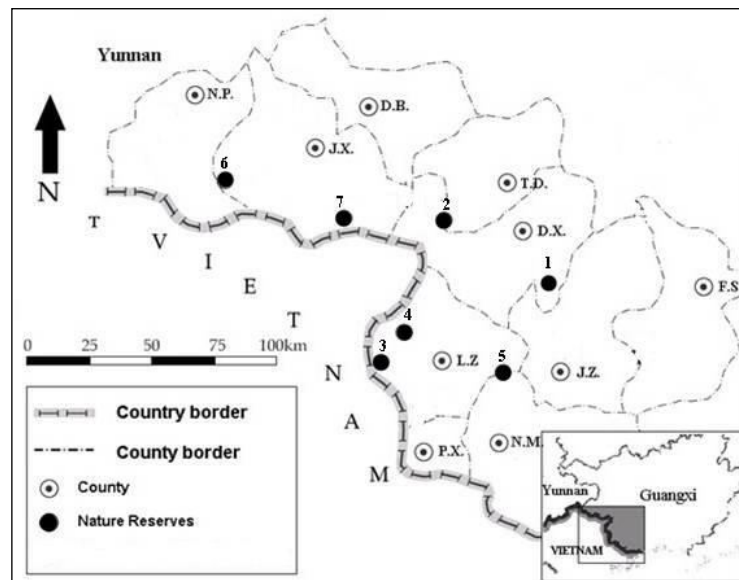


Surveys of bird diversity in karst area of Southwest Guangxi, China



The survey site distribution of limestone region in southwest of Guangxi county

Shu Xiaolian

Surveys of birds diversity in karst area of Southwest Guangxi, China

Summary

From November 2009 to December 2010, we conducted a survey about birds' diversity in karst area of Southwest Guangxi Zhuang autonomous region, China. The survey area included seven Nature reserve in three countries of this area. The survey was respectively conducted in summer and in winter.

Our team is made up of 9 postgraduate students of Guangxi University, College of Forestry and College of Animal Science and Technology; major in Conservation Biology and Zoology.

The length of this survey is 200.5 km. 8291 birds of 189 species were counted including 3683 birds of 129 species in summer and 4608 birds of 152 species in winter.

During this survey, one near threatened species and one vulnerable species were documented. They were Nonggang Babbler *Stachyris nonggangensis* (NT) and White-gorgetted (Brown-chested) Jungle Flycatcher *Rhinomyias brunneatus* (VU).

1 Introduction

The karst area of Southwest Guangxi stretch across north tropical zone and south subtropical zone. It is one of the most typical and concentrated distribution areas of karst landform in China even in the world. Its gross area is 2.13 million hectares. The distribution of vegetation from south to north is seasonal rain forest, evergreen and deciduous broadleaved mixed forest with tropical component, and evergreen and deciduous broadleaved mixed forest. The forest area is 963900 hectares taking up 52% of this area's gross area. The representative vegetation of limestone mountain land in the south is limestone evergreen monsoon forest. In the karst mountain land of the middle part and the north, the representative vegetation is limestone evergreen and deciduous broadleaved mixed forest. Due to the influence of human beings' long-term unreasonable use, the primary forest vegetations in karst area have been destroyed to varying degrees. At present, except the small part of primary forest vegetations preserved in Nature reserve, and "geomantic omen" forest around the village which can hardly reflect the trace of native vegetation, the rest large area of vegetation is cany thorn bushes. The survey sites of this project refer to figure 1, survey date of each Nature reserve in table 1.

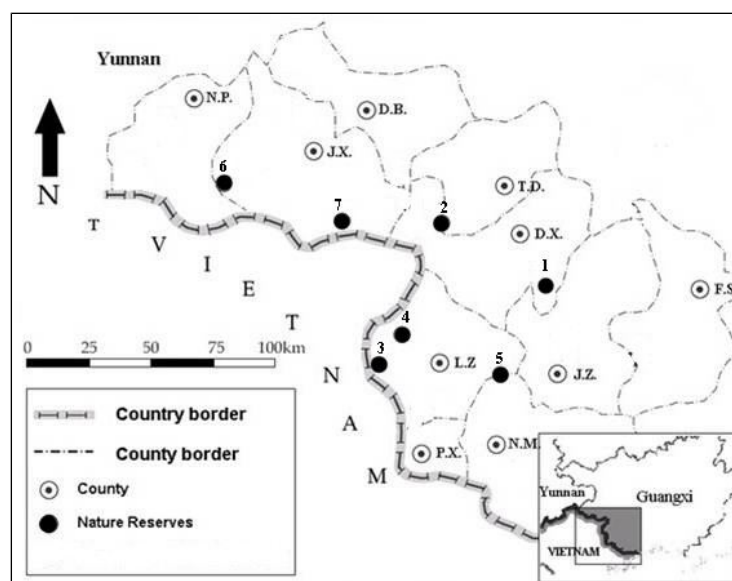


Figure 1 The survey sites distribution of limestone region in southwest of Guangxi county: N.P., Napo; J. X., Jingxi; D. B., Debao; T. D., Tiandeng; D.X., Daxin; L.Z., Longzhou; P.X., Pingxiang; N.M., Ningming; J.Z., Jiangzhou; F.S., Fusui

Table 1 The sites and date of the survey

No.	site	coordinates	county	date
1	Encheng NR	22°37'~22°40'N, 106°58'~107°05'E	Daxin	2010.1.29-2010.2.1; 2010.6.9-6.11
2	Xialei NR	22°24'~22°28'N, 106°04'~106°48'E	Daxin	2010.2.2-2010.2.4; 2010.6.9-6.11
3	Chunxiu NR	22°22'~22°32'N, 106°32'~106°36'E	Longzhou	2009.11.19-2009.11.22; 2010.6.26- 6.29
4	Qinglong Mountain NR	22°27'~22°40'N, 106°32'~106°53'E	Longzhou	2009.11.22-2009.11.25; 2010.6.30- 7.4
5	Nonggang	22°14'~22°33'N, 106°42'~107°05'E	Longzhou	2010.4.30-2010.5.4; 2010.11.16- 11.22
6	Diding	22°06'~23°09'N, 105°57'~106°59'E	Jingxi	2010.1.13-2010.1.15; 2010.5.28-30;
7	Bangliang	22°55'~22°57'N, 106°20'~106°30'E	Jingxi	2010.1.16-2010.1.18; 2010.5.30-6.1

The numbers of the survey sites are corresponded to the numbers in table 1

2 Project objectives

The project will focus on the bird diversity of the karst area of Southwest Guangxi, China.

