

Himalayan Monal (*Lophophorus impejanus*): distribution, habitat and population status in Tibet, China

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Abstract The Himalayan Monal (*Lophophorus impejanus*) is a national first grade protected species in China. So far, current knowledge of the Himalayan Monal in China is still poor. An estimate of its distribution, numbers and habitat was conducted during a two-year investigation from 2008 to 2009 in southern Tibet, especially in Lhozhag, Cona and Yadong counties. In total, 12 sightings of the Himalayan Monal were recorded during the study period. Our data suggest that this bird is mainly found in Medog, Zayu, Cona, Lhunze, Lhozhag, Nyalam, Dingjie, Gamba and Yadong counties on the southern slopes of the Himalayas. Its western-most location was confirmed to be Nyalam County. The bird ranges in elevation from 3800 to 4300 m in the summer and from 3200 to 3500 m in the winter. We sighted 36–37 individual birds, consisting of 8–10 males, 16–20 females and 7–8 sub-adults inhabiting the area around the Kajiu Monastery in Lhozhag County. The birds are mainly found in rocky forests, interspersed with steep slopes, cliffs and alpine meadows at elevations between 3800 and 4000 m. The population density of the Himalayan Monal near the Kajiu Monastery is 2.03 individual birds per km², much larger than that of Yadong and Cona counties (0.052 individuals per km²).

Keywords Himalayan Monal, distribution, habitat, population density

Introduction

As a species of the genus *Lophophorus*, the Himalayan Monal (*Lophophorus impejanus*), also known as the Impeyan Monal, is a national first grade protected species in China. Despite considerable number of surveys conducted for years over its ranges, current knowledge of the Himalayan Monal in China is still poor. Thus, an estimate of its distribution, numbers and habitat was conducted during a two-year investigation from 2008 to 2009 in southern Tibet, especially in Lhozhag, Cona and Yadong counties. In total, 12 sightings of the Himalayan Monal were recorded during this study period. We summarize the domestic results achieved so far about this species.

Appearance and international status

The Himalayan Monal is a relatively large-sized bird within the family Phasianidae. With about 70 cm in length, the weight of males ranges from 1980 to 2380 g and that of females from 1800 to 2150 g. Adult males possess a long crest, feathered with multi-colored plumage throughout its body, while the females, like other pheasants, are dull in color with their upper parts covered with dark brownish black feathers. Notable features in males are their long crest which is metallic green, changeable reddish copper in the back and sides of the neck and a prominent white back while in flight. Tail feathers of the male are uniformly rufous, darker towards the tips, while the lower tail coverts of the female are white, barred with black and rufous. The female has a prominent white patch in the fore neck and a white strip on the tail. First year males are immature and resemble female chicks, but are larger in the first year and their immaturity is less pronounced (Delacour, 1977).

It is also one of the best recognized pheasant species of

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the western Himalayas because of the metallic, rainbow-colored plumage, iridescent blue head crest and highly exhibited sexual dimorphism of the male. These characteristics have qualified this mountainous forest bird to the status as national bird of Nepal and the state bird of Uttaranchal and Himalchal Pradesh in India (Ramesh et al., 1999; Ramesh, 2003).

Distribution

The natural range of the the Himalayan Monal spreads from eastern Afghanistan through the Himalayas, including Pakistan, India (the state of Jammu & Kashmir, Himachal Pradesh, Uttaranchal, Sikkim and Arunachal Pradesh), China (the Tibet region), Nepal and Bhutan. There is also a report of its occurrence in Myanmar, based on a specimen taken in 1969 from the Hpungan pass (27°30' N, 96°48'E), along the Indo-Myanmar border (Yin, 1970). Domestically there is evidence showing that this montane bird is resident on the southern slopes of the Himalaya mountains, specifically in the counties Dingjie, Tingri, Nyalam, Kuala, Yadong, Nyingchi, Medog and Zayu (Zheng and Wang, 1998; Li, 2004) and Gongshan County in the northwest of Yunnan Province (He, 2001). Our data suggest that the Himalayan Monal is mainly found in Medog, Zayu, Cona, Lhunze, Lhozhag, Nyalam, Dingjie, Gamba and Yadong counties, on the south slopes of the Himalayas. Its western-most location was confirmed to be in Nyalam County. The bird ranges in elevation from 3800 to 4300 m in the summer and from 3200 to 3500 m in the winter.

