

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



Eighteenth meeting of the Conference of the Parties
Colombo (Sri Lanka), 23 May – 3 June 2019

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of *Syrmaticus reevesii* (J. E. Gray, 1829), which is endemic to China in Appendix II of CITES, in accordance with Article II, paragraph 2 (a) of the Convention.

Inclusion of *Syrmaticus reevesii* in Appendix II of CITES satisfies Criterion B in Annex 2a of Conf. 9.24 (Rev. CoP17). Based on the available trade data and information on the status and trends of its wild population, the international trade in specimens of *Syrmaticus reevesii* should be regulated to ensure that continued smuggling would not drive poaching and threaten the survival of the wild population.

B. Proponent

China*

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: *Syrmaticus*

There are five species in genus *Syrmaticus*, which are all distributed in Asia. *S. reevesii*, *S. ellioti* and *S. mikado* are endemic to China, while *S. soemmerringii* is endemic to Japan and *S. humiae* could be found in China, India, Myanmar and Thailand. *S. humiae*, *S. ellioti*, and *S. mikado* have been included in CITES Appendix I since 1975.

The proposal only relates to the *Syrmaticus reevesii* (J. E. Gray, 1829).

- 1.5 Scientific synonyms: *Phasianus reevesii* J. E. Gray, 1829

- 1.6 Common names:
- | | |
|----------|-------------------|
| English: | Reeves's Pheasant |
| French: | Faisan vénéré |
| Spanish: | Faisán venerado |

* 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.

1.7 Code numbers: N/A

2. Overview

Syrmaticus reevesii is a long-tailed pheasant that is endemic to central China. It is a typical forest bird that mainly lives in mountain forests at altitudes between 200 to 2,600 m. They mainly feed on vegetation and might come to the farmland for crops in winter when food is limited. Like most of its relatives, Reeves's Pheasant is characterised by strong sexual dimorphism. The adult male is longer and heavier than the female and is brightly plumaged with golden white-black-banded long tail feathers. The tail feathers of Reeves's Pheasant can measure up to 2.4 metres that are thought to be the longest tail of birds and was used as a decoration in traditional dramas costumes, but in modern times plastic or dyed stitched feathers are substitutes in the opera.

While the Reeves's pheasant was widely known from western, central to eastern provinces of China historically; now there remain three main shrinking fragmented subpopulations in the Dabie Mountains, the Qinling Mountains and the Shennongjia mountainous massif. The population has decreased in recent decades due to the illegal hunting and habitat destruction. There are 3,500-15,000 individuals estimated, and the population size has decreased. The species is the wildlife under second class state protection of China since 1989. It is assessed as VU A2cd+3cd+4cd;C2a(i) in the IUCN Red List in 2018, and EN A2cd+3cd+4cd in the China Biodiversity Red List released in 2015.

The Reeves's pheasant was threatened by poaching for food by local communities or targeted hunting for the decoration of specimens. Their eggs are also illegally collected by local people for food or breeding. Other main threats include the destruction and loss of habitats and the poison in farmland. The Chinese government has taken a series of actions to conserve forests in recent decades, including a ban on logging in the middle and upper reaches of large rivers and imposing forests under the National Forest Protection Programme. Dozens of national or provincial nature reserves and forest parks have been established where Reeves's Pheasant used to be found. Moreover, some of the protected areas focus on the conservation of this pheasant with long-term scientific research, population monitoring and habitat protection.

More than 60 institutes both in China and abroad are breeding Reeves's pheasant in captivity. It has been introduced to many countries outside China since the beginning of the last century. The main purposes for international trade are fashion decoration and specimen display. From 2011 to 2015, thousands of feathers were commercially imported to the EU with claimed sources from China. However, since Reeves's pheasant is a nationally protected animal in China, no specimens have been approved to be used or exported with commercial purposes in China. Specimens appearing in international trade may come from introduced populations, but the lack of tracing the source is detrimental to the protection of its wild population. The inclusion of the *Syrmaticus reevesii* in CITES Appendix II will help to monitor and regulate the international trade and minimise the detrimental effect of poaching and smuggling on the survival of its wild population.

3. Species characteristics

3.1 Distribution

The wild *Syrmaticus reevesii* is endemic to central mountains in China. It is a monotypic species and was historically recorded in many provinces (Zheng, 2015). Now there are three main shrinking fragmented subpopulations in the Dabie Mountains, the Qinling Mountains and the Shennongjia mountainous massif, in south Henan, south Shaanxi, south eastern Gansu, north eastern Yunnan, Sichuan, Guizhou, Hubei, west Hunan and west Anhui provinces, and Chongqing municipality (Zheng, 2017), (See Annex 1, Fig. 1).

They have been introduced for sports hunting and ornamental birds to the US and European countries. The Czech Republic and France have built up small breeding populations in nature.

3.2 Habitat

Syrmaticus reevesii is a typical forest bird and inhabits mountain forests at altitudes between 200m to 2,600m. It is found chiefly in broadleaf forests dominated by oaks, usually with a dense canopy and sparse undergrowth, but also in conifer forest and scrub (Wu and Xu, 1987). A study about home range using radio-tracking of cocks in Dongzhai National Nature Reserve (NNR) revealed that the species prefers mixed conifer-broadleaf forest, evergreen broadleaf, deciduous broadleaf and shrub in spring and summer, but mainly favoured shrub and seldom used deciduous broadleaf during late autumn and

winter. They may need a mosaic of habitats to meet their needs throughout the year (Xu et al., 2007). The species also utilises farmland adjacent to forest edge (Qiu and Zhang, 2010). (See Annex 1, Fig. 3).

3.3 Biological characteristics

It is usually monogamy, but occasionally one male pheasant might have 2-3 female partners (Zheng 1986; Wu and Xu, 1987). The mating begins in mid-March when groups of pheasants begin to disperse, and the cocks begin to occupy territory and show audible wing-whirring display more frequently to attract hens (Lu, 1989). Recent research in Dongzhai NNR shows that egg-laying takes place from late March onwards, with hens incubating alone and caring for chicks for several weeks (Qiu and Zhang, 2010).

At the beginning of egg laying, the nest is only a shallow hole on the ground with no obvious nest material. In some cases, there might be some fallen leaves or grasses in the nest. During the egg laying, downs and feathers fall from the belly of hens to the nest. During the incubation, the feathers will continue to fall and cover the bottom of the nest at the end of incubation. Normally, the egg-laying and incubation take place once each year but might have the second time when the first time failed (Zheng, 2015). The average clutch size is 9 ± 2 , and the average weight of the egg is 33.05 ± 2.46 g ($n=71$). The interval time of egg laying is about 24 h. The female begins to incubate immediately after laying the last egg. Incubation time is 26-27 d, and the average temperature of the nest is 34.5 ± 0.1 °C (Zhang et al., 2004a). The female incubates alone and leaves the nest for feeding every 2-3 days. Chicks leave the nest in 2-3 hours when hatched and follow their mother to the following winter (Zheng, 2015).

