

Summary

From May 2001 to August 2002, a survey on White-eared Night Heron's existent status and habitat requirements was carried out in south Guangxi. The results are as follows:

White-eared Night Heron has three distribution sites in south Guangxi. One is in Biannian, Shangsi County, N 22°13.268' and E 108°10.022'. This is the confirmed breeding site in 1999. One is in Bapen, Fusui County, N 22°27' and E 107°50'. The birds that live in Bapen are come from the original breeding site of Nahuang, Fusui County. They are the same population. Another one is a new discover site. It is in Baixu and Qinpai, Shanglin County, N 23°26' and E 108°47'. Besides, it is the first time that we found the bird distributing in limestone area.

The habitat requirements of White-eared Night Heron require 3 conditions: mountain, wetland and forest. White-eared Night Heron usually habit in the mountain, which altitude is below 400 meters and are made up of broad-leaved forest, coniferous-broadleaved mixed forest so as to make sure of the essential place of breeding and nest. The forest cover rate is over 10%. Besides, wetland such as reservoir, stream and pond must be offered. It is the place to give food, and the primary demand of existent. In the Shanglin distribution site, it is considered as a feeding place but not a rest and breeding place.

Through the fieldwork and interview with local people, especially to the wildlife lovers, local hunters in every distribution sites, the population of White-eared Night Heron will be estimated in south Guangxi. The results show that there are 20-25 White-eared Night Heron in the Biannian and the neighbour Fengtinghe Reservoir, Shangsi County; 15-20 in the Bapen Nature Reserve and Wangzhuang River, Fusui County; and 8-10 in Baixu and Qinpai, Shanglin County. The total population of White-eared Night Heron that we now know is 43-55 in south Guangxi.

Many factors threaten the existent of White-eared Night Heron. Now, there are 3 main factors: deforest, hunting and human's productive activities. The threats made the habitat of the bird keep destructing. The fragmented landscape becomes more seriously, and the population is reducing.

During the survey, 4 White-eared Night Heron was found gradually in the market of Nangning. Except one bird was died, the other birds can succeed to live. When it recovered its health, they will be sent to the distribution sites respectively in Shangsi, Fusui and Shanglin County.

The declaration of bird protection, environmental education runs through the whole survey. By the interview, lots of value information will be collected from local people. And it also serves as a publicity event on promoting wildlife protection and environmental education. The importance of species and biodiversity will be also stated and a warning was included to discourage hunting and fell forest.

In the place where White-eared Night Heron was found, we have reported to local government and recommended the suitable conservation plan to impetus the protection. We also took related action when the critical threats to the habitat and status of the bird were found during the survey.

Although the survey has been made some progresses, it is not nearly enough to the critical endangered species. Further surveys on its existent status still need to carry.

1. Introduction

White-eared Night Heron *Gorsachius magnificus* is considered critically endangered species (IUCN, 1996). It should be the highest global priority for heron conservation (Kushlon and Hafner, 2000). The bird is mainly living in China and is the Chinese endemic species, belongs to Ardeidae, Ciconiiformes.

There are little information about White-eared Night Heron, especially about its distribution and ecology. Its distribution is narrow that only six Provinces have its record in the Southeast of China, like Hainan, Guangxi, Guangdong, Fujian, Zhejiang and Anhui. The population is very little, too. Since its discovery in the mountain of central Hainan in the 1890s, there have been few firm records of White-eared Night Heron. The biological department of Zhongshan University has collected the specimen in Dayaoshan, Jinxiu County of central Guangxi in 1929. It was Guangxi's only record before 1990s. During the early 1960s, the South China Animal Research Team in their many field surveys that lasted several years collected only 2 specimens in the mountain areas of central Hainan. There were only several times to observe the bird by Prof. Zhou Fang, whom pursuit the wildlife survey in Guangxi for a long time. According to the reflection by Anhui, Fujian, Zhejiang, Hainan areas, there weren't any tracks of White-eared Night Heron. After 1990, many scholars went to the Wuzhi Mountain of Hainan Island several times in order to find the bird, but they cannot succeed. There have not the bird's data in the winter waterbirds census of Asian since 1987. Considering the above, many ornithologists of the world thought that White-eared Night Heron has been trended to disappear, the existent population probably less than Crested Ibis.

