



**Report of a Rapid Biodiversity Assessment at
Chunxiu 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
Guangxi Normal University

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

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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.

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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 Chunxiu Headwater Forest Nature Reserve, and to use this to help determine conservation priorities within South China.

Methods

Following rapid biodiversity surveys at Nonggang and Longhu sections of Nonggang National Nature Reserve in Longzhou County, Southwest Guangxi (Kadoorie Farm and Botanic Garden, 2002a), a small team comprising staff of KFBG (BC, BH, LKS) made a one-day visit to the nearby Chunxiu Headwater Forest Nature Reserve on 24 May 1998. At the same time a larger team was surveying part of Qinglongshan Headwater Forest Nature Reserve (Kadoorie Farm and Botanic Garden, 2002b). 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, butterflies and dragonflies was conducted. The calls of birds and amphibians were also used to survey these groups. Estimates of the status of large and medium-sized mammals (excluding Erinaceidae, Talpidae, Soricidae, Muridae and Chiroptera) at Chunxiu were largely based on an interview with reserve warden Mr. Lee, with reference to colour pictures. For these purposes, a list of South China mammals was compiled from various sources including Guangdong Forestry Department & South China Institute of Endangered Animals (1987), Corbet & Hill (1992) and Zhang Y. *et al.* (1997).

Records of birds were made or verified by LKS, reptiles and amphibians by BC and ML, fish by BC, butterflies by BH, GTR and ML, and dragonflies by BH and KW.

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

- Mammals (Mammalia): Wilson & Cole (2000);
- Birds (Aves): Inskipp *et al.* (1996);
- Reptiles & Amphibians (Reptilia and Amphibia): Zhao E. *et al.* (2000);
- Fish (Actinopterygii): Nelson (1994); Wu *et al.* (1999);
- Dragonflies (Insecta: Odonata): Schorr *et al.* (2001a, 2001b);
- Butterflies (Insecta: Lepidoptera): Bascombe (1995).

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

Chunxiu Headwater Forest Nature Reserve is at Longzhou County, Southwest Guangxi, near the Vietnam border, at 22° 22' - 22° 32' N by 106° 32' - 106° 36' E. It was established in 1982 to protect water catchment forest and rare fauna. The area has been reported as 78.7 km² (Forestry Department of Guangxi Zhuang Autonomous Region, 1993; Zhang W., 1998) and 50 km² (MacKinnon *et al.*, 1996). It includes karst landscape with some granitic hills, with an altitude range from 300 to 500 m. The mean annual temperature is between 21.5 and 22.0°C; annual precipitation is 1,488 mm (Forestry Department of Guangxi Zhuang Autonomous Region, 1993). The reserve has no large river; there are two small reservoirs and a stream in the northern part. Chunxiu is listed as a Provincial-level Forest Ecosystem Nature Reserve (Zhang W., 1998), and is under the management of the Forestry Bureau. A nature reserve management station was established in 1985.

Results

Vegetation

The zonal vegetation of Chunxiu Headwater Forest Nature Reserve is northern tropical monsoon limestone rainforest. The forest cover in the early 1990s was given as 45.7 km², or 58.1% (Forestry Department of Guangxi Zhuang Autonomous Region, 1993). However, in 1998 the forests were found to be highly fragmented and degraded. The area surrounding the Chunxiu army base was surveyed. The army base is situated at the summit of Chunxiu, a granitic hill. From there, it appeared that the forests on the Chinese side of the China-Vietnam border were fragmented and degraded but those on the Vietnamese's side were relatively intact. The existing forests around the army base are young secondary forests in a mosaic with grassland, farmland, *Cunninghamia lanceolata* (China Fir) and tea plantations. Common tree species recorded in the young secondary forest on granitic and earth hills included typical pioneers such as *Schefflera octophylla*, *Castanopsis fissa* and *Sapium discolor*. Some *Cinnamomum camphora* trees still existed, which had escaped logging for camphor.