The food composition is complex that sand and gravel could always be found in their faeces (Wu et al., 1991; Fang and Ding, 1997). They mainly eat plants, but there is variation in food composition in different seasons. The ratio of crops seeds is higher in winter while the ratio of animals like insects and worms is higher in other seasons (Hu and Wang, 1981; Zhang et al., 1982). They do not form the group in most cases, but the mixed-sex group is the most common group when needed, and there is a significant difference in group forming in different sexes (Zhang et al., 2004b). They are not good at singing but will have the short and urgent call of “gu-gu-gu-gu” when frightened. The cocks seldom sing in the wild but have the behaviour of the wing-whirring display to communicate, attract hens or proclaim the occupancy of the territory.

3.4 Morphological characteristics

Like most of its relatives, Reeves's Pheasant is characterised by strong sexual dimorphism (Zhao, 2001). Cocks measure 210 cm (83 in) long and weigh 1,529 g (3.371 lb). Upon the scaled golden-brown body, the top of the head, chin, throat and up neck are all white, while the forehead, lore, cheek, auricular and headrest are black and are connected in bands. Big white spots could be found under the eyes. There is one black collar under the white neck, and the back is brown with black feather margin. The upper-tail coverts are grey-white with black horizontal stripes. They have 20 tail feathers, and the central two are extraordinarily long with black and chestnut meniscus horizontal stripes. The margin of the tail feather is brown. The length of the third to sixth tail feather is gradually decreasing. There are earthy red horizontal stripes on the meniscus black patches, and the outer rectrices are almost all brown golden. The wing coverts are white with black and dark chestnut margin while the inner coverts are black and brown with white spots and brown feather edges. The primary coverts are dark brown with white or light brown spots. The breast is white with black-dark brown horizontal stripes and dark chestnut feather edges. The colours of two flanks and leg feather are almost the same with the breast, but there are light brown edge spots in the breast. The central belly and the undertail coverts are all black, while there is the brown subterminal band in the undertail coverts. Iris are brown, and there is bare red skin around the eye with the short black feather. The bill is grey-green, tarsometatarsus is grey-brown, toes are tawny while the claws are dark brown.

Hens measure 75 cm (30 in) long and weigh 949 g (2.092 lb). Chestnut brown on top of the head, side of head and throat are light yellow. Ear feather and the upper eye stripes are black. The upper part and the surface of two wings are mixed with chestnut, brown, grey and black spots. The feather shaft is brown and yellow, which enlarge to white sagittal spots. The flight feather has brown and chestnut horizontal stripes. The upper part is all grey and dark brown with black stripes. The central rectrice is grey with small brown spots. The outer tail feather is mainly chestnut, with white and black horizontal stripes. The underparts are light yellow with chestnut spots in the breast and flanks. Dark brown iris,

light yellow with the grey-green mouth, grey-brown tarsometatarsus, and dark brown claws (Zheng, 2015) (Annex 1, Fig. 2).

3.5 Role of the species in its ecosystem

Syrmaticus reevesii is mainly a herbivore and is thought to be a primary consumer. As a nationally protected animal, it is a flagship species in some mountainous massifs in central China and is important in maintaining some natural reserves for the forest ecosystem. The distribution, population size and survival status of this species could reflect the quality and the conservation status of the forest they inhabit in some degrees (Zhang et al., 2003).

4. Status and trends

4.1 Habitat trends

Syrmaticus reevesii used to be widely distributed in the mountains in China (Cheng, 1987), but the distribution area gradually decreased, and the population size began to decrease since the mid-20th century (Zheng and Wang, 1988). The Chinese government has taken a series of actions to conserve forests in recent decades, including a ban on logging in the middle and upper reaches of large rivers and imposing forests under the National Forest Protection Programme after the 1998 Yangtze River Floods. Dozens of national or provincial nature reserves and forest parks have been established where Reeves's Pheasant used to occur, and the total area of all these nature reserves is more than 17,040 km² (Annex 1, Tab. 1). However, there are still poaching, illegal logging, cropland development and tourism in these nature reserves. The temporal and spatial prediction of the potential habitats of *Syrmaticus reevesii* finds that the loss rates of habitats inside the nature reserve are far more than the increase rates (Zhou et al., 2015). (Zhou et al. 2015).

4.2 Population size

According to the report of the First National Terrestrial Wildlife Resource Survey published in 2009, there were about 23,000 *Syrmaticus reevesii* in the wild in China. Among them, the number of individuals in Shennongjia in Hubei Province is the largest and then are the Qinling in Shaanxi Province and Dabie Mountain in Henan Province (SFA, 2009). In 2018, IUCN Red List estimated the population size to be 3,500-15,000. A population density in a total of 43 sites in distribution areas is estimated at 33.36 individuals/km²(Annex 1, Tab. 1).

4.3 Population structure

The survey in Shaanxi in 2003 found that the male: female ratio is 1.1: 1 (n=21). The hens incubate alone and do not mix with other groups. Chicks spend the winter together with their mothers (Zheng, 2015).

4.4 Population trends

The effective population size of this pheasant has decreased about 99% in the past one thousand years based on the estimation of the effective population size in different geographic populations, and this pheasant is found to experience severe genetic bottleneck (Chang et al., 2011). This pheasant used to be a common bird in Hebei Province in northcentral China one hundred years ago, but the population size began to decline in the 1920s. Specimens of this pheasant in Hebei Province have never been collected after 1953. This pheasant was also considered to go extinct in Shanxi Province. The population size of Reeves's pheasant in Guizhou was estimated to be 476-519 in 1987 and 500 in 1991, while the population in Henan was estimated to be 300 in 1991. The investigation in the Taibai County in Qinling Mountains in Shaanxi showed that the population density in breeding season has a tendency of decrease, which was 6.2 inds/km² in 1983, 2.7 inds/km² in 1984, 3.5 inds/km² in 1985, and 2.6 inds/km² in 2001-2002.

Surveys in 89 historical distribution sites from 2011 to 2012 found that the pheasant has disappeared from 46% of the surveyed sites and populations decline in 46 sites. Population densities in protected areas in 2011 were significantly lower compared to those in 2003–2005 (Zhou et al. 2015).

4.5 Geographic trends

Syrnaticus reevesii moves its breeding and wintering areas to higher altitudes or latitudes to respond to the effect of global climate change and the expansion in human activity worldwide (Lemoine et al., 2007; Sorte and Thompson, 2007; Maclean et al., 2008). ArcGIS predicted that the potential distribution area of the pheasant will decrease and move to the north and higher altitudes (Zhou et al., 2015) (Annex 1, Fig. 4). The habitat fragmentation might further restrict the dispersion of this species which will reduce the gene exchange among different geological populations and further increase the risk of extinction for certain populations (Carvalho et al., 2010; Sorte and Jetz, 2010).

Syrnaticus reevesii has been introduced to Europe and the US for more than one hundred years. The UK first introduced this pheasant in 1831. After that, many European countries and the US began to introduce this pheasant directly or indirectly from China (Lei and Lu, 2006). Introduced populations are reported in the US, Pakistan, Czech Republic and France. Among them, the populations in the US and Pakistan may rely on recruits to maintain due to the low population size and the effect of inbreeding degradation, while independently nature populations could be found in the Czech Republic and France.

