



Report of a Rapid Biodiversity Assessment at Huaping National Nature Reserve, Northeast Guangxi, China, 15 to 20 August 1998

Kadoorie Farm and Botanic Garden
in collaboration with
Guangxi Forestry Department
Guangxi Institute of Botany
Guangxi Normal University
South China Institute for Endangered Animals
South China Normal University
Xinyang Teachers' College

July 2002

South China Forest Biodiversity Survey Report Series: No. 15
(Online Simplified Version)

Report of a Rapid Biodiversity Assessment at Huaping National Nature Reserve, Northeast Guangxi, China, 15 to 20 August 1998

Editors

John R. Fellowes, Billy C.H. Hau, Michael W.N. Lau, Ng Sai-Chit and Bosco P.L. Chan

Contributors

Kadoorie Farm and Botanic Garden:	John R. Fellowes	(JRF)
John R. Fellowes	Billy C.H. Hau	(BH)
	Michael W.N. Lau	(ML)
	Lee Kwok Shing	(LKS)
	Graham T. Reels	(GTR)
	Bosco P.L. Chan	(BC)
	Ng Sai-Chit	(NSC)
	Gloria L.P. Siu	(GS)
Guangxi Forestry Department:	Xu Zhihong	(XZH)
Guangxi Institute of Botany:	Li Guangzhao	(LGZ)
	Tong Saichun	(TSC)
Guangxi Normal University:	Lu Liren	(LLR)
	Zhou Shanyi	(ZSY)
South China Institute for Endangered Animals:	Zou Fasheng	(ZFS)
South China Normal University:	Lu Pingke	(LPK)
Xinyang Teachers' College:	Li Hongjing	(LHJ)
Voluntary consultant:	Keith D.P. Wilson	(KW)

Background

The present report details the findings of a trip to Northeast Guangxi by members of Kadoorie Farm and Botanic Garden (KFBG) in Hong Kong and their colleagues, as part of KFBG's South China Biodiversity Conservation Programme. 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

Kadoorie Farm and Botanic Garden, 2002. *Report of a Rapid Biodiversity Assessment at Huaping National Nature Reserve, Northeast Guangxi, China, 15 to 20 August 1998*. South China Forest Biodiversity Survey Report Series (Online Simplified Version): No. 15. KFBG, Hong Kong SAR, ii + 22 pp.

Copyright

© Kadoorie Farm and Botanic Garden Corporation
Lam Kam Road, Tai Po, N.T., Hong Kong SAR

July 2002

Contents

Objectives	1
Methods	1
Location and management	2
Vegetation	2
Results	3
Flora	3
Mammals	7
Birds	8
Reptiles and Amphibians	10
Fish	12
Ants	12
Dragonflies	14
Butterflies	15
Summary of flora and fauna	17
Threats and problems	18
Opportunities and recommendations	18
Acknowledgements	18
References	19
Figure 1. Map	22

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

Report of a Rapid Biodiversity Assessment at Huaping National Nature Reserve, Northeast Guangxi, China, 15 to 20 August 1998

Objectives

- The aims of the survey were to collect up-to-date information on the fauna and flora of Huaping National Nature Reserve, and to use this to help determine conservation priorities within South China. Emphasis was on groups that have not been extensively studied, including birds, amphibians, reptiles, fish, ants, dragonflies and butterflies. Only the northeast parts of the reserve could be surveyed in the time available.

Methods

- On 14-15 August 1998, members of the survey team met at Guilin, Guangxi. Participants were from Kadoorie Farm and Botanic Garden (BH, ML, JRF, LKS, GTR), Guangxi Forestry Department (XZL), Guangxi Institute of Botany (LGZ, TSC), South China Institute for Endangered Animals (ZFS), South China Normal University (LPK), Xinyang Teachers' College (LHJ) and Guangxi Normal University (LLR, ZSY). The team used the South China Biodiversity Survey vehicle driven by Mr Cheng Jisheng (South China Institute of Botany, SCIB) and a vehicle of Guangxi Normal University, driven by Mr Huang.
- Rapid faunal surveys were conducted at Huaping National Nature Reserve on 15-19 August..
- During fieldwork visual searching for plants, mammals, birds, reptiles, amphibians, fish, ants, butterflies and dragonflies was conducted. Frogs and birds were also located by their calls. Plant records were made by field observation, with very few specimens collected.
- Status of large and medium-sized mammals (excluding Insectivora, Chiroptera and Muridae) at Huaping was inferred largely based on interviews with local people, with reference to colour pictures. For purposes of these interviews a list of South China mammals was compiled from various sources including Guangdong Forestry Department and South China Institute of Endangered Animals (1987), Corbet & Hill (1992) and Zhang Y. *et al.* (1997).
- Vascular plant records were made by LGZ, and edited by NSC, except in the case of orchids, which were edited by GS. Mammal records were made by LKS, BH, GTR, ML or JRF. Records of birds were made or verified by LKS, reptiles and amphibians by ML, fish by BC, ants by JRF, butterflies by GTR and dragonflies by GTR and KW of Hong Kong.
- Nomenclature in the report is standardised based, unless otherwise stated, on the following references:
 - Flora (Pteridophyta, Gymnospermae and Angiospermae excluding Orchidaceae): Anon. (1959-2000); Anon. (1991); Anon. (1996-2000); Anon. (2001); The Plant Names Project (2001);
 - Orchids (Angiospermae: Orchidaceae): Chen (1999); Lang (1999);
 - Mammals (Mammalia): Wilson & Cole (2000);
 - Birds (Aves): Inskipp *et al.* (1996);
 - Reptiles and Amphibians (Reptilia and Amphibia): Zhao E.-M. & Adler (1993); 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).

- Information on the global status of species is from IUCN publications, notably IUCN Species Survival Commission (2001). Certain taxa, including orchids, reptiles, amphibians, fish and invertebrates, have yet to be properly assessed for global status.
- Protected status in China is based on Hua & Yan (1993) for animals, and State Forestry Administration & Ministry of Agriculture (1999) for plants.

Location and management

- Huaping National Nature Reserve is at the junction of Longsheng and Liangui counties, Northeast Guangxi. The coordinates have been given as 25°31'-25°40'N and 109°49'-109°58'E (MacKinnon *et al.*, 1996), and as 25° 31'-25° 36'N, 109° 48'-109° 58' E (Liu D.L. *et al.*, 1996). The reserve is 174 km² in size, measuring 15.2 km east to west and 15 km north to south.
- The region has a subtropical monsoon climate, with mean monthly temperature ranging from 4°C in January to 23.5°C in July. Annual precipitation is about 2,000 to 2,200 mm, which falls mostly from March to August. The catchments drain north and west into the Rong Jiang, which flows south toward the Xi Jiang.
- The geology is mainly sand stone and shale. The landscape is mountainous, with an altitudinal range from about 500 to 1,896 m at the summit of Weiqingling in the centre of the reserve.
- The reserve was established in 1961 and upgraded to a national nature reserve in 1978. Its main aims were to protect *Cathaya argyrophylla* and subtropical evergreen broadleaf forest (Forestry Department of Guangxi Zhuang Autonomous Region, 1993). It is listed as a National-level Wild Plant Nature Reserve (Zhang W., 1998), and managed by the provincial Forestry Department. About 27% of the area of the nature reserve is zoned as core area to protect the better forests (Liu D.L. *et al.*, 1996). The rest of the nature reserve is buffer area. Of the total area 134 km² (77%) is state-run.
- The main management office of the nature reserve is at Tianpingshan. The reserve has 12 officers and 14 workers in eight reserve stations: Tianpingshan, Hongtan, Cuijiang, Huaping, Hongmaochong, Dayan, Daping and Huangsha (Liu D.L. *et al.*, 1996).

Vegetation

- The vegetation of Huaping has been described by Wang *et al.* (1986).
 - The zonal vegetation is subtropical evergreen broadleaf forest dominated by Fagaceae, Lauraceae, Theaceae and Styracaceae, and this is the dominant vegetation type on hillsides below 1,300m. Canopy height is about 20 m. Important canopy species found in this vegetation included *Castanopsis carlesii*, *C. eyrei*, *C. fabri*, *Schima argentea*, *Helicia reticulata*, *Machilus leptophylla*, and *Huodendron tibeticum*.
 - Subtropical deciduous forest up to 6-10 m tall occurred where the evergreen broadleaf forest had been disturbed. Important canopy species in this vegetation type included *Betula luminifera*, *Liquidambar formosana*, *Alniphyllum fortunei*, *Diplopanax stachyanthus* and *Carpinus viminea*.
 - Between 1,300 and 1,500 m the vegetation was montane mixed deciduous and evergreen broadleaf forest about 12-20m tall, and dominated by *Liquidambar acalycina*, *Fagus longipetiolata*, *Schima argentea*, *C. eyrei*, *Pterostyrax psilophyllus*, and *Toxicodendron succedaneum*.
 - Above 1,500-1,600 m was montane dwarf forest about 4-6m tall.
 - Small patches of montane coniferous forest dominated by *Cathaya argyrophylla*, *Pinus kwangtungensis* and *Fokienia hodginsii* could be found on cliffs and mountain ridges at about 1,400m.
 - There is also some area of plantation of *Cunninghamia lanceolata*, *Pinus massoniana*, and *Phyllostachys heterocyclus* cv. *Pubescens*.

Results

Flora

- Earlier surveys of the Huaping area had recorded up to 1,194 vascular plant taxa in 214 families (Li *et al.*, 1986).
- The present rapid survey recorded 196 vascular plant species in 87 families, including 10 ferns in 8 families, 5 gymnosperms in 3 families, and 181 flowering plant species in 76 families (Table 1). Important families included Fagaceae, Lauraceae, Theaceae, Symplocaceae, Ericaceae, and Styracaceae.
- *Begonia digyna*, *Asystasiella chinensis*, *Calanthe reflexa*, *Calophanoides chinensis*, *Blainvillia acmella* and *Paraphlomis rugosa* are new records for Huaping National Nature Reserve (cf. Li *et al.*, 1986).
- Among the species recorded, there are a number of threatened and protected species.
 - *Bretschneidera sinensis* is globally Endangered.
 - *Diplopanax stachyanthus*, *Fagus longipetiolata*, *Rhoiptelea chiliantha*, *Tapiscia sinensis*, and *Pterostyrax psilophyllus* are Vulnerable. *Rhoiptelea chiliantha* is also a Class II Nationally Protected species. The populations of *D.stachyanthus* and *R. chiliantha* found were relatively large.
 - *Cathaya argyrophylla* is listed as Lower Risk (Conservation-dependent) and is a Class I Nationally Protected species. It has a scattered distribution in South and Southwest China.
 - *Fokienia hodginsii* is listed as Lower Risk (Near-threatened) and is a Class II Nationally Protected species.
 - *Cibotium barometz* and *Pinus kwangtungensis* are Class II Nationally Protected species. The former is also listed in CITES Appendix II.
 - The three orchids recorded, *Calanthe reflexa*, *Habenaria rhodocheila* and *Spathoglottis pubecens*, are all listed in CITES Appendix II.
 - *Lindera lungshengensis* is endemic to Guangxi.