From 1990 to 1993, White-eared Night Heron was reported again at Longan and Wuming Counties in south Guangxi (Zhou, 1994). In late May 1998, a caged juvenile White-eared Night Heron was found in the market of Nanning by the South China Biodiversity Team of KFBG, Hong Kong (Lee, 1998), which further confirms that a population of the species is still in existence in south Guangxi. This finding prompted a survey of its potential distribution sites in 1998-1999. Through this survey, two breeding sites have been found in Shangsi and neighbouring Fusui Counties respectively in 1999 (Zhou, 2000). It is the confirmed breeding area of the species in the world. Since White-eared Night Heron was discovered in the 1890s, the study has little because of the unclear distribution and the population. It is almost considered as a blank. When the distribution, existent status and habitat requirements were knew, there have great significance to conserve the species efficiently. Habitat requirements are the results that animals adapted to environment for long time. In nature, animals always select the place that can be fully meet their requirements as their favorite living environment. As soon as the potential distribution was confirmed, we can protect the species efficiently and create the advantaged existent conditions. Under the support of the BP conservation programme, which composed of BP Amoco, BirdLife International and Fauna & Flora International, Guangxi University Expedition have carried the survey on the potential distributions and habitat requirements of White-eared Night Heron in south Guangxi from May 2001 to August 2002.

Now, the detailed results of the survey are as follows.

The map of survey area in the project

Scale: 1:1350000

2. Scientific survey methods

Distribution survey

Questionnaires and pictures of some herons of the region (including White-eared Night Heron) will be mailed to the biology teachers of middle school, forest guards, known naturalists and wildlife lovers in surrounding areas of the two known breeding sites. The questionnaires state that true information on the status of the bird species would be rewarded. The importance of the species is also stated and a warning is included to discourage hunting. The questionnaire also serves as an educational leaflet.

Market survey will be done regularly in Nangning. Once White-eared Night Heron was found on sale, we will interview with the seller so that to make clear of the bird's source, and chase the captured place. When the fieldwork was going on, we also went to the nearby market, and interviewed with the dealer. If White-eared Night Heron was found on sale, we will buy and rear it until it was recover. Then the bird was released in possible captured place according to the interview.

Ground surveys will be conducted in areas where the species has been reported in the past and in areas where responses to the questionnaires gave plausible evidence of its existence. Local hunters, forest guards, wildlife lovers and medicinal plant collectors will be interviewed and asked to identify White-eared Night Heron from a collection of pictures showing different heron species. Field observations will be conducted to collect direct evidences such as bird watching, calls, voice playback, feathers or nests.

At dusk, observations will be made from strategic points overlooking potential roosting and feeding habitats: ponds, paddy fields, streams and marshes adjacent to forested slopes. Detection is based on both visual and auditory contact. Observations start at least one hour before sunset and last until one hour after. At dawn, observations start one hour before sunrise and ended one hour after. In order to cover as much ground as possible, we will split into at least three groups of observers, each operating simultaneously in different sectors of a suitable habitat.

Night survey will be carried out. Voice-playback, especially the voice of chick, will be used. During daytimes of breeding season, potential feeding and nesting sites will be patrolled with the aim of detecting nesting activity and the bird searching for food.

Distribution surveys will gradually be extended to surrounding areas of the positive sites according to the results from the interviews and the conditions of the natural environment.

Population census

Population census usually is carried out in conjunction with distribution surveys. All small local population will be counted respectively in the survey area. It is very important for understanding

the existent status of the bird and making an effective conservation plan.

Route census is the mainly method in the survey. But after many times' census, the populations that can be count directly were not nearly enough to reflect the true status of White-eared Night Heron. So it is very difficult to get the accurate data by use these routine methods. According to many specialist experience and incessant thinking and study, we decided to use a reasonable method that is simple, rough compared to the route census. The method is estimate method. In the base of evaluation, jig to the interview's information, we study the ecology environments and food sources of White-eared Night Heron in every distribution sites. We also do some route census in assistance. Then the population of White-eared Night Heron will be estimated in certain extent. The estimate method can be use is mainly according to the follow reasons.

