in arid regions (Stander & Hannsen 2001 in Ray *et al.* 2005, p. 66; Haas *et al.* 2005, p. 5). Lions typically hunt in groups, are opportunistic carnivores, and are primarily active at night (Haas *et al.* 2005, p. 5).

Lions are sexually dimorphic (differences in size, coloration, or body structure between the sexes); males weigh between 20 and 27 percent more than females (Petition, p. 17). Adult males have been recorded to weigh an average of 181 kilograms (kg) (399 pounds), and adult females were observed to weigh an average of 126 kg (278 pounds) (Smuts 1976 in Nowell and Jackson 1996, p. 17). Researchers observed females eating an average of 8.7 kg (19.2 pounds) per day during the dry season, and 14 kg (31 pounds) per day in the wet season (Haas *et al.* 2005, p. 5). Males were observed to eat up to twice as much as females.

Lions have no fixed breeding season, and they give birth to between 1 and 4 cubs (Petition, p. 17). Females may give birth beginning at 4 years of age (Petition, p. 17), and female reproduction begins to decline between 11 and 15 years of age (Nowell and Jackson 1996, p. 19). Often the females in the pride give birth at the same time, which may add to the reproductive success of the pride as a whole (Nowell and Jackson 1996, p. 18). Each pride requires a home range of between 20 and 500 square kilometers (km^2) (8 and 193 square miles (mi^2)). In the wild, males live between 12 and 16 years but have been reported to live up to 30 years (Shoemaker and Pfaff 1997 in Haas *et al.* 2005, p. 5; Guggisberg 1975 in Nowell and Jackson 1996, p. 19).

Population Estimates

The most quantitative estimate of the historic size of the African lion population resulted from a modeling exercise by Bauer *et al*. (2008) that predicted there were 75,800 African lions in 1980 (Bauer *et al.* 2008, p. 1). As of 2008, the International Union for Conservation of Nature (IUCN) estimated that the population declined 30 percent over the past 20 years (Petition, p. 6). Currently African lion experts estimate that the population size is fewer than 40,000, with an estimated population between 23,000 and 39,000 individuals (Petition, p. 6; Bauer *et al.* 2008, p. 1). This is based on the results of two separate assessments. Bauer and Van Der Merwe estimated the African lion population is between 16,500 and 30,000 individuals (2004, p. 26); Chardonnet (2002, Chapter 2, p. 32) estimated the population is between 28,854 and 47,132 individuals. In 2004, the estimate for West and Central Africa combined was 1,800 individuals, with all populations being small and fragmented (Bauer and Van Der Merwe 2004, p. 27). The

petition notes that although subpopulations of interbreeding lions in West Africa have been grouped differently (Bauer and Nowell 2004; Chardonnet 2002), there is acknowledgment that the overall population is likely small and declining.

Various researchers and entities, such as the African Lion Working Group (ALWG), describe groups of lions as being organized into subpopulations, and the degree to which these groups interbreed is unclear (Bauer and Van Der Merwe 2004, pp. 27-30). In research conducted by Chardonnet *et al.,* three subpopulations were described as consisting of 18 groups, between which there may be some interchange of individuals, although the amount of interchange is unknown. The size of the largest population in West Africa is also unclear. For example, the ALWG, an organization dedicated to the conservation, research, and management of free-ranging lion populations in Africa, estimates there are 100 lions in Burkina Faso's Arly-Singou ecosystem (Bauer and Van Der Merwe 2004, p. 28), while Chardonnet (2002) estimates 404 individuals in the same area (Chapter 2, Table 12, p. 39). However, both surveys found that only 5 percent of West African lion population estimates met scientific statistical standards. The remainder of the estimates was believed to be less reliable (Bauer and Nowell 2004, p. 2).

Range

Researchers believe that the African lion now occupies a range of less than 4,500,000 km^2 (1,737,460 mi^2), which is 22 percent of the subspecies' historic distribution (Bauer *et al.* 2008, pp. 1-2). One-half of the total African lion population now likely exists in Tanzania, while viable smaller populations remain in Kenya, South Africa, Mozambique, Botswana, Zimbabwe,

Zambia, and Namibia (Frank *et al.* 2006, p. 1). The population estimate for East Africa was 11,000 individuals as of 2004 (Bauer and Van Der Merwe 2004, p. 27). These authors noted that the two largest populations were in the Serengeti and Selous ecosystems of Tanzania (Bauer and Van Der Merwe 2004, p. 27). For southern Africa, the population estimate was 10,000 individuals, with the majority being in Botswana and South Africa (p. 27). Most lions in the Central African region are found in the Sahel savannah belt (Bauer and Van Der Merwe 2004, p. 30). The petition indicates that viable populations of African lions existing in protected areas occur in only about 5 percent of the subspecies' currently occupied range, and 1 percent of the subspecies' historical continent-wide range.

