CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Twenty-fifth meeting of the Animals Committee
Geneva (Switzerland), 18-22 July 2011

Periodic review of animal species included in the CITES Appendices

REVIEW OF *TYMPANUCHUS CUPIDO ATTWATERI*

1. This document has been submitted by the United States of America[*].

Review of *Tympanuchus cupido attwateri* (sp. Linnaeus 1758 ssp. Bendire 1893) in the periodic review of species included in the CITES Appendices Resolution Conf. 11.1 (Rev. CoP15) and Resolution Conf. 14.8

INTRODUCTION

At the 22nd meeting of the Animals Committee (Lima, July 2006), the United States of America committed to evaluate *Tympanuchus cupido attwateri* as part of the Periodic review of the species included in the CITES Appendices.

This subspecies is endemic to the United States of America and does not occur elsewhere in the wild. During our review, we consulted with representatives of the U.S. Fish and Wildlife Service in Texas, as well as the Texas Parks & Wildlife Department.

DRAFT PROPOSAL TO AMEND THE APPENDICES (in accordance with Annex 6 to Resolution Conf. 9.24 (Rev. CoP15), as amended)

A. Proposal

To delist *Tympanuchus cupido attwateri* (Attwater's greater prairie chicken) from CITES Appendix I. While the subspecies meets the biological criteria for listing in Appendix I as given in Annex 1 of Resolution Conf. 9.24 (Rev. CoP15), the taxon is not affected by trade. This subspecies, endemic to the United States of America, is intensively managed and highly regulated by domestic measures. There are no similarity of appearance or look-alike issues with any other CITES-listed species. CITES protection is not needed.

B. Proponent

Switzerland, as the Depositary Government, on behalf of the Animals Committee (prepared by the United States of America)

[*] *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

C. Supporting Statement

1. Taxonomy

1.1 Class: Aves

1.2 Order: Galliformes

1.3 Family: Phasianidae

1.4 Genus, species or subspecies, including author and year:

Tympanuchus cupido attwateri (sp. Linnaeus 1758 ssp. Bendire 1893; Attwater's greater prairie chicken). This is one of three recognized subspecies of the greater prairie-chicken (also greater prairie chicken) and the species is listed as Vulnerable on the IUCN Red List (BirdLife International 2008). The nominate subspecies, *T. c. cupido* (the heath hen), went extinct in 1932 (U.S. Fish and Wildlife Service, 2011) and the third subspecies is *T. c. pinnatus* (which also carries the English name of the whole species: greater prairie-chicken).

1.5 Scientific synonyms

None.

1.6 Common names

Dutch	ttwaters prairiehoen; Attwaters prairiehoen;
English	ttwater's prairie-chicken; Attwater's prairie chicken
Finnish	reeriakana, eteläisen USA:n alalaji;
French	oule de prairie d'Attwater; Tétras cupidon d'Attwater;
German	ttwaters-Präriehuhn;
Italian	etraone di prateria di Attwater;
Spanish	allito de pradera;
Swedish	ttwaters präriehöna; större präriehöna; sydlig präriehöna

1.7 Code numbers

None.

2. Overview

Tympanuchus cupido attwateri has been listed in Appendix I of CITES since 1975 and is listed as Endangered under the U.S. Endangered Species Act of 1973, as amended. The subspecies has a very small total population size and each sub-population is small (Schroeder and Robb, 1993). The population occupies a very small geographic range in southern Texas (United States of America), which is fragmented thus isolating each sub-population. It has been subject to a long-term decline due mainly to the loss and fragmentation of prairie grassland habitat, as well as hunting during the early 1900s. There has been a recent, but relatively small, increase in numbers of wild individuals, resulting from intensive management. The subspecies is being re-introduced and so the subpopulations that have been established are supplemented by captive-bred birds. Reported illegal or international trade is minimal, as is commercial demand for the subspecies.

Tympanuchus cupido attwateri meets the biological criteria of Appendix I. The subspecies, however, is subject to very intensive management, including re-introduction. In addition, only one specimen has been reported in legal international trade since 1975 (in 1996) and there is only one report of illicit international trade (two specimens; see also Section 6.1, 6.2, and 6.4). Trade is not expected as a result of any delisting under CITES. The subspecies is also highly regulated by Federal and State measures, including the regulation of importation and exportation (see below).