- (1) In the distribution sites of White-eared Night Heron, local people are familiar of the bird. Some of them can distinguish the bird from Malayan Night Heron *Gorsachius melanolophus* and Black crowned Night Heron *Nycticorax nycticorax* in the field. In the daily productive and lived activities, they have more chance to discover the bird. So the local people have extensive knowledge of the population of White-eared Night Heron in their living area.
- (2) Some experienced local hunters, forest guards and wildlife lovers pay great attention to White-eared Night Heron's activity, habitat and breeding. They often do out-door activities, so have relatives more exact knowledge about the population of White-eared Night Heron.
- (3) The population which is through survey and estimation is based on the interview with those local people, hunters and wildlife lovers who provide a great deal of practical information and defined through combining with our survey on the ground. Therefore, although it is not very perfect, the population is fairly confirm to reality and believable.

Survey on the habitat requirements

The survey on habitat preferences and requirements will be conducted in conjunction with distribution survey and population estimate.

Choose vegetation (coverage, forest cover rate, forest types) and altitude as the parameters of habitat feature quantitative analysis. The factors such as available food resources, wetland types and human's activities, which may influence the habitat requirements, will also take into account.

Learn initially the distribution status of White-eared Night Heron from local people. Then, at every distribution site and possible habitat carry on detailed, deeply practically investigation and record the natural environment conditions accordingly.

If research activity did not reduce breeding success, radio-tracking of the bird would be considered. It is useful for identify the preference habitats of the bird.

Survey on threat factors

In the process of practical survey, knowledge about local natural resources' utilization will be got through direct observe and interview. All the human activities, which have a threat on the species and their habitat, will be recorded, such as hunting, trap, exploitation and deforestation, unadvisable utilization of bonds and reservoirs. Comprehension with these situations will do good to improve management of conservation.

3. Results

During the survey from May 2001 to August 2002, the scope of surveys includes the following areas. The details are list in table 1.

Table 1. Survey Time and Areas

Time	Areas
The early May in 2001	Matou, Wuming County
The late August in 2001	Gongchuan and Gonghe, Dahua County
The early and middle February in 2002	Biannian, shangsi County and Fengtinghe Reservoir
The early April in 2002	Baixu and Qinpai, Shanglin County
The middle May in 2002	Nahuang of Dongmen Town, Fusui County
The late June in 2002	Baixu of Shanglin County and Bapen Nature Reserve of Fusui County
The eared July in 2002	Dalongdong Reservoir of Shanglig County
The middle August in 2002	Longan, Daxin and Chongzuo Counties

According to the information, we can conclude that Shanglin is White-eared Night Heron's new distribution site besides the original Shangsi and Fusui sites. What's more, in other areas, such as Gongchuan and Gonghe, Dahua County, Longan, Daxin and Chongzuo Counties, have the possibility to be the distribution sites according to the report of local people. But we can't get effective support evidence after practical survey. So we can't draw a conclusion definitely.

Nangning City is the center of Shangsi, Fusui and Shanglin distribution sites in south Guangxi. These areas lie in transition zone between South Asian subtropical and North Asian subtropical.

The landforms are mainly on low mountains and hills, setting platform, isolate peak plain of limestone, peak cluster and valley. But most of places have been exploited. Only part of original vegetation are reserved in few mountain areas, most of place's original vegetation has been destroyed, which was replaced by secondary broad-leaved forests, coniferous-broadleaved mixed forests, scrubs and sparse woods, or certain amount of *Pinus massoniana* plantations.

During the survey, the concerned White-eared Night Heron's situations about confirmation or being great possibilities show as table 2 and the map detailed geographic location.

Table2. The distribution sites of White-eared Night Heron in south Guangxi

Places	Rank	Main evidence
Biannian of Dongping Town, Shangsi County	Confirm	The Shangsi confirmed breeding site in 1999
Bapen Nature Reserve of Fusui County	Confirm	Near to the Fusui confirmed breeding site in 1999, direct observed by local people and people whom in Nature Reserve
Baixu and Qinpai, Shanglin County	Confirm	Get a living bird in the market, and find the seller and the catcher
Matou, Wuming County	Probably	Get a living bird in the market; it is said that come from this area; there is a high correctness for local people acknowledge the picture of the bird; adjacent to the Daming mountain

The following describes specific situations of concerned distribution sites and possible distribution areas.

3.1 Distribution

3.1.1 Biannian, Dongping Town of Shangsi County and Fengtinghe Reservoir

Biannian village lies in the northeast of Shangsi County, belongs to Dongping Town, and located at 22°13.268'N and 108°10.022'E. Fengtinghe Reservoir borders on west Biannian village. In 1999, the reservoir has been confirmed as the distribution site of White-eared Night Heron. At this confirmed site, we carried on the survey through adopting the way of dot leading and spreading gradually.