Mammals

No direct records of mammals were made. Reserve warden Mr. Lee was interviewed about the status of mammals, with reference to colour pictures. Table 1 includes species reported to occur at Chunxiu, with an indication of local status based on the interview and on habitat availability.

Table 1. The status of mammals (excluding Erinaceidae, Talpidae, Soricidae, Muridae and Chiroptera) at Chunxiu Nature Reserve, Guangxi, based on an interview with reserve warden Mr. Lee. Species names follow Wilson & Cole (2000); synonyms and names commonly used by Chinese scientists are included in brackets. (“+” = rare, “++” = common, “+++” = abundant)

Scientific name	English name	Mr. Lee	Probable status
<i>Macaca assamensis</i>	Assam Macaque	+	insecure
<i>Prionailurus bengalensis</i> (<i>Felis bengalensis</i>)	Leopard Cat	+	insecure
<i>Herpestes javanicus</i>	Javan Mongoose	+++	present
<i>Herpestes urva</i>	Crab-eating Mongoose	+	insecure
<i>Amblonyx cinereus</i>	Oriental Small-clawed Otter	+	insecure
<i>Lutra lutra</i>	Eurasian Otter	+	insecure
<i>Melogale moschata</i>	Chinese Ferret-badger	+++	present
<i>Paguma larvata</i>	Masked Palm Civet	+++	present
<i>Viverricula indica</i>	Small Indian Civet	+++	present
<i>Sus scrofa</i>	Wild Boar	+++	present
<i>Muntiacus</i> sp.	muntjac sp.	+++	present
<i>Manis pentadactyla</i>	Chinese Pangolin	+	insecure
<i>Callosciurus erythraeus</i>	Pallas's Squirrel	+++	present
<i>Tamiops maritimus</i>	Maritime Striped Squirrel	+++	present

Scientific name	English name	Mr. Lee	Probable status
(<i>T. swinhoei</i>)			
<i>Rhizomys pruinosus</i>	Hoary Bamboo Rat	+++	present
<i>Hystrix brachyura</i> (<i>H. hodgsoni</i>)	Malayan Porcupine	+++	present

Assam Macaque *Macaca assamensis* is considered globally Vulnerable, and Class I protected in China. Malayan Porcupine *Hystrix brachyura* is listed as globally Vulnerable. Chinese Pangolin *Manis pentadactyla* and Oriental Small-clawed Otter *Amblonyx cinereus* are considered globally Lower Risk (Near-threatened), and Class II protected. Eurasian Otter *Lutra lutra* and Small Indian Civet *Viverricula indica* are Class II protected in China.

Birds

Forty-seven bird species were recorded from Chunxiu (Table 2). The most abundant species were Grey-cheeked Fulvetta *Alcippe morrisonia*, White-browed Laughingthrush *Garrulax sannio*, Scarlet Minivet *Pericrocotus flammeus*, Grey Treepie *Dendrocitta formosae*, Sooty-headed Bulbul *Pycnonotus aurigaster*, Red-whiskered Bulbul *Pycnonotus jocosus*, Bar-winged Flycatcher-shrike *Hemipus picatus*, Streak-breasted Scimitar Babbler *Pomatorhinus ruficollis*, Plain Flowerpecker *Dicaeum concolor* and Ashy Drongo *Dicrurus leucophaeus*.

Table 2. Birds recorded in Chunxiu Nature Reserve, 24 May 1998. Sequence follows Clements (2000).

