

**U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT
AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: *Pauxi unicornis*

COMMON NAME: Southern helmeted curassow

HQ CONTACT: Elizabeth Maclin, Chief, Branch of Delisting and Foreign Species, 703-358-2646, elizabeth_maclin@fws.gov.

DATE INFORMATION CURRENT AS OF: July 2021

STATUS/ACTION

Species petitioned for listing which we have determined is not a listable entity

Species petitioned for listing which we have determined does not warrant listing (does not meet the definition of a threatened or endangered species)

Non-listed species for which we have not received a petition but for which we have undertaken a species status assessment on our own initiative and which we have determined does not warrant listing (does not meet the definition of a threatened or endangered species)

Listed species petitioned for delisting which we have determined does not warrant delisting

Listed species petitioned for downlisting which we have determined does not warrant downlisting

Listed species petitioned for uplisting for which we have made a warranted-but-precluded finding for uplisting (this is part of the annual resubmitted-petition finding)

Listed species petitioned for uplisting which we have determined does not warrant uplisting

New candidate

Continuing candidate

Date when the species first became a candidate (as currently defined): May 21, 2004

Listing priority number change

Former LPN:

New LPN:

Candidate removal: Former LPN:

A – Taxon does not meet the Act’s definition of “endangered species” or “threatened species” because it is more abundant or widespread than previously believed or

not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

- U – Taxon does not meet the Act’s definition of “endangered species” or “threatened species” because it is not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
- N – Taxon does not meet the Act’s definition of “species.”
- M – Taxon mistakenly included in past notice of review.
- X – Taxon believed to be extinct.

Petition Information:

Non-petitioned

Petitioned; Date petition received: May 6, 1991

90-day substantial finding FR publication date: December 16, 1991 (56 FR 65207)

12-month warranted but precluded finding FR publication date: May 21, 2004 (69 FR 29353)

FOR PETITIONED CANDIDATE SPECIES:

- A. Is listing warranted? Yes
- B. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes
- C. Why is listing precluded at this time? Higher-priority listing actions—including court-approved settlements, and court-ordered and statutory deadlines, for petition findings and listing determinations—continue to preclude the proposed and final listing rules for this species. We continue to monitor populations and, if necessary, will change the status of the species or implement an emergency listing. The “Progress on Revising the Lists” section of the current CNOR (<https://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

PREVIOUS FEDERAL ACTIONS:

On May 6, 1991, we received a petition from the International Council for Bird Preservation to list 53 different bird species, including the southern helmeted curassow (*Pauxi unicornis*), as endangered or threatened species under the Act. On December 16, 1991, we published in the *Federal Register* (56 FR 65207) a 90-day finding in which we announced that the petition to add 53 species of foreign birds contained substantial information indicating that listing may be warranted for all species. This document constitutes our 12-month finding on the May 6, 1991, petition to list the southern helmeted curassow under the Act.

[ANIMAL GROUP AND FAMILY/PLANT GROUP, ORDER AND FAMILY]: Birds, Curassows (Aves: Cracidae)

DISTINCT POPULATION SEGMENT (DPS): N/A

BIOLOGICAL INFORMATION

To assess southern helmeted curassow viability, we followed the species status assessment (SSA) framework and used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years, variation in demographic rates), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate change, disease). A species with a high degree of resiliency, representation, and redundancy is better able to adapt to novel changes and to tolerate environmental stochasticity and catastrophes. In general, species viability will increase with increases in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the species' needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition (i.e., how threats and conservation actions have influenced the species). The final stage of the SSA involved assessing the species' plausible range of future responses to positive and negative environmental and anthropogenic influences. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Species Description

The southern helmeted curassow, also known as the helmeted or horned curassow, or the unicorn bird, is a large (85–95 centimeter (cm); 33–37 inch (in)) ground-nesting bird with a bright red bill and a pale blue casque (a horn-like bony appendage above the bill). Plumage is mainly black with a white vent and white tail tip; legs are normally pale red but turn yellowish in the male during the breeding season (BLI 2017a, unpaginated). Females appear similar to males but have a reddish brown (rufous) color phase (BLI 2017a, unpaginated).

