

An update on the distribution of the 'Endangered' White-eared Night Heron *Gorsachius magnificus* in China

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Summary

The literature on the past distribution and status of the White-eared Night Heron in China is reviewed, and updated based on recent field investigations and reports from Hubei, Jiangxi, Guangxi, Guangdong and Hainan. Recent records reveal the species to be more widespread than previously thought, but there remain many uncertainties about the area of occupancy and connectivity between known populations. The rate of discovery of new sites suggests the species may be under-recorded, but a number of recent sites have been lost, and no truly secure populations are known. There thus remains an urgent need for better information from throughout the species' range, especially from historical sites, as well as increased protection.

Introduction

Since its discovery at Wuzhishan, Hainan Island, in 1899, the White-eared Night Heron *Gorsachius magnificus* has been recorded from eight provinces in southern China, together with two records from north-eastern Vietnam (BirdLife International 2001, 2004; He and Lin 2004). Until the end of the twentieth century, the recorded distribution of White-eared Night Heron in mainland China formed a horseshoe shape, with an empty core in the provinces of Jiangxi and Hunan (Figure 1). Available records suggest the species has a highly fragmented distribution and is extremely rare. Due to the scarcity of recent records and a lack of known viable populations, the bird has been classified as Critically Endangered (CR) (Collar *et al.* 1994; IUCN 1996), and later Endangered (EN), both globally (BirdLife International 2000, 2001, 2003) and in China (Wang and Xie 2004). It has been referred to as the most threatened heron species in the world (Kushlan and Hafner 2000), but its current distribution remains poorly known.

A literature review was conducted to clarify the historical distribution of the species in China, while recent field studies have revealed some new localities for the bird in China, mainly from Jiangxi, reducing the distribution gap. The present paper updates the known distribution of the species in China, and discusses implications for its status. Site numbers and codes given in the text refer to those in Figure 1.

Summary of records

Hubei Province

Historically, a female White-eared Night Heron was collected at Chongyang (Chung Yang; site 2) in January 1902, and the skin is kept in the British Museum of Natural History (BirdLife International 2001). Chongyang is near the southern border of Hubei, less than 100 km from



Figure 1. The distribution of the White-eared Night-heron *Gorsachius magnificus* with the localities mentioned in the text. 1, Shennongjia Nature Reserve; 2, Chongyang; 3, Huoshan; 4, Tianmushan; 5, Jiayang; 6, Shaowu; 7, Fuzhou; 8, Lingshi Si (at Fuqing); 9, Dayaoshan Nature Reserve; 10, Damingshan Nature Reserve; 11, Xianhu reservoir; 12, Luoxu; 13, Pingshan; 14, Nanning; 15, Nahuang Cun; 16, Biannian; 17, Chebaling National Nature Reserve; 18, Huashi Shan; 19, Baisha county; 20, Wuzhishan; 21, Tianchi; 22, Hoa Binh. [B, Baokang; H, Heng Xian; J, Jiulianshan; (J), Jingde (Chinteh); LM, Longmen; LS, Lushan; (M), Manshuihe (Manchoei-Ho); W, Wuyuan; LL, Lung Ly.] Open circles, historical records (pre-1950); circles with dots, records from 1950–1979; filled circles, recent (1980–present), open squares, undated. (Numbered sites are from BirdLife International 2001.)

north-east Hunan and north-west Jiangxi, and the county has only low hills.

One potentially large habitat area is the Shennongjia Forest District in west Hubei (site 1), which covers at least three counties: Fangxian, Kingshan and Badong. The first published account of the species from the area was a brief note by Hu Hong-xin (1999) of Wuhan University, recording collections made by Mr Zhong Lianfu of the Shennongjia Natural History Museum at Songbo and Mr Tang Zhaozi of Wuhan University Museum. This report was influential in downgrading the global status of White-eared Night Heron to Endangered (BirdLife International 2001). In 2001 two searches were made – one in May by Prof. Zhou Fang of Guangxi University (the leading Chinese expert on the species) and one in July by a team from Kadoorie Farm and Botanic Garden (KFBG) in Hong Kong and La Tour du Valat Station Biologique in France. Though neither team found the species in the wild, both photographed the Songbo specimen and interviewed Mr Zhong and Prof. Hu.

