



**Report of a Rapid Biodiversity Assessment at  
Guanyinshan Nature Reserve, Central  
Guangdong, China, August 2000**

**Kadoorie Farm and Botanic Garden**  
in collaboration with  
**Guangdong Provincial Forestry Department**  
**South China Institute of Botany**  
**South China Normal University**  
**Xinyang Teachers' College**

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# **Report of a Rapid Biodiversity Assessment at Guanyinshan Nature Reserve, Central Guangdong, China, August 2000**

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## **Background**

The present report details the findings of a visit to Central Guangdong 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**

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### Translation of common Chinese geographical terms

Romanized Chinese (pinyin)	English meaning
Bei	north
Dao	island
Dong	east
Feng shui	the Chinese system of geomancy
Feng, Ding	peak
Gang	harbour
Hai	sea
He, Chuan, Jiang	river
Hu, Chi	lake
Keng, Gu, Gou	valley
Kou	outlet
Ling	range
Nan	south
Ping	flat
Shan	mountain
Shi	city
Tun	hamlet
Wan	bay
Xi	west
Xi, Yong	stream
Xian	county
Xiang, Cun	village

# Report of a Rapid Biodiversity Assessment at Guanyinshan Nature Reserve, Central Guangdong, China, August 2000

## Objectives

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

## Methods

- On 10 August 2000 a team of biologists from Hong Kong (BH, ML, LKS, CW, BC, NSC), Xinyang (LHJ), Guangxi (ZSY, HJH) and Guangzhou (LS, XZ, DHJ, CZY, CBH) left Guangzhou for Guanyinshan. At 15.00 the team arrived at the Fangniudong Reservoir, south of Guanyinshan Nature Reserve. They stayed at Fogang County Town.
- During fieldwork visual searching for plants, mammals, birds, reptiles, amphibians, fish, ants, butterflies and dragonflies was conducted. Frogs and birds were also identified by their calls. Plant records were made by field observation, with some specimens collected.
- Vascular plant records were made by CBH, CZY or NSC, and edited by NSC, except for orchids, for which records were made by CBH and ML, and verified by GS. No direct mammal records were made. Records of birds were made or verified by LKS or CW, reptiles and amphibians by ML or BC, fish by BC, DHJ or CXL, dragonflies by ML, KW or GTR and butterflies by ML or GTR.
- Nomenclature in the report is standardised based, unless otherwise stated, on the following references:
  - Flora (Pteridophyta, Gymnospermae and Angiospermae excluding Orchidaceae): Anon. (1959-2001); Anon. (1996-2001); Anon. (2002a, 2002b); The Plant Names Project (2002);
  - 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);
  - 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 (2002). Certain taxa, including orchids, reptiles, amphibians, fish and invertebrates, have yet to be properly assessed for global status. National conservation status of orchids is based on Wang *et al.* (in press).
- 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

- Guanyinshan Nature Reserve is situated in central Guangdong at 23° 57'N, 113° 32'E, in the northwest of Fogang County, Qingyuan City District, on the border with Yingde City. The size of the reserve is 28 km<sup>2</sup> (MacKinnon *et al.*, 1996; Zhang, J., 1997; Zhang W., 1998).
- The geology is mainly granite. The reserve has a mountainous landscape, and over ten peaks above 900 m within its small area. Altitude in the reserve ranges from below 350 m to 1,219m at the summit of Yapoji (Zhang J., 1997).
- The region as a whole has a subtropical monsoon climate with a mean annual temperature of 21°C. Mean monthly temperature ranges from 8°C in January to 28°C in July; annual

precipitation is about 2,200 mm and occurs mainly between April and September. The streams radiate in different directions, all eventually feeding into the Bei Jiang of the Zhujiang system.

- Guanyinshan was designated a provincial nature reserve in November 1985 by the Guangdong Provincial Government. The reserve was established to protect the subtropical evergreen broadleaf forest and rare flora and fauna (Zhang J., 1997).