3 Methods

Using the **Distance Sampling** method, observe transect line within 50 meters on both sides and the aerial birds with binocular. Survey in pairs or groups of three. The species and amount of birds were documented separately by two people. When the data was gathered, the individual amount of single species should be taken from the maximum observing number of this species. The sample line was set along the path of the Nature reserve, 8-12 sample lines in each Nature reserve; every line was about 2-3 km long. The survey was proceeding separately in summer and in winter.

4 Result

Birds' number of species is mostly in Nonggang National nature reserve and Diding Nature reserve, Xialei Nature reserve, Qinglong Mountain Nature reserve and Bangliang Nature reserve take the second place, Encheng Nature reserve and Chunxiu Nature reserve are relatively less. The number of species, number of individuals and the total length of sample line in two seasons refer to table2. The distribution and amount of birds' species refer to table3.

Table 2 Birds' species, quantity and the total length of survey sample line in summer and winter in seven Nature reserve

sites	Sample line length	summer		winter		total	
		species	quantity	species	quantity	species	quantity
1. Encheng	24	38	343	50	410	66	753
2. Xialei	24	54	431	64	556	85	987
3. Chunxiu	30	40	510	51	716	63	1226
4. Qinglong Mountain	30	41	479	60	701	75	1180
5. Nonggang	38.5	77	1276	48	942	96	2218
6. Diding	30	62	455	60	809	90	1264
7. Bangliang	24	36	189	59	474	79	663

Table 2 Distribution and amount of birds' species

Species	Amount		Sites	
	summer	winter	summer	winter
1. Cattle Egret	1	8	5	7
2. Chinese Pond-Heron	19	21	1, 5, 6	1, 2, 4, 7
3. Striated Heron	2	3	6	6, 7
4. Tiger Bittern	3		5	
5. Jerdon's Baza	2		5	
6. Oriental Honey-buzzard	2	1	5	6
7. Black-winged Kite	3		1, 2	
8. Crested Serpent-Eagle	1	2	6	3, 5
9. Chinese Sparrowhawk		1		4
10. Common Buzzard		1		7
11. Common Kestrel	1	4	2	1, 5, 6
12. Eurasian Hobby	1		5	
13. Chinese Francolin	7		1, 2, 7	
14. Brown-breasted Hill Partridge	7	4	5, 6	5
15. Red Junglefowl	11		1, 2, 5	
16. Silver Pheasant		1		7
17. Common Pheasant		5		6
18. Yellow-legged Buttonquail		1		1
19. White-breasted Waterhen	12	11	2, 3, 4	1, 3, 4, 5, 7
20. Green Sandpiper		2		7
21. Common Sandpiper		2		7
22. Oriental Turtle Dove	5	5	1, 2, 6	7
23. Spotted Dove	18	12	1, 3, 7	1, 2, 3
24. Emerald Dove		13		5, 6
25. Indian Cuckoo	10		1, 2, 3, 4, 6, 7	
26. Plaintive Cuckoo	16		1, 2, 3, 4, 5	
27. Drongo Cuckoo	6	1	2, 5	5
28. Asian Koel	7		1, 2, 3, 4, 5, 6	
29. Green-billed Malkoha	4	2	5	2, 5
30. Greater Coucal	17	17	3, 4, 5, 6, 7	1, 2, 3, 4, 6, 7
31. Collared Scops Owl	2	1	5	3
32. Collared Owlet	1		1	
33. Barred Owlet	1	1	5	1
34. Brown Hawk Owl		1		5
35. House Swift	58		1, 3, 4, 6	
36. Red-headed Trogon	14	6	2, 5	2, 5
37. Common Kingfisher	13	14	2, 3, 4, 5, 7	1, 2, 3, 4, 5, 7
38. White-throated Kingfisher	6	3	1, 3, 4, 5	2, 3, 7
39. Pied Kingfisher	2		1	
40. Black-capped Kingfisher	1		5	