5. Threats

The wild populations are facing many threats right now. Among them, illegal hunting, habitat destruction and loss, and poison in farmland are the three main threats to the survival of this species (Zhou et al., 2015). This species was hunted in the past for its long tail feathers, which were used as a decoration in the local opera costumes (Zheng, 1986; Xu et al., 1996). Also, eggs are collected, chicks and sometimes even adults are captured to meet the demand for recruits for some zoos or breeding centres, which could directly cause the population decline and the decrease in reproductive rate (Hu et al., 1981; Wu et al., 1991). Hunting and selling of this pheasant are strictly prohibited in public since this pheasant is the wildlife under second class state protection of China. However, trades in private are still ongoing. The habitat fragmentation in many distribution sites might induce the loss of suitable habitats, the increase in dispersion difficulties and the population decline, which might cause the loss of genetic diversity and inbreeding depression. Also, poison bait could be found around the farmland for protecting crops by farmers which causes occasional death of this pheasant (Zhou et al., 2015).

6. Utilization and trade

6.1 National utilization

The long tail feathers of cocks were used as a decoration in the local opera costumes in China in the past (Xu et al., 1996). Now, operas generally use plastic or dyed stitched feathers as substitutes. Some zoos and breeding centres hold live individuals as exhibiting or ornamental birds. The specimens could also be found in many natural history museums in China. Adults might be hunted, or eggs were collected by indigenous people for food.

6.2 Legal trade

Domestic - *Syrnaticus reevesii* is strictly protected under the *Law of the People's Republic of China on the Protection of Wildlife*. Administrative approvals by provincial conservation competent departments are needed for selling, buying and utilisation of this pheasant and their products for special purposes like scientific research, captive breeding and public exhibitions. Also, the wildlife special marks are obligatory for this legal utilization. About 32 live *Syrnaticus reevesii* have been approved by forestry department in Shandong Province for captive breeding and exhibition in zoos from 2016 to 2018. The accurate number of individuals that have been approved for captive breeding and scientific exhibition in China is unknown.

International - Since *Syrnaticus reevesii* has not been included in CITES Appendices heretofore, authentic data of international trade is unavailable. Online surveys on buying and selling posts of *Syrnaticus reevesii* revealed that feathers had been the main parts in trade, but there are also some trade records of live individuals and eggs in some countries. Besides, it is treated as a game or sports species in the Czech Republic and Slovakia with the price of hunting on several websites (Annex 3).

6.3 Parts and derivatives in trade

Tail feathers of cocks and the whole specimens are the main targets. The tail feathers of male *Syrmaticus reevesii* are the longest among all the species in Phasianidae. Distinctive stripes and colour patterns on the tail feathers of pheasants could be used in identifying species in Phasianidae (Annex 4).

6.4 Illegal trade

The Database of Legal Instruments of China contains a few judgements including eleven *Syrmaticus reevesii* poached for food by indigenous farmers, and one individual illegally traded in Anhui Province from 2013 to 2017. Alleged persons had all got penalties.

During 2007 to 2015, 41 kg and 3674 pieces of feathers of Reeve's pheasants were commercially imported into the EU with claimed sources from China according to the EU trade database running by UNEP-WCMC (Annex 3, Tab. 2). However, as aforesaid, Reeves's pheasant is a national protected animal in China, no specimens have been approved to be used or exported with commercial purposes from the side of China. Specimens appearing in international trade may come from introduced populations with false source information.

6.5 Actual or potential trade impacts

Syrmaticus reevesii is popular for the male's gorgeous feather colour and the long tail feathers. The survival and sustainability of wild populations are under increasing pressure from large demand for illegal trade. Studies pointed out that the length of the tail feathers of male *Syrmaticus reevesii* may be the most important features of secondary sex characteristics (Andersson, 1982). The tail feathers of cocks grow to the longest in the breeding season. The large demand for the tail feathers of cocks for decoration might affect the success of courtship and mating.

In addition, the eggs collecting and capturing chicks and even adult birds that occur in many areas to meet the demand for recruits for zoos or breeding centres, lead to the decline of population and the reproduction rate of wild populations (Hu et al., 1981; Wu et al., 1991). The promotion of the living animals of the *Syrmaticus reevesii* due to the demand for non-profit pets of bird lovers or the demand for profitable farming has increased the possibility of poaching of the wild pheasant. The unregulated demand for the exhibition specimens of *Syrmaticus reevesii* will further stimulate captures in the wild. Both the actual and potential illegal trade may have negative effects on the wild population. Therefore, in order to maintain the stability of populations of Reeves's Pheasant, it is proposed that the international trade of wild *Syrmaticus reevesii* should be monitored along with the promotion of the conservation in China.

7. Legal instruments

7.1 National

Syrmaticus reevesii has been listed as the second class on the *Wildlife under Special State Protection of China* since 1989, which is under the protection of *Law of the People's Republic of China on the Protection of Wildlife*, and *Regulations on the Nature Reserves of the People's Republic of China*. The hunting, killing, selling, buying and utilisation of this pheasant and their products are strictly prohibited. Administrative approvals by provincial conservation competent departments are needed for selling, buying and utilisation of this pheasant and their products for special purposes like scientific research, captive breeding and public exhibitions. In addition, the wildlife special marks are obligatory for these legal utilization. Permission from the relevant responsible department of the State Council should be got for the exportation of this pheasant and their products. This species is assessed as EN A2cd+3cd+4cd in the China Biodiversity Red List in China published in 2015.

7.2 International

Syrmaticus reevesii has been listed in Annex D in the EU Wildlife Trade Regulations since 01/06/1997. The IUCN Red List categorized it as VU A2cd+3cd+4cd;C2a(i) in 2018. It is not included in CITES Appendices.

8. Species management

8.1 Management measures

At present, there are 49 national nature reserves, such as the Dongzhai NNR in Henan province, the Shennongjia NNR in Hubei and the Foping NNR in Shaanxi, that include *Syrnaticus reevesii* on the lists of protection objectives. The whole area of all relevant NNRs is more than 17,040 km² (Annex 2, Tab. 1). NNRs actively carry out field patrols, conservation projects as well as popular science education to minimise human disturbance like poaching and habitat occupancy, and to ensure the survival and sustainability of this pheasant.

Reeves's pheasant is a key protection objective of Dongzhai NNR and is benefit from conservation campaigns there in recent years. The Dongzhai NNR has established an *in situ* captive breeding centre and has engaged many conservation biology studies (Annex 2, Tab. 2).

After the examination and approval by the State Forestry Administration and the Ministry of Education of China, *Syrnaticus reevesii* has become a key research object of Phasianidae in the studies of conservation biology and endangered pheasant protection in relevant institutions and universities both in China and abroad. Molecular ecology, radio telemetry and other tools are used to settle more reasonable conservation units. Research on populations and habitats are still on-going in the Beijing Normal University and the Beijing Forestry University.