Scientific name	English name
<i>Spilornis cheela</i>	Crested Serpent Eagle
<i>Spizaetus nipalensis</i>	Mountain Hawk Eagle
<i>Clamator coromandus</i>	Chestnut-winged Cuckoo
<i>Cuculus micropterus</i>	Indian Cuckoo
<i>Cacomantis merulinus</i>	Plaintive Cuckoo
<i>Surniculus lugubris</i>	Drongo Cuckoo
<i>Centropus sinensis</i>	Greater Coucal
<i>Centropus bengalensis</i>	Lesser Coucal
<i>Megalaima asiatica</i>	Blue-throated Barbet
<i>Blythipicus pyrrhotis</i>	Bay Woodpecker
<i>Hirundo rustica</i>	Barn Swallow
<i>Anthus hodgsoni</i>	Olive-backed Pipit
<i>Coracina melaschistos</i>	Black-winged Cuckooshrike
<i>Pericrocotus flammeus</i>	Scarlet Minivet
<i>Hemipus picatus</i>	Bar-winged Flycatcher-shrike
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul
<i>Pycnonotus aurigaster</i>	Sooty-headed Bulbul
<i>Alophoixus pallidus</i>	Puff-throated Bulbul
<i>Prinia hodgsonii</i>	Grey-breasted Prinia
<i>Prinia rufescens</i>	Rufescent Prinia
<i>Orthotomus sutorius</i>	Common Tailorbird
<i>Orthotomus atrogularis</i>	Dark-necked Tailorbird
<i>Abroscopus superciliaris</i>	Yellow-bellied Warbler
<i>Cyornis hainana</i>	Hainan Blue Flycatcher
<i>Copsychus malabaricus</i>	White-rumped Shama
<i>Rhipidura albicollis</i>	White-throated Fantail
<i>Terpsiphone paradisi</i>	Asian Paradise-flycatcher
<i>Garrulax sannio</i>	White-browed Laughingthrush
<i>Garrulax canorus</i>	Hwamei
<i>Pomatorhinus ruficollis</i>	Streak-breasted Scimitar Babbler
<i>Stachyris chrysaea</i>	Golden Babbler
<i>Stachyris nigriceps</i>	Grey-throated Babbler
<i>Stachyris striolata</i>	Spot-necked Babbler
<i>Macronous gularis</i>	Striped Tit Babbler
<i>Alcippe brunnea</i>	Brown-capped Fulvetta

Scientific name	English name
<i>Alcippe morrisonia</i>	Grey-cheeked Fulvetta
<i>Sitta frontalis</i>	Velvet-fronted Nuthatch
<i>Arachnothera magna</i>	Streaked Spiderhunter
<i>Dicaeum concolor</i>	Plain Flowerpecker
<i>Oriolus chinensis</i>	Black-naped Oriole
<i>Lanius schach</i>	Long-tailed Shrike
<i>Dicrurus leucophaeus</i>	Ashy Drongo
<i>Dicrurus macrocercus</i>	Black Drongo
<i>Dicrurus annectans</i>	Crow-billed Drongo
<i>Cissa chinensis</i>	Common Green Magpie
<i>Dendrocitta formosae</i>	Grey Treepie
<i>Corvus macrorhynchus</i>	Large-billed Crow

Golden Babbler *Stachyris chrysaea* was a new record for Guangxi. It was also recorded subsequently from Longshan (Kadoorie Farm and Botanic Garden, 2002a). The species is believed to be very rare in South China. The records of Yellow-bellied Warbler *Abroscopus superciliosus*, Dark-necked Tailorbird *Orthotomus atrogularis* and White-rumped Shama *Copsychus malabaricus* were the first from Guangxi Zhuang Autonomous Region.

Crested Serpent Eagle *Spilornis cheela*, Mountain Hawk Eagle *Spizaetus nipalensis*, Greater Coucal *Centropus sinensis* and Lesser Coucal *Centropus bengalensis* are Class II protected species in China.

Although the forests at Chunxiu are fragmented, these forest remnants are well-structured and support a diverse bird fauna including specialists such as Crested Serpent Eagle, Mountain Hawk Eagle, Drongo Cuckoo *Surniculus lugubris*, Bay Woodpecker *Blythipicus pyrrhotis*, Blue-throated Barbet *Megalaima asiatica*, White-throated Fantail *Rhipidura albicollis*, Streaked Spiderhunter *Arachnothera magna*, Velvet-fronted Nuthatch *Sitta frontalis*, Common Green Magpie *Cissa chinensis*, and various bulbuls, babblers, fulvettas and flycatchers. Some of these are more typical of the Indochinese forests, and are highly restricted within South China.