There were some discrepancies between the original accounts in Hu (1999), those received in the May 2001 trip (Zhou and Lu 2002) and those received in July 2001 (KFBG unpublished); the date of first collection was variously recorded as 1993 (Hu 1999), 1992 (Zhou and Lu 2002) and

1987 (KFBG unpublished). While Hu (1999) reported 21 specimens had been collected by the museum, Hu and Zhong (pers. comm. to KFBG, July 2001) said the figure of 21 referred to the estimated population, and only a single specimen was collected, in 1987, prior to the construction of the Yutauhe reservoir in 1991, after which no birds were seen in the area. Since this contradicts all the other reports we shall assume it to be a miscommunication.

The observation of five herons, of which two were collected, was in either May 1993 (Hu 1999) or May 1994 (Zhou and Lu 2002); the locality is described by Hu (1999) as Yutauhe reservoir, in the lower reaches of Gushui River, Yangri village, and by Zhou and Lu (2002) as Zhouwan ($31^{\circ}45.458'N$ and $110^{\circ}56.045'E$, 440 m elevation), Maqiao town in Baokang county, near where the Maqiao River flows (north-west) into the east-flowing Songluo River (the Nanhe River on some maps). These apparently refer to the same locality; Yutauhe reservoir is within Maqiao town district, and the KFBG team visited this area (450 m) in July 2001, to be told the site of discovery had been submerged by the Yutauhe reservoir with no subsequent sign or report of White-eared Night Heron activity.

KFBG also visited Wushanhu reservoir (580 m), which was formed by the impoundment of the Guanmen River (another tributary of the Nanhe, further west and upriver). According to Zhou and Lu (2002) an adult and nestling were taken there in May 1992 from a nest in a tree ($31^{\circ}42.199'N$ and $110^{\circ}47.344'E$, 595 m). They note that many trees including the nest-site were subsequently destroyed by a mining road and tourist development. Zhou and Lu (2002) also mentioned a third locality, Taijitou ($31^{\circ}44.238'N$ and $110^{\circ}51.457'E$, 550 m), a bank of the Nanhe between the other two sites, where several White-eared Night Herons were reportedly seen in April 1992. None of the people interviewed reported seeing the birds after 1995, and the survival of the population is in doubt.

It is possible that the bird once occurred in Yinshan county in the far eastern part of Hubei province, as described below under Anhui.

Anhui Province

No record of the White-eared Night Heron has been reported from Anhui province for more than 80 years. But when checking the historical records of the bird mentioned in *Threatened birds in Asia* (BirdLife International 2001), we found two uncertainties worthy of note:

(1) "In *Anhui Province* Huoshan (Hwoshan: see site 3), collected in May (year unspecified) (Cheng 1987); "Chinteh" (untraced), on the south bank of the Yangtze, July 1901, two collected and two others seen while coming to roost in high trees, so that "by day they could not be seen" (Styan 1902; two females in the British Natural History Museum (BMNH))" (see p. 146 of *Threatened birds in Asia*). While there is no problem with the locality Huoshan, located some 120 km north of the Yangtze River, the location of "Chinteh" is uncertain. If, as mentioned, it is "on the south bank of the Yangtze", we speculate that "Chinteh" is likely to refer to Jingde county, whose county town (Jingyang or Jingde) is at approximately $30^{\circ}25'N$, $118^{\circ}35'E$ and some 80 km south of the Yangtze River (site J). Jingde is in a mountainous area, from which the Tianmu range extends into northern Zhejiang Province; about 100 km to the east is Tianmu Shan (site 4), in Lin'an county (now a city) of north-west Zhejiang, where skins of the species were successively collected during the 1950s (see below), and the area is likely to have supported favourable habitat for the species in the past.

(2). "Unknown locality: 'On a fairly high mountain, named Pen-kia-lin, not far from 'Manchoei-ho', on the road from Ho-Shan to Yng-Shan', one collected, undated" (Père Courtois in La Touche 1925–1934; see BirdLife International 2001, p. 148). Père Courtois's field activities were mostly in the Anhui region, as indicated by his book title *Plantes Recoltées dans Le Ngan-Hoei* in 1916. If the above localities are converted to pinyin (the current Chinese romanization system), 'Manchoei-ho' should be Manshuihe (c. $31^{\circ}15'N$, $116^{\circ}01'E$: site M), Ho-Shan is Huoshan, and Yng-Shan is Yingshan, a county located in the extreme east of Hubei province and whose county town is roughly at $30^{\circ}45'N$, $115^{\circ}40'E$. Manshuihe is in south-west Huoshan

county located midway along the old (official) post road from Huoshan to Yingshan, and there are two high peaks, called Baimajian or Huo Shan (1,774 m, south of Huoshan town) and Tiantangzhai (1,729 m, north of Yingshan town), between which the road passes. Hence it is possible the bird might also have occurred in Yingshan in the past, as there are likely to have been similar habitats throughout the area.