Species	Amount		Sites	
	summer	winter	summer	winter
41. Dollarbird	12		5	
42. Eurasian Hoopoe		1		1
43. Greater Barbet	7		2, 3, 4, 5	
44. Speckled Piculet		1		7
45. White-browed Piculet	5	3	5, 6	2, 4, 7
46. Rufous Woodpecker	2		5	
47. Bay Woodpecker	20	10	2, 3, 4, 5, 6	2, 5
48. Long-tailed Broadbill	5		5, 6	
49. Blue-rumped Pitta	2	1	5	5
50. Barn Swallow	174		1, 2, 3, 4, 5, 6, 7	
51. Red-rumped Swallow	62		1, 6, 7	
52. Asian House-Martin		80		3
53. White Wagtail	59	82	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
54. Grey Wagtail	2	13	7	1, 2, 3, 4, 6
55. Richard's Pipit		4		1, 6, 7
56. Tree Pipit		46		1, 2, 3, 4, 5, 7
57. Scarlet Minivet	82	92	1, 2, 3, 4, 7	1, 2, 3, 4, 6
58. Grey-throated Winivet		8		4
59. Brown-backed pied shrike	8		2	
60. Collared Finchbill	14	42	2, 3	2, 3, 6
61. Black-crested Bulbul	22	8	2, 5	2, 5
62. Red-whiskered Bulbul	448	857	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
63. Brown-breasted Bulbul	6	5	6	6
64. Light-vented Bulbul	16	24	1, 2	1, 2
65. Sooty-headed Bulbul	35	63	1, 2, 6, 7	1, 2, 6, 7
66. Flavescent Bulbul		10		6
67. White throated Bulbul	57	64	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6
68. Grey-eyed Bulbul		4		6
69. Chestnut Bulbul	21	15	2, 3, 4, 6, 7	3, 4, 6
70. Mountain Bulbul	52	124	2, 3, 4, 6	2, 6
71. Madagascar Bulbul	76	42	2, 3, 4, 5, 6	1, 2, 3, 4
72. Orange-bellied Leafbird		3		6
73. Tiger Shrike		1		2
74. Brown Shrike		11		1, 2, 4, 5, 6
75. Burmese Shrike	31	36	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
76. Grey-backed Shrike		1		2
77. Black-naped Oriole	1		7	
78. Black Drongo	32		1, 4, 5, 6, 7	
79. Ashy Drongo		2		7
80. Crow-billed Drongo	12		5	
81. Lesser Racquet-tailed Drongo	1	2	6	3, 5
82. Crested Myna	26	16	1, 2, 4, 7	1, 2, 4, 7
83. White-shouldered Starling		3		4

Species	Amount		Sites	
	summer	winter	summer	winter
84. Ashy Woodswallow		6		7
85. Red-billed Blue Magpie	25	12	1, 2, 6	1, 2, 6
86. White-winged Magpie	56	77	3, 5, 6	3, 5, 6, 7
87. Short-tailed Magpie	2	1	5	5
88. Grey Treepie	1	3	6	4
89. Black-billed Magpie	3	10	6	6
90. Large-billed Crow	5	6	2, 3, 4, 5	2,3
91. Rufous-tailed Robin		1		4
92. Orange-flanked Bush-Robin		37		1, 2, 4, 5, 6, 7
93. Oriental Magpie-Robin	49	30	1, 2, 3, 4, 5, 7	1, 2, 3, 4, 7
94. White-rumped Shama		1		4
95. Daurian Redstart		4		2, 6, 7
96. Plumbeous Water-Redstart	3	16	1,	1, 2, 4, 6, 7
97. White-capped Water-Redstart		1		7
98. White-tailed Robin	1	5	5	3, 5
99. Slaty-backed Forktail	9	9	6	6
100. White-crowned Forktail	1		6	6
101. Common Stonechat		25		1, 2, 3, 4, 6, 7
102. Grey Bushchat	2	74	6	1, 2, 3, 4, 5, 6, 7
103. Blue Rock-Thrush		20		1, 2, 3, 5, 7
104. Scaly Thrush		1		5
105. Grey-backed Thrush		4		5
106. Eurasian Blackbird		6		3, 4, 7
107. Eyebrowed Thrush		1		6
108. White-gorgetted Jungle Flycatcher	1		5	
109. Brown-breasted Flycatcher		2		4
110. Rufous-gorgeted Flycatcher		1		4
111. Verditer Flycatcher	1	1	2	7
112. Large Niltava	1		6	
113. Small Niltava	2	4	7	4, 5
114. Fujian Niltava		6		4
115. Hainan Blue-Flycatcher	36		1, 2, 3,4, 5	
116. Grey-headed Canary-Flycatcher	10	13	5, 6	2, 6, 7
117. White-throated Fantail	3	25	6	1, 2, 3, 5, 6, 7
118. Black-naped Monarch	31		2, 3, 4, 5, 6, 7	
119. Asian Paradise-Flycatcher	4		5	
120. Black-throated Laughingthrush	9	1	5, 6	7
121. Hwamei	7	6	2, 3, 4, 6	1, 2, 4
122. White-browed Laughingthrush	14	38	7	2, 7
123. Red-tailed Laughingthrush		2		4
124. Red-faced Liocichla	6		6	
125. Spot-throated Babbler	8		5, 6	
126. Large Scimitar-Babbler	4		5	

Species	Amount		Sites	
	summer	winter	summer	winter
127. Streak-breasted Scimitar Babbler	146	159	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
128. Streaked Wren-Babbler	72	59	3, 4, 5, 7	2, 3, 4, 5, 7
129. Pygmy Wren-Babbler		1		4
130. Rufous-capped Babbler	274	302	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
131. Grey-throated Babbler	48	21	5, 6	4, 5
132. Spot-necked Babbler	7	16	5, 6	3, 5, 7
133. Nonggang Babbler	68	87	5	5
134. Striped Tit-Babbler	90	82	2, 4, 5	2, 4, 5
135. Yellow-eyed Babbler	10	24	5	5
136. Silver-eared Mesia	6	20	6	1, 5, 6
137. Red-billed Leiothrix		44		6
138. Spectacled Barwing	4	21	6	6, 7
139. Blue-winged Minla	4	50	6	6, 7
140. Rusty-capped Fulvetta		5		6
141. Grey-cheeked Fulvetta	335	454	2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
142. Rufous Sibia		25		6
143. Striated Yuhina	96	36	3, 4, 5, 6, 7	3, 6
144. White-bellied Yuhina	63	56	3, 4, 5	3, 4, 5, 6
145. Grey-headed Parrotbill		8		6
146. Hill Prinia	11	6	3, 4, 5, 6, 7	2, 3, 6
147. Rufescent Prinia	7	18	2, 5	2, 5
148. Grey-breasted Prinia	11	10	1, 2, 7	1, 7
149. Yellow-bellied Prinia	27	17	1, 2, 3, 4, 5, 7	1, 2, 3, 4
150. Plain Prinia	34	48	1, 2, 4, 5, 6, 7	1, 2, 4, 6
151. Grey-bellied Tesia		5		3, 5, 7
152. Brownish-flanked Bush-War	3		6, 7	
153. Mountain Tailorbird		3		1, 3, 7
154. Common Tailorbird	74	130	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6, 7
155. Dusky Warbler		17		1, 2, 3, 5, 6, 7
156. Ashy-throated Warbler		1		2
157. Yellow-rumped Warbler		6		3, 4
158. Yellow-browed Warbler		20		1, 3, 4
159. Two-barred Warbler	6	1	5, 7	7
160. Eastern Crowned Warbler		2		4
161. White-tailed Leaf-Warbler		6	5	
162. Sulphur-breasted Warbler	12		2, 5	
163. Golden-spectacled Warbler	28	15	1, 2, 3, 5, 6	3, 4
164. Grey-cheeked Warbler	2		6	
165. Chestnut-crowned Warbler		12		3, 4, 5, 6
166. Rufous-faced Warbler		3		3
167. Yellow-bellied Warbler	10	24	5	2, 5
168. Oriental White-eye		7		6
169. Japanese White-eye	61	97	2, 3, 4, 5	2, 3, 4, 6