Table 1. Vascular plant species recorded in Huaping Nature Reserve on 16-20 August 1998. Species which are under National Protection (Class I or II) (State Forestry Administration & Ministry of Agriculture, 1999) or globally Threatened or Lower Risk (IUCN Species Survival Commission, 2001) or endemic are indicated.

Family	Species name	Remarks
PTERIDOPHYTA		
Blechnaceae	<i>Woodwardia japonica</i> (L.f.) Sm. <i>Woodwardia orientalis</i> Sw.	
Dicksoniaceae	<i>Cibotium barometz</i> (L.) J. Sm.	Protected II
Gleicheniaceae	<i>Diplopterygium chinensis</i> (Rosenst.) DeVol <i>Diplopterygium laevissimum</i> (H. Christ) Nakai	
Huperziaceae	<i>Huperzia serrata</i> (Thunb.) Trevis.	
Lycopodiaceae	<i>Lycopodiastrum casuarinoides</i> (Spring) Holub	
Plagiogyriaceae	<i>Plagiogyria distinctissima</i> Ching	
Pteridiaceae	<i>Pteridium aquilinum</i> (L.) Kuhn var. <i>latiusculum</i> (Desv.) Underw. Ex A. Heller	
Selaginellaceae	<i>Selaginella uncinata</i> (Desv.) Spring	
GYMNOSPERMA		
E		
Cupressaceae	<i>Fokienia hodginsii</i> (Dunn) A. Henry & H. Thomas	Protected II, Lower Risk (nt)
Pinaceae	<i>Cathaya argyrophylla</i> Chun & Kuang <i>Pinus kwangtungensis</i> Chun & Tsiang <i>Pinus massoniana</i> Lamb.	Protected I, Lower Risk (cd) Protected II
Taxodiaceae	<i>Cunninghamia lanceolata</i> (Lamb.) Hook.	mainly planted

Family	Species name	Remarks
ANGIOSPERMAE		
Dicotyledonae		
Acanthaceae	<i>Asystasiella chinensis</i> (S. Moore) E. Hossain	new record for Huaping NR
	<i>Calophanoides chinensis</i> (Champ.) C.Y. Wu & H.S. Lo	new record for Huaping NR
Aceraceae	<i>Acer davidii</i> Franch.	
	<i>Acer fabri</i> Hance	
	<i>Acer flabellatum</i> Rehder	
Actinidiaceae	<i>Actinidia fulvicoma</i> Hance var. <i>lanata</i> (Hemsl.) C.F. Liang	
	<i>Actinidia latifolia</i> (Gardner et Champ.) Merr.	
Alangiaceae	<i>Alangium chinense</i> (Lour.) Harms.	
Anacardiaceae	<i>Choerospondias axillaris</i> (Roxb.) B.L. Burt et. A.W. Hill	
	<i>Rhus chinensis</i> Mill.	
	<i>Toxicodendron succedaneum</i> (L.) Kuntze.	
Apiaceae	<i>Oenanthe javanica</i> (Blume) DC.	
Aquifoliaceae	<i>Ilex aculeolata</i> Nakai	
	<i>Ilex ficoidea</i> Hemsl.	
	<i>Ilex rotunda</i> Thunb.	
Araliaceae	<i>Acanthopanax evodiifolius</i> Franch.	
	<i>Aralia dasyphylla</i> Miq.	
	<i>Dendropanax dentigerus</i> (Harms ex Diels) Merr.	
	<i>Diplopanax stachyanthus</i> Hand.-Mazz.	Vulnerable
	<i>Schefflera delavayi</i> (Franch.) Harms	
	<i>Schefflera octophylla</i> (Lour.) Harms	
Asteraceae	<i>Artemisia anomala</i> S. Moore	
	<i>Blainvillea acmella</i> (L.) Philipson	new record for Huaping NR
	<i>Parasenecio subglaber</i> (C.C. Chang) Y.L. Chen	
Begoniaceae	<i>Begonia digyna</i> Irmsch.	new record for Huaping NR
	<i>Begonia grandis</i> Dryand. ssp. <i>sinensis</i> (A. DC.) Irmsch.	
Betulaceae	<i>Betula luminifera</i> H.J.P. Winkl.	
Bretschneideraceae	<i>Bretschneidera sinensis</i> Hemsl.	Endangered
Campanulaceae	<i>Platycodon grandiflorus</i> (Jacquin) A. DC.	
Caprifoliaceae	<i>Sambucus williamsii</i> Hance	
	<i>Viburnum fordiae</i> Hance	
	<i>Viburnum nervosum</i> D. Don	
	<i>Viburnum sempervirens</i> Koch	
	<i>Viburnum setigerum</i> Hance	
Celastraceae	<i>Euonymus myrianthus</i> Hemsl.	
Chloranthaceae	<i>Sarcandra glabra</i> (Thunb.) Nakai	
Clethraceae	<i>Clethra kaipoensis</i> H. Lév.	
Cornaceae	<i>Dendrobenthamia hongkongensis</i> (Hemsl.) Hutch.	
Corylaceae	<i>Carpinus viminea</i> Lindl.	
Cucurbitaceae	<i>Momordica cochinchinensis</i> (Lour.) Spreng.	
Daphniphyllaceae	<i>Daphniphyllum calycinum</i> Benth	
	<i>Daphniphyllum macropodum</i> Miq.	
Dipsacaceae	<i>Dipsacus asperoides</i> C.Y. Cheng & Ai	
Elaeocarpaceae	<i>Elaeocarpus duclouxii</i> Gagnep.	
	<i>Elaeocarpus japonicus</i> Siebold & Zucc.	
	<i>Elaeocarpus petiolatus</i> (Jack) Wall. ex Kurz	
Ericaceae	<i>Enkianthus chinensis</i> Franch.	
	<i>Lyonia ovalifolia</i> (Wall.) Drude var. <i>lanceolata</i> (Wall.) Hand.-Mazz.	
	<i>Pieris formosa</i> (Wall.) D. Don	
	<i>Rhododendron bachii</i> H. Lév.	
	<i>Rhododendron mariesii</i> Hemsl. & E.H. Wilson	
	<i>Rhododendron ovatum</i> (Lindl.) Planch. ex Maxim.	
	<i>Rhododendron rivulare</i> Hand.-Mazz.	
	<i>Rhododendron simiarum</i> Hance var. <i>versicolor</i> (Chun & W.P. Fang) M.Y. Fang	
Escalloniaceae	<i>Itea chinensis</i> Hook. et Arn	
Euphorbiaceae	<i>Mallotus lianus</i> Croizat	

Family	Species name	Remarks
	<i>Sapium discolor</i> (Champ. ex Benth.) Müll.-Arg.	
	<i>Vernicia montana</i> Lour.	
Fagaceae	<i>Castanopsis carlesii</i> (Hemsl.) Hayata	
	<i>Castanopsis eyrei</i> (Champ. ex Benth.) Tutcher	
	<i>Castanopsis fabri</i> Hance	
	<i>Castanopsis tibetana</i> Hance	
	<i>Cyclobalanopsis stewardiana</i> (A. Camus) Y.C. Hsu & H.W. Jen	
	<i>Fagus longipetiolata</i> Seemen	Vulnerable
Flacourtiaceae	<i>Idesia polycarpa</i> Maxim.	
Gentianaceae	<i>Crawfordia</i> sp.	
	<i>Latouchea fokienensis</i> Franch.	
Gesnariaceae	<i>Oreocharis benthami</i> C. B. Clarke ex A. et C. DC.	
Hamamelidaceae	<i>Altingia chinensis</i> (Champ. ex Benth.) Oliv. ex Hance	
	<i>Corylopsis multiflora</i> Hance	
	<i>Liquidambar formosana</i> Hance	
Hydrangeaceae	<i>Hydrangea chinensis</i> Maxim.	
	<i>Hydrangea paniculata</i> Siebold	
Illiciaceae	<i>Illicium majus</i> Hook. f. & Thomson	
Juglandaceae	<i>Platycarya strobilacea</i> Siebold & Zucc.	
Lauraceae	<i>Cinnamomum appelianum</i> Schewe	
	<i>Cinnamomum austrosinense</i> H.T. Chang	
	<i>Lindera communis</i> Hemsl.	
	<i>Lindera glauca</i> (Siebold & Zucc.) Blume	
	<i>Lindera kwangtungensis</i> (H. Liu) C.K. Allen	
	<i>Lindera lungshengensis</i> S. Lee	endemic to Guangxi
	<i>Litsea cubeba</i> (Lour.) Pers.	
	<i>Litsea elongata</i> (Nees) Benth. et Hook. f.	
	<i>Litsea euosma</i> W.W. Sm.	
	<i>Machilus salicina</i> Hance	
	<i>Neolitsea chuii</i> Merr.	
	<i>Neolitsea levinei</i> Merr.	
	<i>Phoebe shearerii</i> (Hemsl.) Gamble	
	<i>Sassafras tzumu</i> (Hemsl.) Hemsl.	
Magnoliaceae	<i>Michelia foveolata</i> Merr. ex Dandy	
	<i>Michelia maudiae</i> Dunn	
Melastomataceae	<i>Blastus cochinchinensis</i> Lour.	
	<i>Fordiophyton strictum</i> Diels	
	<i>Melastoma dodecandrum</i> Lour.	
	<i>Osbeckia crinita</i> Benth. ex Triana	
	<i>Phyllagathis cavaleriei</i> (H. Lév. & Vaniot) Guillaumin	
	<i>Sarcopyramis nepalensis</i> Wall.	
Mimosaceae	<i>Albizia kalkora</i> (Roxb.) Prain	
	<i>Pithecellobium lucidium</i> Benth.	
Myricaceae	<i>Myrica rubra</i> (Lour.) Sieb. et Zucc.	
Myrsinaceae	<i>Ardisia crenata</i> Sims	
Myrtaceae	<i>Syzygium buxifolium</i> Hook. et Arn.	
Nyssaceae	<i>Nyssa sinensis</i> Oliv.	
Papilionaceae	<i>Dalbergia hancei</i> Benth.	
	<i>Dalbergia hupeana</i> Hance	
	<i>Lespedeza formosa</i> (Vogel) Koehne	
Pentaphragaceae	<i>Pentaphragax euryoides</i> Gardner & Champ.	
Pittosporaceae	<i>Pittosporum glabratum</i> Lindl.	
Polygalaceae	<i>Polygala fallax</i> Hemsl.	
Polygonaceae	<i>Antenoron filiforme</i> (Thunb.) Roberty & Vautier	
	<i>Reynoutria japonica</i> Houtt.	
Primulaceae	<i>Lysimachia foenum-graecum</i> Hance	
Proteaceae	<i>Helicia reticulata</i> W. T. Wang	
Ranunculaceae	<i>Anemone hupehensis</i> (Lemoine) Lemoine	
	<i>Clematis armandii</i> Franch.	
Rhoipteleaceae	<i>Rhoiptelea chiliantha</i> Diels & Hand.-Mazz.	Vulnerable, Protected II