The southern helmeted curassow strongly resembles the Sira curassow (*Pauxi koepckeae*) from Peru though their ranges are separated by more than 1,000 kilometers (km; 621 miles (mi)). Casque shape and size are a good distinguishing feature; the casque of the southern helmeted curassow is upright and cone-shaped while that of the Sira curassow is shorter, rounder, and flattened against the head (BLI 2015, unpaginated; Gastañaga *et al.* 2011, p. 271). Additionally, although both species have a thin white tip on the tail, the Sira curassow's white tail tip is thinner (Gastañaga *et al.* 2011, p. 271).

Species Assessment Form
revised July 2021



Figure 1: Image of southern helmeted curassow (ARKive 2017, unpaginated. Photo Credit, Frank W. Lane).

Taxonomy

The southern helmeted curassow (*Pauxi unicornis*) is a bird in the Cracid family — a primitive family of the Order Galliformes that includes game birds such as Megapodes (also known as incubator or mound builder birds), grouse, quail, pheasants, turkeys, partridge and Guineafowl (Banks 1998, p. 152). In 2014, BirdLife International's (BLI) BirdLife Taxonomic Working Group elevated the southern helmeted curassow (*P. unicornis unicornis*) from a subspecies to species (*P. unicornis*) after evaluating all non-passerines (non-perching birds), including the southern helmeted curassow, to examine differences in morphology, vocalizations, ecology, and geographical relationships (Tobias *et al.* 2010, pp. 6–14) (BLI 2014a, entire; BLI 2014b, unpaginated). Although BLI and the International Union for the Conservation of Nature (IUCN) now recognize the southern helmeted curassow as a full species, the Integrated Taxonomic Information System (ITIS) continues to recognize it as a subspecies (*P. unicornis unicornis*) (ITIS 2017, unpaginated). Based upon our review of the available information we consider the southern helmeted curassow a valid species.

Habitat/Life History

The southern helmeted curassow inhabits dense, humid foothill and lower montane forest and adjacent evergreen forest at altitudes between 450 and 1,500 meters (m) (1,476 to 4,921 feet (ft)) (Herzog and Kessler 1998, pp. 46–47; Cox *et al.* 1997, p. 200; Cordier 1971, p. 10). The bird is notoriously hard to find (Tobias and del Hoyo 2006, p. 61; Herzog and Kessler 1998, p. 46), which may be due to the remoteness of its preferred habitat and its reported intolerance of human disturbance (Herzog and Kessler 1998, p. 46).

Information on the ecology of the southern helmeted curassow is limited. The species prefers eating nuts of *Byrsonima wadsworthii* (the almendrillo tree) (Cordier 1971, p. 11), but also eats fruit, seeds, soft plants, larvae, insects (BLI 2017a, unpaginated; Banks 1998, p. 153; Renjifo and Renjifo 1997, pp. 89–90) and the bones of small mammals (Renjifo and Renjifo 1997, pp. 89–90). The southern helmeted curassow reaches sexual maturity at age 3 (Renjifo and Renjifo 1997, pp. 89–90) and the breeding season is believed to be from August to December (BLI 2017a, unpaginated). Clutch size of the southern helmeted curassow is probably two, as is common in other members of the Cracidae family. However, the only nest found in the wild, which was surveyed in November of 1989, contained only one egg (Cox *et al.* 1997, p. 207); a pair in captivity laid only one egg in each of four observed clutches (Banks 1998, p. 154), indicating a low reproductive rate. An egg collected and incubated from a captive pair hatched in 32 days (Banks 1998, p. 154).

The southern helmeted curassow is vocal with both a distinctive alarm call and display singing (reviewed by del Hoyo and Motis, 2004, pp. 435, 436). Male “booming” (display songs) and pairing were noted in August (MacLeod *in litt.* 2000, as cited in BLI 2017a, unpaginated).