Habitat

The Himalayan Monal occupies the upper temperate oak-conifer forests and subalpine oak forests interspersed with open grassy slopes, cliffs and alpine meadows between 2400 and 4500 m elevation, mostly concentrating in a narrow belt between 2700 and 3700 m (Grimmett et al., 1998). They exhibit clear migration in elevation, reaching as low as 2000 m in winter (Ramesh, 2003). Our observations showed that the birds mainly occur in rocky forests where the dominant tree species include *Quercus semecarpifolia*, *Picea spinulosa* and *Abies spectabilis*, characterized by DBH > 20 cm and the oldest tree of the stands was estimated to be more than 500 years old. The bush layer is primarily composed of *Salix oritrepha* and *Rosa tibetica* interspersed with steep slopes (45°–50°), cliffs and alpine meadows at an elevation of 3800–4000 m. However, they

show tolerance to snow and have been observed to dig through snow for roots, tubers, other plant parts and invertebrates (McGowan, 1994; Kumar, 1997).

Daily behavior around the Kajiu Monastery in Tibet

The Kajiu Monastery, a small Buddhist temple (28°05'38" N, 91°07'34"E) at an elevation of 4000 m is situated on top of a hill in Lakang town, located on the Chinese-Indian border area of Lhozhag County. Our observations suggest that there were 36–37 individual birds, consisting of 8–10 males, 16–20 females and 7–8 sub-adults, inhabiting an area with a radius of of 5 km around the monastery. The birds move up to the monastery along a tortuous path by walking or jumping with slight flapping of the wings when they climb over terraces 1.0–2.0 m high every morning. They spent about two hours to feed on the barrier wall of the temple where the monks provide food to them until they glide swiftly to their natural habitat at the edge of the cliffs. We observed the birds soaring at a distance of more than 500 m, accompanied by hurried and sharp voices when they were interrupted by some disturbances. From 5:00 to 8:00 in the afternoon, they hunted some plants for foods on the meadow nearby cliffs and then hid on the branches of large oak trees at night. The birds are gregarious during the non-breeding season and live in small flocks of the same gender.

Simple summary of breeding ecology

We found a ground nest without any content at an elevation of 3940 m (28°05'35"N, 91°07'21"E), located under an oak tree 8 m tall and 30 cm in DBH on a steep slope near a cliff. The measurement of the nest was 3 cm × 35 cm × 39 cm in depth, width and length. Some feathers and excrements were observed inside the nest.

Other sightings of this bird have been made and some references about nesting of the Himalayan Monal exist. For example, Johnsgard (1986) reported that the clutch size of this species is most commonly four or five eggs in the wild, with three-egg clutches also fairly common and sometime only two eggs are present. The eggs described by Ali and Ripley (1983) were pale yellowish or reddish buff, freckled and spotted with reddish brown. The incubation period, as Howman (1993) reported, is 28 days. Whether the males played an active role in chick rearing could not be established, as reported by Johnsgard (1986), although there are a few suggestions in the literature that males help



Fig. 1 Two males foraging on the barrier wall of the Kaji Monastery (photo by Xiaoping YU)



Fig. 2 Two females foraging on the barrier wall of the Kaji Monastery (photo by Xiaoping YU)



Fig. 3 A handsome male roosting on alpine oak tree (photo by Xiaoping YU)



Fig. 4 The upper parts of the cliff around the Kaji Monastery was suitable for inhabiting of Himalayan Monal (photo by Xiaoping YU)

caring for the young. Still, this is certainly not a typical situation and most authorities contend that he takes no part in the rearing phase. Gaston (1981) described that the Himalayan Monal exhibits a special display flight during the breeding season, consisting of extended gliding, with the tail fanned and the wings held well above the level of the body and with a repeated piping call that varies from fairly soft to strident.