Family	Species name	Remarks
Rosaceae	<i>Rhaphiolepis indica</i> (L.) Lindl. <i>Sorbus caloneura</i> (Stapf) Rehder <i>Sorbus granulosa</i> (Bertol.) Rehder <i>Sorbus wilsoniana</i> C.K. Schneid.	
Rubiaceae	<i>Lasianthus japonicus</i> Miq. var. <i>lancilimbus</i> (Merr.) C.Y. Wu & H. Zhu	
Rutaceae	<i>Evodia fargesii</i> Dode <i>Zanthoxylum ailanthoides</i> Siebold & Zucc.	
Sabiaceae	<i>Meliosma glandulosa</i> Cufod. <i>Meliosma squamulata</i> Hance	
Saxifragaceae	<i>Astilbe grandis</i> Stapf ex E.H. Wilson	
Schisandraceae	<i>Kadsura longipedunculata</i> Finet & Gagnep. <i>Schisandra viridis</i> A.C. Sm.	
Scrophulariaceae	<i>Torenia asiatica</i> L.	
Staphyleaceae	<i>Euscaphis japonica</i> (Thunb.) Kanitz <i>Tapiscia sinensis</i> Oliv.	Vulnerable
Styracaceae	<i>Alniphyllum fortunei</i> (Hemsl.) Makino <i>Huodendron tibeticum</i> (J. Anthony) Rehder <i>Meliiodendron xylocarpum</i> Hand.-Mazz. <i>Pterostyrax psilophyllum</i> Diels ex Perkins <i>Styrax tonkinensis</i> (Pierre) Craib ex Hartwich	Vulnerable
Symplocaceae	<i>Symplocos chinensis</i> (Lour.) Druce <i>Symplocos phyllocalyx</i> C.B. Clarke <i>Symplocos pseudobarberina</i> Gontsch. <i>Symplocos ramosissima</i> Wall. ex G. Don <i>Symplocos stellaris</i> Brand <i>Symplocos sumuntia</i> Buch.-Ham. ex D. Don	
Theaceae	<i>Adinandra bockiana</i> E. Pritz var. <i>acutifolia</i> (Hand.-Mazz.) Kobuski <i>Camellia oleifera</i> Abel <i>Camellia polyodonta</i> How ex Hu <i>Camellia sinensis</i> (L.) Kuntze <i>Cleyera japonica</i> Thunb. <i>Eurya loquaiana</i> Dunn <i>Eurya nitida</i> Korthals <i>Schima argentea</i> E. Pritz. <i>Schima superba</i> Gardn. et Champ. <i>Ternstroemia gymnanthera</i> (Wight & Arn.) Bedd. <i>Ternstroemia kwangtungensis</i> Merr.	
Ulmaceae	<i>Celtis tetrandra</i> Roxb. subsp. <i>sinensis</i> (Pers.) Y.C. Tang	
Urticaceae	<i>Elatostema acuminatum</i> (Poir.) Brongn. <i>Oreochide frutescens</i> (Thunb.) Miq. <i>Pellionia grijsii</i> Hance	
Verbenaceae	<i>Clerodendrum fortunatum</i> L. <i>Paraphlomis javanica</i> (Blume) Prain var. <i>coronata</i> (Vaniot) C.Y. Wu & H.W. Li	new record for Huaping NR
Violaceae	<i>Viola hamiltoniana</i> D. Don	
Vitaceae	<i>Vitis heyneana</i> Roem. & Schult.	
Monocotyledonae		
Araceae	<i>Acorus tatarinowii</i> Schott	
Areaceae	<i>Trachycarpus fortunei</i> (Hook.) H. Wendl.	
Commelinaceae	<i>Commelina communis</i> L.	
Cyperaceae	<i>Carex cruciata</i> Wahlenb. <i>Carex scaposa</i> C.B. Clarke	
Liliaceae	<i>Cardiocrinum giganteum</i> (Wall.) Makino var. <i>yunnanense</i> (Leichtlin ex Elwes) Stearn <i>Hemerocallis citrina</i> Baroni <i>Hosta plantaginea</i> (Lam.) Asch. <i>Hosta ventricosa</i> (Salisb.) Stearn <i>Lilium brownii</i> F.E. Brown ex Miellez	

Family	Species name	Remarks
	<i>Ophiopogon intermedius</i> D. Don	
	<i>Polygonatum cyrtoneura</i> Hua	
Musaceae	<i>Musa balbisiana</i> Colla	
Orchidaceae	<i>Calanthe reflexa</i> Maxim.	new record for Huaping NR
	<i>Habenaria rhodocheila</i> Hance	
	<i>Spathoglottis pubescens</i> Lindl.	
Poaceae	<i>Indosasa shibataeoides</i> McClure	
	<i>Lophatherum gracile</i> Brongn.	
	<i>Phyllostachys heterocycla</i> (Carr.) Mitford cv. <i>Pubescens</i>	mainly cultivated
Zingiberaceae	<i>Zingiber mioga</i> (Thunb.) Roscoe	

Mammals

- A number of direct mammal observations were made during the survey.
 - A dead spiny rat, probably Chinese White-bellied Rat *Niviventer confucianus* (sometimes included in *N. niviventer*) was found on a forest path near Hongtan on 16 August. A live individual of the same species was seen near Cuijiang on 19 August.
 - A rat, probably Buff-bellied Rat *Rattus rattus flavipectus*, was seen on a banana plant near Hongtan station on 16 August.
 - Maritime Striped Squirrels *Tamiops maritimus* were seen near Cuijiang on 18 and 19 August.
 - A bat, either a Noctule *Nyctalus noctula* or Serotine *Eptesicus serotinus*, was found roosting in the wooden Cuijiang reserve station building.
 - A Pallas's Squirrel *Callosciurus erythraeus* was seen in the forest near Cuijiang on 19 August.
 - There were unconfirmed reports from villagers of a Tiger *Panthera tigris* near Dayan, as described by Fellowes *et al.* (1998). On an earlier visit by LLR, BH and JRF, in February 1998, villagers reported a large cow killed in 1997, and described prints to LLR matching those of a tiger. On the present visit, the following incidents were reported. One night in May 1998 a farmer encountered a large cat which lunged at him; he fled, and returned the next day to find one uneaten leg of a cow's carcass. In June, one farmer lost a cow (weighing 100-150 kg), and discovered one uneaten leg in the undergrowth; another farmer found tiger tracks in his fields. On 14 August at 17.00, two women working in their fields were startled by a roar nearby. Subsequent attempts in late 1998 to photograph the tiger, using infra-red triggered cameras loaned from the Department of Ecology & Biodiversity of The University of Hong Kong, were unsuccessful. Tiger is not confirmed to survive in Guangxi.
 - A bamboo rat (*Rhizomys* sp.) burrow was seen close to a forest path near Hongtan on 16 August.
- During a visit to Huaping on 14 September 1999, naturalist Tim Woodward of Hong Kong (personal communication, 2001) reported seeing both Maritime Striped Squirrel *Tamiops maritimus* and Pallas's Squirrel in the reserve.
- The inferred status of larger mammals in Huaping, based mainly on interviews with local residents, is shown in Table 2.

Table 2. The status of mammals (excluding Insectivora, Chiroptera and Muridae) at Huaping National Nature Reserve, Guangxi. Based on interviews with Mr. Liu, farmer ("+" = rare, "++" = common, "+++" = abundant). Species names and sequence follow Wilson & Cole (2000).