The petitioners indicate that since 2002, several African lion populations that have been studied have either declined or disappeared altogether (Henschel *et al.* 2010, pp. 34, 39). The petitioners assert that the latest available information suggests the African lion exists in 27 countries (Petition, p. 7; Henschel *et al.* 2010, p. 34), which is a rapid decrease from its reported existence in 30 countries in 2008 (Bauer *et al.* 2008, p. 1). This subspecies may no longer exist in Congo, Côte d'Ivoire, or Ghana (Henschel *et al.* 2010, p. 34).

Conservation Status

The petition indicates that in the 2008 IUCN Red List of Threatened Species, the IUCN classified the African lion as "Vulnerable" with a declining population trend, which means it is considered to be facing a high risk of extinction in the wild (Bauer *et al.* 2008, p. 1). This classification is based on a suspected reduction in population of approximately 30 percent over

the past two decades (Bauer *et al.* 2008, p. 1). Because there are believed to be fewer than 1,500 lions remaining in West Africa, lion populations in this region as of 2005 were classified by the IUCN as "Regionally Endangered" (Petition, p. 11; Bauer and Nowell 2004, p. 35). Bauer and Nowell indicated that the lion population of West Africa is geographically isolated from the lion populations in Central Africa, and there is little to no exchange of breeding individuals (Bauer and Van Der Merwe 2004; Chardonnet 2002). However, it should be noted that IUCN rankings do not confer any actual protection or management.

CITES

The African lion is listed in Appendix II of CITES. CITES is a multinational agreement through which countries work together to ensure that international trade in CITES-listed species is legal and not detrimental to the survival of the species. There are currently 175 CITES Parties (CITES signatory countries), including the United States. To ensure sustainable use, Parties regulate and monitor international trade in CITES-listed species—that is, their import, export, and re-export—through a system of permits and certificates. CITES lists species in one of three appendices—Appendix I, II, or III. Species such as the African lion that are listed in Appendix II of CITES may be commercially traded. CITES Appendix II includes species that "although not necessarily now threatened with extinction may become so, unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival." The status of the African lion with respect to CITES and how it is affected by trade is discussed below under the **Evaluation of Factors** section.

CITES Periodic Review of Felidae

Although we are not considering this information in this 90-day finding in accordance with section 4(b)(3)(A) of the Act, the African lion is currently under a periodic review of the CITES Appendices being conducted by the CITES Animals Committee, led by two range countries for the African lion, Kenya and Namibia. This periodic review is based on a recommendation by a Working Group at the 25th meeting of the CITES Animals Committee (AC25) held in July 2011, which recommended that the African lion be considered for inclusion in the Periodic Review of *Felidae*, as part of the Periodic Review of the Appendices (AC25 Doc. 15.2.1). The Animals Committee adopted this recommendation at AC25. The decisions and working documents can be located on the CITES website at http://www.cites.org/eng/com/ac/index.php. Our status review under the Act will consider the results of the review being conducted through the CITES process. During the status review, the Branch of Foreign Species will consult with the U.S. Division of Scientific Authority, an office within the Fish and Wildlife Service that is directly involved in the work of the CITES Animals Committee, including the Periodic Review of the African lion. Additional information about CITES may be found on the CITES Web site at http://www.cites.org.

Evaluation of Petition

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The petition (p. 7) asserts that the African lion now occupies less than an estimated 4,500,000 km^2 (1,737,460 mi^2), which is only 22 percent of the subspecies' historic distribution (Bauer *et al.* 2008, p. 1). Recent research suggests the African lion exists in 27 countries (Henschel *et al.* 2010, p. 34), while just a few years ago in 2008, it was believed to exist in approximately 30 countries (IUCN 2008, Bauer *et al.* 2008, p. 4), indicating that the populations of the African lion continue to decline.