Reptiles and amphibians

Six amphibians and one lizard species were found during the survey (Table 3). The most frequently recorded species were *Bufo melanostictus*, *Rana limnocharis* and *Microhyla pulchra*. Local villagers also reported the presence of *Physignathus cocincinus* (Chinese Water Dragon) in the Zhangmu area.

Table 3. Amphibians and reptiles recorded in Chunxiu Nature Reserve, 24 May 1998. Sequence follows Zhou E.-M. & Adler (1993).

Species	Habitat
AMPHIBIA	
<i>Bufo melanostictus</i>	shrubland
<i>Rana guentheri</i>	stream
<i>Rana limnocharis</i>	pool
	paddy field
	grassland
<i>Rana</i> (cf. <i>spinulosa</i>) sp.	stream
<i>Polypedates megacephalus</i>	pool
<i>Microhyla pulchra</i>	paddy field
	grassland
REPTILIA	
<i>Calotes emma</i>	shrubland

A frog resembling *Rana spinulosa* was found and may constitute the second record of this species from Guangxi. *R. spinulosa* was formerly considered endemic to Hainan, where it is common. However there are minor differences between the Guangxi individuals and the Hainan specimens, and the exact identity is to be determined. *Calotes emma*, a species not recorded from Guangxi before the present survey, was also recorded at Nonggang (Kadoorie Farm and Botanic Garden, 2002a). *P. concincinus* is highly restricted within South China and is threatened regionally.

Fish

Four species of freshwater fish were recorded from Chunxiu (Table 4) after a very limited sampling effort. The most frequently encountered species were the Odontobutidae sp. and *Oryzias* sp.

Table 4. Freshwater fish species recorded at Chunxiu Nature Reserve, 24 May 1998. Sequence of genera follows Nelson (1994).

Species	Habitat
<i>Rasbora steineri</i>	stream flowing through NR
<i>Oryzias</i> sp.	stream flowing through NR
Odontobutidae sp.	stream flowing through NR
<i>Macropodus opercularis</i>	stream flowing through NR

The Odontobutidae sp. and *Oryzias* sp. await specialist verification and could be of both scientific and conservation interest. The actual conservation significance of this site for stream fish could not be properly evaluated due to the limited sampling effort, but the stream looked to be in good condition.

Dragonflies

Sixteen dragonfly species were recorded (Table 5). The most abundant were *Devadatta ducatrix*, *Rhinocypha* sp., *Libellago lineata*, *Rhipidolestes* sp. and *Copera ciliata*.

Table 5. Dragonfly species at Chunxiu, 24 May 1998. Sequence of genera follows Schorr *et al.* (2001a, 2001b).

Species	Notes
<i>Devadatta ducatrix</i>	
<i>Mnais</i> sp.	pending identification
<i>Libellago lineata lineata</i>	
<i>Rhinocypha</i> sp.	pending identification
<i>Dysphaea</i> sp.	pending identification
<i>Euphaea decorata</i>	
<i>Euphaea superba</i>	
<i>Agriomorpha fusca</i>	
<i>Rhipidolestes</i> sp.	pending identification
<i>Calicnemia miles</i>	
<i>Copera ciliata</i>	
<i>Prodasineura autumnalis</i>	
<i>Anisogomphus koxingai</i>	
<i>Asiagomphus xanthenatus acco</i>	
<i>Lamelligomphus</i> sp. B	pending identification
<i>Sinictiongomphus clavatus</i>	

A number of species are possibly new to science, and await detailed study. The species found included forest specialists such as *Rhipidolestes* sp., *Calicnemia miles* and *Devadatta ducatrix*. This indicates that there is some good remnant forest left at Chunxiu.