Scientific name	English name	Mr. Liu	Probable status
<i>Tupaia belangeri</i>	Northern Tree Shrew	+++	uncertain
<i>Macaca arctoides</i>	Stump-tailed Macaque	+++	present
<i>Cuon alpinus</i>	Dhole	+	insecure
<i>Catopuma temminckii</i>	Asiatic Golden Cat	+	insecure or extirpated
<i>Prionailurus bengalensis</i>	Leopard Cat	+	present
<i>Neofelis nebulosa</i>	Clouded Leopard	+	insecure or extirpated
<i>Panthera pardus</i>	Leopard	+	insecure or extirpated
<i>Panthera tigris amoyensis</i>	South China Tiger	+	insecure or extirpated

Scientific name	English name	Mr. Liu	Probable status
<i>Lutra lutra</i>	Eurasian Otter	+	insecure or extirpated
<i>Amblonyx cinereus</i>	Oriental Small-clawed Otter	+++	present
<i>Martes flavigula</i>	Yellow-throated Marten	+++	present
<i>Melogale moschata</i>	Chinese Ferret-badger	+++	present
<i>Mustela kathiah</i>	Yellow-bellied Weasel	+	present
<i>Mustela sibirica</i>	Siberian Weasel	+	present
<i>Ursus thibetanus</i>	Asiatic Black Bear	+++	present
<i>Paguma larvata</i>	Masked Palm Civet	+++	present
<i>Prionodon pardicolor</i>	Spotted Linsang	+++	present
<i>Viverricula indica</i>	Small Indian Civet	+++	present
<i>Sus scrofa</i>	Wild Boar	+++	present
<i>Moschus berezovskii</i>	Chinese Forest Musk Deer	+++	present
<i>Cervus nippon</i>	Sika Deer	+	insecure or extirpated
<i>Cervus unicolor</i>	Sambar	+	insecure or extirpated
<i>Hydropotes inermis</i>	Chinese Water Deer	+	uncertain
<i>Muntiacus reevesii</i>	Reeves's Muntjac	+++	present
<i>Manis pentadactyla</i>	Chinese Pangolin	+	insecure
<i>Callosciurus erythraeus</i>	Pallas's Squirrel	+++	present
<i>Dremomys pyrrhomerus</i> (or <i>D. rufigenis</i>)	Red-hipped Squirrel (or Asian Red-cheeked Squirrel)	+++	present
<i>Tamiops maritimus</i>	Maritime Striped Squirrel	+++	present
<i>Belomys pearsonii</i>	Hairy-footed Flying Squirrel	+++	present
<i>Hystrix brachyura</i>	Malayan Porcupine	+	insecure
<i>Lepus sinensis</i>	Chinese Hare	+++	present

- Many of the species reported to occur at Huaping are of conservation concern:
 - Tiger *Panthera tigris* is Endangered globally, and Class I Protected in China; the South China subspecies (*P. tigris amoyensis*) is Critically Endangered globally.
 - Clouded Leopard *Neofelis nebulosa* is Vulnerable globally and Class I Protected in China.
 - Stump-tailed Macaque *Macaca arctoides*, Dhole *Cuon alpinus*, Eurasian Otter *Lutra lutra* and Asiatic Black Bear *Ursus thibetanus* are Vulnerable globally and Class II Protected in China.
 - Malayan Porcupine *Hystrix brachyura* is Vulnerable globally.
 - Asiatic Golden Cat *Catopuma temminckii*, Oriental Small-clawed Otter *Amblonyx cinereus*, Chinese Forest Musk Deer *Moschus berezovskii*, Chinese Water Deer *Hydropotes inermis* and Chinese Pangolin *Manis pentadactyla* are at Lower Risk (Near-threatened) globally and Class II Protected in China.
 - Hairy-footed Flying Squirrel *Belomys pearsonii* is also at Lower Risk globally.
 - Leopard *Panthera pardus* is Class I Protected in China, and the South China subspecies (*P. pardus orientalis*) is Critically Endangered globally.
 - Spotted Linsang *Prionodon pardicolor*, Small Indian Civet *Viverricula indica* and Sambar *Cervus unicolor* are Class II Protected in China.
 - There are thought to be two subspecies of Sika Deer *Cervus nippon* in South China, and it is not clear which, if any, survives in the Huaping area. *C. n. kopschi* (described from Jiangxi) is Endangered and *C. n. pseudaxis* (described from Vietnam) is Critically Endangered.
- While many of the species reported require specialist verification, it would appear from the habitat suitability and the residents' reports that Huaping supports a rich mammal fauna.

Birds

- Fifty-seven species of birds were recorded in Huaping National Nature Reserve during this survey (Table 3).
- The most frequently encountered species were Chestnut Bulbul *Hemixos castanonotus* and Mountain Bulbul *Hypsipetes mccllellandii*.
- The record of Blyth's Kingfisher *Alcedo hercules* is the first from Guangxi.

Table 3. Birds recorded in Huaping National Nature Reserve, 15-20 August 1998. Sequence follows Clements (2000).

Scientific name	English name
<i>Spilornis cheela</i>	Crested Serpent Eagle
<i>Accipiter trivirgatus</i>	Crested Goshawk
<i>Falco subbuteo</i>	Eurasian Hobby
<i>Bambusicola thoracica</i>	Chinese Bamboo Partridge
<i>Lophura nycthemera</i>	Silver Pheasant
<i>Hierococcyx fugax</i>	Hodgson's Hawk Cuckoo
<i>Cuculus saturatus</i>	Oriental Cuckoo
<i>Otus spilocephalus</i>	Mountain Scops Owl
<i>Otus bakkamoena</i>	Collared Scops Owl
<i>Otus sunia</i>	Oriental Scops Owl
<i>Ketupa flavipes</i>	Tawny Fish Owl
<i>Glaucidium brodiei</i>	Collared Owlet
<i>Apus pacificus</i>	Fork-tailed Swift
<i>Apus affinis</i>	House Swift
<i>Eurystomus orientalis</i>	Dollarbird
<i>Alcedo hercules</i>	Blyth's Kingfisher
<i>Megalaima virens</i>	Great Barbet
<i>Megalaima oorti</i>	Black-browed Barbet
<i>Celeus brachyurus</i>	Rufous Woodpecker
<i>Blythipicus pyrrhotis</i>	Bay Woodpecker
<i>Pitta nympha</i>	Fairy Pitta
<i>Hirundo rustica</i>	Barn Swallow
<i>Hirundo daurica</i>	Red-rumped Swallow
<i>Motacilla alba</i>	White Wagtail
<i>Motacilla cinerea</i>	Grey Wagtail
<i>Pericrocotus solaris</i>	Grey-chinned Minivet
<i>Spizixos semitorques</i>	Collared Finchbill
<i>Hemixos castanonotus</i>	Chestnut Bulbul
<i>Hypsipetes mcclllandii</i>	Mountain Bulbul
<i>Hypsipetes leucocephalus</i>	Black Bulbul
<i>Chloropsis hardwickii</i>	Orange-bellied Leafbird
<i>Monticola rufiventris</i>	Chestnut-bellied Rock Thrush
<i>Myophonus caeruleus</i>	Blue Whistling Thrush
<i>Prinia inornata</i>	Plain Prinia
<i>Orthotomus cuculatus</i>	Mountain Tailorbird
<i>Phylloscopus ricketti</i>	Sulphur-breasted Warbler
<i>Abroscopus albogularis</i>	Rufous-faced Warbler
<i>Muscicapa griseisticta</i>	Grey-streaked Flycatcher
<i>Cyornis hainanus</i>	Hainan Blue Flycatcher
<i>Rhyacornis fuliginosus</i>	Plumbeous Water Redstart
<i>Enicurus scouleri</i>	Little Forktail
<i>Enicurus schistaceus</i>	Slaty-backed Forktail
<i>Enicurus leschenaulti</i>	White-crowned Forktail
<i>Garrulax maesi</i>	Grey Laughingthrush
<i>Pomatorhinus ruficollis</i>	Streak-breasted Scimitar Babbler
<i>Stachyris ruficeps</i>	Rufous-capped Babbler
<i>Leiothrix lutea</i>	Red-billed Leiothrix
<i>Pteruthius flaviscapis</i>	White-browed Shrike Babbler
<i>Alcippe brunnea</i>	Dusky Fulvetta
<i>Alcippe morrisonia</i>	Grey-cheeked Fulvetta
<i>Yuhina castaniceps</i>	Striated Yuhina
<i>Yuhina nigrimenta</i>	Black-chinned Yuhina
<i>Yuhina zantholeuca</i>	White-bellied Yuhina
<i>Parus major</i>	Great Tit
<i>Parus spilonotus</i>	Yellow-cheeked Tit
<i>Aethopyga christinae</i>	Fork-tailed Sunbird
<i>Dicaeum ignipectus</i>	Fire-breasted Flowerpecker
<i>Urocissa erythrorhyncha</i>	Red-billed Blue Magpie
<i>Dendrocitta formosae</i>	Grey Treepie

- A number of species of conservation concern were recorded:
 - Fairy Pitta *Pitta nympha* is Vulnerable globally and Class II Protected in China.
 - Blyth's Kingfisher is at Lower Risk (Near-threatened) globally.
 - Crested Serpent Eagle *Spilornis cheela*, Crested Goshawk *Accipiter trivirgatus*, Eurasian Hobby *Falco subbuteo*, Silver Pheasant *Lophura nycthemera*, Collared Owlet *Glaucidium brodiei*, the scops owls *Otus* spp. and Tawny Fish Owl *Ketupa flavipes* are Class II Protected in China.
- The presence of many forest-dependent species indicated that the forests at Huaping have high integrity. However certain groups susceptible to hunting, such as pigeons and pheasants, were apparently depleted.

Reptiles and Amphibians

- Twenty-five species of amphibian (one newt and 24 anurans) and nine species of reptile (three lizards and six snakes) were recorded at Huaping during the survey (Table 4).
- The most frequently encountered species included *Rana limnocharis* and *Amolops ricketti*.
- One frog and one lizard species could not be firmly identified, and are provisionally assigned to *Rana sangzhiensis* and *Sphenomorphus indicus* respectively.
- The record of *Rana sangzhiensis* is the first from Guangxi. *Megophrys minor*, *Paa boulengeri*, *Rana adenopleura*, *Rana latouchii*, *Rana schmackeri*, *Philautus rhododiscus*, *P. jinxiuensis* and *Ophiophagus hannah* are new records for the reserve.

Table 4. Amphibians and reptiles of Huaping National Nature Reserve, 15-20 August 1998. Sequence follows Zhao E.-M. & Adler (1993).

