Report of a Rapid Biodiversity Assessment at Qinglongshan Headwater Forest Nature Reserve, Southwest Guangxi, China, 24 May 1998

Kadoorie Farm and Botanic Garden
in collaboration with
Guangxi Forestry Department
Guangxi Institute of Botany
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Background

The present report details the findings of a trip to Southwest Guangxi by members of Kadoorie Farm & Botanic Garden (KFBG) in Hong Kong and their colleagues, as part of KFBG's South China Biodiversity Conservation Programme, launched in February 1998. The overall aim of the programme is to minimise the loss of forest biodiversity in the region, and the emphasis in the first phase is on gathering up-to-date information on the distribution and status of fauna and flora.

Citation

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Common geographical descriptions and their Chinese phonetics

English meaning	Chinese phonetics (pinyin)
East	dong
South	nan
West	xi
North	bei
mountain	shan
range	ling
peak	feng, ding
valley	keng, gu
island	dao
river	he, chuan, jiang
stream	xi, yong
lake	hu, chi
sea	hai
harbour	gang
bay	wan
outlet	kou
city	shi
county	xian
village	xiang, cun
hamlet	tun
the Chinese system of geomancy	feng shui

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Objectives

The aims of the survey were to collect up-to-date information on the condition and fauna of Qinglongshan Headwater Forest Nature Reserve, and to use this to help determine conservation priorities within South China.

Methods

Following rapid biodiversity surveys in the Nonggang and Longhu sections of Nonggang National Nature Reserve in Longzhou County, Southwest Guangxi (Kadoorie Farm and Botanic Garden, 2002a), a team comprising staff of KFBG (ML, JRF), Guangxi Institute of Botany (WFN, ZXG), Guangxi Normal University (LLR), and three expert Hong Kong naturalists (GJC, PJL, KW) made a one-day visit to the nearby Qinglongshan Headwater Forest Nature Reserve on 24 May 1998. On 25 May the whole team left Longzhou for Ningming County, to undertake a survey of the Longshan section of Nonggang National Nature Reserve (Kadoorie Farm and Botanic Garden, 2002a).

During fieldwork visual searching for mammals, birds, reptiles, amphibians, fish, ants, butterflies and dragonflies was conducted. The calls of birds and amphibians were also used to survey these groups. No assessment of mammal status was possible. Due to the degraded state of the vegetation encountered, no flora records were made. Records of birds were made or verified by GJC, PJL or KW, reptiles and amphibians by ML, fish by ML and BC, ants by JRF, butterflies by ML and GTR, dragonflies by KW, and rove beetles by GDR, formerly of Hong Kong.

Nomenclature in the report is standardised based, unless otherwise stated, on the following references:

- Birds (Aves): Inskipp *et al*. (1996);
- Reptiles & Amphibians (Reptilia and Amphibia): Zhao E. *et al.* (2000);
- Fish (Actinopterygii): Nelson (1994); Wu *et al.* (1999);
- Ants (Insecta: Hymenoptera: Formicidae): named species according to Bolton (1995); unnamed species with reference numbers according to the collection currently held by KFBG.
- Dragonflies (Insecta: Odonata): Schorr *et al.* (2001a, 2001b);
- Butterflies (Insecta: Lepidoptera): Bascombe (1995);
- Rove Beetles (Insecta: Coleoptera: Staphylinidae): G. de Rougemont (unpublished).

Information on the global status of species is from IUCN publications, notably IUCN Species Survival Commission (2001). Protected status in China is based on Hua & Yan (1993). Most taxa, including reptiles, amphibians, fish and invertebrates, have yet to be properly assessed for global status.