Butterflies

Twenty-four species were recorded (Table 6), including three forest butterflies (*Mandarinia regalis*, *Pseudergolis wedah* and *Abisara neophron*) that are apparently new Guangxi records (cf. Chou, 1994). *Aemona amathusia* and *Stibochiona nicea* are typically dependent on forest.

Table 6. Butterfly species at Chunxiu Nature Reserve, 24 May 1998. Sequence of genera follows Bascombe (1995).

Species	Habitat
<i>Astictopterus jama</i>	farmland
<i>Parnara bada</i>	marsh
<i>Potanthus</i> sp.	forest
<i>Appias albina</i>	abandoned field
	disturbed forest
<i>Abisara neophron</i>	stream
<i>Everes lacturnus</i>	stream
<i>Jamides bochus</i>	shrubland
<i>Spindasis syama</i>	disturbed forest
<i>Yasoda androconifera</i>	shrubland
<i>Yasoda tripunctata</i> ?	forest
<i>Zemerus flegyas</i>	shrubland
<i>Zizeeria maha</i>	bamboo plantation
<i>Aemona amathusia</i>	stream
<i>Argyreus hyperbius</i>	abandoned field
<i>Cethosia biblis</i>	disturbed forest
<i>Euploea core</i>	shrubland
<i>Ideopsis similis</i>	disturbed forest
<i>Lethe confusa</i>	shrubland
<i>Mandarinia regalis</i>	stream
<i>Mycalesis mamerta memerta</i>	bamboo plantation
<i>Neptis hylas</i>	disturbed forest
<i>Pseudergolis wedah</i>	roadside
<i>Stibochiona nicea</i>	disturbed forest
<i>Ypthima baldus</i>	bamboo plantation
	disturbed forest

Summary of fauna

This brief survey revealed some very interesting records. While the forest seen was quite disturbed in appearance, a number of the species seen indicated high habitat integrity nearby. These included Mountain Hawk Eagle, Bay Woodpecker, Blue-throated Barbet, Streaked Spiderhunter, Velvet-fronted Nuthatch, Green Magpie, and various babblers and fulvettas. Golden Babbler was a new record for Guangxi, and is apparently at the southeastern limit of its range here (it was also recorded at Longshan). On the basis of its previous forest cover of 58%, MacKinnon *et al.* (1996) considered Chunxiu of national biodiversity importance. The forest cover has greatly declined, but the site retains a rich fauna, and deserves more thorough study.

Threats and problems

Much of the forest at Chunxiu has been destroyed, and the remaining fragments are isolated and vulnerable to human disturbance. The mammal fauna, along with the larger-bodied and edible birds and reptiles, is severely depleted. Possibly some of the forest specialist birds and insects owe their existence at Chunxiu to dispersal from forests in adjacent Vietnam, following the widespread habitat destruction in and around Chunxiu.

Opportunities and recommendations

Land mines left over from the border conflict between China and Vietnam in the late 1970s, while posing a threat to humans and wildlife, may on the other hand have conferred a degree of protection on the forest and its biodiversity by limiting human activity. The fauna and flora of this region is also represented in the remaining forests on the Vietnam side of the border. It is suggested that forest management should be coordinated with that across the border, enabling effective protection of the threatened forest biota of this northeastern Indochina region.