Species	Amount		Sites	
	summer	winter	summer	winter
170. Black-throated Tit	3	21	6	2, 3, 7
171. Great Tit	35	86	2, 3, 4, 5, 6	1, 2, 3, 4, 6, 7
172. Yellow-cheeked Tit	6	1	7	7
173. Sultan Tit	22	16	4, 5	1, 4, 5
174. Plain Flowerpecker	4	3	2, 5	1, 2, 4
175. Olive-backed Sunbird	4	4	5	6
176. Mrs Gould's Sunbird	1		7	
177. Fork-tailed Sunbird	8	3	4, 5	1, 2, 4
178. Black-throated Sunbird		37		3, 6
179. Crimson Sunbird	1		7	
180. Streaked Spiderhunter	1	2	6	6
181. Russet Sparrow	32	2	6, 7	6
182. Eurasian Tree Sparrow	18	14	1	1, 7
183. White-rumped Munia	86	68	1, 2, 6	1, 2, 4, 6, 7
184. Scaly-breasted Munia	76	44	1, 2, 6	1, 2, 4, 7
185. Grey-capped Greenfinch		8		2, 4
186. Crested Bunting	40	62	2, 3, 5, 6	1, 2, 3, 4
187. Tristram's Bunting		4		2, 4
188. Little Bunting		40		2, 7
189. Black-faced Bunting		9		2, 7

5 Conclusions

5.1 Evaluation of Nature reserve

In the survey of Nature reserves, we found a large number of species and amount of birds in better preservation of vegetation, standard management, large and contiguous habitat such as Nonggang and Diding Nature reserve, the percentage of forest cover in both Nature reserves is over 95%, human activities and interference are less; the number of bird species is larger than other Nature reserve. Other Nature reserve have of small areas of good vegetation, but most is brush land, Some places of Nature reserve are cut by the roads and also have a few villages, many human activities, county-level Nature reserves lack of managers, shortage of funds, with these problems, protection is difficult to implement. The grazing of goats in Karst area has a great impact on the local vegetation. As we learnt, the amount of macaques in Nature reserves and the surrounding areas is growing rapidly in recent years, they drive away the birds and eat birds' eggs in breeding season and they have interference with the birds which were hatching and breeding.

(1) Encheng Nature reserve

Since the establishment of Nature reserve in the 80's, due to lack of effective management, environmental damage is very serious. Except Rulong, Huguo village are better preserved, most areas don't have Primitive forest. Relatively flat low-lying land have been developed as farmland and is constantly cultivated the hill

causing the fragmentation of animals' habitat. Other than that, illegal quarrying and poaching in Nature reserve often occurred, all the human factors have adversely affected birds and their habitat. There is a large number of macaques in this Nature reserve, they harm to crops frequently.

(2) Xialei Nature reserve

The natural environment in this Nature reserve is relatively good; therefore, it has relatively rich bird resources. But tourism development and urban construction caused certain damage to local natural resources. Some areas develop the mining industry, birds' habitats are encroached, and it has a trend of further compress.

(3) Chunxiu Nature reserve

The main purpose of this Nature reserve is water conservation. Meantime, it also became an important base to protect local plants and animal species. Since the 80s of last century, animal resources and their habitats in Nature reserve are prodigiously damaged by human activities. Even after ten years of afforestation protection, the restoration of vegetation is slow in many of the mountains we observed, native vegetation is seriously damaged, the existing is mainly secondary forest. Some primary vegetation still exists but most are surrounded by agricultural land. The phenomenon of local residents' poaching often occurs.

(4) Qinglong Mountain Nature reserve

The scope of this Nature reserve is established in the early 80s of last century, and it plays an important role in the protection of the local ecological environment and biodiversity. But because the systems were not perfect then, and many current situations were not considered, the scope of protection of Nature reserve was limited. A large part of forests are beyond the Nature reserve. The protection work can not be started smoothly. Therefore, it is hard to manage effectively. In the 90's of last century, animal resources and their habitats in Nature reserve were prodigiously damaged by human activities. The mountain vegetation in many places we observed is relatively simple even after ten years of afforestation protection.

(5) Nonggang National nature reserve

The rate of vegetation coverage is very high, above 95%. The nature reserve management is standardized and has strict management of the entry into protection areas. There are very few human disturbance activities and the vegetation is well-preserved. The number of bird species is the highest in the survey in seven nature reserves. In Nonggang nature reserve we once observed White-gorgetted Jungle Flycatcher, it was the vulnerable species of the IUCN Red List, We observed the swarms of Nonggang Babble activities on the rocks of karst.

(6) Diding Nature reserve

The protection areas are very small, but the rate of vegetation coverage is very high, above 95%. A small part of villagers come into the mountains to collect fungus in winter, except that, there is few vandalism activities. The number of species of the birds is a lot.