Location and management

Qinglongshan Headwater Forest Nature Reserve is in Longzhou County, Southwest Guangxi, near the Vietnamese border, at 22^{o} 27’ - 22^{o} 29’ N by 106^{o} 32’ - 106^{o} 53’ E. (It is not to be confused with Qinglongshan Nature Reserve in Lingyun County, Guangxi (Zhang, 1998).) It was established in 1982 to protect water catchment forest and rare fauna. It has an area of 151 km^2

and covers an altitude from 300 to 500 m. The landscape is composed of both karst and earth hills. The mean annual temperature is 22°C; annual precipitation is 1,488 - 1,515 mm (Forestry Department of Guangxi Zhuangzu Autonomous Region, 1993). It is a Provincial-level Forest Ecosystem Nature Reserve (Zhang, 1998), and is under the management of the Forestry Bureau.

Results

Vegetation

The zonal vegetation of Qinglongshan is northern tropical monsoon rainforest and the forest cover in the early 1990s was reportedly 59% (Forestry Department of Guangxi Zhuangzu Autonomous Region, 1993). When the KFBG team visited the reserve in May 1998, the vegetation was totally different from that described. Broadleaf forests on the granitic slopes around the reservoir had been completely destroyed, and only young trees and saplings could be seen. On a hill some shrubs remained. According to the local guide, Mr. Huang, Deputy Chairman of the Forestry Bureau, broadleaf forest around the reservoir had been logged to make room for a future China Fir (*Cunninghamia lanceolata*) plantation. There was reportedly some forest cover on the limestone hills farther away but the team could not get there in the time available. No plants of conservation importance were seen on this brief visit, and the remaining flora was not surveyed.

Birds

Twenty-three bird species were recorded on the survey day (Table 1).

Table 1. Bird species recorded at Qinglongshan, 24 May 1998. Sequence follows Clements (2000).

Scientific name	English name
Ixobrychus cinnamomeus	Cinnamon Bittern
Centropus sinensis	Greater Coucal
Centropus bengalensis	Lesser Coucal
Hirundo rustica	Barn Swallow
Pycnonotus melanicterus	Black-crested Bulbul
Pycnonotus jocosus	Red-whiskered Bulbul
Pycnonotus aurigaster	Sooty-headed Bulbul
Alophoixus pallidus	Puff-throated Bulbul
Hemixos castanonotus	Chestnut Bulbul
Hypsipetes leucocephalus	Black Bulbul
Prinia hodgsonii	Grey-breasted Prinia
Orthotomus sutorius	Common Tailorbird
Hypothymis azurea	Black-naped Monarch
Garrulax canorus	Hwamei
Pomatorhinus hypoleucos	Large Scimitar Babbler
Pnoepyga pusilla	Pygmy Wren Babbler
Stachyris ruficeps	Rufous-capped Babbler
Macronous gularis	Striped Tit Babbler
Timalia pileata	Chestnut-capped Babbler
Nectarinia jugularis	Olive-backed Sunbird
Dicaeum concolor	Plain Flowerpecker
Zosterops palpebrosus	Oriental White-eye
Lanius cristatus	Brown Shrike

Greater Coucal *Centropus sinensis* and Lesser Coucal *Centropus bengalensis* are Class II Protected Species in China. Chestnut-capped Babbler *Timalia pileata* is rare in South China. Rather few bird species were seen in this visit, although bulbuls and babblers were well represented.

Reptiles and Amphibians

Four species of amphibian and two species of snake were recorded from Qinglongshan Headwater Forest Nature Reserve and the surrounding area (Table 2). The most commonly seen species was *Rana limnocharis* in the paddy fields. None of the six species found during this survey are forest specialists and this reflects the lack of mature forest in the section of the reserve visited.

Table 2. Amphibian and reptile species, Qinglongshan 24 May 1998. Sequence follows Zhao E.-M. & Adler (1993).

Species	**Habitat**	
AMPHIBIA		
Occidozyga lima	paddy field	✓
Rana guentheri	paddy field	✓
	marsh	tadpoles
Rana limnocharis	pool	✓
	paddy field	✓
	shrubland	✓
Microhyla pulchra	pool	tadpoles
	paddy field	✓
	shrubland	✓
REPTILIA		
Ramphotyphlops braminus	shrubland	✓
Amphiesma stolatum	paddy field	✓

Fish

The fish fauna was not surveyed at Qinglongshan but several specimens of a catfish *Leiocassis* (cf. *crassilabris*) sp. were purchased from a fisherman from the nearby Shuikou River. These specimens have not yet been identified and may be of both scientific and conservation interest.