The petitioner states that the loss of habitat and corresponding loss of prey are serious threats to the survival of the African lion (Ray *et al.* 2005, pp. 66-67). The petition points to a study (Ray *et al.* 2005), led by the Wildlife Conservation Society (WCS), that indicates habitat loss is principally driven by the conversion of lion habitat to agriculture and grazing as well as human settlement (Ray *et al.* 2005, pp. 66-67); however, desertification is also indicated to be a factor (Petition, p. 21; United Nations Economic Commission for Africa [UN ECA] 2008, pp. 4-5; Bied-Charreton 2008, p. 1). Desertification, defined as a process of land degradation in arid, semi-arid, and dry, sub-humid areas, is also affecting this species' habitat (UN ECA 2008, p. 3). Ray *et al.* note that where "protection [for the lion] is poor, particularly outside protected areas, range loss and population decreases can be significant." Researchers further note that African lion population declines have been the most severe in West and Central Africa, with only small, isolated populations remaining scattered chiefly through the Sahel area. Lions are declining even in some protected areas and, with the exception of southern Chad and northern Central African Republic, are virtually absent from unprotected areas (Ray *et al.* 2005, p. 67; Bauer 2003, p. S113).

The 2005 WCS study found that most lion populations in protected areas of East and southern Africa have been essentially stable over the last three decades (Ray *et al.* 2005, pp. 67, 69). However, sub-Saharan Africa experienced a 25 percent increase in the amount of land allocated to agriculture between 1970 and 2000 (Chardonnet *et al.* 2010, p. 24). The significance of the increase in the land being used for agriculture is that there is a higher human population density, and there is a negative correlation between lion density and human density (Chardonnet *et al.* 2002 in Chardonnet *et al.* 2010, p. 24). This species' habitat has decreased in part due to the conversion of wild habitats into areas suitable for livestock farming, which causes environmental degradation and the loss of plant and animal biodiversity (Chardonnet *et al.* 2010, p. 25). Ray *et al.* note that although the African lion has a wide tolerance, African lions are sensitive to loss of cover or prey, and the African lion's way of life and habitat needs are generally incompatible with human activities. Habitat conversion, especially for agriculture, has encroached heavily upon lion habitat throughout the species' range (Ray *et al.* 2005, p. 69). This has resulted in widespread extirpation, fragmentation, and reduced densities of lion populations (Bauer & Van der Merwe 2004 in Ray *et al.* 2005, p. 69; Nowell & Jackson 1996). The increase in conflict is primarily due to the intense persecution of lions in areas as a result of depredation on livestock (Ray *et al.* 2005, p. 68). The petition provides additional citations and information about historical and current impacts to habitat from current or future threats due to these practices within the subspecies' range as supporting information (Petition, pp. 21-22). In summary, we find that the information presented in the petition, as well as the information available in our files, indicates that the African lion may be impacted by the present or threatened destruction, modification, or curtailment of its habitat or range.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The petition asserts that the African lion is overutilized to a great extent for trophy-hunting (Petition, pp. 22-23; Packer *et al.* 2009, p. 2). The overall effect of trophy hunting on African lion populations is currently unclear. Submitted with the petition, a report prepared by WCS in 2005, noted that Creel and Creel (1997) found little evidence that the decrease in populations due to hunting altered the density of lions in Selous Game Reserve, Tanzania (Ray *et al.* 2005, p. 70). The petition asserts that between 1999 and 2008, 21,914 African lion specimens (lions, dead or alive, and their parts and derivatives), representing a minimum of 7,445 lions, were traded internationally for all purposes (pp. 7, 23; Appendix A). It should be noted that a specimen could be a whole animal, or multiple products made from one animal. The World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC) maintains a database on international trade of wildlife taxa that are included in the CITES appendices on behalf of the CITES Secretariat. This trade database, referenced in Appendix A of the Petition, is based on trade reports from the CITES Parties and is available to the public at http://www.unep-wcmc.org/citestrade. Each Party to CITES is responsible for compiling and submitting annual reports to the CITES Secretariat regarding their country's international trade in species protected under CITES. Of the trade described in the petition, the United States reportedly imported 13,484 lion specimens coded as being from a wild source between 1999 and 2008 (62 percent of the total). The petition also notes (p. 23) that the number of trophies traded internationally in 2008 (1,140) was larger than any other year in the decade studied and more than twice the number in 1999, which was 518 trophies.