While cognizant of the precautionary approach as described in Annex 4 of Resolution Conf. 9.24 (Rev. CoP15) (Criteria for amendment of Appendices I and II), the United States of America does not find it necessary to apply those measures in this instance. Despite intensive management actions by Federal and State agencies, along with no apparent trade or utilization, the conservation status of the subspecies has failed to improve significantly over the past 25-40 years. We do not anticipate any risks from trade as a result of this proposal to delist the subspecies because this endemic subspecies is highly regulated by our stricter domestic measure,

the United States Endangered Species Act. This measure alone is sufficient to regulate the take and export of any specimens of this endemic subspecies. Therefore, we do not foresee any additional benefits that could possibly result from a transfer to CITES Appendix II, with monitoring of any impact of trade on the subspecies for at least two intervals between meetings of the Conference of the Parties. In addition, we would not support a transfer to CITES Appendix II because the subspecies does not meet the biological criteria for inclusion in Appendix II.

3. Species characteristics

3.1 Distribution

Tympanuchus cupido attwateri occurs in three isolated populations in Texas, in the United States of America (Figure 1). The Attwater Prairie Chicken National Wildlife Refuge (APCNWR) in Colorado and Austin Counties, the Texas City Prairie Preserve (TCPP) in Galveston County, and two private ranches in Goliad County (which form one sub-population) are the only areas where populations of the subspecies now exist in the wild (U.S. Fish and Wildlife Service, 2010; U.S. Fish and Wildlife Service, unpublished data). All three subpopulations were reintroduced to these areas and are supplemented with captive-bred birds (U.S. Fish and Wildlife Service, 2010).