Historical and Current Range/Distribution

The historical distribution of the southern helmeted curassow is not known. The southern helmeted curassow is known only from central Bolivia on the eastern slope of the Andes, where it has been found in the neighboring Amboró and Carrasco National Parks (MacLeod *in litt.* 2000 as cited in BLI 2017a, unpaginated; Brooks 2006, p. 59; Maillard 2006, p. 95; del Hoyo and Motis, 2004, p. 433; Mee 1999, p. 18; Herzog & Kessler 1998, pp. 46–47; and Cox *et al.* 1997, pp. 199–200). The species has also been found in Isiboro-Secure Indigenous Territory and National Park and along the outer edge of the Cordillera Mosevenes, Cochabamba (MacLeod *in litt.* 2007 as cited in BLI 2017a, unpaginated).

The estimated extent of the resident/breeding area is 10,700 km² (4,131 mi²) and declining (BLI 2017a, unpaginated; BLI 2016, p. 10). Within approximately the last decade, the southern helmeted curassow was found in just a few locations across the northern boundary of Carrasco National Park, where it was historically more abundant (MacLeod *in litt.* 2000 and 2007, as cited in BLI 2015, unpaginated). Extensive surveying over several years has not documented the species in other areas where it historically occurred, including (1) Madidi National Park (Hennessey 2004, p. 74; MacLeod *in litt.* 2003, as cited in BLI 2017a, unpaginated); (2) in the rio Tambopata area near the Peru/Bolivia border (Gastañaga and Hennessey 2005, p. 21; MacLeod *in litt.* 2004, as cited in BLI 2014, unpaginated); or (3) in the Cordillera Cocapata and

along the inner edge of Cordillera MoseTENES (MacLeod *in litt.* 2003 and 2007, as cited in BLI 2015, unpaginated).