(7) Bangliang Nature reserve

Bangliang is the only distribution area of *Nomascus nasutus* in China. Protection areas have good natural environment, and a certain area of native vegetation. Many karst mountains outside the Nature reserve have been cut down in the past. After years of enclose the hills for natural afforestation, the

vegetation has some recovery. But the local residents breed goats, and they often graze to the edge of Nature reserve, and even go into the Nature reserve, eating the leaves of plants, it has great impact on the recovery of local vegetation.

5.2 Observations around the Nature reserve

Deforestation, cultivation, quarrying, road construction, large-scale industrial projects, rural urbanization have adverse impact on birds and their habitats. Some transport, tourism construction projects failed to put the biodiversity protection into an important position. A small number of highway route cut relatively complete forest into plaques. Blindness development of tour project directly leads to the damage of biodiversity.

5.3 Environment pollution

The house refuse and industrial effluent comes from paper making, ore dressing, smelting, sugaring and other industries could not be effectively dealt with, many of which were directly discharged into rivers. That pollutes the water, and leads the significant reduction of fish, shrimps, amphibians and reptiles, and also reduce the food source of birds.

5.4 Biological invasion

In karst area of Southwest Guangxi, fragrant eupatorium herb, crofton weed and other foreign species' invasion phenomenon is pretty serious. It threats and hinder the growth of native vegetation and changes the original vegetation structure. Single foreign species becomes a dominant species, and birds do not take these plants for food, and even rarely come to these areas.

6 Recommendations

Although the local people's protection awareness has increased, it is still not strong. We should focus on preventing new man-made ecological damage, and improve community co-management model of Nature reserve's management, so that local people can participate in the daily management of Nature reserve. By the co-construction of the community, improve people's living conditions standards in the community, ease the contradiction of natural resource use between Nature reserve and community, promote sustainable development of Nature reserve and the local economy. Relevant policy should be taken to solve the problems of residents' life in Nature reserve, to content their necessary living conditions, to fundamentally solve the phenomenon that local residents benefit from the Nature reserve. Strengthen the protection and management of environment in agriculture, forestry, animal husbandry, mining, water, tourism and other resource development activities.

Appendix: Survey report of Seven nature reserve

(1) Encheng nature reserve (Daxin county)

1. Survey date

2010.1.29-2010.2.1; 2010.6.9-6.11

2. Investigators

Shu Xiaolian, Du Yin, Li Yilin, Li Dong, Yu Chenxing, Yang Gang, Li Zhaotian, Jiang Guangwei

3. Results

We recorded 66 species, number for 753; including 343 birds of 38 species in summer and 410 birds of 50 species in winter.

Species	Water area		Farmland		Scrub		Forest	
	summer	winter	summer	winter	summer	winter	summer	winter
1. Chinese Pond-Heron			4	1				
2. Black-winged Kite			2					
3. Common Kestrel				2				
4. Chinese Francolin			2					
5. Red Junglefowl							1	
6. Yellow-legged Buttonquail				1				
7. White-breasted Waterhen		1						
8. Oriental Turtle Dove							2	
9. Spotted Dove			6	4				
10. Indian Cuckoo					2			
11. Plaintive Cuckoo					4			
12. Asian Koel					1			
13. Greater Coucal				3				
14. Collared Owlet					1			
15. Barred Owlet						1		
16. HouseSwift			20					
17. Common Kingfisher		3						
18. White-throated Kingfisher			2					
19. Pied Kingfisher	2							
20. Eurasian Hoopoe						1		
21. Barn Swallow			24					
22. Red-rumped Swallow			10					
23. White Wagtail			6	4				
24. Grey Wagtail		2		1				
25. Richard's Pipit				2				
26. Tree Pipit				12				
27. Scarlet Minivet							20	8
28. Red-whiskered Bulbul				38	44	84		
29. Light-vented Bulbul			8	12				
30. Sooty-headed Bulbul				10	22			

Species	Water area		Farmland		Scrub		Forest	
	summer	winter	summer	winter	summer	winter	summer	winter
31.White claroated Bulbul							6	4
32.Madagascar Bulbul								12
33.Brown Shrike				1				
34.Burmese Shrike			8	5				
35.Black Drongo			14					
36.Crested Myna			6	4				
37.Red-billed Blue Magpie							10	6
38. Orange-flanked Bush-Robin						2		
39.Oriental Magpie-Robin			2	2	6	3		
40.Plumbeous Water-Redstart	3	2						
41.Common Stonechat				4				
42.Grey Bushchat				4		6		
43.Blue Rock-Thrush				3				
44.Hainan Blue-Flycatcher							2	
45.White-throated Fantail								1
46.Hwamei						3		
47.Streak-breasted Scimitar Babbler					6	5	2	4
48.Rufous-capped Babbler					10	8	15	18
49.Silver-eared Mesia								8
50.Grey-cheeked Fulvetta						12		
51. Grey-breasted Prinia			4	6				
52.Yellow-bellied Prinia					4	2		
53.Plain Prinia			2	1	2	2		
54.Mountain Tailorbird						1		
55.Common Tailorbird			10	12	8	6	2	4
56.Dusky Warbler						1		2
57.Yellow-browed Warbler						2		
58. Golden-spectacled Warbler					4			
59.Great Tit				2		18		4
60.Sultan Tit								2
61.Plain Flowerpecker								1
62.Fork-tailed Sunbird								1
63.Eurasian Tree Sparrow			18	6				
64.White-rumped Munia			6	4				
65.Scaly-breasted Munia			10	18				
66.Crested Bunting				8				

(2) Xialei nature reserve (Daxin county)

1. Survey date

2010.2.2-2010.2.4; 2010.6.9-6.11

2. Investigators

Li Dong, Yu Chenxing, Yang Gang, Xu Liang

3. Results

We recorded 85 species, number for 987; including 431 birds of 54 species in summer and 556 birds of 64 species in winter.

