

The status and habitat use of green peafowl *Pavo muticus* in Shuangbai Konglonghe Nature Reserve, China

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Abstract A rapid interview and survey based study of green peafowl in Konglonghe Nature Reserve in Chuxiong was undertaken between March and May 2007. The abundance and distribution of green peafowl was established by interviewing local people and by systematic counts from seven listening stations over 20 days. We determined that green peafowl were distributed in the Shiyangjiang and Xiaojianghe Valleys and that there were between 53 and 61 individuals in eight separate groups. Green peafowl inhabited mainly deciduous broad-leaved forest and evergreen broad-leaved mixed forest along the banks of rivers.

Keywords Green peafowl, habitat use, Konglonghe Nature Reserve, status

Introduction

Green peafowl *Pavo muticus* is considered vulnerable to extinction in the wild (IUCN 2008). Three sub-species are described: *P. m. spicifer* of north east India is believed now to be extinct, *P. m. imperator* is found in scattered locations in Yunnan (China), Vietnam, Cambodia, Laos, Myanmar and Thailand, and *P. m. muticus* is found only on Java, with perhaps only 1,000 left in the wild (<http://www.gbwf.org>). In China, green peafowl is one of the Category I Nationally Protected Species under the China Wildlife Protection Act, and is listed under Appendix II of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES). Within China the species' distribution is limited to the central and southern areas of Yunnan Province, SW China. They mainly live in the relatively flat land near the streams and rivers, cultivated land, forests (including rain forests, evergreen broad-leaved forest, coniferous forest and mixed broad-leaved forest), shrub land, farming wasteland and barren hill habitats (Xu Hui, 1995; Luo Aidong, 1998; Yang Xiaojun, 2000; Han Lianxian, 2006).

Konglonghe Nature Reserve in Shuangbai County of the Chuxiong Yi Autonomous Prefecture is one site within central Yunnan where green peafowl are historically thought to occur, but no previous systematic surveys have

been carried out. In this study we conducted field work at the Nature Reserve in order to better understand the green peafowl's distribution and status in the protected areas.

Methods

Study site

Konglonghe Nature Reserve, located in Shuangbai County, Chuxiong, Yunnan, was established in 2003. It is a part of the valley of Shiyangjiang and is a narrow strip running north west to south east. This reserve is located at the latitude 24° 23'N - 24° 34'N, longitude 101° 10'E - 101° 23' E, at elevations ranging from 623 m to 1,796 m with a total area of 73,594 km². The protected area includes deeply cut river valleys. Most of the existing vegetation is secondary plantation. A large number of the mountainous roads were made by forest rangers for logging operations. The reserve has only a core protection zone, and does not have buffer zones. The neighbouring villages build terraces on the sloping areas, planting rice, wheat, pea, tobacco and other crops, with buildings next to the terraced fields for chickens, pigs, sheep and cows grazing.

Surveys

Green peafowl have two main peaks of calling activity each day; 7:00 - 10:00 and 19:00 - 20:00, with highest activity in spring (Yang Xiaojun, 2000). We surveyed the distribution of the green peafowl within our study site by

interviewing local people and by establishing seven listening stations to record green peafowl calls. These listening stations were situated at Yiwanshui, Xinfendshan, both sides of Etoushanyakou, Yangmeishu, Dongjiawan and Mojiawan. We recorded calls of green peafowl from 6:30 to 19:30 for 20 days. We recorded the number of calling birds, time, frequency and types of call and the relative direction between the call and listening station to distinguish the different individuals. In addition, 10 m × 10 m sample plots were created adjacent to each listening station and these were searched for evidence of green peafowl presence, such as claw marks and faeces. Habitat and physical variables were recorded at each location, including dominant habitat type, main species of plants, slope, exposure, altitude, canopy density, surface mulch density, crown height and tree height. At each site the maximum group size was estimated. Data analysis was undertaken using the spreadsheet software Excel (Microsoft 2003). Based on the results of interview and call surveys, green peafowl records were entered marked on a topographic map using Arcview 3.0 software (Kang-tsung Chang, 2001).