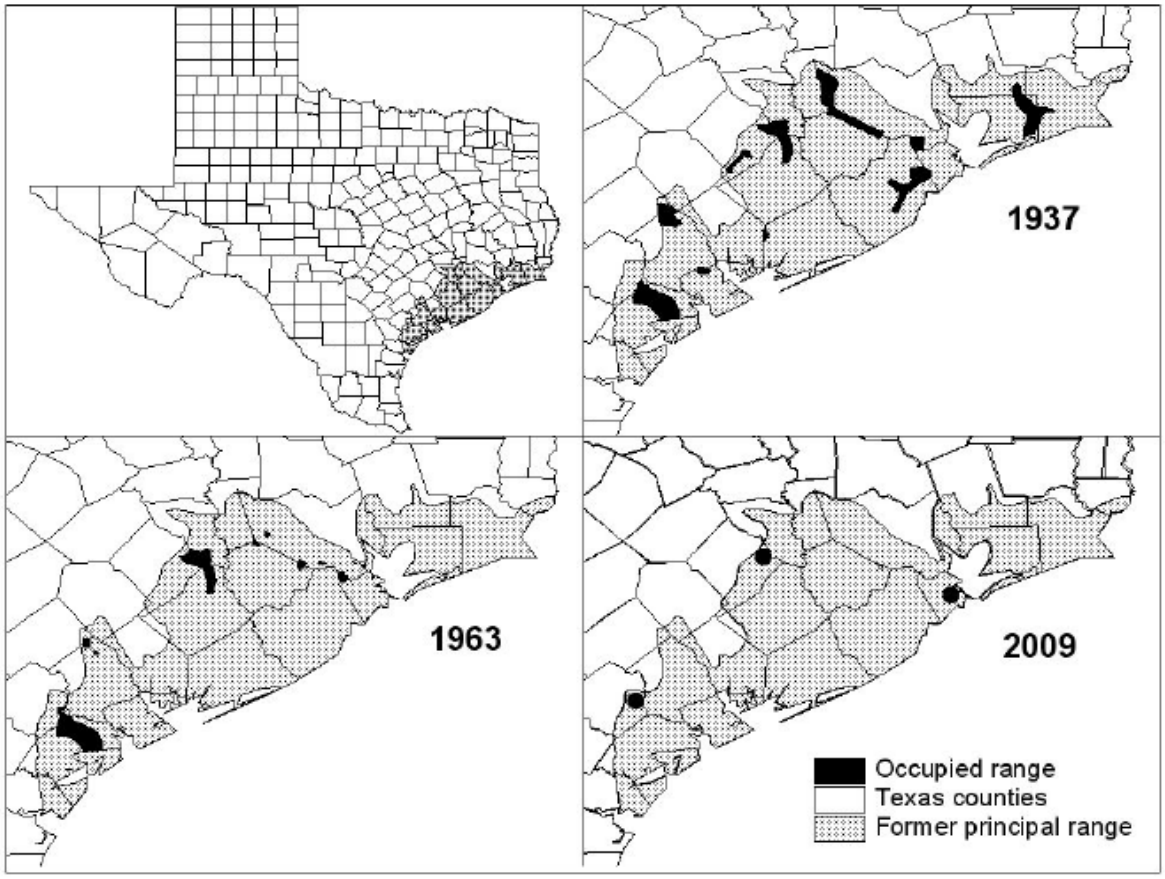

Figure 1. The approximate distribution of Attwater's greater prairie chicken in southeast Texas (United States of America); characterized historically for the years 1937, 1963 and 2009 (taken from U.S. Fish and Wildlife Service, 2010)

3.2 Habitat

Tympanuchus cupido attwateri requires open grassland habitat that is well drained, contains weeds and shrubs as well as grasses with a varying density of cover, and has a source of surface water during the summer (U.S. Fish and Wildlife Service, 2010). Permanent grassland or prairie is necessary for nesting, breeding and night roosting, although there is no consensus among species experts on the minimum size of the area that is required to sustain a viable population, with estimates ranging from 100 to 1000 hectares (U.S. Fish and Wildlife Service, 2010). Anthropogenic structures such as roads, buildings, and electric transmission lines can have a negative impact on the use of habitat by *Tympanuchus cupido attwateri* as reports suggest that booming grounds have been abandoned following the construction of these features (U.S. Fish and Wildlife Service,

2010). *Tympanuchus cupido attwateri* nest success and the annual survival of cocks (males) on booming grounds also decreases with increased woody cover (U.S. Fish and Wildlife Service, 2010).

3.3 Biological characteristics

Reproduction

Tympanuchus cupido attwateri courtship behavior takes place in communal display areas known as leks or booming grounds, so named because of the reverberating or booming calls made by displaying males while in these relatively clear areas of short grass (U.S. Fish and Wildlife Service, 2010). Booming grounds are usually close to nesting and night roosting grounds, and when established in natural, stable habitat (as opposed to habitat that has been altered by humans such as agricultural fields and roads), they tend to attract more males to display (U.S. Fish and Wildlife Service, 2010). Each booming ground generally attracts the same group of cocks and hens over time (day to day as well as year to year) and the cocks tend to remain within 1 mile (1.6 km) of the grounds (Toepfer, 2003; cited in U.S. Fish and Wildlife Service, 2010).

Courtship and breeding behavior begins in February and March and ends in May (U.S. Fish and Wildlife Service, 2010). This period corresponds with the end of winter and the beginning of spring. Within 4 days of mating, the female will move to the nesting grounds (which are within 1 mile (1.6 km) of the booming grounds) and lay and incubate a clutch of 7-16 eggs for 23-24 days (U.S. Fish and Wildlife Service, 2010). Nest success is 32.2% (mean, n=143 nests; see Peterson and Silvy, 1996) and females may attempt to re-nest if the first nest is destroyed, beginning as soon as 8-9 days later (U.S. Fish and Wildlife Service, 2010). Higher rates of reproduction are found in nest sites established in natural grasslands containing dense grasses at a height of approximately 9-10 inches (22.9—25.4 cm), rather than in agricultural areas (U.S. Fish and Wildlife Service, 2010).

Mortality

Mortality of *Tympanuchus cupido attwateri* broods can be as high as 50% during the first 4 weeks of hatching and 60% by 8 weeks. Death is often caused by avian and mammalian predation, high levels of precipitation during the brooding season and the poor quality of the brood rearing habitat (U.S. Fish and Wildlife Service, 2010). Mortality rates in 1979 for *Tympanuchus cupido attwateri* during the breeding season in rangeland habitats on private property were between 57-77% (U.S. Fish and Wildlife Service, 2010). Reports from the APCNWR suggested that the mortality rates on the refuge during 1988-1993 were 43% on average (U.S. Fish and Wildlife Service, 2010).