8.2 Population monitoring

The population monitoring of this species is continuous and has been included in the first and the second Survey on National Terrestrial Wildlife Resource of China and also in some similar provincial projects. Long-term research has focused on the status of population and habitats and conservation genetics. Wu and Xu (1987) finished surveys on the distribution and population of *Syrnaticus reevesii* in Yunnan and Guizhou. Chen et al. (1992) carried on surveys on the population of *Syrnaticus reevesii* in Shanxi and given conservation suggestions. Zhou et al. (2015) have done surveys on the distribution and population size of the species in whole China and used ArcGIS to predict and simulate the suitable habitats of *Syrnaticus reevesii*.

8.3 Control measures

8.3.1 International

N/A

8.3.2 Domestic

According to the *Law of the People's Republic of China on the Protection of Wildlife*, permission or wildlife special marks are needed for the hold and transport of specimens of *Syrnaticus reevesii*. The mail of *Syrnaticus reevesii* and their products are prohibited in accordance with the relevant regulations of China post administration. The return to the wild of this species should meet the requirements of certain regulation.

8.4 Captive breeding and artificial propagation

The *in situ* captive breeding centre in Dongzhai NNR has carried out captive breeding and holds about 30 individuals of *Syrnaticus reevesii*. Related scientific research, such as the rhythms of egg-laying and hatching behaviour rhythm in controlled environment and in different seasons, the treatment of difficult delivery, the proportion of feed, and so on, provides scientific basis for captive breeding the species. About 32 live *Syrnaticus reevesii* have been approved by the forestry department of Shandong Province for captive breeding and scientific exhibitions in zoos from 2016 to 2018. The total number of individuals in captive breeding and scientific exhibition in zoos and breeding centres in China is unknown.

The ZIMS, the Zoological Information Management System, which is a zoological data collection and management software in the Species 360, formerly International Species Information System or ISIS, provided holding record of animals of Reeves's Pheasant that about 258 individuals can be found in 60 institutions from Asia, Europe, North America and South America. The average number of individuals

in these institutes is low than ten except for some zoos, and 47 chicks were born last year (Annex 3, Tab. 3).

8.5 Habitat conservation

See section 4.1 and 8.1, and some wild population and their habitats are also covered by some forest parks or timberlands in some areas (Xu et al., 2007). For example, *Syrnaticus reevesii* could be found in Huangbai Forest Park, Zhonghuashan Forest Park, Liyuan and Xianjuding Timberlands in Dabie Mountains. However, the Reeves's pheasant is evaluated as one of the ten Chinese wildlife that have the lowest ratio of habitats protected by NNRs to the whole habitats (Hu et al., 2017).

8.6 Safeguards

N/A

9. Information on similar species

Five species in genus *Syrnaticus* occur all in Asia. Among them *S. humiae*, *S. ellioti*, and *S. mikado* have been included in CITES Appendix I since 1975. The males have significantly differentiated features in the genus. Annex 4 summarizes some of relevant information and colour patterns of tail feathers of males of Galliformes species.

10. Consultations

N/A

11. Additional remarks

N/A

12. References

- Andersson, M. (1982). Female choice selects for extreme tail length in a widowbird. *Nature* 299, 818-820.
- Carvalho, S. B., Brito, J. C., Crespo, E. J., and Possingham, H. P. (2010). From climate change predictions to actions—conserving vulnerable animal groups in hotspots at a regional scale. *Global Change Biology* 16, 3257-3270.
- Chang N, Wang N, Chen D, Zhang Z (2011). The conservation genetic research in Reeves's pheasant (*Syrnaticus reevesii*) In "Seventh National Wildlife Ecology and Resource Conservation Seminar. pp. 1, Jinhua Zhejiang, China. (In Chinese)
- Chen F, Yang X, Liu S, Li B (1992). Studies on the variations of population density of the three species pheasants in the western part of the Qinling Mountains Shaanxi. *Journal of Northwest University (Natural Science Edition)*, 22: 71-77. (In Chinese)
- Cheng, T.-h. (1987). A synopsis to the avifauna of China. Science Press Book (Germany, FR).
- Fang C, Ding Y (1997). Over-wintering ecology of the white crowned long-tailed pheasant. *Chinese Journal of Ecology* 16: 68-69. (In Chinese with English Abstract)
- Gibbs, J. P. (2001). Demography versus habitat fragmentation as determinants of genetic variation in wild populations. *Biological Conservation* 100, 15-20.
- Hu X, Wang Q (1981). The study on the ecology of the Reeves's pheasant. *Wildlife*: 39-44. (In Chinese)
- Lu T (1989). The endangered pheasants in China. *The Nature*. 37-39. (In Chinese)
- Hu, R., Wen, C., Gu, Y., Wang, H., Gu, L., Shi, X., Zhong, J., Wei, M., He, F., and Lu, Z. (2017). A bird's view of new conservation hotspots in China. *Biological Conservation* 211, 47-55.
- Johnsgard, P. A. (1999). "Pheasants of the World," Smithsonian Institution Press.
- Kurki, S., Nikula, A., Helle, P., and Lindén, H. (2000). Landscape fragmentation and forest composition effects on grouse breeding success in boreal forests. *Ecology* 81, 1985-1997.
- Lei F, Lu T (2006). The endemic bird species in China. Beijing: Science Press. (In Chinese)