Results

Green peafowl groups distribution

Green peafowl in the Konglonghe Nature Reserve were distributed in the Shiyangjiang and Xiaojianghe valleys (TABLE 1 & FIG. 1).

TABLE 1 Locations of green peafowl based on interview surveys

Location	Number	Male	Female
Dongjiawa	8	2	6
Yiwanshui	8	2	6
Etoushan	6	1	5
Xinfengshan	3	1	2
Yangmeishu	7	1	6
Yiwanshui	4	1	3
Mojiawan	5	1	4
Total	41	9	32
Average	5.9	1.3	4.6

Habitat characteristics of green peafowl

Physical and habitat characteristics of green peafowl records are shown in TABLE 2. Variation in canopy density and vegetation cover among records is shown in FIG. 2.

Discussion

Green peafowl abundance

During the investigation we found that there were four groups of green peafowl in the

Shiyangjiang Basin. Green peafowl distribution is not very large, and they live in groups, so local villagers seemed to know the number of the groups accurately, and also to know how many green peafowl were within each group. We concluded that there are about 29 green peafowl in the Shiyangjiang Basin, based on the villagers' observations. This included: eight in the Yuzhuanghe Basin to Xinfengshan; six in Etoushan; seven in Dapingzhang to Yangmeishu Basin and eight in Dongjiawa Basin. Villagers could not provide any information on the Xiaojianghe Basin - because of the rugged terrain hardly any people lived in there - but we established from our call survey that there are at least four groups in this area. By extrapolating from the average number of birds in a group from other locations (six - eight birds), we estimate this probably represents around 24 - 32 birds. Across the entire Konglonghe Nature Reserve we therefore estimate a total population of around 53 - 61 green peafowl, in eight groups.

Habitats

Green peafowl's habitats in the valleys of the Shiyangjiang and Xiaojianghe Basins included mainly deciduous broad-leaved mixed forest and evergreen broad-leaved mixed forest, at an altitude of 620 m to 1070 m. The average height of the trees in these areas was 8 - 15 m (TABLE 2). At the time of the survey most deciduous trees had dropped their leaves. The ground cover is as high as 90% fallen leaves.

The habitat areas can be further divided into mountain chain, valley and river banks. A difference in canopy density and cover is noticeable between mountain chain and valley. In the mountain chains, the tree canopy density and coverage is low (around 20% - 50%), mainly because of the lack of water resulting in trees dropping their leaves in the dry season. Higher winds also contribute to the high leaf fall. In the valley tree coverage and density is higher (90% - 95%) because of adequate water allowing trees to grow more densely. The obvious differences in canopy density and cover between mountain chain and valley provided the green peafowl with two different habitat needs. The local climate is hot; green peafowl are active in the valley during the day, because here the temperature is lower in the shade, and it is near water, and food is relatively more abundant. When night falls however, green peafowl moved to the mountain chain at higher elevations (around 1060 m), and chose trees around 7-13 m high as night roosting locations.