During the survey on Biannian village, the forest guard claimed that he ever found the White-eared Night Heron inhabit at some hillslope forest. Guided by him, we went to that place and began to observe. We survey its living condition and tried to found the bird's trace, but we did not find any bird and its nest. In February 2002, along the Fengtinghe Reservoir and Biannian village, 3 flying White-eared Night Heron of which two were resting on the trees were found in succession. The three White-eared Night Herons further confirmed the bird still existing in Biannian village and

Fengtinghe Reservoir.

3.1.2 Bapen Nature Reserve in Fusui County

Bapen Nature Reserve lies in the south of Fusui County, located at 22°27'N and 107°50'E. The lower reaches of the Wangzhuang River flows through here and there are lots of small fishes. In 1999, the Fusui confirmed breeding site located at upper reaches of Wangzhuang River, along Nahuang of Tuoda village, Dongmen Town. After the survey on Nahuang in May 2002, we discovered that there were already no traces of White-eared Night Heron. Local people claimed that they have not seen the bird in recent two years. This area's vegetation was damaged seriously. A great amount of forest was cut and the hillslope land was used to plant fruit trees. Over-development destroyed the living habitat environment of White-eared Night Heron.

In June 2002, there was news from Bapen Nature Reserve that White-eared Night Heron was found. So we began to carry on searching survey in this area. Through vast interview, more than one people ever observed the bird, and they even can describe the bird's some habit and characteristic without any guidable language. There are better living environment suitable to White-eared Night Heron's habitat in the Nature Reserve than that in Nahuang. And there are the same river flows through, that is to say, Nahuang is in the upper reaches of Wangzhuang River, while Bapen is in the lower part. The distance between the two places is close, about 25 kilometers according to the map. It is completely possible for the bird to migrate down the Wangzhuang River when the natural environment was destroyed in Nahuang. Addition to the report of local people and people whom in Nature Reserve, we can conclude that White-eared Night Heron distributing in Bapen Town and the population is the one come from Nahuang village.

3.1.3 New distribution site—Baixu and Qinpai, Shanglin County

Baixu and Qinpai lie in the east of Shanglin County. The two towns border each other, located at 23°26'N and 108°47'E. In March 2002, we bought a juvenile White-eared Night Heron in Nanning market, and found the seller who transported the bird to Nanning. We get to know by interview that the bird was caught in the areas of Baixu and Qinpai, Shanglin County. Then in June 2002, we continued to carry the survey in these places. During the survey, we not only found the buyer in there but also found the catcher. Without any guidable language, they can describe the main characteristic and some habits. Some people in Qinpai said that he had ever seen a White-eared Night Heron in March, which is not easy and frequent to see, in the pond.

During the survey, we were not able to found the bird or other activity trace, such as feather, sound. But the evidences provided by the seller and the catcher are believable, so we can define that the distribution in Baixu and Qinpai Town is the new site found in the project.

3.1.4 Matou, Wuming County

Matou lies in the northeast of Wuming County, borders on the south of Shanglin and separates by

Daming Mountains. Matou Reservoir is near to Matou. Several thick trees surround the reservoir. There is certain amount of cultivated land.

At the beginning of May 2001, we got a juvenile White-eared Night Heron in Nangning market. It is from Matou Town according to the clue provided by the seller. But the transporter or the catcher did not find, so we can't define exactly. Later, in the process of practical survey and interview in the place, local people can recognize the picture correctly and describe few about the bird. One wildlife lover who is also a retired middle-school teacher said that he has saw the bird long before, but seldom met afterwards. Through the survey, none of the activity trace can be found. But considered the bird had appeared in Daming Mountain in 1994, and Matou Town is only about 20 kilometers away from Daming Mountain, hence, in addition with the practical survey and analysis, we think that there probably exists White-eared Night Heron in Matou. But it still needs to go step further.

3.2 Habitat requirements

In the confirmed distribution sites, we made on-the-spot survey of local natural environment, geomorphologic landscape, wetland types and other factors. After arrangement, the survey results list in the table 3. Though there are no White-eared Night Heron living in the Nahuang, Fusui County now, the results of habitat also list in the table 3 for the bird indeed found lived and breed in there from 1998-1999.