Diet

Forbs, grass seeds and insects are all important for the diet of *Tympanuchus cupido attwateri* with forbs being the most predominant (U.S. Fish and Wildlife Service, 2010). *Tympanuchus cupido attwateri* has also been reported to use crops such as corn, peanuts, and rice as food sources (U.S. Fish and Wildlife Service, 2010). Insects are also important for the subspecies, particularly chicks and juveniles and can amount to 30% of the diet during the summer months (del Hoyo et al., 1994).

3.4 Morphological characteristics

Tympanuchus cupido attwateri is a medium-sized grouse with heavily barred brown, black, and buff plumage (Texas Parks and Wildlife Website, 2007). It weighs about 2 pounds (900 g; males slightly larger than females) and is approximately 17 inches (43.2 cm) long with a short, rounded dark tail held erect during the courtship display. The male has yellow-orange eye combs and long tufts on the side of the neck (also held erect during courtship) with a yellow-orange air sac (Texas Parks and Wildlife, 2009a,b).

3.5 Role of the species in its ecosystem

Tympanuchus cupido attwateri serves as an indicator species for the health of the coastal prairie ecosystem.

4. Status and trends

4.1 Habitat trends

Loss and degradation of the Texan prairie grassland habitat have resulted in the decline of *Tympanuchus cupido attwateri* populations which were found in this habitat in 48 counties in the 1940s and since then are

currently only found at 3 sites (Silvy et al., 2004, U.S. Fish and Wildlife Service, 2010). In 1991, it was estimated that less than 1% of coastal prairie grasslands were in a habitable condition for *Tympanuchus cupido attwateri* and that this habitat was largely fragmented (U.S. Fish and Wildlife Service, 2010).

4.2 Population size

In 2010, the total number of *Tympanuchus cupido attwateri* individuals recorded across the three subpopulations was approximately 90 (U.S. Fish and Wildlife Service, 2010).

4.3 Population structure

There is no information available regarding the population structure of *Tympanuchus cupido attwateri*. Sexual maturity is usually attained at the age of 1 year, but few prairie chickens mate successfully at that age. The longest that a ringed bird has been recorded to live is 8 years (de Hoyo et al., 1994).

4.4 Population trends

Prior to the 1890s, *Tympanuchus cupido attwateri* population numbers had been near 1 million individuals (U.S. Fish and Wildlife Service, 2010). Over time, reported population estimates have been dependent on a number of different variables, typically the quality of the habitat, the time of year, and the survey method and survey area (U.S. Fish and Wildlife Service, 2010). However, despite inconsistencies with data collection it is clear that there has been a dramatic decline in *Tympanuchus cupido attwateri* numbers since 1937, with numbers falling from just under 9,000 individuals to under 100 (U.S. Fish and Wildlife Service, 2010). Between 1967 and 1977, the population as a whole increased from approximately 1,000 individuals to 2,000, but this number had decreased again to 1,000 by the late 1980s and continued declining until 1995, where it has remained at a constant level of around 50 individuals (U.S. Fish and Wildlife Service, 2010). Since 2007, the number has risen slightly to 90 individuals due in large measure to intensive conservation efforts.

Tympanuchus cupido attwateri is an *r*-selected species, experiencing rapid growth and reproduction, but also experiencing sudden population declines. Therefore, small isolated population sizes have a high potential to increase or decrease quickly (U.S. Fish and Wildlife Service, 2010). *Tympanuchus cupido attwateri* population trends at other sites suggest strongly that, if a population drops below 250 cocks (males) for more than 3 years in succession without intensive management, there is a high probability that the population will become extinct (U.S. Fish and Wildlife Service, 2010).