On 13–18 June 2004 ornithologists Zhou Lizhi and Yang Chen conducted a brief survey along the road from Huoshan to Yingshan, in the hope of finding the bird at its historical site, Manshuihe (Zhou and Yang 2004). Some ardeids, but no White-eared Night Herons, were found.

Zhejiang Province

So far only one locality for the bird is known in Zhejiang: Tianmu Shan (Mt Tianmu: site 4), located in Lin'an county by the north-west border of the province, where a few skins were successively collected in May 1954 (Yu et al. 1983) and then in July 1957 (Cheng 1976, 1987; BirdLife International 2001). No recent report of the bird has been made from the province.

Fujian Province

The historical sites of the White-eared Night Heron described in *Threatened birds in Asia* (BirdLife International 2001) include: "Jianyang (Kianyang), May 1914, March 1915, 'said to breed' (La Touche 1917, four specimens in the Museum of Comparative Zoology, Harvard, Cambridge, Massachusetts, USA (MCZ) and the American Museum of Natural History, USA (AMNH); Shaowu, December 1944 (female in the Academy of Natural Sciences, Philadelphia, Pennsylvania, USA (ANSP)); near Fuzhou (Foochow), male collected, October 1911, another seen by local collectors (La Touche 1913), 1913 (male and female in 'SNHMCN'); and near Lingshi Monastery (Ling-sioh Monastery), Fuqing county, pair seen, summer 1929, 'evidently nesting' in a bamboo forest (Caldwell and Caldwell 1931)" (sites 5, 6, 7 and 8). All the Fujian records cited by Cheng (1944, 1955, 1976, 1987, 1997) refer to these historic ones, showing the most recent record of the bird in the province to be in 1929.

In early February 2004, members of the Xiamen Bird Watching Society (XBWS) together with one of us (LJ), made a 1 day visit to the area around Lingshi Monastery near Fuqing, and found the vegetation around the temple, especially the bamboo forests, quite well preserved. XBWS were planning further surveys in the area in 2005.

Jiangxi Province

Until the end of the twentieth century, there was no record of White-eared Night Heron from Jiangxi. In view of the presence of the species at the nearby Chebaling NNR in Guangdong (site 17), in late July 2001 the KFBG team visited Jiulianshan National Nature Reserve, Longnan county, south-west Jiangxi (site J), which has similar habitat and is only about 50 km north-east of Chebaling (Kadoorie Farm and Botanic Garden 2003). Though a few ardeids resembling the species were seen after dark (Liu and Xiao 2001), its presence could not be confirmed during the trip (Lee and Chan 2002). Confirmation of the species at Jiulianshan NNR came in January 2003 when an injured adult bird was found by a stream in the well-forested Daqiutian area (about 400 m); the reserve staff tried to rehabilitate the bird but it died a few days later (Tang and Liao 2003). From mid-April to late June 2003, more birds were seen successively in the same area by us (He Fenqi and Lin Jiansheng) and Zhou Fang, after dark and in late afternoon.

Two more localities for the White-eared Night Heron, Wuyuan and Lushan, in north-east and north Jiangxi respectively (sites W and LS), were reported recently (He and Lin 2004). In August 2001, one White-eared Night Heron was seen by Hong Yuan-hua, a keen bird-watcher and

employee of the Wuyuan Forestry Bureau, feeding in the afternoon in a small drained fishpond by a village about 200 m from the town of Jialu in Wuyuan. Further visits to the location followed in May, November and December 2002 but the bird could not be seen again.

On 19 October 2003, one White-eared Night Heron was seen at Lushan, Jiujiang City by Lin Jiansheng, standing at 16h30 by a stream near the dam of a small reservoir at about 800 m. After being sighted the bird flew up to a tree and perched until dark. Mt Lushan is an isolated mountain about 300 km² in size and 1,474 m at the summit. It sits on the south bank of the Yangtze River and forms the north-western edge of Poyang Lake (He and Lin 2004).

Guangdong Province

Three localities for the White-eared Night Heron have been reported in Guangdong province. The first record was of a male bird collected in March 1960 at Huashi Shan, Yingde county, central Guangdong (BirdLife International 2001; also site 18).