The specific situations of the three distribution sites are as follows.

3.2.1 Biannian, Shangsi County

Biannian village is mainly on low mountains and hills. Most of the hills are less than 400 meters. The natural environment and the vegetation are the best of the three sites under survey. The mountain is covered by many forests, which are mainly made up of artificial coniferous forest, broad-leaved forest and shrubs. Part of original broad-leaved forest reserve in the valley and some small ponds scatter between the mountains, which water level varies according to the seasonal rain.

Fengtinghe Reservoir borders on west Biannian village, which is surrounded by low mountains and hills. Except for some cultivated plains, the vegetation here is similar to that of the Biannian Village. Branches of the stream lead from the Fengtinghe Reservoir flow through the Biannian Village. Lots of fishes, shrimp and crabs can be found in the stream as well as in the reservoir.

Local people spend most of their time on their farmlands. But footprints of cutters and hunters can be found even in the deepest forest and the hope of having an unexploited place is impossible.

Table 3. The table of habitat parameters of white-eared Night Heron in distribution sites

Distribution sites	Vegetation				Altitude (m)	Geomorphologic landscape	Wetland types				Human's actives		
	Coverage	Forest cover rate ()	Forest types										
Biannian, Shangsi County	80□85	20□25	□□	□□	□□□	□□□	□400	Mainly on low mountains and hills	√	√	√	√	Little
Bapen, Fusui County	80□85	15□20	□□	□	□	□□□	□350	Mainly on isolate peak plain of limestone	√		√		More
Nahuang, Fusui County	80□85	10□15	□	□	□□	□□□	□350	Mainly on low mountains and hills	√		√	√	More
Baixu, Qinpai, Shanglin County	75□80	8□10	□			□□□	□300	Mainly on low mountains and hills; have large intermountain plain of planate geography	√		√	√	Frequent

*□ Broad-leaved forest □ Coniferous-broadleaved mixed forest □ Conifer forest □ Scrub
 □ Stream □ Reservoir □ Pond □ Paddy field

3.2.2 Bapen Nature Reserve of Fusui County

Bapen Town is located in the southwest of Guangxi where limestone terrains are very typical and mainly on isolate peak plain. The natural environment and the vegetation conditions here are between those of Shangsi and Shanglin Counties. The altitude is below 350 meters and most of which have been cultivated, with crops such as rice, sugarcane and earthnut planted. Except for some carefully preserved secondary broad-leaved forest in Bapen Nature Reserve, sparse woods, shrubs and artificial coniferous forest occupy most of the other areas. Therefore, the forest cover rate is much less than that of Shangsi, though the vegetation coverage of the two counties is almost the same.

Wangzhuang River flows through the Bapen Nature Reserve and is intercepted by a small dam, with deeper water in one side and shallower water in the other side. Various fishes can be found in the water and the shallower water is suitable to feeding for White-eared Night Heron.

The traffic is relatively developed in here and the human's activities are more.

3.2.3 Baixu and Qinpai Towns of Shanglin County

Baixu and Qinpai are neighboring towns. The terrains here are mainly on low mountains and hills under 300 meters, and have large intermountain plain. The vegetation here, most of which are shrubs, has been much more seriously damaged than those of the other two places. The traffic is very developed and the land has been highly exploited. Villages and farmlands with crops such as rice and sugarcane can be seen everywhere. Fishery is also very developed and most of the villagers are fishing in the contracted ponds or in the hilly depression. Lots of herons can be seen rustling in the bigger ponds such as Maotang pond in Qinpai Town. Around the ponds crops are planted, high trees are rare even on the mountain. Due to fully exploitation of the ponds, fish resource is most abundant than that of the other places.

Besides, human's activities here are most frequent.

3.3 Population estimate

An extensive interview and survey were carried out on Shangsi, Fusui and Shanglin Counties where White-eared Night Heron distribute, to gather accurate information for population estimation. And the interview to wildlife lovers, skilled hunters and forest guards is value especially. The original breeding site of Fengtinghe Reservoir in Shangsi County is a fixed site, where local government and people have paid much attention to this bird and estimate that there are about 20 White-eared Night Heron lived in the region. When we were making route survey in Biannian village, we successively found 3 White-eared Night Heron living around on the hills near the Fengtinghe Reservoir, which have been mentioned in the previous results of the distribution survey.