4.5 Geographic trends

The ancestral range of *Tympanuchus cupido attwateri* probably was from southwest Louisiana to an area near Brownsville, Texas, although the subspecies was extirpated from Louisiana by 1919 (U.S. Fish and Wildlife Service, 2010). In 1937, it occupied only 19 counties in southern Texas, having become extinct in approximately 29 others (U.S. Fish and Wildlife Service, 2010). By 1999, it remained in only two counties (Galveston and Colorado, Texas) increasing to three in 2007 with the release (reintroduction) of individuals in Goliad County (Texas; U.S. Fish and Wildlife Service, 2010).

5. Threats

Habitat loss

The main cause of the decline of *Tympanuchus cupido attwateri* populations is the loss and fragmentation of prairie grassland habitat (Silvy et al., 2004; U.S. Fish and Wildlife Service, 2010). The reasons for this loss are increases in agricultural practices such as livestock grazing, as well as habitat conversion, urban and industrial expansion, and the invasion of woody plant species (Silvy et al., 2004). These practices have left less than 1% of the prairie ecosystem inhabited by *Tympanuchus cupido attwateri* in relatively pristine condition (Silvy et al., 2004).

Hunting

Until 1936, hunting was a significant threat to *Tympanuchus cupido attwateri* with yearly hunts taking place from mid-summer to winter contributing to its decline (U.S. Fish and Wildlife Service, 2010). Large numbers of the subspecies typically were taken during these hunts. The Texas legislature closed the hunting season in 1937 due to the continued decline of *Tympanuchus cupido attwateri* (Terry Rossignol, U.S. Fish and Wildlife Service, in litt., 2011; see Jurries, 1979 and Lehmann, 1941).

Genetic isolation and disease

These pressures have affected *Tympanuchus cupido attwateri* to such an extent that populations are now small, fragmented, and susceptible to genetic isolation and disease. There is no direct evidence that *Tympanuchus cupido attwateri* populations are currently suffering from inbreeding depression, but this may become more of an issue if the genetic diversity of the captive-bred birds, used to supplement populations, does not improve (U.S. Fish and Wildlife Service, 2010). As well as a reduction in genetic fitness, current small populations are now more vulnerable to extirpation than before to due to high mortality caused by parasites (U.S. Fish and Wildlife Service, 2010).

Captive breeding

Currently the three populations of *Tympanuchus cupido attwateri* are dependent on captive breeding programs for survival. The biggest threat to the subspecies, and one that could result in extinction, is the inability of the captive breeding programs to increase the number of individuals produced annually that are released and able to raise young in the wild (Pratt, 2010; U.S. Fish and Wildlife Service, 2010). Recovery could occur if the problems with poor brood survival (see section 8.4) are resolved, but until this time, populations of *Tympanuchus cupido attwateri* are increasingly vulnerable to stochastic events (U.S. Fish and Wildlife Service, 2010).

6. Utilization and trade

6.1 National utilization

National utilization of *Tympanuchus cupido attwateri* is illegal under a strict domestic measure: U.S. Endangered Species Act of 1973, as amended (U.S. Fish and Wildlife Service, 2009; Act). The Act protects endangered and threatened species and their habitats by prohibiting the “take” of listed animals and the interstate or international trade in listed plants and animals, including their parts and products, except under Federal permit. The Act makes it unlawful for a person to take a listed animal without a permit. Take is defined in the Act as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” The term “harm” and “harass” are further defined by regulation. Current published data regarding national utilization of *Tympanuchus cupido attwateri* are not readily available, but unofficial estimates by species experts suggest that utilization is minimal (Terry A. Rossignol, U.S. Fish and Wildlife Service, pers. comm., 2011).

6.2 Legal trade

There have only been two reported instances of international trade in *Tympanuchus cupido attwateri* since 1975 (UNEP-WCMC CITES trade database, 2010). The first (legal) was in 1996 when one captive-bred scientific specimen was exported from the United States of America to Sweden. The second reported shipment was in 1998 when two scientific specimens from captive-bred U.S.-origin birds were re-exported from Sweden to the United States for medical purposes and, based on the comparative tabulation report, were confiscated or seized (UNEP-WCMC CITES trade database, 2010). No further information about the second shipment is available at this time.