Ants

Thirty-four ant species were recorded from Qinglongshan (Table 3). The most frequently encountered species were *Tapinoma* sp. 1, *Crematogaster* sp. 8, *Odontoponera* sp. 1, *Pheidole* sp. 11, and *Odontomachus monticola*.

Table 3. Ant species at Qinglongshan, 24 May 1998.

Species	**Habitat**
Aenictus (*ceylonicus* group) sp. 1	open shrubland
Anoplolepis gracilipes	agricultural fields
Camponotus (cf. *mitis*) sp. 11	open shrubland/fields
Camponotus nicobarensis	shrubland/fields
Camponotus rufoglaucus	shrubland, agricultural fields
Cataulacus granulatus	shrubland
Crematogaster (cf. *dohrni*) sp. 8	shrubland
Crematogaster (cf. *travancorensis*) sp. 2	shrubland
Diacamma (nr. *rugosum*) sp. 1	shrubland
Dolichoderus sp. 9	shrubland
Gnamptogenys bicolor	shrubland
Meranoplus bicolor	shrubland
Myrmicaria sp. 1	shrubland
Odontomachus monticola	shrubland
Odontoponera (cf. *denticulata*) sp. 1	shrubland
Pachycondyla (cf. *nigrita*) sp. 17	shrubland
Pachycondyla rufipes	shrubland, fields
Paratrechina (cf. *bourbonica*) sp. 4	shrubland
Paratrechina longicornis	open shrubland

Species	Habitat
Paratrechina sauteri	shrubland
Pheidole sp. 11?	shrubland, fields
Pheidole rinae hongkongensis	shrubland
Pheidole (*rinae* group) sp. 9	shrubland
Pheidologeton diversus	agricultural fields
Polyrhachis (cf. *caligata*) sp. 26	shrubland
Polyrhachis halidayi	open shrubland
Polyrhachis tyrannica	fields/shrubland
Pristomyrmex pungens	shrubland
Pseudolasius sp. 1	shrubland
Tapinoma sp. 1	shrubland, fields
Technomyrmex albipes	shrubland
Technomyrmex sp. 6	shrubland
Tetraponera attenuata	shrubland

No strict forest specialists were recorded, although *O. monticola* and *Gnamptogenys bicolor* are generally confined to forest areas. *Polyrhachis* sp. 26 has not been recorded elsewhere in South China, but is known from Southeast Asia (S. Yamane, Kagoshima University, pers. comm., November 2000). *Anoplolepis gracilipes* and *Paratrechina longicornis* are exotic species, native to Africa.

Dragonflies

Only four dragonfly species were recorded (Table 4), none of which is very rare or restricted.

Table 4. Dragonfly species at Qinglongshan, 24 May 1998. Sequence of families follows Schorr *et al*. (2001a, 2001b).

Species
Neurobasis chinensis chinensis
Cratilla lineata lineata
Orthetrum pruinosum
Orthetrum sabina sabina

Butterflies

Sixty-four butterfly species were recorded during this brief survey (Table 5). None are of particular conservation concern, although *Yasoda androconifera* is apparently endemic to Guangxi (Chou, 1994).

Table 5. Butterfly species at Qinglongshan, 24 May 1998. Sequence of families follows Bascombe (1995).