In the original breeding site of Nahuang, Fusui County, the habitat of White-eared Night Heron have been damaged. So the population, which lived in the place, was forced to migrate to Bapen Nature Reserve along Wangzhuang River. It is the same one in the two places. So the population in Bapen is estimated by the common survey on the two places. When survey on the distribution site of Shanglin County, none of White-eared Night Heron can be counted. So we are mainly depend on the interview and environmental survey in the fieldwork. In every distribution site, local people claimed that White-eared Night Heron usually active at dawn and dusk. The bird often lives alone or 1-2 together, do not like to live in social.

Take the interview, survey, ecology, the habitat conditions that suit to live, 3 birds were counted directly in the field, 4 birds were found in the Nanning market into account, the population of White-eared Night Heron is estimated. The estimate results are that there are 20-25 birds in the Biannian and the neighbor Fengtinghe Reservoir, Shangsi County; 15-20 in the Bapen Nature Reserve and Wangzhuang River, Fusui County; and 8-10 in Baixu and Qinpai, Shanglin County. The total population of White-eared Night Heron that we now know is 43-55 in south Guangxi.

The population of White-eared Night Heron is very few and still in the trend of decreasing.

3.4. Threat factors

3.4.1 Fell forest results in serious damage of environment

Before 1970s, the forest industry was logged basically. The forest has been suffered two holocausts in Guangxi. In many areas, people replaced the broad-leaved forest with coniferous forest of pine, Chinese fix or bamboo and other economic crops in order to get short-term economic benefits. These damaged the broad-leaved forest seriously. Except for the few surviving broad-leaved forest in remote mountain areas, the forest was kept decreasing in big range. Nowadays, these phenomenons still happen in survey areas. In Biannian village of Shangsi, lots of thick camphor trees were felled in order to produce oils. Some roots were dug out of the earth. It is no doubt was a ruinous action. The forest was damaged seriously in the original distribution site of Fusui County. Much deforestation has been resulted in the habitat of White-eared Night Heron losing.

3.4.2 Hunting is hard to forbid and still going on

For a long time, hunting wildlife has been a common phenomenon in many areas. It is hard to forbid and still going on. So hunting has serious led to the amount of wildlife decreasing. In some economic undeveloped mountain areas, hunting was acted as a traditional activity. Almost every home owned a shotgun. When local government ordered no hunting and confiscated the gun, people still had many other methods to catch animal, such as trap, iron clip and mist-net. These added the difficult of forbidden and led to the hunting still going on. Not many animals can be observed in the places where we surveyed. What we can see mostly were little birds. The

local people claimed that these little birds will be disappeared probably if the hunting going on.

From May 2001 to August 2002, four White-eared Night Heron were found on Nanning market. Besides, maybe there still had other White-eared Night Heron were on sale that we were not able to find. In the market, many other animals were on sale. From these conditions, we can concluded that hunting exist extensively, hard to forbid and still going on.

3.4.3 Human's productive activities still expanding

With the human population's increasing, less and less soil resources can be available. Local people were forced to gradual expand their production to forest areas so as to get more soils to plant provisions and economic crops. At the same time, people's activities also enlarge. These serious disturbed the animal's original habitat.

In the three distribution sites, the most development areas and the human's productive activities most frequently were in Shanglin distribution site. The secondary were in Fusui distribution site. Moreover, the reservoirs and ponds exploitation is so frequently which were mainly embody on fishing and other activities. For an example, when we survey on the Dalongdong Reservoir, we found lots of small boat stayed on the reservoir fishing. The people caught fish by nest or other ways and lasted for several hours. When the evening was coming, they will use the lamp or electricity to caught fish. It can be said that the fishing lasted for a whole day.

The over-exploitation added the people's activities invisible and formed great threats to the White-eared Night Heron's feeding place. Thus, the bird will be found easily and caught.

3.5 The saving results of four White-eared Night Heron

From the May 2001 on, we found and bought four White-eared Night Heron gradually when we surveyed in the market of Nanning. Three of them are juveniles. When it recovered its health, they will be released. Through interview with the seller, we knew that one bird came from Shangsi County, one came from Fusui, one came from Baixu and Qinpai Towns of Shanglin, and one came from Matou, Wuming County probably.