The International Species Information System (ISIS) database (www.isis.org, accessed 31 January 2011) records five institutions, all in the United States, that have captive *Tympanuchus cupido attwateri* (see Section 8.4 below). Therefore, there is no evidence of international trade for zoological display. The World Pheasant Association database (last updated 2009) of Galliformes in captivity in Austria, Germany, Belgium, Netherlands, Luxemburg, Portugal, France or the United Kingdom does not contain any records of *Tympanuchus cupido attwateri* (http://wpa.serena-mueller.ch, accessed 31 January 2011). Two collections reported *Tympanuchus cupido* (no sub-specific identification), however, in 2009. Both databases rely on voluntary submission of records.

6.3 Parts and derivatives in trade

Other than two shipments in 1996 and 1998, there are no data to suggest that international trade is occurring in parts or derivatives of *Tympanuchus cupido attwateri*.

6.4 Illegal trade

Other than a single seized shipment in 1998, there are no data to suggest that the illegal international trade of *Tympanuchus cupido attwateri* is occurring.

6.5 Actual or potential trade impacts

There is no current information about trade impacts on *Tympanuchus cupido attwateri*. The subspecies, however, is not in demand for international trade (not "affected by trade" as defined in Annex 5) nor would any trade be anticipated if it were delisted from the CITES Appendices.

7. Legal instruments

7.1 National

Tympanuchus cupido attwateri was listed in 1967 as Endangered by U.S. Fish and Wildlife Service under the Endangered Species Preservation Act of 1966 (and concurrently by Texas Parks Wildlife Department under State legislation). This act was incorporated into the U.S. Endangered Species Act of 1973, as amended. Listing has had a number of impacts on the management of the taxon and its coastal prairie ecosystem, primarily increasing the level of funding available for conservation, raising awareness of its status, and affecting regulations concerning its environment (Morrow et al., 2004). Since *Tympanuchus cupido attwateri* has been listed, funding has also been generated from sources other than the Government and this has allowed 19 studies of the subspecies to take place since the listing occurred (where there were only three prior to this) and formalization of habitat management. A large portion of available funding also supports the captive breeding program (Morrow et al., 2004). The U.S. Endangered Species Act prohibits (among other things) import, export, and shipment in foreign commerce of listed species without a permit.

7.2 International

Tympanuchus cupido attwateri was included in Appendix I of Convention on International Trade in Endangered Species of Wild Fauna and Flora in 1975.

8. Species management

8.1 Management measures

The APCNWR (Texas) was set up in 1972 with the aim of protecting and enhancing 4,265 ha of prairie habitat as well as conserving populations of *Tympanuchus cupido attwateri* (U.S. Fish and Wildlife Service, 2010). Some lands that were acquired for the refuge were initially for rice production but have been restored to provide *Tympanuchus cupido attwateri* habitat (U.S. Fish and Wildlife Service, 2010). The population of *Tympanuchus cupido attwateri* in the refuge increased from approximately 25 individuals in 1972 to 222 in 1987, but unfortunately since then has declined (U.S. Fish and Wildlife Service, 2010). Reasons for the decline have been correlated with burning regimes in *Tympanuchus cupido attwateri* core habitat, variability in grassland structure, and climate variables (U.S. Fish and Wildlife Service, 2010). Another area that supports a very small population of the subspecies is the Texas City Prairie Preserve (Texas; TCPP; 6 individuals on 970 ha). Both the APCNWR and the TCPP populations are supplemented with individuals that have been bred in captivity (see also Section 8.5). A third population of *Tympanuchus cupido attwateri* is being reintroduced onto private lands in Goliad County (Texas). This initiative began in 2007 (Pratt, 2010). This population is surviving but experiencing similar problems with low brood survival as the other two management sites (Pratt, 2010).

In order to protect and ensure the survival of *Tympanuchus cupido attwateri* and its habitat the U.S. Fish and Wildlife Service has outlined recovery objectives in its 2010 recovery plan (U.S. Fish and Wildlife Service, 2010). These objectives include:

1) maintaining and improving 121,457 ha of coastal prairie grasslands for the subspecies throughout its historic range;
2) increasing propagation and release efforts of captive specimens of *Tympanuchus cupido attwateri* into wild populations to viable levels by reintroducing physically and behaviorally healthy individuals;
3) establishing populations of at least 500 birds in multiple core areas to encourage gene flow between populations; and
4) increasing public support and partners for the continued conservation of the subspecies and its coastal prairie ecosystem.