	species	water area		farmland		scrub		forest	
		summer	winter	summer	winter	summer	winter	summer	winter
1.	Chinese Pond-Heron		8						
2.	Black-winged Kite			1					
3.	Common Kestrel			1					
4.	Chinese Francolin					3			
5.	Red Junglefowl							2	
6.	White-breasted Waterhen	2							
7.	Oriental Turtle Dove							2	
8.	Spotted Dove				2		2		
9.	Indian Cuckoo							1	
10.	Plaintive Cuckoo			2					
11.	Drongo Cuckoo							2	
12.	Asian Koel							1	
13.	Green-billed Malkoha						1		
14.	Greater Coucal				1				
15.	Red-headed Trogon							4	2
16.	Common Kingfisher	4	2						
17.	White-throated Kingfisher				1				
18.	Greater Barbet							2	
19.	White-browed Piculet						1		
20.	Bay Woodpecker							6	4
21.	Barn Swallow			20					
22.	Red-rumped Swallow			12					
23.	White Wagtail		2	8	5				
24.	Grey Wagtail		2						
25.	Tree Pipit				6				
26.	Scarlet Minivet							28	20
27.	Brown-backed pied shrike					8			
28.	Collared Finchbill							4	8
29.	Black-crested Bulbul							10	6
30.	Red-whiskered Bulbul				32	48	88		
31.	Light-vented Bulbul					8	12		
32.	Sooty-headed Bulbul					5	20		

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	winter
75. Black-throated Tit						1		
76. Great Tit					4	8		
77. Plain Flowerpecker							2	1
78. Fork-tailed Sunbird								1
79. White-rumped Munia			20			2		
80. Scaly-breasted Munia			16	10				
81. Grey-capped Greenfinch						4		
82. Crested Bunting			12	18				
83. Tristram's Bunting						3		
84. Little Bunting				20				
85. Black-faced Bunting	0	0	0	4	0	0	0	0

(3) Chunxiu nature reserve (Longzhou county)

1. Survey date

2009.11.19-2009.11.21; 2010.6.26-6.29

2. Investigators

Yang Gang, Li Zhaotian, Jiang Guangwei

3. Results

We recorded 63 species, number for 1226; including 510 birds of 40 species in summer and 716 birds of 51 species in winter.

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
1. Crested Serpent-Eagle								1
2. White-breasted Waterhen	4	2						
3. Spotted Dove			6	4				
4. Indian Cuckoo					2			
5. Plaintive Cuckoo					1			
6. Asian Koel					1			
7. Greater Coucal			2	3				
8. Collared Scops Owl								1
9. HouseSwift			12					
10. Common Kingfisher	2	3						
11. White-throated Kingfisher				1				
12. Greater Barbet							1	
13. Bay Woodpecker							2	
14. Barn Swallow			20					
15. Asian House-Martin				80				
16. White Wagtail			6	13				
17. Grey Wagtail		2						

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
18. Tree Pipit					6			
19. Scarlet Minivet						8	12	
20. Collared Finchbill						10	6	
21. Red-whiskered Bulbul			26	67	88	140		
22. White throated Bulbul						5	9	
23. Chestnut Bulbul						4	1	
24. Mountain Bulbul						8		
25. Madagascar Bulbul						6	2	
26. Burmese Shrike			2	5	1	3		
27. Lesser Racquet-tailed Drongo								1
28. White-winged Magpie							16	11
29. Large-billed Crow							2	2
30. Oriental Magpie-Robin			2	2	6	1		
31. White-tailed Robin								1
32. Common Stonechat				4				
33. Grey Bushchat				6				
34. Blue Rock-Thrush				1				
35. Eurasian Blackbird				2				
36. Hainan Blue-Flycatcher							6	
37. White-throated Fantail								2
38. Black-naped Monarch							4	
39. Hwamei					2			
40. Streak-breasted Scimitar Babbler					14	12	10	6
41. Streaked Wren-Babbler							6	3
42. Rufous-capped Babbler			6	18	20	27	18	15
43. Spot-necked Babbler								2
44. Grey-cheeked Fulvetta					30	50	44	37
45. Striated Yuhina							20	16
46. White-bellied Yuhina							15	5
47. Hill Prinia					2	1		
48. Yellow-bellied Prinia			2	5	4	1		
49. Plain Prinia			2	4	6	1		
50. Grey-bellied Tesia								1
51. Mountain Tailorbird								1
52. Common Tailorbird			2	5	10	8	2	4
53. Dusky Warbler								3
54. Yellow-rumped Warbler						3		
55. Yellow-browed Warbler						4		4
56. Golden-spectacled Warbler					4	1	6	6
57. Chestnut-crowned Warbler						3		5
58. Rufous-faced Warbler								3
59. Japanese White-eye					12	20	8	2

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
60. Black-throated Tit								6
61. Great Tit					6	8		
62. Black-throated Sunbird								2
63. Crested Bunting	0	0	6	30	0	0	0	0

(4) Qinglong Mountain nature reserve (Longzhou county)

1. Survey date

2009.11.22-2009.11.25; 2010.6.30-7.4

2. Investigators

Yang Gang, Li Zhaotian, Jiang Guangwei

3. Results

We recorded 75 species, number for 1180; including 479 birds of 41 species in summer and 701 birds of 60 species in winter.