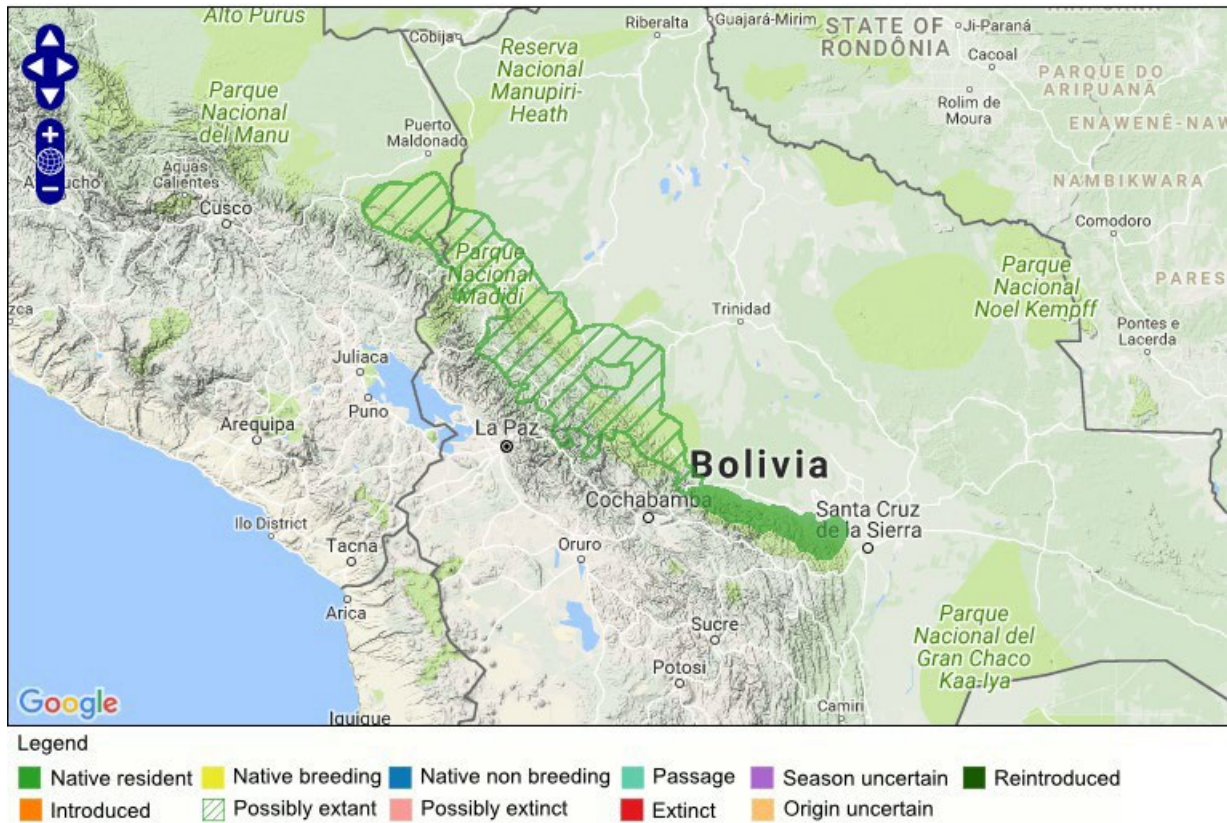


Figure 2. The current range of the southern helmeted curassow represented by the green polygon; hatched green indicates areas where the species is possibly extant (BLI 2017b, unpaginated).

Population and Species Needs

The southern helmeted curassow relies on dense, humid foothill and lower montane forest and adjacent evergreen forest habitat at altitudes between 450 and 1,500 meters (m) (1,476 to 4,921 feet (ft)) (Herzog and Kessler 1998, pp. 46–47; Cox *et al.* 1997, p. 200; Cordier 1971, p. 10). The species is primarily a frugivore, but also eats soft plants, larvae, insects (BLI 2017a, unpaginated; Banks 1998, p. 153; Renjifo and Renjifo 1997, pp. 89–90) and the bones of small mammals (Renjifo and Renjifo 1997, pp. 89–90).

SUMMARY OF BIOLOGICAL INFORMATION

The southern helmeted curassow, also known as the helmeted or horned curassow, is a game bird with a distinctive pale-blue, horn-like appendage (or casque – a horn-like bony appendage above the bill) above its bill. The southern helmeted curassow strongly resembles the Sira curassow from Peru, although their ranges are separated by more than 1,000 km (621 mi). Casque shape

and size are a good distinguishing feature. The southern helmeted curassow only occurs in central Bolivia on the eastern slope of the Andes, where it has been found in the neighboring Amboró and Carrasco National Parks. The southern helmeted curassow inhabits dense, humid, foothill and lower montane forest and adjacent evergreen forest at altitudes between 450 and 1,500 m (1,476 and 4,921 ft). The estimated extent of the resident/breeding area is 10,700 km² (4,131 mi²) and declining. Population size is estimated to be between 1,000 and 4,999 mature individuals, the equivalent of 1,500 to 7,500 individuals.

FACTORS INFLUENCING THE STATUS

The Act directs us to determine whether any species is an endangered species or a threatened species because of any factors (or threats) affecting its continued existence (i.e., whether it meets the definition of a threatened species or an endangered species). We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals, as well as those that affect individuals through alteration of their habitat or required resources. The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as the Services can reasonably determine that both the future threats and the species’ responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and

should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Threats

Hunting and habitat loss and destruction are the primary threats to the species. Large portions of the southern helmeted curassow's habitat are in National Parks (i.e., Amboró, Carrasco, and the Isiboro-Secure Indigenous Territory). These areas have been important for the preservation of the species, although the National Parks do not have the financial and human resources needed to patrol and protect these areas (Armonía 2015, unpaginated). Human settlements and ongoing encroachment, illegal logging operations, forest clearing to grow coca (*Erythroxylum coca* var. *coca*) for cocaine production, and other farming are occurring in the parks (Armonía 2015, unpaginated; Macleod 2009, p. 16). Rural development and road building limit the species' ability to disperse (Fjeldså *in litt.* 1999 as cited in BLI 2017a, unpaginated; Herzog and Kessler 1998, p. 47). Despite indigenous protest and pushback, the Bolivian Government is constructing a highway through the Isiboro-Secure Indigenous Territory and National Park (Gaia 2019, unpaginated), which is a protected area that may support the largest remaining southern helmeted curassow population in the world (Armonía 2015, unpaginated).