- Lemoine, N., Schaefer, H. C., and Böhning-Gaese, K. (2007). Species richness of migratory birds is influenced by global climate change. *Global Ecology and Biogeography* 16, 55-64.
- Maclean, I. M., Austin, G. E., Rehfisch, M. M., Blew, J., Crowe, O., Delany, S., Devos, K., Deceuninck, B., Guenther, K., and Laursen, K. (2008). Climate change causes rapid changes in the distribution and site abundance of birds in winter. *Global Change Biology* 14, 2489-2500.
- Sahney, S., Benton, M. J., and Falconlang, H. J. (2010). Rainforest collapse triggered Carboniferous tetrapod diversification in Euramerica. *Geology* 38, 1079-1082.
- Slatkin, M. (1987). Gene flow and the geographic structure of natural populations. *Science* 236, 787-792.
- Sorte, F A L, Jetz, W. (2010). Avian distributions under climate change: towards improved projections. *Journal of Experimental Biology* 213, 862-869.
- Sorte, F. A. L., and Thompson, F. R. T. (2007). Poleward shifts in winter ranges of North American birds. *Ecology* 88, 1803-1812.
- The State Forestry Administration (2009). The national terrestrial wildlife resource survey. Beijing: China Forestry Publishing House. (In Chinese)
- Wu Z, Li Z, Xu W (1991). The distribution and population density of the Reeves's pheasant. *Guizhou Science*. 9: 215-219. (In Chinese)
- Wu Z, Xu W (1987). The distribution and population size of the Reeves's pheasant (*Syrmaticus reevesii*) in Guizhou. *Zoological Research*. 13-19. (In Chinese)
- Xu, J.-L., Zhang, Z.-W., Zheng, G.-M., Zhang, X.-H., Sun, Q.-H., and McGowan, P. (2007). Home range and habitat use of Reeves's pheasant *Syrmaticus reevesii* in the protected areas created from forest farms in the Dabie Mountains, central China. *Bird Conservation International* 17, 319-330.
- Xu Y, Yin Z, Lei F, Ding W, Liu R, Yu Q (1996). The current situation and conservation strategy of Reeves's pheasant. *Acta Zoologica Sinica*. 155. (In Chinese with English Abstract)
- Zhang C, Zhang K, Zhang X, Zheng H (1992). The study on the ecological habits of Reeves's pheasant. *Henan Forestry Technology*. 27-28. (In Chinese)
- Zhang X, Xu J, Zhang Z, Xie F, Zhang K, Zhu J (2004a). A study on the incubation behavior of Reeves's pheasant (*Syrmaticus reevesii*) by radio tracking. *Journal of Beijing Normal University (Natural Science)*. 255-259. (In Chinese with English Abstract)
- Zhang X, Xu J, Zhang Z, Zheng G, Ruan X, Xie F (2004b). Flocking behavior of Reeves's pheasants (*Syrmaticus reevesii*) at two sites in Henan and Shaanxi. *Zoological Research*. 89-95. (In Chinese with English Abstract)
- Zhang Z, Ding C, Ding P, Zheng G (2003). The current status and a conservation strategy for species of Galliformes in China. *Biodiversity Science*. 414-421. (In Chinese with English Abstract)
- Zhao Z (2001). *Chinese Birds*. Chang chun: Jilin Science and Technology Press. (In Chinese)
- Zheng G (2015). *Chinese Pheasants*. Beijing: Education Press. (In Chinese)
- Zheng G (2017). *A Checklist on the Classification and Distribution of the Birds of China (Third edition)*. Beijing: Science Press. (In Chinese)
- Zheng G, Wang Q (1998). *The endangered species red book in China---aves*. Beijing: Science Press. (In Chinese)
- Zheng Z (1986). *Fauna Sinica: Aves*. Beijing: Science Press. (In Chinese)
- Zhou, C., Xu, J., and Zhang, Z. (2015). Dramatic decline of the vulnerable Reeves's pheasant *Syrmaticus reevesii*, endemic to central China. *Oryx* 49, 529-534.

Annex 1. Illustrations and Information about Reeves's Pheasant

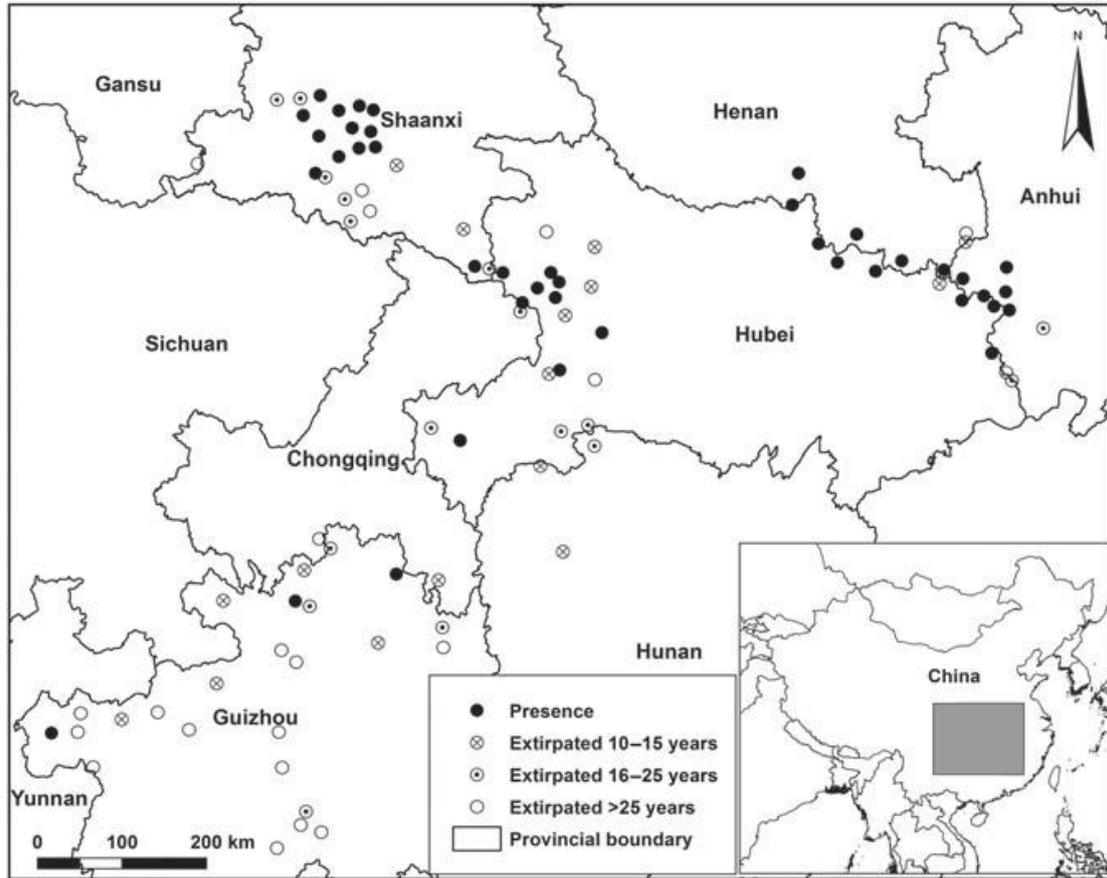


Figure 1. Geographic distribution map of Reeves's Pheasant *Symaticus reevesii* (Zhou et al. 2015). Locations of sites indicate signs of presence and where the species appears to have been extirpated, (some symbols represent more than one site). The rectangle on the inset indicates the location of the main map in China.

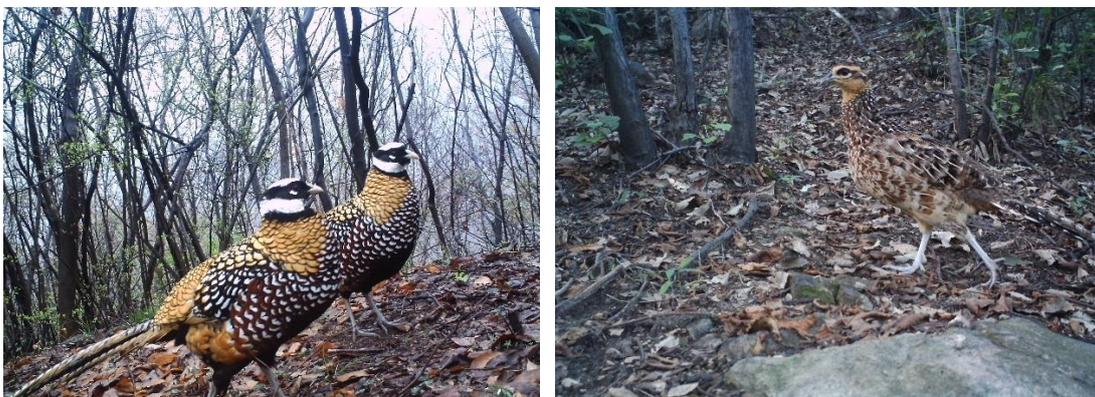




Figure 2. Male (left), female (right), chick and eggs of Reeves's Pheasant in the wild (Photo from Dr. Xu, Jiliang)