Following these objectives should lead to reclassification as Threatened of *Tympanuchus cupido attwateri* under the Endangered Species Act if the population is increased and sustained at a minimum of 3,000 breeding adults annually over a 5-year period (U.S. Fish and Wildlife Service, 2010).

8.2 Population monitoring

Annual population counts of *Tympanuchus cupido attwateri* are conducted every spring on booming grounds by U.S. Fish and Wildlife Service personnel and associates (U.S. Fish and Wildlife Service, 2010).

8.3 Control measures

8.3.1 International

Other than CITES we are not aware of any specific international control measures for *Tympanuchus cupido attwateri*. However, our domestic regulation of the species prohibits (among other things) import, export, and shipment in foreign commerce by persons subject to U.S. jurisdiction of the species without a permit.

8.3.2 Domestic

At the Federal level, the subspecies is listed as Endangered under the U.S. Endangered Species Act of 1973, as amended, and is also subject to the Lacey Act of 1900, as amended 22 May 2008. At the State level, the subspecies is managed as Endangered by Texas Parks and Wildlife Department under corresponding State legislation and is not subject to harvest (Texas Parks and Wildlife, 2007, 2009a, 2009b).

8.4 Captive breeding and artificial propagation

Captive breeding programs for *Tympanuchus cupido attwateri* have been underway for several years, but have not been successful, largely because of the difficulty in producing the right conditions in which to hatch and raise the chicks. These chicks also suffer from medical problems such as wryneck, enteritis, and outbreaks of the reticuloendotheliosis virus (U.S. Fish and Wildlife Service, 2010). Currently there are breeding programs underway at the following institutions: Fossil Rim Wildlife Center; Houston Zoo; San Antonio Zoo; Sea World of Texas; Abilene Zoo; and Caldwell Zoo (U.S. Fish and Wildlife Service, 2010). Between 1992 and 1998, 175 *Tympanuchus cupido attwateri* eggs and 9 live males were collected from wild populations for the captive breeding program, but only 19 individuals were subsequently used as genetic founders (U.S. Fish and Wildlife Service, 2010).

Pratt (2010) reported that the captive population of *Tympanuchus cupido attwateri* in 2007 consisted of 167 breeding adults with the Fossil Rim Wildlife Center managing 50% of the total captive flock, the Houston Zoo managing 20%, the Abilene Zoo managing 9%, the San Antonio Zoo managing 6%, and the Sea World of Texas, Texas A&M University and Caldwell Zoo each managing 5% (Pratt 2010). In January 2011, these institutions (excluding the Sea World of Texas and Texas A&M University) had a total of 284 individuals in captivity, 90 of which were bred during 2010 according to the ISIS database (see: www.isis.org, accessed 31 January 2011). Additional breeding facilities are now currently being established (U.S. Fish and Wildlife Service, 2010). These captive populations supplement the populations at APCNWR and TCPP in addition to providing the source birds for reintroductions underway on private ranches in Goliad (U.S. Fish and Wildlife Service, unpublished data, 2011).

Although the captive breeding program has been instrumental in preventing the extinction of *Tympanuchus cupido attwateri*, it has not resulted in the expansion of populations (Pratt, 2010). Post-release survival has been noted to vary between 8-43% per year compared to a wild yearly survival rate of 23-57% (Pratt, 2010). Brood survival from captive bred hens of *Tympanuchus cupido attwateri* introduced into the wild has been very poor and is stated to be the single factor limiting the recovery of the subspecies (U.S. Fish and Wildlife Service, 2010). The main reason for this low survival rate has been attributed to nutritional deficiency in the chicks. Three possible reasons for this deficiency are low quality brood habitat, the rearing environment at the captive breeding facilities, and a decrease in genetic diversity from inbreeding or genetic drift (Pratt, 2010). Other possible reasons for low brood survival are low genetic variability, physiological changes to individuals of *Tympanuchus cupido attwateri* due to the captive environment, parental behavior attributable to the captive environment, disease/parasites, and stings by the exotic red imported fire ant (*Solenopsis wagneri*; U.S. Fish and Wildlife Service, 2010). Successful reintroductions and ultimately the survival of the subspecies depend on a solution to these limiting factors.