Species	Habitat	
<i>Pachytriton labiatus</i>	stream	✓
<i>Brachytarsophrys carinensis</i>	stream	✓
	village	✓
<i>Megophrys minor</i>	stream	✓, tadpoles
<i>Vibrissaphora yaoshanensis</i>	stream	tadpoles
<i>Bufo andrewsi</i>	forest	✓
<i>Bufo cryptotympanicus</i>	forest	✓
<i>Bufo melanostictus</i>	village	✓
<i>Amolops chunganensis</i>	river	✓
	forest	✓
<i>Amolops ricketti</i>	stream	✓, tadpoles
	ditch	✓
<i>Paa boulengeri</i>	stream	✓
<i>Paa exilispinosa</i>	stream	
<i>Paa spinosa</i>	stream	
	river	✓
<i>Rana adenopleura</i>	village	✓
	paddy field	✓
<i>Rana guentheri</i>	paddy field	✓
<i>Rana limnocharis</i>	ditch	✓
	stream	✓
	paddy field	✓
	village	✓
	forest	✓
	pine plantation	✓
	shrubland	✓
	grassland	✓
	forest	✓
	stream	✓
<i>Rana latouchii</i>	forest	✓
<i>Rana livida</i>	stream	✓
	forest	✓
<i>Rana sangzhiensis</i> ?	forest edge	✓
<i>Rana schmackeri</i>	river	✓, tadpoles
<i>Rana versabilis</i>	stream	✓

Species	Habitat	
	forest	✓
<i>Philautus rhododiscus</i>	bamboo plantation	+ , eggs, tadpoles
		tadpoles
	bamboo forest	
<i>Philautus jinxiuensis</i>	bamboo forest	✓
<i>Polypedates dennysi</i>	bamboo forest	✓
<i>Microhyla heymonsi</i>	paddy field	tadpoles
<i>Microhyla ornata</i>	paddy field	✓
	forest	✓
	pine plantation	✓
<i>Platyplacopus kuehnei</i>	forest edge	✓
<i>Scincella modesta</i>	forest	✓
<i>Sphenomorphus indicus</i> ?	forest edge	✓
	forest	✓
<i>Boiga kraepelini</i>	logged forest	✓
<i>Calamaria septentrionalis</i>	forest	✓
<i>Elaphe carinata</i>	forest	shed skin
<i>Pseudoxenodon karlschmidti</i>	forest	✓
	forest edge	✓
<i>Pseudoxenodon macrops</i>	forest	✓
<i>Sinonatrix percarinata</i>	stream	✓
	paddy field	✓
	river	✓
<i>Ophiophagus hannah</i>	forest	✓
<i>Trimeresurus stejnegeri</i>	logged forest	✓

- In addition to these, the following species have been reported by Liu C.-C. & Hu (1962) and Wen *et al.* (1984) (nomenclature updated): *Andrias davidianus*, *Echinotriton asperrimus* (as *Tylototriton asperrimus*), *Paramesotriton chinensis* (as *Trituroides chinensis*), *Leptolalax liui* (as *Megophrys oshanensis*), *Megophrys omeimontis*, *Hyla sanchiangensis*, *Rana andersoni*, *Rana japonica*, *Rana kuhlii*, *Rana lungshengensis*, *Rana rugulosa*, *Rana shini*, *Rana taipehensis*, *Polypedates megacephalus* (as *Rhacophorus leucomystax*), *Polypedates mutus*, *Rhacophorus omeimontis*, *Takydromus sexlineatus*, *Eumeces chinensis*, *Eumeces elegans*, *Dibamus bourreti*, *Ramphotyphlops braminus*, *Xenopeltis hainanensis*, *Achalinus rufescens*, *Achalinus spinalis*, *Ahaetulla prasina*, *Amphiesma bitaeniata* (as *Natrix bitaeniata*), *Amphiesma boulengeri*, *Amphiesma craspedogaster* (as *Natrix craspedogaster*), *Amphiesma optata*, *Amphiesma popei*, *Amphiesma sauteri*, *Amphiesma stolatum*, *Boiga multomaculata*, *Cyclophiops major*, *Dinodon flavozonatum*, *Elaphe frenata*, *Elaphe mandarina*, *Elaphe porphyracea*, *Elaphe taeniura*, *Enhydris plumbea*, *Lycodon ruhstrati*, *Macropisthodon rudis*, *Oligodon chinensis*, *Oligodon formosanus*, *Opisthotropis latouchii*, *Pareas chinensis*, *Plagiopholis styani*, *Pseudoxenodon bambusicola*, *Ptyas korros*, *Rhabdophis nuchalis*, *Rhabdophis tigrina*, *Sibynophis chinensis*, *Sibynophis collaris*, *Sinonatrix aequifasciata*, *Xenochrophis piscator*, *Bungarus multicinctus*, *Calliophis maccllellandi*, *Naja atra*, *Azemiops feae*, *Deinagkistrodon acutus* and *Trimeresurus mucrosquamatus*. Two of these, *Rana lungshengensis* and *Dibamus bourreti*, have a restricted global distribution.
- A number of species recorded in the present survey are of conservation concern:
 - *Ophiophagus hannah* is a Class II Protected species in China.
 - *Bufo cryptotympanicus*, *Rana sangzhiensis*, *Philautus rhododiscus* and *P. jinxiuensis* are endemic to central/southern China and have a very restricted range.
- The presence of the two species of *Philautus*, *Scincella modesta*, *Boiga kraepelini*, *Pseudoxenodon karlschmidti*, *P. macrops* and many stream specialists (e.g. *Pachytriton liberata*, *Brachytarsophrys carinensis*, *Amolops ricketti*, *Paa boulengeri*, *Paa exilispinosa*, *Paa spinosa*, *Rana livida* and *Rana schmackeri*) indicate that the forest and the stream habitats at Huaping had high integrity.

Fish

- Twelve species of freshwater fish were recorded from the Reserve (Table 5).
- The most frequently encountered species were *Zacco platypus*, *Acrossocheilus parallens*, *Schistura fasciolata*, *Discogobio elongatus?* and *Pseudogastromyzon fangi*.
- You (1986) reported the occurrence of 13 fish species in Huaping, but gave only vernacular names, which cannot be reliably assigned to species. The present records are therefore all new for Huaping.
- *Rhinogobius yaoshanensis* was thought to be endemic to the Yaoshan district (Zhu, 1995), but has recently been found in Mulun, North Guangxi (Kadoorie Farm and Botanic Garden, 2002c).
- Some of the species (e.g. *Protomyzon* (cf. *sinensis*) sp.) could not be firmly identified, and await specialist verification.
- Specimens of the genus *Discogobio* could not be positively identified, but represent a new record for Guangxi. They are provisionally assigned to *D. elongatus?*, which has been reported only from Yunnan Province (Yue *et al.*, 2000).

Table 5. Freshwater fish recorded at Huaping, 15-20 August 1998.

Species	Habitat
<i>Zacco platypus</i>	stream
<i>Acrossocheilus parallens</i>	stream
<i>Onychostoma leptura</i>	stream
<i>Discogobio elongatus?</i>	stream
<i>Pseudogastromyzon fangi</i>	stream
<i>Protomyzon</i> (cf. <i>sinensis</i>) sp.	stream
<i>Schistura fasciolata</i>	stream
<i>Schistura incerta</i>	stream
<i>Vanmanenia pingchowensis</i>	stream
<i>Mystus macropterus</i>	stream
<i>Glyptothorax fukiensis fukiensis</i>	stream
<i>Rhinogobius yaoshanensis</i>	stream

- The fish fauna is of conservation interest because of the presence of the highly-restricted *Discogobio elongatus?*, *Protomyzon* (cf. *sinensis*) sp. and *Rhinogobius yaoshanensis*. It was apparently unexceptional in terms of species richness.
- The sampled fish fauna consisted solely of lotic species requiring relatively clean water with high oxygen-content, indicating that the streams at Huaping were in good ecological condition.

Ants

- At least 74 species were recorded at Huaping (Table 6).
- The most frequently encountered species throughout the reserve (altitude 500-1,500 m) included *Pachycondyla* sp. 14, *Pachycondyla* sp. 2, *Pachycondyla* sp. 17, *Paratrechina* sp. 9, *Pheidole* sp. 25, *Leptogenys kitteli*, *Camponotus* sp. 28 and *Pheidologeton* sp. 8. Species occurring frequently but at middle altitude (up to 1,000 m) only were *Pheidole* sp. 1 and *Crematogaster* sp. 3. Frequent at high altitude (1,000 to 1,500m) only was *Pheidole fervida*.
- Many specimens could not reliably be assigned to described species. These require further study.
- The following species have recently been described as new, from specimens collected at Huaping (Zhou, 2001). It has not yet been possible to compare these with those listed below, or with other described species held in overseas collections.
 - *Amblyopone eminia* Zhou (collected by ZSY on 17 September 1998);
 - *Aphaenogaster pumilopuncta* Zhou (collected by ZSY on 6 June 1995);
 - *Aphaenogaster subexaperata* Zhou (collected by ZSY on 9 July 1995);

- *Camponotus albivillosus* Zhou (collected by ZSY on 6 July 1995; holotype from Xingan County, 8 July 1994);
- *Leptogenys huapingensis* Zhou (collected by ZSY on 16 August 1998);
- *Monomorium concolor* Zhou (collected by ZSY on 8 July 1995; holotype from Quanzhou County, 12 September 1995);
- *Pheidole selathorax* Zhou (collected by ZSY on 8 August 1995);
- *Prenolepis longiventris* Zhou (collected by ZSY on 8 July 1995);
- *Strumigenys pilosa* Zhou (collected by ZSY on 19 August 1998);
- *Technomyrmex antennus* Zhou (collected by ZSY on 9 July 1995).

Table 6. Ant species and number of encounters at Huaping National Nature Reserve, 15 to 20 August 1998. * Species with a strong forest-association.