Bolivia was one of the top ten countries in the world to report the greatest loss (11.4 percent) of primary forest area from 1990 to 2015 (Morales-Hidalgo *et al.* 2015, p. 73). Habitat throughout the species' range has been and continues to be altered as a result of human activities, particularly human encroachment due to agricultural development and illegal logging. Results from modeling of forest loss (Soares-Filho *et al.* 2006 as cited in BLI 2017a unpaginated), taken together with data on the species' range and ecology indicated that 98 percent of its global extent of suitable habitat could be lost in 44 years (BLI 2017a, unpaginated).

Hunting the species for food is believed to be an even greater threat than habitat loss (MacLeod *in litt.* 2014 as cited in BLI 2015, unpaginated). In one valley in Carrasco National Park, the species declined from 20 singing males to zero from 1999 to 2004 due to hunting (MacLeod *et al.* 2006, p. 62). Hunting pressure and human encroachment are similar or worse in other parts of its range (MacLeod and Soria-Auza *in litt.* 2014 as cited in BLI 2017a, unpaginated). In addition to harvesting for meat, its unique blue casque (or horn) was used historically by local people to make cigarette lighters (Cordier 1971, p. 11), and in the Amboró region, the bird's head was purportedly used in folk dances (Hardy 1984 as cited in Collar *et al.* 1992, p. 153). It is unknown whether these uses still occur.

Range reductions due to the effects of climate change are predicted for the southern helmeted curassow when warming temperatures may cause the species to shift its distribution upslope (del Rosario Avalos & Hernandez 2014, pp. 465–466). Modeling of these changes shows that portions of the diminished range may shift outside of protected National Parks (del Roario Avalos & Hernandez 2014, p. 467).

Conservation Measures

Although the southern helmeted curassow primarily occurs in protected areas (i.e., Amboró and Carrasco National Parks and the Isiboro-Secure Indigenous Territory and National Park), these areas are currently threatened by human activity (hunting and habitat degradation) and offer no effective protection (BLI 2016, p.5).

The Asociación Armonía (a nonprofit, nongovernmental conservation organization) recently initiated a “horned curassow program” that focuses on the population at Amboró National Park, which they believe may be the last hope for preserving a population in the wild (Armonía 2015, unpaginated). The program has a three-pronged approach to help prevent extinction of the species: (1) promote ecotourism in the park; (2) support captive breeding in the local communities; and (3) carry out an educational and pride campaign with local communities (Armonía 2015, unpaginated). It is unclear how much has been accomplished to date, although the ecotourism component has seemingly begun (Tobias and del Hoyo, 2006, p. 61).

Cumulative Effects

Interactions between small and declining population size and continued habitat loss (due to development and climate change) will lead to further declines of the southern helmeted curassow throughout its range. These effects decrease the viability of this species and further warrant listing.

CURRENT CONDITION

Resiliency: The southern helmeted curassow has low to moderate resiliency. Population size of the southern helmeted curassow is estimated to be between 1,000 and 4,999 mature individuals and declining. The southern helmeted curassow is local and believed to be extirpated from much of its historical range (Birds of Bolivia 2019, unpaginated). Multiple locations of the species have been recorded, but population density is estimated at less than one individual per km². Large species of Cracids have intrinsically low rates of reproduction (Barrio 2011, p. 225).

Redundancy: The southern helmeted curassow occurs in three national parks. In the last 30 years, there have been confirmed records at eight scattered localities throughout the species range, although the largest known population in Carrasco National Park declined to zero because of hunting. Thus, the southern helmeted curassow has low to moderate redundancy throughout its range, in which we assume is occupied by more than one population. However, the current number of populations is unknown.

Representation: The species inhabit steep and densely forested habitats in the Yungas, which occur throughout the eastern side of the Central Andes Mountains from Peru, Bolivia, and northern Argentina. The southern helmeted curassow is resident at lower elevations (400–1,200 meters). Microhabitats within the species’ range are likely to be present within its forested habitat. However, the southern helmeted curassow is endemic, ground-based, and restricted to a relatively narrow elevational range in central Bolivia. Therefore, the species has low representation.

The species of curassows were determined to be separate species in 2014 because of morphological differences and their ranges are separated by more than 1,000 km (621 mi). However, we do not have information regarding genetic diversity for the southern helmeted curassow within its respective population. However, because populations are small and continue to decrease in number, genetic diversity of the species is expected to be low, further reducing representation.