In addition to the trade described above, the petition (pp. 24-25) indicates that, between 1999 and 2008, 3,102 lion specimens, equivalent to likely at least 1,328 lions (which includes trophies, skins, live animals, and bodies), were traded internationally via CITES permits for commercial purposes (Petition, Appendix A).

The petition reports that, for commercial purposes, the most common lion specimens traded were claws (number = 764), trophies (508), skins (442), live animals (3,208), skulls (144), and bodies (58). The petition also indicates that, of this trade, 1,846 lion specimens were imported into the United States, and suggests this may be equivalent to at least 401 lions. The petition notes that other significant importers other than the United States were South Africa, Spain, France, and Germany (Petition, p. 23). The petition also notes that the primary exporting countries of lion parts for commercial purposes were Zimbabwe (914 specimens), South Africa (867), and Botswana (816) (Petition, Appendix A). The petition concludes that these three countries accounted for 83.7 percent of all specimens in commercial trade (Petition, pp. 24-25, Table A9).

Hunting of lions for trophies does occur regularly and provides revenue for many countries in the African lion's range. This practice allows for conservation measures to be implemented for this subspecies. Some countries have implemented measures to mitigate the decrease in lion population numbers based on the effects of trophy-hunting on African lion populations (Packer *et al.* 2009, p. 2). Countries have instituted moratoriums on hunting lions for trophies (Botswana in 2001–2004, Zambia in 2000– 2001, and western Zimbabwe in 2005–2008), and have implemented measures such as banning the hunting of female lions from the

hunting quota (for example in Zimbabwe, starting in 2005) (Packer *et al.* 2009, p. 2). However, lion populations appear to continue to decline (see discussion under *Population Estimates*, above). Additionally, the petition claims that, in some cases, lions are being killed by bushmeat poachers to ensure easier hunting and less competition for bushmeat species because lions compete for species favored by bushmeat hunters (Joubert and Joubert, pers. comm. 2010 in Petition, p. 21).

In addition to the removal of lions from the population due to trophy hunting, there is concern that the use of lion body parts is contributing to the decline in African lion populations. Lion bones are being exported to Asia for use in traditional Chinese medicine, in part as a replacement for tiger parts, which have been more strictly regulated within the recent past (Nowell and Ling 2007, pp. 30-32). Body parts from the African lion are also used for traditional purposes in Africa as well as in Asia. For example, body parts of lions, including fat, skin, organs, and hair, are highly valued for treatment of a variety of different ailments in Nigeria, with lion fat being the most highly valued (Morris undated [n.d.], pp. 1-2). A household questionnaire distributed in rural communities within the range of the African lion found that 62 percent of respondents reported using lion fat in medicine, with just over half of those respondents reporting to have used it in the last 3 years (Morris, n.d., p. 6). The putative medicinal benefits are the healing of fractured and broken bones, and the alleviation of back pain and rheumatism (Morris, n.d., pp. 5-7). The petition claims that, in some African countries such as Guinea-Bissau and parts of Guinea, hunting African lions for their skins for use in traditional ceremonies is considered to be the primary threat to lions, and cited Brugiere *et al.* 2005. The use of lions in traditional African medicine also occurs in East Africa, although it is not well

documented in this region. For example, in May 2010, it was reported that five lions killed close to Queen Elizabeth National Park in Uganda were poisoned for their skin and medicinal value (Karugaba 2010, p. 1). Lion fat is also used in traditional medicine in Tanzania (Petition, p. 41; Baldus 2004, p. 15).

In summary, we find that the information presented in the petition and in our files indicates that overutilization may be occurring with respect to the African lion.

C. Disease or Predation

The petition (p. 9) states that diseases such as canine distemper virus (CDV), feline immunodeficiency virus (FIV), and bovine tuberculosis are viewed by experts as threats to the African lion (Roelke *et al.* 2009, pp. 1-4; Cleaveland *et al.* 2007, p. 613; Michel *et al.* 2006, p. 92). In addition to long-standing ambient diseases that occur in the African lion subspecies, the growth and expansion of the human population may be exposing African lions to new diseases (IUCN Species Survival Commission Cat Specialist Group, 2006b, p. 19) to which African lions may have little or no immunity. For example, CDV, which is normally associated with domesticated dogs, has affected some lion populations (Cleaveland *et al.* 2007, p. 613). In 1994, the Serengeti lion population experienced a 30 percent mortality rate due to a CDV epidemic (Roelke-Parker *et al.* 1996 in Roelke *et al.* 2009, p. 8). In 2001, in Tanzania, mortality occurred in approximately one third of the Ngorongoro Crater lion population, also primarily due to CDV (Munson *et al.* 2008, p. e2545). With respect to FIV, there are several strains which apparently

are highly divergent. However, the extent to which FIV negatively affects the African lion in the wild is unclear (Packer pers. comm. in Baldus 2004, p. 58).