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
1. Chinese Pond-Heron		6						
2. Chinese Sparrowhawk								1
3. White-breasted Waterhen	6	4						
4. Indian Cuckoo			1					
5. Plaintive Cuckoo			2					
6. Asian Koel							1	
7. Greater Coucal			3	4				
8. HouseSwift			8					
9. Common Kingfisher	1	1						
10. White-throated Kingfisher	2							
11. Greater Barbet							2	
12. White-browed Piculet					1			
13. Bay Woodpecker							2	
14. Barn Swallow			40					
15. White Wagtail		6	10	13				
16. Grey Wagtail		2		1				
17. Tree Pipit					1			
18. Scarlet Minivet							22	40
19. Grey-throated Winivet								8
20. Red-whiskered Bulbul			20	38	60	50		
21. White throated Bulbul							12	29
22. Chestnut Bulbul							8	10
23. Mountain Bulbul							6	
24. Madagascar Bulbul							10	8
25. Brown Shrike				2				

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
26. Burmese Shrike			2	6	1	2		
27. Black Drongo			8					
28. Crested Myna			6	2				
29. White-shouldered Starling				3				
30. Grey Treepie								3
31. Large-billed Crow							1	
32. Rufous-tailed Robin								1
33. Orange-flanked Bush-Robin						8		5
34. Oriental Magpie-Robin			2	4	5	6		
35. White-rumped Shama						1		
36. Plumbeous Water-Redstart		2						
37. Common Stonechat				4				
38. Grey Bushchat				4		2		
39. Eurasian Blackbird				2				
40. Brown-breasted Flycatcher						2		
41. Rufous-gorgeted Flycatcher								1
42. Small Niltava						1		1
43. Fujian Niltava								6
44. Hainan Blue-Flycatcher					4			
45. Black-naped Monarch							6	
46. Hwamei					2	1		
47. Red-tailed Laughingthrush								2
48. Streak-breasted Scimitar Babbler				2	10	13	8	14
49. Streaked Wren-Babbler					6	4		
50. Pygmy Wren-Babbler								1
51. Rufous-capped Babbler				6	20	24	15	16
52. Grey-throated Babbler						1		4
53. Striped Tit-Babbler							12	8
54. Grey-cheeked Fulvetta					28	52	33	53
55. Striated Yuhina							10	
56. White-bellied Yuhina							6	18
57. Hill Prinia					2			
58. Yellow-bellied Prinia			6	2	4	6		
59. Plain Prinia			8	20	2	10		
60. Common Tailorbird			2	5	10	16	6	12
61. Yellow-rumped Warbler						3		
62. Yellow-browed Warbler						5		5
63. Eastern Crowned Warbler								2
64. Golden-spectacled Warbler						6		2
65. Chestnut-crowned Warbler						1		
66. Japanese White-eye					5	8	20	38
67. Great Tit				8	5	10		

species	water area		farmland		scrub	forest	
	summer	winter	summer	winter		summer	winter
68. Sultan Tit						6	4
69. Plain Flowerpecker							1
70. Fork-tailed Sunbird					1	2	
71. White-rumped Munia				5	4		
72. Scaly-breasted Munia				6			
73. Grey-capped Greenfinch				4			
74. Crested Bunting				6			
75. Tristram's Bunting	0	0	0	0	0	1	0

(5) Nonggang National nature reserve (Longzhou county)

1. Survey date

2010.4.30-2010.5.22;2010.11.16-11.22

2. Investigators

Yang Gang, Li Zhaotian, Li Dong, Yu Chenxing, Jiang Guangwei

3. Results

We recorded 96 species, number for 2218; including 1276 birds of 77 species in summer and 942 birds of 48 species in winter.

species	water area		farmland		scrub	forest	
	summer	winter	summer	winter		summer	winter
1. Cattle Egret						1	
2. Chinese Pond-Heron	1		12				
3. Tiger Bittern						3	
4. Jerdon's Baza						2	
5. Oriental Honey-buzzard						2	
6. Crested Serpent-Eagle							1
7. Common Kestrel				1			
8. Eurasian Hobby			1				
9. Brown-breasted Hill Partridge						1	4
10. Red Junglefowl						8	
11. Silver Pheasant						M	
12. White-breasted Waterhen		1					
13. Emerald Dove							3
14. Plaintive Cuckoo			3		4		
15. Drongo Cuckoo						4	1
16. Asian Koel						2	
17. Green-billed Malkoha						4	1
18. Greater Coucal						6	
19. Collared Scops Owl						2	
20. Barred Owlet						1	

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
63. Spot-throated Babbler					4			
64. Large Scimitar-Babbler							4	
65. Streak-breasted Scimitar Babbler					32	18	42	22
66. Streaked Wren-Babbler					8	4	48	44
67. Rufous-capped Babbler			40	48	36	25	56	44
68. Grey-throated Babbler					6		28	16
69. Spot-necked Babbler					6	2		
70. Nonggang Babbler					18	12	50	75
71. Striped Tit-Babbler					20	16	42	30
72. Yellow-eyed Babbler			8	24	2			
73. Silver-eared Mesia								6
74. Grey-cheeked Fulvetta					54	45	82	90
75. Striated Yuhina							60	
76. White-bellied Yuhina							42	30
77. Hill Prinia					2			
78. Rufescent Prinia			4	10	2	6		
79. Yellow-bellied Prinia			4					
80. Plain Prinia			6					
81. Grey-bellied Tesia								3
82. Common Tailorbird			4	10	8	12		
83. Dusky Warbler								4
84. Two-barred Warbler							2	
85. White-tailed Leaf-Warbler								6
86. Sulphur-breasted Warbler							8	
87. Golden-spectacled Warbler							4	
88. Chestnut-crowned Warbler								2
89. Yellow-bellied Warbler				6	8	6	2	
90. Japanese White-eye					8			
91. Great Tit					6			
92. Sultan Tit							16	10
93. Plain Flowerpecker							2	
94. Olive-backed Sunbird					4			
95. Fork-tailed Sunbird							6	
96. Crested Bunting	0	0	8	0	0	0	0	0