In the late 1990s, it was reported that two specimens of the bird had been collected, in 1993 and 1998 respectively, at Chebaling National Nature Reserve, Shixing county, Shaoguan district in north Guangdong (Gao 1999; also site 17). In April 2000, the KFBG team recorded the species at the site where the specimen was collected by reserve staff in 1998, and during follow-up visits, one or two birds were seen by the main stream in the evening on 16 August 2000, and 21 and 22 July 2001 (Fellowes *et al.* 2001). Other ornithologists saw the species at the same site subsequently, up to summer 2004 (e.g. Ben King, pers. comm., 2003; Mike Kilburn, pers. comm., 2004). Unfortunately some visiting ornithologists were offered specimens by local people for money; moreover, both road widening inside and hydropower development just outside the reserve since August 2003 have caused extreme disturbance to the stream where the birds were regularly seen before (Kilburn 2004), and there has been only one successful sighting from 2005, of a single bird on 26 May (P. J. Heath, pers. comm., 12 July 2005; Song Xiangjin, Chebaling National Nature Reserve, pers. comm., 26 July 2005).

Forestry officials of the Shaoguan district recently reported that the species has also been found in another site not far south of Chebaling National Nature Reserve.

Quite recently a White-eared Night Heron was recorded at Nankunshan (Mt Nankun) Nature Reserve in Longmen county (c. 23°50'N, 114°20'E; also site LM), between Chebaling and Guangzhou, the provincial capital, and less than 100 km from Guangzhou (Gao 2003).

Guangxi Zhuang Autonomous Region

Compared with other provinces in China, the bird appears to be more widespread in Guangxi. Historically a male bird was collected, in April 1929, at Dayao Shan in Jinxiu county (Mt Dayao, now Dayaoshan National Nature Reserve: site 9) and the species was described as “*extremely rare*” there (Yen 1933–1934).

According to Zhou (1994), in the early 1990s single individuals of White-eared Night Heron were seen in June 1990 by a stream at Pingshan township in Long'an county (see site 13) and then at different places in Wuming county in low hills around Damingshan National Nature Reserve, central Guangxi. One bird was seen in October 1992 by the Xianhu reservoir, one in January 1993 in a rice paddy in Luoxu township, and one adult and two young birds recorded in June 1994 at Damingshan National Nature Reserve (Zhou 1994; *Oriental Bird Club Bull.* 23 [1996]: 8–9; sites 10, 11, 12).

In May 1998, the KFBG team found a live nestling (estimated to be 4–8 weeks old) in a local market in Nanning, the provincial capital, reported to have been captured near the city. The bird was purchased, raised and released near Damingshan (Lee 1998). Another juvenile was purchased in June 1999 at Shajing town, a suburb of Nanning (site 14). A dead juvenile and several old nests were found in a forest in 1999 near Nahuang Cun in Fusui county (site 15). At

Biannian village (200 m) near Datang, by Fentinghe reservoir in Shangsi county (site 16), one live juvenile was captured in August 1999, and an adult was shot and injured in December 1999. One was seen by the KFBG team near Biannian in March 2000 (Fellowes *et al.* 2001).

Recent investigation revealed that, in 2003, Nanning Zoo received three juvenile White-eared Night Herons: two rescued from Jiajiang reservoir, Liujiang town in Heng county (site H), about 50 km east of Nanning city, and another from Laohuling reservoir in Gaofeng Forest Farm, just 15 km north of the city. Two more juvenile birds were seen for sale in Nanning market in 2005, with one rescued by interested students and passed to Nanning Zoo (Huang Dehe, Nanning Zoo, pers. comm. 14 January 2005). The other bird was sold before it could be rescued (Jiang Aiwu, Guangxi University, pers. comm. 9 Jan 2005).

Hainan Province

Though Hainan was the type locality of the White-eared Night Heron, there have been very few records from the island. At Wuzhi Shan ('Five Finger Mountains'), Qiongzong county (site 20), one specimen (the type) was collected by John Whitehead in March–May 1899 (Ogilvie-Grant, 1899, 1900a, 1900b); this is kept at the BMNH (M. P. Adams, BMNH, *in litt.*, 27 June 2005). Shaw and Hsu (1966) reported that one female was collected on 18 April 1961 at Baisha county (see site 19). Later, Xu *et al.* (1983) reported that a male bird had been collected one November (year unspecified) at Jianfengling (now a National Nature Reserve), Ledong county (site 21). This appears to have been the last confirmed record.