FUTURE CONDITION

Condition of the southern helmeted curassow is expected to decline in the future because of hunting and habitat loss from human settlements and encroachment of land-clearance activities within the national parks, particularly coca production. These primary threats are anticipated to continue. Additionally, the constructions of roadways within the national parks is a substantial future threat to the southern helmeted curassow's habitat in Carrasco and Isiboro-Secure Indigenous Territory and National Park.

FINDING

Standard for Review

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an “endangered species” or a “threatened species.” The Act defines an endangered species as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether any species is an “endangered species” or a “threatened species” because of any one or a combination of the following factors:

- (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.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

Summary of Analysis

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we determine that the southern helmeted curassow experiences hunting,

habitat loss from human settlements and ongoing encroachment, illegal logging operations, forest clearing to grow coca (*Erythroxylum coca* var. *coca*) for cocaine production, and other farming practices that are occurring in the parks (Armonía 2015, unpaginated; Macleod 2009, p. 16) present and threatened destruction, modification, and curtailment of its habitat. Thus, after assessing the best available information, we conclude that the southern helmeted curassow (*Pauxi unicornis*) is warranted for listing but precluded by other higher priority actions.

RECOMMENDED CONSERVATION MEASURES

- Partner with/support conservation organizations including
 - o Armonia
 - o SustainableBolivia
 - o Forests of The World

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2*
	Non-imminent	Subspecies/population	3
		Monotypic genus	4
		Species	5
Moderate to Low	Imminent	Subspecies/population	6
		Monotypic genus	7
		Species	8
	Non-imminent	Subspecies/population	9
		Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

In the previous Assessment (81 FR 71457), the southern helmeted curassow was assigned an LPN of 2. After reevaluating the threats to the species, we have determined that no change in the LPN is warranted. The southern helmeted curassow does not represent a monotypic genus. It faces threats that are high in magnitude based on its small population and limited range. The area where it exists is less than historical estimates and will continue to be subject to hunting pressure and habitat loss. The population is estimated to be between 1,000 and 4,999 mature individuals and declining. The factors affecting the species are ongoing and imminent. Thus, the LPN remains at 2 to reflect imminent threats of high magnitude.

Magnitude: The threat of habitat loss and hunting to the southern helmeted curassow is high. The species' population and suitable habitat are declining because of hunting and habitat loss and degradation. The southern helmeted curassow primarily occurs in protected areas, although these areas are threatened by human activities and offer inadequate protection (BLI 2016, p.5).

Imminence: The estimated population is small (1,000 - 4,999 adults) and the extent of its range is predicted to decline. Threats to the southern helmeted curassow from hunting and habitat loss and degradation (e.g., agricultural development, illegal logging and road building) are ongoing and expected to continue in the future. Therefore, threats to the southern helmeted curassow are considered imminent.

Rationale for Change in Listing Priority Number

N/A

Is Emergency Listing Warranted?

No; There is currently no emergency posing a significant risk to the conservation of the Southern helmeted curassow.

DESCRIPTION OF MONITORING

The candidate notice of review (CNOR) and accompanying species assessment forms constitute the Service's system for monitoring and making annual findings on the status of petitioned species under sections 4(b)(3)(c)(i) and 4(b)(3)(c)(ii) of the Act. We review all new information on candidate species as it becomes available, prepare annual species assessments that reflect monitoring and research results and any other new information. A three-pronged approach to help prevent extinction of the species has been initiated by the Asociación Armonía (a nonprofit, nongovernmental conservation organization) (Armonía 2015, unpaginated), but current status and effectiveness of the program is unknown.

COORDINATION WITH STATES

No countries provided information or comments on the species or latest assessment. The range country, **Bolivia**, did not provide information or comments.

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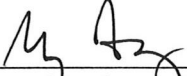
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Approve:  2/16/22
Gary Frazer, Assistant Director for Ecological Services Date

Concur:  03/31/2022
Director, U.S. Fish and Wildlife Service Date

Do not concur: _____
Director, Fish and Wildlife Service Date

Director's Remarks:

Date of annual review: July 2021
Conducted by: Branch of Delisting and Foreign Species