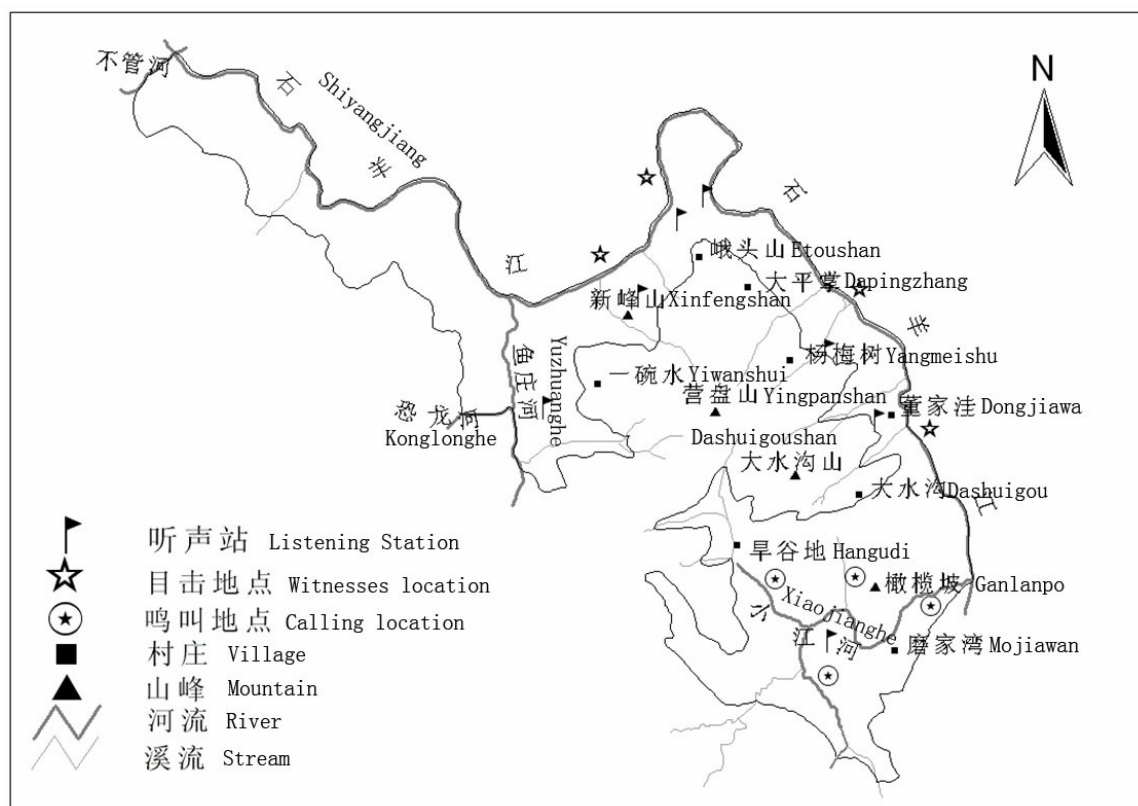


FIG. 1 Distribution of green peafowl

TABLE 2 Habitat and physical characteristics of green peafowl locations

Locality	Vegetation Types	Tree Height (m)	Crown Height (m)	Gradient (°)	Canopy Density	Surface Mulch Density	Altitude (m)	Slope	Habitat Types
Mojiawan	Deciduous broad-leaved forest	10	5-7	30	40%	90%	857	North	Mountain chain
Mojiawan	deciduous broad-leaved forest	8	7	30	30%	20%	1060	North	Mountain chain
Mojiawan	evergreen broad-mixed forest	7-11	5-7	33	50%	30%	1060	North	Mountain chain
Xiaojianghe	deciduous broad-leaved forest	13	7	2	20%	10%	650	—	Riparian
Xinfengshan	evergreen broad-mixed forest	13	7	28	40%	80%	902	Northwest	Mountain chain
Etoushan	evergreen broad-mixed forest	15	10	27	80%	90%	1066	Northwest	Valley
Yangmeishu	evergreen broad-mixed forest	15	9	29	95%	90%	842	Northeast	Valley

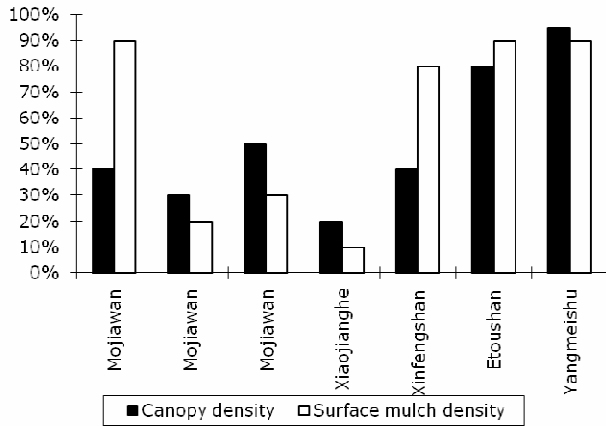


FIG. 2 Canopy density and surface mulch density by location

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Biographical sketches

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