Figure 3. The habitat of Reeves's Pheasant

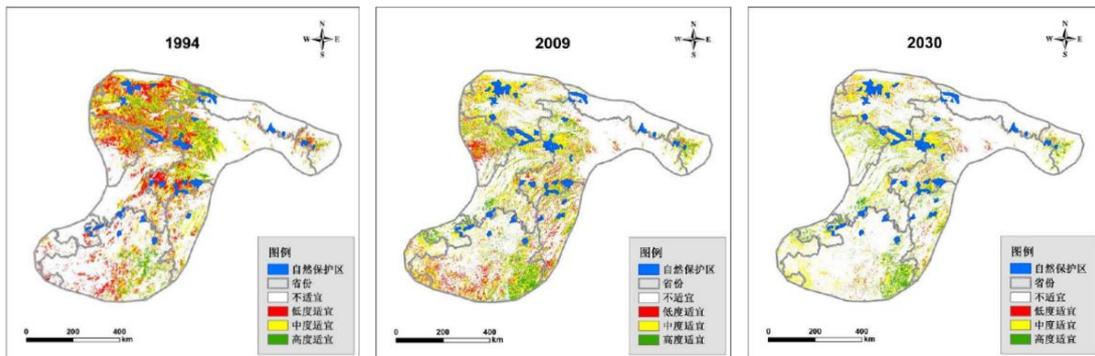


Figure 4. The suitable habitat map of Reeves's Pheasant in the year 1994, 2009 and 2030. Blue, natural reserves; White, unsuitable; Red, low fit; Yellow, medium appropriate; Green highly suitable

Annex 2 Conservation and management of Reeves's Pheasant

Table 1. Information about subpopulation of Reeves's Pheasant

SUBPOPULATIONS	PROVINCES	NUMBER OF NNR	POPULATION DENSITY (KM ⁻²)
Dabie subpopulation	Anhui	4	0-10.04 (n=24)
	Henan	5	0-11.36 (n=39)
Qinling subpopulation	Shaanxi	13	0-15.75 (n=65)
Shennongjia subpopulation	Hubei	10	0-33.36 (n=67)
	Hunan	6	NI
Other subpopulation	Chongqing	5	NI
	Guizhou	6	0-32.77 (n=14)
Total		49	0-33.36

n: number of line transects from 2011-2012; NI: No information

Table 2. Scientific research and conservation projects for Reeves's Pheasant in Dongzhai NNR

BASIC INFORMATION OF DONGZHAI NNR						
First established (Provincial)		Enlarged (National)			Development Plan	
Year	Whole area	Year	Central area	Facility		
1982	1x10 ⁴ hm ²	2001	4.68x10 ⁴ hm ²	Captive breeding centre with incubator and brooder	Reeves's Pheasant Ecological Park	
Year	Contents				Participants	
Scientific Research						
2001	The ecological habits of Reeves's Pheasant				Beijing Normal University and Dongzhai NNR	
2001	The endangered status, extinction rate, conservation strategy and reasons of Reeves's Pheasant					
2001	The radio telemetry research of Reeves's Pheasant					
2001	The flocking behaviour of Reeves's Pheasant					
2002	Roosting behaviour and roost-site used by Reeves's pheasant in winter					
2002	The study on the morphology of digestive system of Reeves's pheasant					
2003	Ranging behaviour of territorial male Reeves's pheasants in the breeding season					
2005	Home range and habitat use of male Reeves's pheasant in winter					
2008	Time distribution of egg laying of Reeves's pheasant in captive					
2011	The treatment of difficult delivery in captive-bred Reeves's pheasant					Dongzhai NNR
2012	The proportion of feed in different seasons for captive- bred Reeves's pheasant					
2017	The treatment of fracture for Reeves's pheasant					
2018	The management key points of the seven-days brooding period					
2018	The help production technique in captive-bred Reeves's pheasant					
Population monitoring						
2016	The Second Scientific Survey in Dongzhai NNR				Beijing Normal University and Dongzhai NNR	

Propaganda and Education

Number		Hosts
Since 1981	Propaganda of the Bird-loving Week in each year	Competent departments, NGOs and NNRs
2010	The first batch of place for the Eco-China Experience	The State Forestry Administration
2011	The honorary title of the hometown of Reeves's pheasant in China	China Wildlife Conservation Association
2017	Talking about Galliformes in the Year of the Rooster	New Media in China Central Television