Species	Habitat
Abraximorpha davidii	shrubland
Aeromachus sp.	abandoned field
Astictopterus jama	abandoned field
	shrubland
Erionota torus	shrubland
Notocrypta sp.	shrubland
Parnara ganga	paddy field
Polytremis lubricans	plantation
Potanthus sp.	shrubland
Telicota sp.	shrubland
Graphium doson	shrubland/forest
Graphium sarpedon	shrubland
Lamproptera meges	shrubland
Papilio bianor	shrubland
Papilio (Chilasa) clytia	shrubland
Papilio demoleus	shrubland
Papilio memnon	shrubland

Species	Habitat
Papilio nephelus	shrubland
Papilio paris	shrubland
Papilio polytes	abandoned field
Papilio protenor	shrubland
Pathysa antiphates	shrubland
Delias hyparete	shrubland
Delias pasithoe	plantation
Eurema hecabe	abandoned field
Hebomoia glaucippe	shrubland
Ixias pyrene	shrubland
Pieris (Artogeia) canidia	agricultural field
Pieris (Artogeia) rapae	paddy field
Abisara echerius	shrubland
Heliophorus epicles	shrubland
Miletus boisduvali boisduvali	shrubland
Yasoda androconifera	shrubland
Zemeros flegyas	shrubland
Zizeeria maha	shrubland
Acraea issoria	shrubland
Apatura (Rohana) parisatis	shrubland
Argyreus hyperbius	agricultural field
Athyma asura	shrubland
Athyma selenophora	shrubland
Cethosia cyane evanthes	shrubland
Cyrestis thyodamas	shrubland
Discophora sondaica	forest edge
Euploea core	shrubland

Rove Beetles

One unidentified species of staphylinid beetle, *Paederus* (cf. *alternans* Walk.) sp., was recorded from Qinglongshan, in a marsh.

Summary of vegetation and fauna

Only one day was spent at Qinglongshan and the team failed to locate any mature forest. Broadleaf forests on the granitic slopes around the reservoir had been completely destroyed, and only young trees and saplings could be seen. At the top of a limestone hill on the far side of the reservoir, some shrubs remained. Therefore, the survey results may not be representative of the whole reserve. No information could be obtained on the mammal fauna. The fauna in the part of the reserve surveyed consisted mainly of common and widespread species typical of disturbed habitats. Because of its location, however, it did contain some species near the edge of their range which are therefore rare elsewhere in South China.

Very few aboveground hill streams occurred in the study area due to the porous limestone topography. Thus aquatic habitats were poorly represented in the survey. However, there were some small rivers in the valley.

Unfortunately the rating given by MacKinnon *et al*. (1996), that Qinglongshan Headwater Forest Nature Reserve is of national and potentially global biodiversity importance based on the 59% forest cover, seems no longer applicable.

Threats and problems

It no longer seems appropriate to call the reserve Qinglongshan "Headwater Forest Nature Reserve". Very little if any natural forest is left at Qinglongshan, though good forest was reportedly present only ten years earlier in the area visited. The remaining native vegetation is still being cleared to make way for plantations. Thus any plant and animal species dependent on the continuity of forest habitat have probably been extirpated locally. The remaining fauna and flora consists of adaptable, disturbance-tolerant species, with possibly a few long-lived forest specialist plants which will be unable to replace themselves. The hydrological function of the reserve is likely to have been severely reduced by this deforestation, and will not be fully restored by means of conventional plantations.

Opportunities and recommendations

If Qinglongshan is to serve a function in conservation of water or biodiversity, some fundamental changes are needed. The practice of cutting down secondary forest and turning it into plantation should be stopped completely. Reforestation using native species should be considered on the scrubby slopes. Such habitat restoration might lead to the recovery of forest fauna and flora of good dispersal ability. For others, active reintroduction would be necessary.

Any intact forest remaining in the reserve should be strictly protected. It is suggested that reforestation efforts should attempt to connect up such scattered fragments, to provide ecological corridors for the remaining biota. A full habitat survey and rezoning is obviously required as a prelude to management for conservation. After this survey, the objectives of the reserve would need to be revised. Based on these, programmes of policing, restoration, monitoring, awareness-raising (among staff, residents and visitors) and conflict resolution could be implemented.