In 2001, a joint team from KFBG and Tour du Valat in France set out to visit some promising localities, including the type locality, in the hope of finding more traces of the occurrence of the bird on the island. They visited Ruixi town in Chengmai county, Guyue Villa, Fanggen Cun and Wuzhishan NNR in Qiongzong county, Jianfengling NNR in Ledong and Datian NNR in Dongfang county, but were unable to confirm the survival of the bird in the wild. During spring 2005 KFBG conducted rapid biodiversity surveys in forested habitats likely to support White-eared Night Heron (e.g. areas in Baisha county), but no sightings were made, and the local hunters interviewed seemed unfamiliar with the species.

Discussion

Recent findings have mixed implications for the status of White-eared Night Heron in China. Though still rather scattered, recently found localities of the White-eared Night Heron fill some distribution gaps and the localities with recent records of the bird now outnumber the historical ones.

Dedicated field effort for years by researchers has allowed a better understanding of the habitat requirements of White-eared Night Heron, confirming that the species can survive and breed in rather degraded habitats. Even Nanning, an area with a city of over 2 million people, has been found by Zhou Fang and his colleagues to support the species close to its core, breeding in low-integrity plantation forest.

The links between the observed populations remain little-known. The Nanning City District extends south-west to the Vietnam border, covering an area of over 8,000 km². If the population of the White-eared Night Heron is contiguous with those in north-east Vietnam (BirdLife International, 2004; site LL), the combined area might support a rather large population. The populations in the Nanling Range, from south-west Jiangxi to north Guangdong, could, if linked, occupy a triangle of over 3,000 km² between Shixing county (Chebaling NNR), Longnan county (Jiulianshan NNR) and Longmen county (Nankunshan NR). Since the Nanling Range runs along the border of Jiangxi, Guangdong and Hunan, it might be predicted that the bird occurs in extreme south-east Hunan, too. At present there is no evidence for a link between these southern-Guangxi and Nanling populations.

Links among the eastern populations are equally mysterious. Regarding the occurrence of White-eared Night Heron along the lower branch of the Yangtze River, He and Lin (2004) pointed out that the two new localities, Lushan and Wuyuan, might link all other localities, historical and recent, in eastern-central China to form a chain (sites 2, 3, 4, 5, 6, 7 and 8), each no more than 200 km from its nearest neighbour. The possibility is therefore that White-eared Night Heron may not be so sparsely scattered along the lower branch of the Yangtze River as was thought. As Styan (1902) once speculated: "It is possible ... that this species is distributed, in summer at least, throughout the hill-districts of Fokien [Fujian], Chekiang [Zhejiang], and Anhwei [Anhui], which provinces are very similar in general character and natural productions." These provinces, and especially well-forested Fujian, remain likely places for discovery.

As for connectivity between the eastern and southern populations, this also seems more likely than previously thought. The three new records of White-eared Night Heron from Jiangxi raise a question as to why no record of the bird has been made from Hunan, as the two provinces are geomorphologically and biologically similar. The lack of records may reflect a lack of specific fieldwork on the bird. We would not be surprised if the White-eared Night Heron were to be discovered in Hunan or eastern Guizhou, or re-discovered at some of its historical sites. But without better knowledge of the mobility and natural history of the species, it is very difficult to gauge the likelihood of population connectivity.

While the distribution of the species appears broader than previously thought, its status cannot be said to be secure. Several of even the recent records are of sites which no longer appear to support the species. Habitat damage and direct hunting appear to be responsible for the decline or disappearance of the birds in Hubei and parts of Guangxi and Guangdong. In Guangxi occurrences in markets outnumber records of animals in the wild. At Chebaling and Shennongjia the collecting of specimens, including those to supply scientific collections, has been an additional threat. This, like capture for food, is illegal as the White-eared Night Heron is a Class II national-protected species in China.

It remains impossible to reliably assess the status of the species. The species was downlisted in 2000 from Critically Endangered to Endangered on the strength of the new populations being found, but, as noted, none of these are secure and some have been extirpated. It is possible that the species still meets one or more of the criteria for a Critically Endangered species (e.g. small population with a continuing decline: C1 or C2a(i)); at present there is no basis for estimating total population size. In its best-known area, around Nanning, population size remains alarmingly low judging by the number of sightings and market animals compared with most other ardeids.

There thus remains a need for better information from throughout its range. Better understanding of the behaviour and biology of this species will help in improving the survey effectiveness, and in estimating potential range and connectivity. If a breeding population can be located, then intensive study should be carried out to help fill the gaps. It would be wise to start with historical localities of the species from past decades; while it is difficult to interpret the discovery of new localities in terms of their long-term importance to populations, a rediscovery would suggest long-term presence and habitat that has remained suitable over a number of generations.

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