Species	Habitat
<i>Acropyga guangxiensis</i>	open low fir/bamboo
<i>Aenictus (laeviceps group) sp. 2</i>	broadleaf forest
<i>Camponotus (cf. fuscivillosus) sp. 28</i>	broadleaf forest, shrubland
<i>Camponotus (cf. mitis) sp. 11</i>	forest
<i>Crematogaster (cf. travancorensis) sp. 2</i>	low forest, 900m
<i>Crematogaster (cf. laboriosa) sp. 3</i>	forest, shrubland, paddy
<i>Crematogaster sp. 23</i>	open shrubland/grassland
<i>Cryptopone sp. 1 *</i>	forest, shrubland
<i>Dolichoderus sp. 8</i>	closed broadleaf forest
<i>Dolichoderus sibiricus</i>	broadleaf forest
<i>Dolichoderus sp. 6</i>	(data missing)
<i>Hypoponera (cf. excoecata) sp. 2</i>	closed broadleaf forest
<i>Hypoponera sp. 5 *</i>	closed broadleaf forest
<i>Kartidris (cf. galos) sp. 1 *</i>	broadleaf forest
<i>Lasius sp. 1 *</i>	closed forest
<i>Leptogenys kitteli *</i>	forest, shrubland, grassland
<i>Leptogenys sp. 14</i>	low closed forest
<i>Leptogenys sp. 17</i>	forest, shrubland
<i>Leptogenys (cf. chinensis) sp. 18 *</i>	forest, shrubland
<i>Liometopum (cf. sinense) sp. 1</i>	forest, shrubland
<i>Monomorium chinense</i>	shrubland, paddy
<i>Monomorium destructor</i>	open shrubland/grassland
<i>Myrmecina sp. *</i>	closed broadleaf forest
<i>Myrmica sp. *</i>	broadleaf forest
<i>Odontomachus monticola *</i>	forest
<i>Oligomyrmex (cf. hunanensis) sp. 3</i>	forest
<i>Oligomyrmex sp. 4 *</i>	closed forest
<i>Oligomyrmex sp. 6 *</i>	closed forest
<i>Pachycondyla (javana group) sp. 1 *</i>	open forest
<i>Pachycondyla (cf. astuta) sp. 14 *</i>	forest
<i>Pachycondyla (cf. annamita) sp. 11 *</i>	(missing data)
<i>Pachycondyla (cf. luteipes) sp. 2 *</i>	forest
<i>Pachycondyla (cf. nigrita) sp. 17 *</i>	broadleaf forest
<i>Paratrechina (cf. bourbonica) sp. 4</i>	shrubland, forest, paddy
<i>Paratrechina sp. 30</i>	open shrubland/grassland
<i>Paratrechina sauteri</i>	pine/broadleaf forest
<i>Paratrechina (cf. opaca) sp. 26 *</i>	pine/broadleaf shrubland
<i>Paratrechina (nr. indica) sp. 9 *</i>	broadleaf/bamboo forest
<i>Pheidole fervida *</i>	low closed forest
<i>Pheidole smythiesi</i>	forest
<i>Pheidole (cf. noda) sp. 1</i>	forest, shrubland, grassland
<i>Pheidole (cf. tsailuni) sp. 7 *</i>	low fir/bamboo wood
<i>Pheidole sp. 11</i>	broadleaf/bamboo forest
<i>Pheidole sp. 13 *</i>	forest, shrubland
<i>Pheidole sp. 29-A</i>	closed broadleaf forest
<i>Pheidole sp. 29-B *</i>	closed broadleaf forest
<i>Pheidole sp. 29-C *</i>	closed broadleaf forest

Species	Habitat
<i>Pheidologeton</i> (cf. <i>melasolenus</i>) sp. 8 *	forest
<i>Polyrhachis dives</i>	shrubland
<i>Polyrhachis tyrannica</i>	shrubland
<i>Polyrhachis vigilans</i> *	paddy/low shrubland
<i>Ponera</i> sp. 3 *	closed low forest
<i>Prenolepis</i> (cf. <i>emmae</i>) sp. 1 *	forest
<i>Prenolepis</i> sp. 3 *	closed broadleaf forest
<i>Prenolepis</i> sp. 8 (= <i>Paratrechina opisothalmia</i>) *	forest, shrubland, paddy
<i>Prenolepis</i> sp. 9 *	forest
<i>Pristomyrmex pungens</i>	open forest, fields
<i>Pseudolasius</i> sp. 1	pine/fir/broadleaf forest
<i>Pyramica</i> (cf. <i>canina</i>) sp. B *	low closed forest
<i>Pyramica</i> sp. A *	closed broadleaf forest
<i>Rhoptomyrmex</i> (<i>wroughtonii</i> group) sp. 1	open forest
<i>Strumigenys lewisi</i> *	closed broadleaf forest
<i>Tapinoma</i> (nr. <i>indica</i>) sp. 2 *	closed low forest
<i>Technomyrmex</i> sp. 2 *	closed broadleaf forest
<i>Tetramorium guangxiensis</i> *	closed broadleaf forest
<i>Tetramorium</i> (nr. <i>shensiense</i>) sp. *	closed broadleaf forest
<i>Tetramorium</i> sp. 18 *	closed broadleaf forest
<i>Tetramorium nipponense</i> *	low closed forest,
<i>Tetramorium</i> sp. 25 *	closed broadleaf forest
<i>Tetramorium</i> (cf. <i>tonganum</i>) sp. 12	low closed forest
<i>Tetramorium</i> sp. 2	closed broadleaf forest
<i>Tetramorium</i> (cf. <i>kraepelini</i>) sp. 4 *	forest
<i>Tetraoponera modesta</i>	open shrubland/grassland
<i>Vollenhovia</i> (cf. <i>emeryi</i>) sp. 1 *	closed broadleaf forest

- *Acropyga guangxiensis*, *Dolichoderus* sp. 8, *Leptogenys* sp. 14, *Pheidole* spp. 29-B and 29-C and *Tetramorium* sp. 18 are known only from Huaping.
- *Kartidris* sp. 1, *Lasius* sp. 1, *Hypoponera* sp. 5, *Ponera* sp. 3, *Prenolepis* spp. 3 and 9, *Strumigenys lewisi* and *Tetramorium* sp. 6 are probably dependent on primary forest.
- Of the species recorded, some 42 (57%) are forest-dependent. On the Hongtan trail, 31 of 49 species (63%) are forest-dependent, indicating the high forest integrity in that part of the reserve.

Dragonflies

- Twenty-six species were recorded from Huaping (Table 7).
- Among the most frequently encountered were *Ceriagrion melanurum*, *Planaeschna suichangensis*, *Matrona basilaris*, *Vestalis smaragdina veluta*, *Bayadera melanopteryx* and *Coeliccia cyanomelas*.
- Several species could not be identified to species, including a female coenagrionid (19 August on the Cuijiang trail) and a male libellulid (16 August on the Hongtan trail). The *Anotogaster* specimens could not be assigned to a described species.
- *Calopteryx melli* has not been recently recorded from China and hitherto only recorded from Guangdong.

Table 7. Dragonflies recorded from Huaping National Nature Reserve, 15 to 20 August 1998. Sequence of genera follows Schorr *et al.* (2001a, b).

Species	Remarks
<i>Archineura incarnata</i>	
<i>Matrona basilaris</i>	
<i>Vestalis smaragdina veluta</i>	
<i>Caliphaea consimilis</i>	
<i>Calopteryx melli</i>	new Guangxi record
<i>Anisopleura qingyuanensis</i>	

Species	Remarks
<i>Bayadera melanopteryx</i>	
<i>Ischnura senegalensis</i>	
<i>Ceriagrion melanurum</i>	
<i>Coeliccia cyanomelas</i>	
<i>Indocnemis orang</i>	
<i>Aeshna petalura</i>	
<i>Anax nigrofasciatus</i>	
<i>Planaeschna suichangensis</i>	
<i>Polycanthagyna ornithcephala</i>	
<i>Anotogaster</i> sp.	
<i>Idionyx carinata</i>	
<i>Orthetrum albistylis</i>	
<i>Orthetrum melanium</i>	
<i>Orthetrum glaucum</i>	
<i>Orthetrum triangulare</i>	
<i>Pantala flavescens</i>	
<i>Sympetrum eroticum</i>	
<i>Sympetrum darwinianum</i>	
<i>Sympetrum baccha</i>	

- *Vestalis smaragdina veluta*, *Caliphaea consimilis*, *Bayadera melanopteryx*, *Indocnemis orang*, *Planaeschna suichangensis* and *Idionyx carinata* are rare and/or dependent on high habitat integrity.

Butterflies

- Eighty-four butterfly species were recorded at Huaping over the period 16-20 August (Table 8).
- Among the most frequently encountered species were *Graphium chironides*, *Papilio nephelus*, *Eurema hecabe*, *Allotinus drumila*, *Euthalia nara*, *Lethe chandica*, *Erionota torus*, *Pieris naganum*, *Abisara burnii*, *Abisara fylla*, *Lethe verma*, *Melanitis leda* and *Stibochiona nicea*.
- Some species (*Pelopidas* sp., *Chrysozephyrus* sp., *Tongeia* sp., *Polygonia* sp., *Stichophthalma* sp.) could not be identified, while others (*Lethe chandica*, *Mycalasis gotama*, *Neptis sappho*) are subject to confirmation.
- Eleven species are apparently new provincial records (not recorded for Guangxi by Chou (1994) or Bascombe (1995)).

Table 8. Butterflies recorded at Huaping, 16-20 August 1998, with habitat surveyed. Sequence of genera follows Bascombe (1995).

Species	Habitat	Notes
<i>Ampittia virgata</i>	forest/stream	
<i>Caltoris cahira</i>	forest/stream, farmland	new Guangxi record
<i>Choaspes benjaminii</i>	forest/stream	
<i>Erionota torus</i>	forest/stream	
	forest/farmland	
<i>Halpe homolea</i>	forest/stream	
<i>Hasora badra</i>	forest/stream	
<i>Isoteinon lamprospilus</i>	forest/farmland	
<i>Notocrypta curvifascia</i>	forest/stream	
<i>Pelopidas</i> sp.	forest/stream	
<i>Tagiades litigiosus</i>	forest/stream	
<i>Telicota augias</i>	forest/stream	
<i>Graphium chironides</i>	forest/stream	
	forest/farmland	
<i>Graphium sarpedon</i>	forest/farmland	
	forest/stream	
<i>Meandrusa payeni</i>	forest/stream	
<i>Papilio helenus</i>	forest/stream	
	forest/farmland	