During the four birds' saving, the first bird was normal in the first two weeks. Until that day, we found the bird was anomalous, languid and did not want to eat. At 6 p.m., the bird was feeble, fell down and died. The anatomy showed that the bird was male and there were obvious pathology in the viscera. Some visible yellow precipitate covered on the heart, and white stripes on the surface of the liver. The most seriously pathology was the cyst in the bottom of the stomach. It was occupied by many parasites, which were like a threat. It was the same in the guts. The total was more than 30, and the size was different. The parasite was so many in the body that can be considering preliminary as the main cause. But the detail and the category of parasite need to go further examine.

According to the first bird's death, the other birds that we found later were expelled worms at every period time. Later, 1 or 3 parasites were found in the excretions occasionally. The type and shape were as same as the first bird's. By this method, the bird can be lived successfully. It showed that the job of expelled worms was essential, and the bird can be survived during the rearing.

When it recovered its health, the bird will be sent to the field. According to the information from seller, we tried to release the bird to the place where it was caught. So the three birds were released to Biannian village of Shangsi, Bapen Nature Reserve of Fusui, and the Dalongdong Reservoir of Shanglin respectively. The radio-tracking was used on two of the birds. The results of tracking showed that the habitat requirements of White-eared Night Heron were as same as our analysis.

3.6 Publicizes and accelerate conservations

From May 2001 to August 2002, the declaration of bird protection, environmental education always runs through the survey. By the interviews, a lot of value information will be collected from local people. At the same time, it also serves as a publicity event on promoting wildlife protection and environmental education to the local people. The importance of species and biodiversity will be also stated and a warning was included to discourage hunting and fell forest. All unlawful actions that we found in the survey will be recorded, reported to the local government in time and produced suitable conservation advice. For example, when we found the camphor trees were felled and the roots were dug out in Shangsi County, forest were felled in the original breeding site of Fusui, we have reported to the local government in time. When the Shanglin County was confirmed as the White-eared Night Heron's new distribution site, we also reported to the government and created a conservation strategy in time.

The suggestion that we had done to the local governments respectively to accelerate the conservations are listed as below:

- (1) Forbid the people buy broad-leaved wood to make paper in the Fengtinghe Reservoir areas;
- (2) Forbid the people felled camphor trees and dug the roots out in order to produce oils;
- (3) Strengthen the conservation of the new distribution site of White-eared Night Heron in Shanglin County.

The suggestion has been received concern from the governments, and the corresponding conservation measures have been done.

4. Discussion

Habitat requirements of White-eared Night Heron must meet three conditions: mountain, wetland and forest

By the survey on the natural resources and environmental ecology of Shangsi, Fusui, Shanglin distribution sites, and the comparison form table 3., we can find that there are three common conditions in the three sites. The common conditions are mountain, wetland and forest. White-eared Night Heron usually habits in the mountain, which altitude is below 400metres. In the mountain, there have certain forest cover rates that are mainly made up of the broad-leaved forest and coniferous-broadleaved mixed forest. It is the guarantee to offer habitat, nest places to White-eared Night Heron. There also have wetlands, which serve as feeding place. This condition is related to the primary demand of existent.

In the survey, we first found that White-eared Night Heron distribute in limestone areas. The limestone areas where White-eared Night Heron distribute have the mountain, wetland and forest. So the habitat requirements of White-eared Night Heron must meet mountain, wetland and forest three conditions.

It is only the feeding place in Baxu and Qinpai, Shanglin County

Compare with the natural resources and vegetations of three distribution sites, and consider the above discussion, it is easy to found that Shangsi and Fusui sites able to provide the mountain, wetland and forest conditions. Baixu and Qinpai Town of Shanglin site only have the mountains and wetlands, without thick forests. It is not able to offer suitable place for White-eared Night Heron to habit and reproduce. So the Shanglin site is considered only be a feeding place for White-eared Night Heron, but not a habitat place.

According to the result, another question will be easy to think about. If the Shanglin site only were a feeding place, where the White-eared Night Heron come from? Where is it habit? Supposed the bird came from Shangsi or Fusui site, the distance is too far. Besides, the two sites have suitable places for the bird to feed. And the bird needn't fly so far to find food. So the suppose has few possibility. Seeing the surrounding areas of Shanglin County from map, Matou of Wuming County and Daming Mountain lies in the southwest of Shanlin County. The two places are separated by Daming Mountains. It is possible that the White-eared Night Heron in the ShangLin site come from Matou Town or Daming Mountain.