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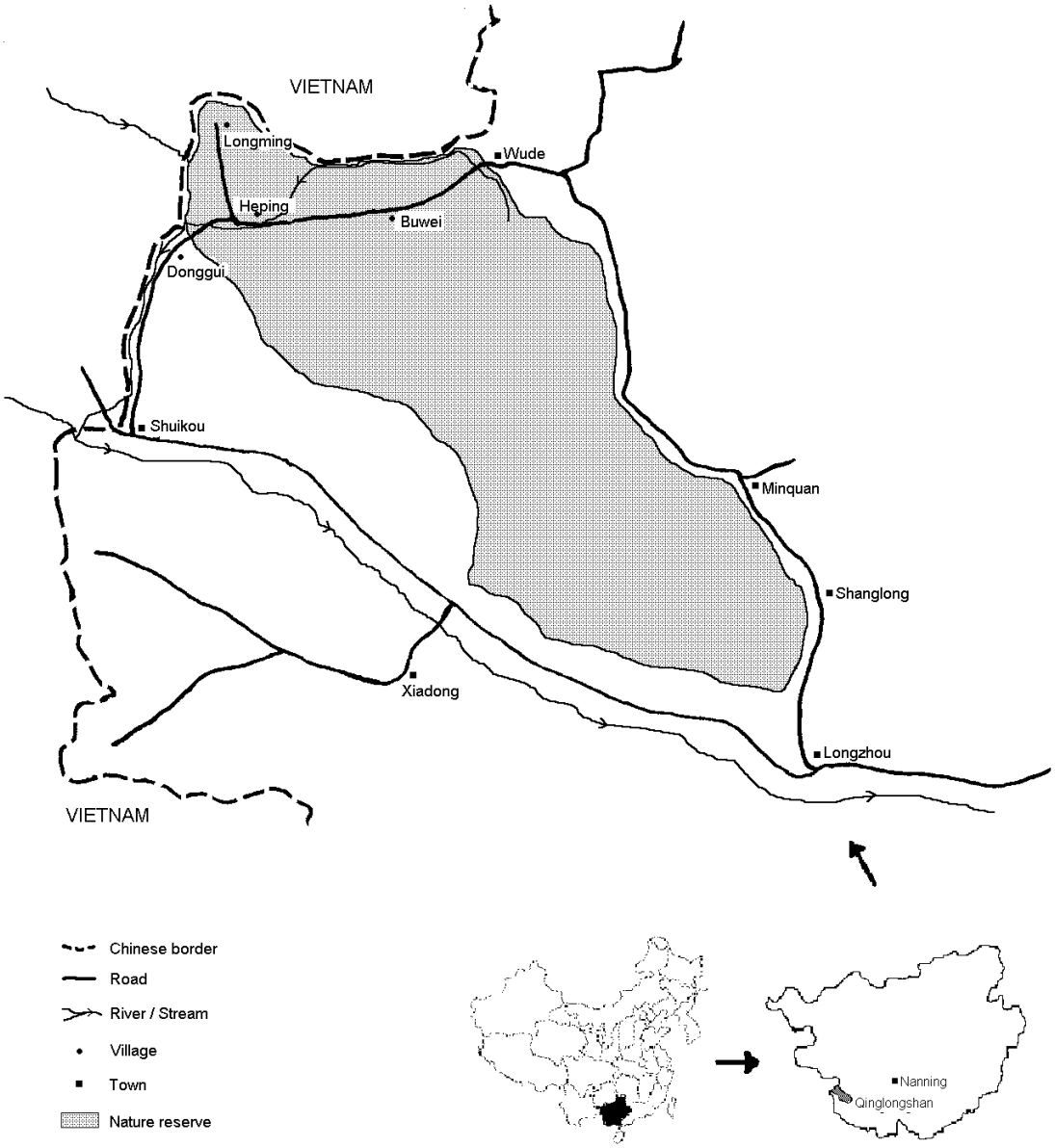

Figure 1. Map showing location of Qinglongshan Headwater Forest Nature Reserve, Southwest Guangxi, China. Not to scale.