Species	Habitat	Notes
<i>Papilio memnon</i>	forest/stream	
<i>Papilio nephelus</i>	forest/farmland	
<i>Papilio protenor</i>	forest/stream	
<i>Eurema brigitta</i>	forest/farmland	
<i>Eurema hecabe</i>	forest/stream	
<i>Eurema laeta</i>	forest/farmland	
<i>Hebomoia glaucippe</i>	forest/stream	
<i>Pieris (Artogeia) canidia</i>	forest/farmland	
<i>Pieris (Talbotia) naganum</i>	forest/stream	
<i>Abisara burnii</i>	forest/stream	
<i>Abisara echerius</i>	forest/farmland	
<i>Abisara fylla</i>	forest/stream	new Guangxi record
<i>Abisara neophron</i>	forest/stream	
<i>Acytolepis puspa</i>	forest/stream	
<i>Allotinus drumila</i>	forest/farmland	new Guangxi record
<i>Chrysozephyrus sp.</i>	forest/stream	
<i>Curetis dentata</i>	forest/stream	
<i>Heliophorus ila</i>	forest/farmland	
<i>Jamides bochus</i>	forest/stream	
<i>Pithecopus corvus</i>	forest/farmland	
<i>Spindasis syama</i>	forest/farmland	
<i>Stiboges nymphidia</i>	forest/stream	
<i>Tongeia sp.</i>	forest/stream	
<i>Acraea issoria</i>	forest/farmland	
<i>Argynnis (Argyronome) laodice</i>	forest/farmland	new Guangxi record
<i>Argynnis (Childrena) childreni</i>	forest/stream	
<i>Argyreus hyperbius</i>	forest/stream	
<i>Athyma asura</i>	forest/farmland	
<i>Athyma cama</i>	forest/stream	
<i>Athyma jina</i>	forest/stream	
<i>Athyma punctata</i>	forest/stream	new Guangxi record
<i>Athyma ranga</i>	forest/stream	
<i>Athyma selenophora</i>	forest/stream	
<i>Cethosia biblis</i>	forest/stream	
<i>Charaxes bernardus</i>	forest/farmland	
<i>Dichorragia nesimachus</i>	forest/stream	
<i>Euthalia kardama</i>	forest/stream	new Guangxi record
<i>Euthalia nara</i>	forest/stream	
<i>Euthalia narcea</i>	forest/farmland	
<i>Euthalia niepelti</i>	forest/stream	
<i>Euthalia phemius</i>	forest/farmland	
<i>Helcyra superba</i>	forest/stream	new Guangxi record
<i>Hestina assimilis</i>	forest/stream	
<i>Kallima inachus</i>	forest/farmland	
<i>Lethe chandica ?</i>	forest/stream	
<i>Lethe satyrina</i>	forest/farmland	
<i>Lethe verma</i>	forest/stream	new Guangxi record
	forest/farmland	
	forest/stream	

Species	Habitat	Notes
<i>Lethe (Neope) armandii</i>	forest/stream	
<i>Lethe (Neope) muirheadii</i>	forest/stream	
<i>Limenitis (Bhagadatta) austenia</i>	forest/stream	
<i>Mandarinia regalis</i>	forest/stream	new Guangxi record
<i>Melanitis leda</i>	forest/stream	
<i>Melanitis phedima</i>	forest/farmland	
	forest/stream	
<i>Mycalesis francisca</i>	forest/stream	
<i>Mycalesis gotama ?</i>	forest/farmland	
<i>Neptis hylas</i>	forest/farmland	
<i>Neptis miah</i>	forest/stream	
<i>Neptis sankara</i>	forest/stream	
<i>Neptis sappho ?</i>	forest/farmland	
<i>Pararge (Nosea) hainanensis</i>	forest/farmland	
<i>PentHEMA adelma</i>	forest/farmland	
	forest/stream	
<i>Polygonia sp.</i>	forest/farmland	
<i>Sephisa princeps</i>	forest/stream	new Guangxi record
<i>Stibochiona nicea</i>	forest/stream	
	forest/farmland	
<i>Stichophthalma howqua</i>	forest/stream	
<i>Stichophthalma sp.</i>	forest/farmland	
	forest/stream	
<i>Symbrenthia brabira</i>	forest/stream	new Guangxi record
	forest/farmland	
<i>Symbrenthia hypselis</i>	forest/stream	
<i>Ypthima baldus</i>	forest/farmland	

- Notable forest indicators included *Meandrusa payeni*, *Talbotia naganum*, *Bhagadatta austenia*, *Euthalia* spp., *Helcyra superba*, *Kallima inachus*, *Mandarinia regalis*, *Nosea hainanensis*, *Stibochiona nicea*, *Stichophthalma howqua*, *Allotinus drumila* and *Stiboges nymphidia*.

Summary of flora and fauna

- Huaping probably has the largest area of primary forest in Guangxi. Though only a small part of this could be surveyed, the recorded flora included six globally Threatened species and two Lower Risk species, including the Class I Nationally Protected species *Cathaya argyrophylla*. In addition there were four Class II Nationally Protected species and one Guangxi endemic species. This survey contributed six new records to the Huaping area.
- The forests at Huaping had an exceptionally rich reptile, amphibian and ant fauna. A large proportion of the fauna and flora encountered, including almost 60% of ant species, were forest-dependent species, with a correspondingly low proportion of weed and tramp species.
- Many rare species were recorded including Blyth's Kingfisher, Tawny Fish Owl, Fairy Pitta, Grey Laughingthrush, the frogs *Philautus jinxiuensis* and *Philautus rhododiscus* and the goby *Rhinogobius yaoshanensis*. Other reported fauna of great conservation importance, such as Tiger, Clouded Leopard, Stump-tailed Macaque, Dhole, Eurasian Otter, Asiatic Black Bear, Malayan Porcupine and Sika Deer, could not confirmed in this rapid survey.
- Due to its location, there was a high proportion of central Chinese species such as *Boiga kraepelini*, *Pseudoxenodon macrops*, *Pachytriton labiatus*, *Brachytarsophrys carinensis*, *Amolops chunganensis* and *Discogobio elongatus?*, which do not occur in coastal South China.
- Huaping was considered of national biodiversity importance by MacKinnon *et al.* (1996). The results of the present survey fully support this designation.

Threats and problems

- Habitat loss and degradation is the greatest threat to fauna and flora. While the forest in the reserve interior is still largely intact, degradation has recently occurred at the periphery. One slope near Tianpingshan was cleared for the construction of bungalows for tourism development. Another large patch of forest (~ 2 ha) at the border of the core area near Cujiang Station was cleared to make way for traditional Chinese medicine cultivation. A new logging trail from the bridge at Tianpingshan to Hongtan was made to selectively log old-growth *Cunninghamia lanceolata*. In addition, a large area of natural old-growth *Cunninghamia lanceolata* near Cujiang had been logged for timber.
- Medicinal plants such as *Panax japonicus*, *Cinnamomum wilsonii*, and *Coptis chinensis* var. *brevisepala* have been extensively collected and, though recorded in the past, were not found during this survey.
- Hunting occurred in the reserve. A gin trap (reportedly set for Wild Boar) was found near Dayan where the Tiger was reported.
- Freshwater fish were still being harvested from streams within the reserve.

Opportunities and recommendations

- There was a large area of good primary forest at Huaping, and consequently the reserve supported a diverse forest fauna and flora. Extensive sections of good forest were outside the designated core area, between Tianpingshan and Hongtan.
- Clearfelling of natural forest should be stopped completely. Collection of medicinal plants should be stopped completely in the core area and strictly controlled in the outer buffer zone. Selective logging should be restricted to the periphery, and carried out using low impact methods.
- The existing good forests are largely confined to higher altitudes and lowland forest is under-represented at Huaping. Where possible, attempts should be made to restore lowland forests by planting native trees and allowing natural regeneration.
- The reserve management authorities were trying to increase the number of tourists by providing better accommodation. This might bring income to villagers, but such tourist developments should be carefully assessed and controlled to protect the ecological value of this important reserve. Few educational materials had been provided at the reserves, and the possibilities of developing environmental education should be explored.
- The occurrence of South China Tiger has not yet been confirmed. If further reports are received, reserve authorities could seek financial and technical support from the Wild Fauna and Flora Conservation Department of State Forestry Administration, which is implementing an action plan to save this subspecies. Conservation management measures will be needed for this Critically Endangered top predator and its prey. Conservation of large ungulate populations should be a priority.
- The streams in the reserve still support a diverse freshwater community and other stream-dependent wildlife. These should be protected from harvesting, pollution and damaging engineering works.

Acknowledgements

The editors wish to thank the Guangxi Forestry Department for their cooperation and assistance, and all participants of the survey team, including field staff at Huaping National Nature Reserve. Tim Woodward from Hong Kong provided his unpublished bird data collected from Huaping. Gary Ades of KFBG identified the bat from a photograph. We also thank our voluntary helper Sukh Mantel, for data input. This work has been funded by KFBG.

References

- Anon., 1959-2000. *Flora Reipublicae Popularis Sinicae*. Tomus 2-80. Science Press, Beijing. (In Chinese.)
- Anon., 1991. *Flora of Guangxi*. Volume 1. Guangxi Science Technology Press, Nanning. (In Chinese.)
- Anon., 1996-2000. *Flora of China* Vol. 4, 15, 16, 17, 18, & 24. Science Press, Beijing, and Missouri Botanic Garden Press, St. Louis.
- Anon., 2001. *Flora of China Checklist*. Published on the Internet. <http://mobot.mobot.org/W3T/Search/foc.html> [accessed 1 September, 2001].
- Bascombe, M.J., 1995. Check list of the butterflies of South China. *Memoirs of the Hong Kong Natural History Society* 20: 1-206.
- Bolton, B., 1995. *A New General Catalogue of the Ants of the World*. Harvard University Press, Cambridge, Massachusetts, 504 pp.
- Chen, S. (ed.), 1999. Angiospermae Monocotyledoneae Orchidaceae (2). *Flora Reipublicae Popularis Sinicae*. Tomus 18. Science Press, Beijing, 463 pp. (In Chinese.)
- Clements, J.F., 2000. *Birds of the World: A Checklist, Fifth Edition*. Ibis Publishing Company, California, 867pp.
- Chou, I., 1994. *Monographia Rhopalocerorum Sinensium*. Henan Scientific and Technological Publishing House, Zhengzhou, 2 vol., 854 pp. (In Chinese.)
- Corbet, G.B. and Hill, J.E., 1992. *The Mammals of the Indomalayan Region: a Systematic Review*. Oxford University Press, New York, 488 pp.
- Fellowes, J., Hau, B. and Lau, M., 1998. Tigers in Guangxi? *Cat News* 29, 5.
- Forestry Department of Guangxi Zhuang Autonomous Region, 1993. *Guangxi Nature Reserves*. China Forestry Publishing House, Beijing, 187 pp.
- Guangdong Forestry Department and South China Institute of Endangered Animals, 1987. *Colour Guide of Wildlife in Guangdong Province*. Guangdong Science and Technology Press, Guangzhou, 139 pp. + 300 colour plates. (In Chinese.)
- Hua, W.L. and Yan, Q.W., 1993. *Protected Animals in China*. Shanghai Scientific and Technological Education Publishing House, Shanghai, 618 pp. (In Chinese with English abstract.)
- Inskipp, T., Lindsey, N. and Duckworth, W., 1996. *An Annotated Checklist of the Birds of the Oriental Region*. Oriental Bird Club, Sandy, Bedfordshire, U.K, 294 pp.
- IUCN Species Survival Commission, 2001. *2000 IUCN Redlist of Threatened Species*. Published on the Internet: <http://www.redlist.org/> [accessed 1 September, 2001].
- Kadoorie Farm and Botanic Garden, 2002a. *Report of Rapid Biodiversity Assessments at Maoershan Nature Reserve, Northeast Guangxi, China, 1998 and 2001*. South China Forest Biodiversity Survey Report Series: No. 16. KFBG, Hong Kong SAR, ii + 25 pp.
- Kadoorie Farm and Botanic Garden, 2002b. *Report of a Rapid Biodiversity Assessment at Qingshitan Headwater Forest Nature Reserve, Northeast Guangxi, China, 25 to 26 August 1998*. South China Forest Biodiversity Survey Report Series: No. 17. KFBG, Hong Kong SAR, ii + 13 pp.