Annex 3. The utilization and trade of Reeves's Pheasant

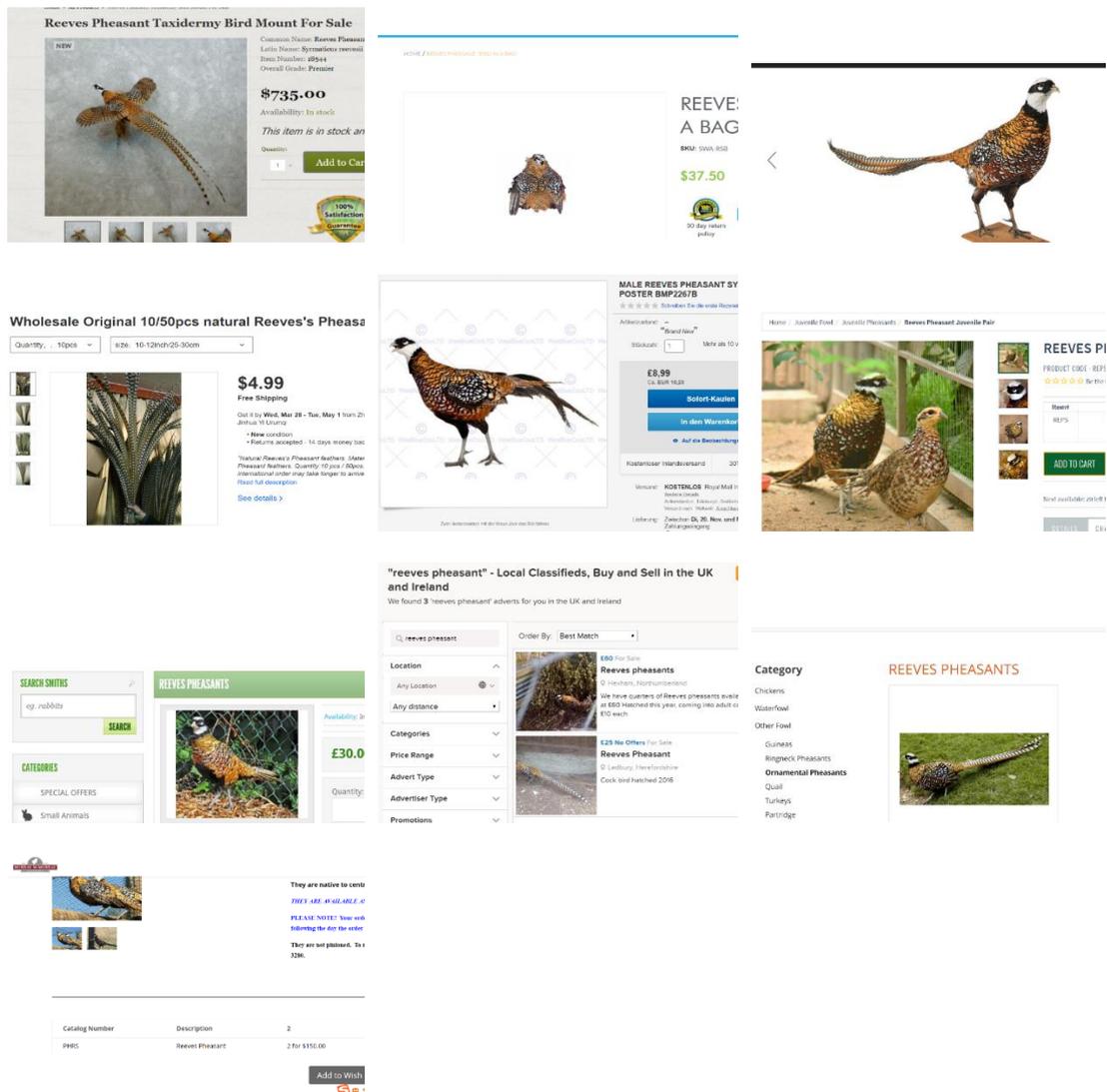


Figure 1. The sales of Reeves's Pheasant and their products in the US and Europe

The majority forms of trade in Reeves's Pheasant are specimen and tail feather while small amounts of live individuals could also be found in the US, most of which come from China. When using the 'Reeves's Pheasant buy' as keyword to search on the European internet, half of the search results are chicken for sale. More than ten individuals are stocked and are all labelled as sources from China.



Figure 2. A poster of hunting Reeves's Pheasant on the web



Figure 3. Examples of using long tail feathers of Reeves's Pheasant in beauty contests.

The costumes on the left are made up of more than 70 tail feathers of Reeves's Pheasant, while one adult male pheasant can only grow two long tail feathers in each year.

Table 1. Examples of Sale of Reeves's Pheasant on the web

Contents	Posting time	Type of specimen on sale
Reeves pheasant remaja for sale. pm price	2018/10/22	Live
Reeves pheasants pairs for sale	2015/10/6	Live
Any Reeves pheasant hens for sale	2017/12/3	Live
Reeves pheasant adult pair for sale	2015/9/25	Live
Chicks of Golden, Lady Amherst and Reeves pheasant for sale	2018/7/8	Live
Reeves pheasants for sale	2017/3/13	Live
Gutted we can't make this sale but have some beautiful reeves pheasants for sale if anyone is interested	2016/9/8	Live
Pheasants for sale: Reeves male - R850	2017/7/24	Live
Reeve pheasant female for sale. pm price	2018/6/8	Live
Breeding pair of unrelated reeves pheasants for sale	2016/12/5	Live
Ring necked male with one simple female and one Reeve female pheasant breeder pair for sale.	2018/9/24	Live
Adult pair silver pheasants and one female reeve pheasant for sale	2014/3/19	Live
Reeve pheasant betina remaja for sale. pm price reeve pheasant betina remaja for sale. pm price	2018/10/27	Live
Any Reeves hens pheasants for sale am in Barnsley	2018/3/30	Live
reeves pheasant feathers for sale	2017/2/20	Live
Reeves pheasants for sale can take to Stafford 9th October	2016/9/6	Live
Got Reeves pheasants chick for sale if anyone want some not sure on price	2018/2/9	Live
Anyone have any reeves pheasants for sale and golden pheasants	2017/8/31	Live
Reeves pheasant pair in outstanding condition for sale	2016/12/11	Live
For sale: Golden pheasant, yellow pheasant, silver Pheasant, reeves pheasant, lady armrest pheasant pairs	2017/11/13	Live
For sale quartet of reeves pheasants 2016 bred £80	2017/3/20	Live
Does anyone know of any reeves pheasants for sale around Doncaster? Thanks	2016/8/14	Live
pheasant reeves breeder pair for sale	2017/3/3	Live
I have 2 reeves pheasant chick for sale. They are a month old about the size of quail. they are 12 dollars a pc	2017/7/28	Live
Reeves pheasant 100% breeder pair for sale.	2017/11/11	Live
Reeves pheasant breeder pair is available for sale.	2018/5/11	Live
Any one got any reeves pheasant day / week olds for sale in Gloucestershire	2015/5/27	Live

From 2015 to 2018, there are more than 100 transaction information on the Facebook. Here we list a quarter as examples.

Table 2. Imports of Reeves's Pheasant into the EU-28 from 2002-2015

Year	Taxon	Importer	Exporter	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
2002	<i>Syrnaticus reevesii</i>	PK	NL	/	10	live		T	C
2007	<i>Syrnaticus reevesii</i>	DE	CN	1	/	feathers	kg	T	W
2008	<i>Syrnaticus reevesii</i>	ES	US	9	/	feathers	kg	T	C
2011	<i>Syrnaticus reevesii</i>	ES	CN	1500	/	feathers		T	W
2011	<i>Syrnaticus reevesii</i>	NL	CN	400	/	feathers			
2013	<i>Syrnaticus reevesii</i>	ES	CN	374	/	feathers		T	C
2014	<i>Syrnaticus reevesii</i>	DE	CN	40	/	feathers	kg	T	W
2015	<i>Syrnaticus reevesii</i>	ES	CN	1400	/	feathers		T	F