Effect of monasteries on wildlife conservation

We need to refer to the Buddhist temples and their impact on the conservation of wildlife in the Tibet areas, where a large number of monasteries exist. The size of the Chinese population of the Himalayan Monal was estimated in 2004 to be no more than 1000 individual birds (Li, 2004). The population density of this bird species and the forest cover at the temples are significantly larger than that for other areas (Yu et al., unpublished). The reason for this is that the Buddhist monks and their adherents treat wildlife according to their faith and traditional culture. As in most Tibetan temples, the monks of the Kajiu Monastery often provide a variety of foods such as highland barley, tsamb and ghee to wild birds. The monasteries are usually the distribution centers for wild birds with the densest populations. As a result, the population density of the Himalayan Monal near the Kajiu Monastery is 2.03 individual birds per km², which is much greater than that of Yadong and Cona counties (0.052 birds per km²).

Elements of depletion and conservation

Similar to many other spectacular species, the Himalayan Monal is usually captured by local people for their own purposes. The bird has been decisively incorporated into the traditional folklore of many Himalayan cultures (Delacour, 1977). The use of feathers is deemed significant in rituals and local ceremonies among the people across Asia. For example, men in the Indian state of Himachal Pradesh hunted males for their crests, which adorned their ceremonial hats as a sign of high social status and the defining of property qualification, although this pressure subsided after hunting was banned in Himachal Pradesh in 1982 (Kumar et al., 1997; Ramesh, 2003). In addition, pheasants are aesthetically pleasing to humans and irrefutably a source of food. For instance, chickens provide a stable diet for millions of people in the world and sport hunting is very popular entertainment in Europe and America.

Thus, several of these factors have collectively contributed to the removal of wild populations in their native regions. As well, pheasant populations have experienced strong depletion, attributed to loss of their habitats by human encroachment and development in most part of their ranges (McGowan and Gillman, 1997).

Another example is Yadong County in Tibet where the Himalayan Monal and Satyr Tragopan (*Tragopan satyra*) were illegally hunted by local people using traps set on the paths which the birds must pass on snowy days in the winter. These birds are captured to stuff specimens for commercial purposes.

The present state of knowledge of the Himalayan Monal is sketchy and it is necessary to obtain scientific data to understand their behavior and ecological requirements better. This dearth of information may be partly due to its remoteness and lack of accessibility, dense forests and steep terrain of their habitats making them difficult to observe. Furthermore, poaching and habitat degradation from human activities contribute to the situation. We hope that our survey, designed to gather new information on the distribution and ecology of the Himalayan Monal, will encourage further study and conservation of this magnificent species in Tibet and elsewhere. After more investigations, conservation measures for the Himalayan Monal should be implemented for the protection of this species.

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棕尾虹雉 (*Lophophorus impejanus*) 在中国西藏的分布、栖息地与种群现状

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摘要: 棕尾虹雉 (*Lophophorus impejanus*) 做为虹雉属中的一种, 是我国 I 级重点保护鸟类。目前国内关于此物种的了解仍然很少。作者于2008–2009年对该物种在西藏南部的分布、种群数量和栖息地进行了初步调查, 主要研究区域在洛扎、错那和亚东县。调查期间共计观察到棕尾虹雉12次。该物种主要分布于喜马拉雅山脉南麓的墨脱、察隅、错那、隆子、洛扎、聂拉木、定结、岗巴和亚东县, 其中最西端的分布地为聂拉木县。棕尾虹雉的分布海拔范围夏季3800–4300 m, 冬季3200–3500 m, 随季节表现出明显的垂直分布变化。在洛扎县拉康镇卡久寺周围活动的棕尾虹雉数量约36–37只, 其中雄性8–10只, 雌性16–20只, 亚成体7–8只。主要栖息于海拔3800–4000 m的针阔混交林、灌木丛、草甸和裸岩地带。卡久寺周围该物种的种群密度为2.03只/km², 明显高于亚东县和错那县的0.052只/km²。

关键词: 棕尾虹雉 (*Lophophorus impejanus*), 分布, 栖息地, 种群密度