- Kadoorie Farm and Botanic Garden, 2002c. *Report of a Rapid Biodiversity Assessment at Mulun National Nature Reserve, North Guangxi, China, 18 to 23 July 1998*. South China Forest Biodiversity Survey Report Series: No. 13. KFBG, Hong Kong SAR, ii + 29 pp.
- Lang, K. (ed.), 1999 Angiospermae Monocotyledoneae Orchidaceae (1). *Flora Reipublicae Popularis Sinicae*. Tomus 17. Science Press, Beijing, 551 pp. (In Chinese.)
- Li, S.G., Yuan, S.F., Liu, L.F., and Chen, Z.Z., 1986. Floristic composition. Pp. 72-144 in: Anon. (eds.), *Report of Comprehensive Survey of Huaping Forest Area, Guangxi*. Shandong Science and Technology Publishing House, Jinan, 293 pp. (In Chinese.)
- Liu, C.-C. and Hu, S.-C., 1962. A herpetological report of Kwangsi. *Acta Zoologica Sinica* 14 (suppl.): 73-104.
- Liu, D.L., Wu, Z.L., Yang, H.X., Chen, C.D., Zhao, X.Y., Wang, X.L., Wang, M.H and Wang, J.M., 1996. *Nature Reserves in China*. Shanghai Science, Technology and Education Press, Shanghai. 923 pp. (In Chinese.)
- MacKinnon, J., Meng, S., Cheung, C., Carey, G., Zhu, X. and Melville, D., 1996. *A Biodiversity Review of China*. World Wide Fund for Nature (WWF) International, WWF China Programme, Hong Kong, 529 pp.
- Nelson, J.S., 1994. *Fishes of the World, 3rd edition*. John Wiley & Sons, New York, 600 pp.
- Schorr, M., Lindeboom, M. and Paulson, D., 2001a. *List of Odonata of the World (Part 1, Zygoptera and Anisozygoptera)*. July 2001 version. Published on the Internet: <http://www.ups.edu/biology/museum/worldodonates.html>
- Schorr, M., Lindeboom, M. and Paulson, D., 2001b. *List of Odonata of the World (Part 2, Anisoptera)*. April 2001 version. Published on the Internet: <http://www.ups.edu/biology/museum/worldanisops.html>
- State Forestry Administration and Ministry of Agriculture, 1999. *State Protection List of Wild Plants*. (In Chinese.)
- The Plant Names Project, 2001. *International Plant Names Index*. Published on the Internet: <http://www.ipni.org/> [accessed 1 September, 2001].
- Wang, X.P., He, M.G., Zheng, W.Y., Wang, J.J., Wu, D.Z., Yuan, R.Z., Fan, J.R., Wang, Y.S., Tan, H.F. and Liu, S.Y., 1986. Vegetation. Pp. 145-160 in: Anon. (eds.), *Report of Comprehensive Survey of Huaping Forest Area, Guangxi*. Shandong Science and Technology Publishing House, Jinan, 293 pp. (In Chinese.)
- Wen, Y., Li, Z. and Xu, Y., 1984. Herpetological investigations of the Huaping Forest in Guangxi. *Acta Herpetologica Sinica* [new series] 3: 50, 54, 57.
- Wilson, D.E. and Cole, F.R., 2000. *Common Names of Mammals of the World*. Smithsonian Institution Press, Washington and London, xiv + 204 pp.
- Wu, H.L., Shao, K.T. and Lai, C.F. (eds.), 1999. *Latin-Chinese Dictionary of Fishes' Names*. Sueichan Press, Taiwan, 1,028 pp. (In Chinese and English.)
- You, Q.J., 1986. Insects and Animals. Pp. 198-207 in: Anon. (eds.), *Report of Comprehensive Survey of Huaping Forest Area, Guangxi*. Shandong Science and Technology Publishing House, Jinan, 293 pp. (In Chinese.)

- Yue, P. *et al.*, 2000. *Fauna Sinica – Osteichthyes Cypriniformes III*. Science Press, Beijing, 661 pp. (In Chinese with English abstract.)
- Zhang, W. (ed.), 1998. *China's Biodiversity: A Country Study*. China Environmental Science Press, Beijing, 476 pp.
- Zhang, Y. *et al.*, 1997. *Distribution of Mammalian Species in China*. CITES Management Authority of China. China Forestry Publishing House, Beijing, 280 pp. (In Chinese and English.)
- Zhao, E., Chang, H.W., Zhao, H. and Adler, K., 2000. Revised checklist of Chinese Amphibia & Reptilia. *Sichuan Journal of Zoology* 19(3): 196-207. (In Chinese.)
- Zhao, E.-M. and Adler, K, 1993. *Herpetology of China*. Society for the Study of Amphibians and Reptiles, Oxford, Ohio, U.S.A., 522 pp.
- Zhou, S., 2001. *Ants of Guangxi*. Guangxi Normal University Press, Guilin, China, 255 pp. (In Chinese.)
- Zhu, S.Q., 1995. *Synopsis of Freshwater Fishes of China*. Jiangsu Science and Technology Publishing House, Nanjing. (In Chinese.)

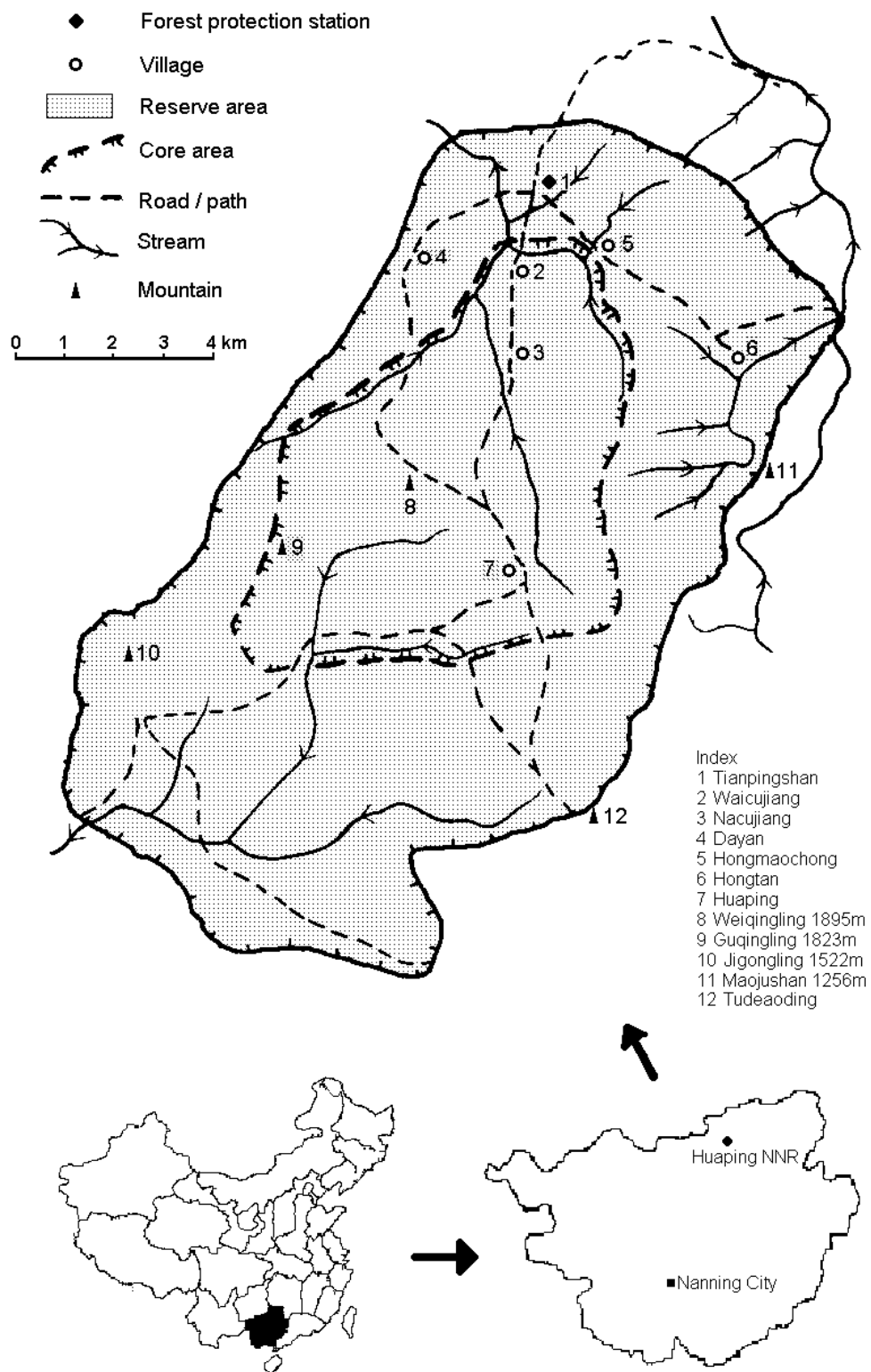


Figure 1. Map showing location of Huaping National Nature Reserve, Northeast Guangxi, China