Bovine tuberculosis (bTB) is a disease believed to have been caused by the importation of cattle from Europe (Michel *et al.* 2006, p. 92) and is caused by the bacterium *Mycobacterium bovis*. This is significant because in many areas, buffalo are the primary prey of lions. The petition indicates that during one study conducted in Kruger National Park in South Africa, more than 80 percent of lions were found to be infected by bTB and cites Renwick *et al.* 2007. Lions affected with this bacterium experienced respiratory problems, emaciation, lameness, and blindness (Petition, p. 44; Renwick *et al.* 2007, p. 533). Another study found that approximately 20 percent of infected lions did not show evidence of the disease, and 80 percent became infectious (i.e., diseased and contagious) within a 5-year period (Keet *et al.* 2009, pp. 5, 13, 34). However, despite the high prevalence of lions infected with this bacterium, the Kruger lion population has remained stable during the past 20 years (Ferreira and Funston 2010, p. 195).

Given the high level of mortality due to diseases that occur in African lions, particularly newly introduced diseases and the potential pathways for exposure, we find that the information provided in the petition indicates that the African lion may be impacted by disease.

The petition does not present information to indicate that listing the African lion may be warranted due to predation, nor do we have information in our files suggesting that predation to African lions impacts the subspecies, although infanticide is discussed under Factor E, below.

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D. The Inadequacy of Existing Regulatory Mechanisms

The petition asserts that there are several existing regulatory mechanisms that are inadequate with respect to the African lion (Petition, pp. 45-53). Some of the regulatory mechanisms cited by the petitioners as being inadequate include: The Rotterdam Convention; the African Union Conventions (Petition, pp. 47-48); the Southern African Development Community (SADC) Protocol on Wildlife Conservation and Law Enforcement; the Lusaka Agreement; the U.S. Endangered Species Act (Act); the U.S. Lacey Act (Petition, pp. 49-50); the U.S. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); and domestic laws within the African lion's range countries (Petition, pp. 51-52). Some of the impacts that may occur due to inadequate existing regulatory mechanisms are discussed in the other factors, such as the loss of habitat (Factor A), overutilization for the international wildlife trade (Factor B), and effects of inappropriate use of pesticides (Factor E) (Petition, p. 7). Due to the numerous regulatory mechanisms involved, in part because the African lion's range spans approximately 30 countries, we will not evaluate this factor in depth at this 90-day finding stage. We acknowledge that information regarding this factor was submitted with the petition. Based on the interrelationship between regulatory mechanisms and the other factors, we find that the information provided in the petition and in our files indicates that existing regulatory mechanisms may be inadequate in reducing or removing effects associated with certain factors identified in the Petition.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Other Sources of African Lion Mortality

Infanticide

The petition asserts that a secondary, related effect of removing lions through trophy hunting on the African lion occurs due to the behavior of infanticide by adult male lions (Petition, pp. 23-24; Davidson *et al.* 2011, p. 114). When male lions take over a pride, they often kill the lion cubs. The petition asserts that this is significant because trophy hunters preferentially seek adult male lions, which has cascading effects on a pride. When an adult male lion associated with a pride is killed by a trophy hunter, surviving males who form the pride's coalition may become vulnerable to takeover by other male coalitions, and this often results in injury or death to the defeated males within the pride. Replacement males that take over a pride will also usually kill all cubs that are less than 9 months of age in the pride (Whitman *et al.* 2004, p. 175; Nowell and Jackson 1996, p. 18). This practice of killing lion cubs sired by other males is common in this species (Nowell and Jackson 1996, p. 18). Because this behavior is common, the removal of the dominant males in prides through trophy hunting has the effect of not only removing one or two older males, but rather several individuals including the younger cubs from the pride.