species	water area		farmland		scrub	forest		
	summer	winter	summer	winter	summer	winter	summer	
33. Orange-bellied Leafbird							3	
34. Brown Shrike				2				
35. Burmese Shrike			8	4				
36. Black Drongo			7					
37. Lesser Racquet-tailed Drongo						1		
38. Red-billed Blue Magpie						1	2	
39. White-winged Magpie						8	20	
40. Grey Treepie						1		
41. Black-billed Magpie			3	10				
42. Orange-flanked Bush-Robin					3			
43. Daurian Redstart				1				
44. Plumbeous Water-Redstart		1						
45. Slaty-backed Forktail	9	9						
46. White-crowned Forktail	1							
47. Common Stonechat				3				
48. Grey Bushchat			2	7	2			
49. Eyebrowed Thrush							1	
50. Large Niltava						1		
51. Grey-headed Canary-Flycat						2	8	
52. White-throated Fantail						3	2	
53. Black-naped Monarch						2		
54. Black-throated Laughingthrush						8		
55. Hwamei						2		
56. Red-faced Liocichla						6		
57. Spot-throated Babbler					4			
58. Streak-breasted Scimitar Babbler					1	5	2	8
59. Rufous-capped Babbler					3	5	4	12
60. Grey-throated Babbler							14	
61. Spot-necked Babbler					1			
62. Silver-eared Mesia							6	6
63. Red-billed Leiothrix								44
64. Spectacled Barwing					4	10		3
65. Blue-winged Minla							4	44
66. Rusty-capped Fulvetta						5		
67. Grey-cheeked Fulvetta					8	30		25
68. Rufous Sibia								25
69. Striated Yuhina							2	20
70. White-bellied Yuhina								3
71. Grey-headed Parrotbill								8
72. Hill Prinia			2	2	2	2		
73. Plain Prinia			2	4		2		
74. Brownish-flanked Bush-War					1			

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
75. Common Tailorbird			2	4	1	6	6	
76. Dusky Warbler					2		2	
77. Golden-spectacled Warbler						4		
78. Grey-cheeked Warbler						2		
79. Chestnut-crowned Warbler							1	
80. Oriental White-eye					2		5	
81. Japanese White-eye					2		7	
82. Black-throated Tit					3			
83. Great Tit			10	5	5			
84. Olive-backed Sunbird					2		2	
85. Black-throated Sunbird					20		15	
86. Streaked Spiderhunter						1	2	
87. Russet Sparrow			26	2				
88. White-rumped Munia			60	50				
89. Scaly-breasted Munia			50					
90. Crested Bunting	0	0	14	0	0	0	0	

(7) Bangliang nature reserve (Jingxi county)

1. Survey date

2010.1.16-2010.1.18; 2010.5.30-6.1

2. Investigators

Li Dong, Yu Chenxing, Yang Gang, Tang Lingxue

3. Results

We recorded 79 species, number for 663; including 189 birds of 36 species in summer and 474 birds of 59 species in winter.

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
1. Cattle Egret		8						
2. Chinese Pond-Heron		6						
3. Striated Heron		2						
4. Common Buzzard				1				
5. Chinese Francolin					2			
6. Silver Pheasant							1	
7. White-breasted Waterhen		2		1				
8. Green Sandpiper		2						
9. Common Sandpiper		2						
10. Oriental Turtle Dove				5				
11. Spotted Dove			6					

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
12. Indian Cuckoo			2					
13. Greater Coucal			3	5				
14. Common Kingfisher	2	3						
15. White-throated Kingfisher				1				
16. Speckled Piculet								1
17. White-browed Piculet					1			
18. Barn Swallow			20					
19. Red-rumped Swallow			10					
20. White Wagtail		6	9	24				
21. Grey Wagtail	2							
22. Richard's Pipit				1				
23. Tree Pipit				8	1			
24. Scarlet Minivet							4	
25. Red-whiskered Bulbul			4	14	10	4		
26. Sooty-headed Bulbul				10	4	13		
27. Chestnut Bulbul							1	
28. Burmese Shrike			2	4		1		
29. Black-naped Oriole							1	
30. Black Drongo			1					
31. Ashy Drongo								2
32. Crested Myna			10	8				
33. Ashy Woodswallow								6
34. White-winged Magpie						8		10
35. Orange-flanked Bush-Robin				1		2		
36. Oriental Magpie-Robin			2	4	4	3		
37. Daurian Redstart						2		
38. Plumbeous Water-Redstart		9						
39. White-capped Water-Redstart		1						
40. Common Stonechat				6				
41. Grey Bushchat				14		12		
42. Blue Rock-Thrush				2		3		
43. Eurasian Blackbird				2				
44. Verditer Flycatcher						1		
45. Small Niltava							2	
46. Grey-headed Canary-Flycat								1
47. White-throated Fantail								2
48. Black-naped Monarch							1	
49. Black-throated Laughingthrush								1
50. White-browed Laughingthrush			8	16	6	14		
51. Streak-breasted Scimitar Babbler					2	12		22
52. Streaked Wren-Babbler							4	2
53. Rufous-capped Babbler					10	15	8	6

species	water area		farmland		scrub		forest	
	summer	winter	summer	winter	summer	winter	summer	
54. Spot-necked Babbler								12
55. Spectacled Barwing					8			
56. Blue-winged Minla								6
57. Grey-cheeked Fulvetta					10	16	6	20
58. Striated Yuhina							4	
59. Hill Prinia					1			
60. Grey-breasted Prinia					5	4		
61. Yellow-bellied Prinia			2					
62. Plain Prinia			1					
63. Grey-bellied Tesia								1
64. Brownish-flanked Bush-War					2			
65. Mountain Tailorbird								1
66. Common Tailorbird				3		2		
67. Dusky Warbler						2		
68. Two-barred Warbler							4	1
69. Black-throated Tit								14
70. Great Tit				12		11		
71. Yellow-cheeked Tit							6	1
72. Mrs Gould's Sunbird							1	
73. Crimson Sunbird							1	
74. Russet Sparrow			6					
75. Eurasian Tree Sparrow				8				
76. White-rumped Munia						3		
77. Scaly-breasted Munia				10				
78. Little Bunting				20				
79. Black-faced Bunting	0	0	0	5	0	0	0	0