Sources: UNEP-WCMC and European Union Commission, 2017

Table 3. The captive-bred populations of Reeves's Pheasant in foreign countries

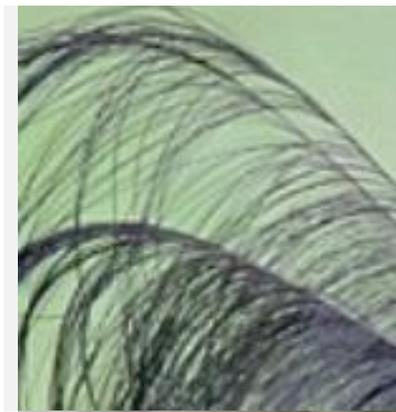
Species holding report for: <i>Symaticus reevesii</i> / Reeve's pheasant								
Institution	Male	Female	Other	Birth (last 12 month)	Group M.	Group F.	Group O.	Total
All 60 Institutions, 4 Regions	65	70	51	47	21	37	14	258
Species: <i>Symaticus reevesii</i> / Reeve's pheasant								
All 60 Institutions, 4 Regions	65	70	51	47	21	37	14	258
Region: Asia 16 Institutions, Male: 24 , Female: 35, Other: 10								
ALBUSTAN / Al Bustan Zoological Center	1	0	0	0	0	0	0	1
ALMA-ATA / Almaty State Zoo of Kazakhstan	2	3	7	1	0	0	0	12
BAYRAMOGL / Faruk Yalcin Zoo (Hayvanlar Alemi & Botanik Bahcesi)	2	1	0	0	0	0	0	3
CHIMKENT / Chimkent Zoo	2	2	2	0	0	0	0	6
DARJEELIN / Padmaja Naidu Himalayan Zoological Park	0	0	0	0	3	6	0	9
HAIFA / Haifa Educ.Zoo & Biological Institute	0	1	0	0	0	0	0	1
HYDERABAD / Nehru Zoological Park	0	0	0	0	0	0	1	1
JERUSALEM / The Tisch Family Zoological Gardens	0	1	0	0	0	0	0	1
JURONG / Jurong Birdpark, Singapore	1	1	0	0	0	0	0	2
KATHMANDU / National Trust for Nature Conservation	1	0	0	0	0	0	0	1
KHORAT / Nakhon Ratchasema Zoological Park	1	1	0	0	0	0	0	2
NANDANKAN / Nandankanan Biological Park	0	0	0	0	1	2	0	3
PAPHOS BP / Pafos Zoo	4	7	0	0	0	0	0	11
SAFA WILD / Wadi Al Safa Wildlife Centre	3	4	0	0	0	0	0	7
TBILISI / Tbilisi Zoo	0	1	0	0	1	5	0	7
UBON ZOO / Ubon Ratchathani Zoo	2	0	0	0	0	0	0	2
Region: Europe 38 Institutions, Male: 58 , Female: 65, Other: 54								
ABRANTES / Parque Zoológico e Aquário de Abrantes	0	1	0	0	0	0	0	1
ANAPA / Anapa Zoo "DoDo"	0	1	0	0	0	0	0	1
ATTICAZOO / Attica Zoological Park S.A.	2	2	0	0	0	0	0	4
BERLIN TP / Tierpark Berlin-Friedrichsfelde GmbH	1	1	0	0	0	0	0	2
BERNBURG / Tiergarten Bemburg	1	1	0	0	0	0	0	2
BIRMINGHAM / Birmingham Wildlife Conservation Park	2	1	0	0	0	0	0	3
BOJNICE / Zoologicka zahrada Bojnice	1	1	0	0	0	0	0	2
BUCURESTI / Gradina Zoologica Bucuresti	0	0	4	0	0	0	0	4
CHELYABIN / Chelyabinsk Zoo	0	0	0	0	1	1	0	2
CHERKASY / Cherkasy Zoo	0	0	0	0	1	3	0	4
DEBRECEN / Nagyerdei Kulturpark Nonprofit Kft	1	0	0	0	0	0	3	4
DUDLEY / Dudley Zoological Gardens	2	1	0	0	0	0	0	3
EAST PARK / The Animal Education Centre	0	0	0	0	1	1	0	2
FARNHAM / Birdworld Farnham	3	3	0	4	0	0	0	6
KAZAN / Kazan Zoological & Botanical Garden	1	1	0	0	0	0	0	2
KHAR KOV / Kharkov Zoo	2	0	4	0	0	0	0	6
KISHINEV / Kishinev Zoopark	0	1	0	0	2	1	0	4
KOETHEN / Tierpark Köthen	1	2	0	0	0	0	0	3
KOLN / Cologne Zoo	1	0	0	0	0	0	0	1
KRONBERG / Opel-Zoo von Opel HessischeZoostiftung	2	1	0	0	0	0	0	3
KYIV ZOO / Kiev Zoological Park	0	0	0	0	0	0	10	10
LOUROSA Z / Parque Ornitológico de Lourosa	2	0	0	0	0	0	0	2
MINSK ZOO / Minskij Zoopark (Minsk Zoo)	1	2	0	0	0	0	0	3
MOSCOW / Moscow Zoological Park	2	2	28	10	0	0	0	32
MURES ZOO / Gradina Zoologica Tirgu-Mures	0	0	0	0	4	5	0	9
NEUMIED / Zoo Neuwied	1	2	0	0	0	0	0	3
NIKOLAEV / Nikolaev Zoo of Nikolaev-City Council	2	2	2	0	0	0	0	6
NOVOSIBIRK / Novosibirsk Zoological Park	1	1	0	0	0	0	0	2
PERM ZOO / Mauk "Pemskij Zoopark"	0	0	0	10	3	4	0	7
PESCHERAY / Domaine Zoologique de Pescheray	1	2	0	0	0	0	0	3
ROEVRUCHI / Municipal Independent Org."Roev Ruchi	1	0	0	0	0	0	0	1
SANTILLAN / Zoo de Santillana y Parque Cuaternario	2	3	0	0	0	0	0	5
SO LAKES / Safari Zoo	0	0	0	0	2	1	0	3
TALLIN / Tallinn Zoo	5	5	0	11	0	0	0	10
TARGOVIST / Targoviste Zoo (Gradina Zoologica)	0	0	0	0	2	8	0	10
TORUN ZOO / Zoobotanical Garden in Torun	1	1	0	4	0	0	0	2
VELDHOVEN / Stichting Nederlands Opvang Papegaaien	2	2	0	0	0	0	0	4
WARSAW / Miejski Ogród Zoologiczny Warsaw	1	2	3	7	0	0	0	6
Region: North America 4 Institutions, Male: 3 , Female: 4, Other: 0								

BISMARCK / Dakota Zoo	0	2	0	0	0	0	0	2
TOLEDO / Toledo Zoological Gardens	1	2	0	0	0	0	0	3
WILD WRLD / Wildlife World Zoo	1	0	0	0	0	0	0	1
WILLOW PK / Willow Park Zoo	1	0	0	0	0	0	0	1
Region: South America 2 Institutions, Male: 1 , Female: 3, Other: 1								
FOZDOAVES / Parque das Aves	1	0	0	0	0	0	0	1
SANTIAGOZ / Zool.Nacional Parque Metro De Santiago	0	3	1	0	0	0	0	4

Annex 4. Information on similar species

Colour patterns of tail feathers	Species	Domestic protection	CITES Appendices
	<i>Syrmaticus reevesii</i>	The wildlife under second class state protection of China	Not included
	<i>Syrmaticus ellioti</i>	The wildlife under first class state protection of China	I
	<i>Syrmaticus humiae</i>	The wildlife under first class state protection of China	I
	<i>Syrmaticus mikado</i>	The wildlife under first class state protection of China	I
	<i>Syrmaticus soemmerringii</i>	None is known	Not included

	<i>Phasianus colchicus</i>	Species of terrestrial wildlife which are beneficial or of important economic or scientific value in China	Not included
	<i>Ithaginis cruentus</i>	The wildlife under second class state protection of China	II
	<i>Chrysolophus pictus</i>	The wildlife under second class state protection of China	Not included
	<i>Chrysolophus amherstiae</i>	The wildlife under second class state protection of China	Not included
	<i>Crossoptilon mantchuricum</i>	The wildlife under first class state protection of China	I



Crossoptilon auritum

The wildlife under second class state protection of China

Not included



Lophura nycthemera

The wildlife under second class state protection of China

Not included



Lophura swinhoii

The wildlife under first class state protection of China

I



Lophura leucomelanos

The wildlife under second class state protection of China

III for the population from Pakistan

(Image source: Yan Zeng, <http://orientalbirdimages.org>)