Further survey will be carrying in the future.

Main threat factors to the existence of White-eared Night Heron

In the survey areas, fell forest is very common phenomenon. Lots of vegetation, which is suitable to habit, has been damaged seriously. Even the few surviving broad-leaved forest is also in the status of damaging. The existent spaces of White-eared Night Heron become less and less

because of condensed habitat and fragmented landscape. The bird is isolated in a few sites separately and become a meta-population. For such meta-population, their ecology habits and potential distribution still needing to study. Otherwise, it is difficult to analysis their development and existent trend, and then hard to create and effective conservation strategy.

Hunting is also a serious threat to the bird's existence. Many wildlife's captured has been resulted in the decreasing amount. White-eared Night Heron was so rare that it will be more danger. The species fate is worried.

The productive activities of human keep extending. The soils and water resources were exploited in an extensive, unadvisable way. These actions have threats to the habitat and feeding places of White-eared Night Heron.

Because of these threats, the habitats of White-eared Night Heron are keeping in the situation of ruin. The fragmented landscape is becoming more serious. And the population is decreasing.

5. Suggestions

Base on the up-to-date existent status of white-eared Night Heron, the primarily works are to reinforce the conservation of the confirmed distribution sites, carry further survey on the habitat requirements of the white-eared Night Heron, forbid the damage and try to recover the resources. All these works are tried to prevent the species disappear from Guangxi. So we suggest some works must be done for the proposed reserves.

- (1) In the confirmed distribution sites of White-eared Night Heron, the survival broad-leaved forest, coniferous-broadleaved mixed forest needing to protect efficiently and doing some appropriate restores in the conditional places, such as close the land for reforestation, forbid people fell forest. Therefore, we can protect the habitat and breeding places of the White-eared Night Heron.
- (2) To strengthen the conversation, study and create a relevant detailed law and code which can put into practice to forbid the hunting, felling and unlawful actions. Although there are many laws and codes to protect the wildlife, but the conditions are very common that it is not strict in applying and executing the law, especially in the remote mountain areas. If the conditions didn't change, we would not forbid the catching and hunting efficiently, and even not to restore the species of White-eared Night Heron.
- (3) To suggest the local governments to carry out their functions sufficiently, put the forbidding law into practice, and restrict the productive activities appropriately in the existent areas where White-eared Night Heron lives. We also try to lead the people to utilize the earth, vegetation, and water resource reasonably so as to reach the aim of efficient and persistent utilization. Then, we can accelerate the conservation of the

species.

- (4) To serve a publicity event on promoting environmental education to the local people. In some places, the local people have realized the importance of the White-eared Night Heron's conservation. In order to let them list the conservation of the species into village regulations in self-awareness, we still need to keep providing the environmental education, and the education will act more important role in the Shangxi, Fusui and Shanglin distribution sites. For example, we can present the conservation lecture, make the press on blackboard, or print and distribute the booklet to declare the conservation. Through these declarations, let more people join in the protective procession in their own consciousness and actions.
- (5) Because the population and the existent status of White-eared Night Heron still in the disadvantageous situation, it's very important to make further survey on its distributions, especially survey the surrounding areas of the new distribution site, and search for the bird's habitat place. Only by this way, can we create a scientific and efficient conservation plans for the new distribution site.

All the suggestions are based on the survey on the existent status and habitat requirements of White-eared Night Heron in south Guangxi. It needs the frequent sustain and help of the government to put into practice. At the same time, it also needs the BP, Birdlife and FFI's concern to carry the further survey smoothly, and saving the critically endangered species together.

6. Thanks

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8. Appendix

8.1 Photographer: 1-5. Birds 1 to 5

6. A press on blackboard appealed the people to protect the bird which made by the Shangsi government
7. Camping in the field
8. Setting the emitter of radio-tracking on the bird
- 9 Carrying the radio-tracking
10. Going to use the voice playback
11. Walk in the sludge
12. Survey on boat
13. Interview with local people
14. The phenomenon of felled camphor trees and dug the roots out
15. Survey areas' landscape
16. The new distribution site's landscape
17. The Moutang pond in the new distribution site
18. The excretions of Heron birds in Moutang pond

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