Human-Lion Conflict

Retaliatory killing, even with respect to other predatory species, affects lions (Petition, p. 53). Killing of lions because the lions kill livestock has been indicated to be the most serious

threat to these large carnivores (Chardonnet *et al.* 2010, p. 11; Baldus 2004, p. 59). Local communities often retaliate against livestock-killing lions (Petition, pp. 53-54; Packer *et al.* 2011, p. 150; Chardonnet *et al.* 2010, p. 11; Kissui 2008, p. 422). WCS found that between 1997 and 2001, approximately 3 percent (number = 93) of the lion population was killed on farm land adjacent to the Kgalagadi Transfrontier Park, Botswana (Frank *et al.* 2006, p. 1; Castley *et al.* 2002 in Ray *et al.* 2005, p. 68). Lions in Amboseli National Park were exterminated in the early 1990s, and three-fourths of the lions in Nairobi Park were speared by local tribesmen within the period of a year (Packer pers comm. in Baldus 2004, p. 59). Because humans are now moving into land formerly dominated by wildlife, there is more conflict between predators such as lions and humans. Adding to the potential incidences in human-lion conflict, the human population is expected to increase significantly in the next 40 years, particularly in the range of the lion (Petition, p. 20; United Nations, Department of Economic and Social Affairs [UN DESA] 2009, unpaginated). In addition to deliberate killing of lions, lions are killed inadvertently. For example, in northern Serengeti National Park, lions were almost entirely extirpated in the 1980s by poachers setting snares for herbivores (Packer *et al.* 2011, p. 149; Sinclair *et al.* 2003, p. 289).

Compromised [Genetic] Viability

The petition indicates that the African lion is increasingly restricted to small and disconnected populations, which may increase the threat of inbreeding (Petition, p. 54). The petition claims that large lion populations with 50 to 100 prides are necessary to avoid the negative consequences of inbreeding and cites Bjorklund 2003, pp. 515-523. The petition avers that population connectivity is essential in order to allow males to travel to other areas in order to

preserve genetic variation. The petition suggests that the lions in Ngorongoro Crater, Tanzania, may be inbred, and subsequently their vulnerability to disease may be increased. Compared with many other mammal species, the population resilience of the lion is high (Chardonnet *et al.* 2010, p. 10). The African lion is capable of producing many young each year, and its reproductive cycle is not limited to a particular season, so the species is able to rapidly recover from losses to its population (Chardonnet *et al.* 2010, p. 10).

The information contained in the petition and in our files indicates that there are several other natural or manmade factors such as human-lion conflict and infanticide by African lions that may result in negative impacts on the African lion.

Finding

On the basis of our review under section 4(b)(3)(A) of the Act, we determine that the petition presents substantial scientific or commercial information indicating that listing the African lion as endangered throughout its range may be warranted. This finding is based on information provided under the present or threatened destruction, modification, or curtailment of its habitat or range (Factor A); overutilization for commercial, recreational, scientific, or educational purposes (Factor B); disease (Factor C); the inadequacy of existing regulatory mechanisms (Factor D); and other natural or manmade factors affecting the subspecies' continued existence (Factor E). The petition does not present substantial information to indicate that listing the African lion may be warranted due to predation, nor do we have information in our files suggesting that predation to African lions impacts the subspecies. The African lion's

range spans approximately 30 countries and the factors affecting this species are complex and interrelated. The petition asserts that the subspecies no longer exists in 78 percent of its historic distribution (Bauer *et al.* 2008). Although there is insufficient information in the petition to substantiate that lions may warrant listing as endangered due to compromised genetic viability, we will evaluate this factor in conjunction with other potential threats during the status review. Because we have found that the petition presents substantial information indicating that listing the African lion may be warranted, we are initiating a status review to determine whether listing the African lion under the Act as endangered is warranted.

The "substantial information" standard for a 90-day finding differs from the Act's "best scientific and commercial data" standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act's standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

References Cited

A complete list of all references cited in this 90-day finding is available on the Internet at *http://www.regulations.gov* or upon request from the Branch of Foreign Species, Endangered

Species Program, U.S. Fish and Wildlife Service (see **FOR FURTHER INFORMATION CONTACT**).

Author

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Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.).

Dated: 8-23-12

Dan Ashe

Director, U.S. Fish and Wildlife Service

~~**Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List African Lion Subspecies as Endangered**~~

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