MacKinnon *et al.* (1996) recommended joining Chunxiu to Qinglongshan Headwater Forest Nature Reserve and Nonggang National Nature Reserve to form a globally important reserve. Each of these reserves is highly degraded, with an agricultural matrix surrounding fragments of forest. Of paramount importance is the protection of remaining forest fragments and the careful restoration of interlying areas, using the appropriate combination of native plant species, and forming ecological corridors between these fragile patches. The reserve should be carefully re-zoned to ensure that the remaining forests form the core areas in which human activity is strictly controlled. The management objectives should also be revised, on the basis of the habitats and species of prime conservation concern. 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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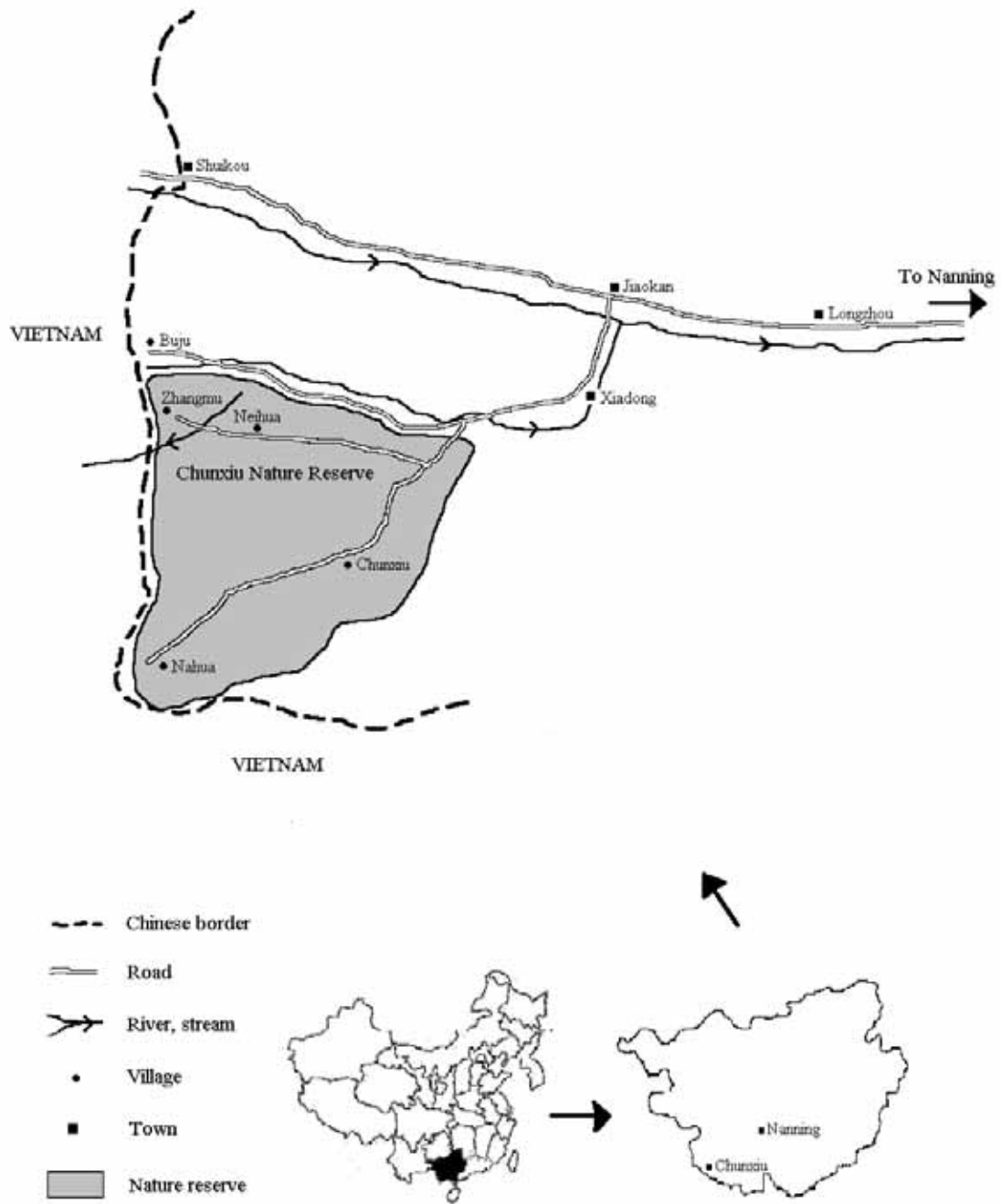


Figure 1. Map showing location of Chunxiu Headwater Forest Nature Reserve, Southwest Guangxi, China.