In 2010, however, brood survival surpassed 62% on APCNWR. Preliminary findings indicate that perhaps red imported fire ants had decimated insect densities (especially small insects that are important *Tympanuchus cupido attwateri* prey items) to the point that it had affected the number of insects available to newly hatched chicks during this very critical period of their life (U.S. Fish and Wildlife Service, 2010). Additional research to investigate this hypothesis is currently ongoing.

8.5 Habitat conservation

In 1995, the Coastal Prairie Conservation Initiative (CPCI), a conglomeration of private landowners and conservation and governmental organizations, was set up to assist with the management of coastal prairie habitat on private lands (U.S. Fish and Wildlife Service, 2010). A Safe Harbor Agreement was incorporated into this initiative with the aim of '*promoting voluntary management for federally listed species on private property while giving assurances to landowners that no additional future regulatory restrictions will be imposed if these species colonize or increase in numbers as a result of management activities*' (U.S. Fish and Wildlife Service, 2010). Management of *Tympanuchus cupido attwateri* currently includes 33,461 ha under Safe Harbor Agreements (U.S. Fish and Wildlife Service, 2010).

The CPCI primarily manages the prairie habitat restoration (23,865 ha) in the Refugio-Goliad priority management zone in Goliad County. Historically this area supported large populations of the subspecies, and currently contains the largest continuous blocks of prairie habitat in Texas (U.S. Fish and Wildlife Service, 2010).

Two further habitat management areas support the *Tympanuchus cupido attwateri*. The Texas City Prairie Preserve (970 ha) currently supports fewer than 10 birds and is managed by the Texas Nature Conservancy. The second is the APCNWR (4,265 ha), which is based within the Austin-Colorado County priority management zone and has historically supported large populations of *Tympanuchus cupido attwateri*. Currently there are about 6,285 ha under grassland management or restoration in this area with future targets in place to acquire 12,145 ha for the refuge (U.S. Fish and Wildlife Service, 2010).

8.6 Safeguards

Regardless of any reclassification under CITES, the taxon will continue to be regulated by the U.S. Endangered Species Act of 1973, as amended, as well as regulations by the State of Texas. The lead Federal agency for actions regarding this bird is the U.S. Fish and Wildlife Service. The subspecies is not subject to harvest in Texas.

9. Information on similar species

Tympanuchus cupido attwateri is part of the *Phasianidae* (grouse) family and the genus *Tympanuchus*. This genus includes three species: *Tympanuchus cupido* (greater prairie-chicken), of which there are two subspecies, *T. c. pinnatus* and *T. c. attwateri*; *T. pallidicinctus* (lesser prairie-chicken); and *T. phasianellus* (sharp-tailed grouse), of which there are six subspecies (del Hoyo et al., 1994). However, with the exception of *Tympanuchus cupido attwateri*, no other species or subspecies of the genus *Tympanuchus* are listed in the CITES Appendices.

Three other grouse taxa are either candidates for listing under the U.S. Endangered Species Act of 1973, as amended, or have been evaluated for listing under the Act, but are not listed in the CITES Appendices: *Centrocercus minimus* (Gunnison sage-grouse) and *Centrocercus urophasianus* (greater sage-grouse) are candidates to be listed under the Act, while *Tympanuchus phasianellus columbianus* (Columbian sharp-tailed grouse) was evaluated and will not be listed.

10. Consultations

Mr. Terry A. Rossignol, Refuge Manager, Attwater Prairie Chicken National Wildlife Refuge (U.S. Fish and Wildlife Service) was consulted for this periodic review and proposal.

11. Additional remarks

The Coastal Prairie Coalition (GLCI) Grazing Lands Conservation Initiative and Gulf Coast Prairies (also known as Coastal Prairie Conservation Initiative [CPCI]) also promote the conservation status of this taxon in cooperation with the U.S. Fish and Wildlife Service.

12. References

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