## Results

### Vegetation

- The vegetation of Guanyinshan Nature Reserve has been reported to include the following types (Zhang J., 1997):
  - i) Subtropical monsoon evergreen broadleaf forest, the zonal vegetation of the region, at medium altitude;
  - ii) Montane evergreen broadleaf forest, between medium and high altitude;
  - iii) Young secondary forest of *Pinus massoniana*, mainly below high altitude. This vegetation had recently regenerated from deforested sites;
  - iv) Mixed evergreen broadleaf and coniferous forest, between medium and high altitude at the margin of evergreen broadleaf forest;
  - v) Montane evergreen dwarf forest, above higher altitude near ridges and summits.
- The present rapid survey was able to visit only the southern parts of the reserve. The surveyed area was covered mainly in young secondary broadleaf forest dominated by *Liquidambar formosana* and *Schefflera octophylla*, about 4-8 m tall and less than 30 cm dbh, and young open *Pinus massoniana* plantation about 2-4 m tall. More mature secondary broadleaf forest about 10-15 m tall and 40 cm dbh was found in small patches near Baisha Keng village, but the age of the forest was reported to be less than 40 years.

### Flora

- The present survey recorded 538 vascular plant species including 51 fern species in 23 families, four gymnosperms in four families, and 483 angiosperms in 106 families (Table 1). This is a very high number given the two-and-a-half days of field work, but includes many species of degraded vegetation and of fairly low conservation significance. Earlier surveys of Guanyinshan had recorded 1,163 vascular plant species (Zhang, J., 1997).
- Among the flora recorded in the present survey, some are of conservation concern:
  - The orchid *Habenaria leptoloba* is a new record for Guangdong. It was considered endemic to Hong Kong (Siu, 2000) before the present survey, and is known only from these two sites.
  - *Cymbidium ensifolium* is Endangered in China due to over-collection for ornamental purposes.
  - *Diplopanax stachyanthus* is globally Vulnerable and is mainly found in relatively good hillside broadleaf forest in South China.
  - *Ixonanthes chinense* and *Artocarpus hypargyreus* are considered Vulnerable, although both are widespread and fairly common in South China.
  - *Castanopsis kawakamii* is considered to be at Lower Risk (near threatened). It is widespread in South China and occasionally dominant in hillside broadleaf forest.
  - *Alsophila spinulosa* and *Gymnosphaera podophylla* are tree fern species, all of which are under Class II National Protection in China, and are usually restricted to relatively mature forest.
  - *Cibotium barometz* and *Brainea insignis* are under Class II National Protection in China although they are both widespread in South China and common in degraded secondary forest.
  - *Toona ciliata* is under Class II National Protection in China. It is widespread in broadleaf forest of South China.
  - *Eurycorymbus cavaleriei* is under Class II National Protection in China and is considered to be at Lower Risk (near threatened) globally.

- *Cinnamomum camphora* is under Class II National Protection in China, although it is widespread and commonly cultivated in South China.
- *Blastus pauciflorus* is endemic to Guangdong and Jiangxi.
- *Ormosia pachycarpa* var. *tenuis* is endemic to Guangdong.
- All the orchid species recorded are listed in CITES Appendix II.

**Table 1.** Vascular plants of Guanyinshan Nature Reserve recorded in the present survey. Species which are nationally Protected (Class I or II) (State Forestry Administration & Ministry of Agriculture, 1999), globally Threatened or Lower Risk (Near-threatened) (IUCN, 2002) or globally restricted are indicated.

Family	Scientific name	Notes
<b>PTERIDOPHYTA</b>		
Adiantaceae	<i>Adiantum caudatum</i> L. <i>Adiantum flabellulatum</i> L.	
Aspidiaceae	<i>Ctenitis rhodolepis</i> (C.B. Clarke) Ching <i>Ctenitis subglandulosa</i> (Hance) Ching <i>Tectaria subtriphylla</i> (Hook. & Arn.) Copel.	
Aspleniaceae	<i>Asplenium normale</i> D. Don <i>Asplenium pseudolaserpitiiifolium</i> Ching	
Athyriaceae	<i>Diplazium donianum</i> (Mett.) Tardieu <i>Diplazium subsinuatum</i> (Wall. ex Hook. & Grev.) Tagawa	
Blechnaceae	<i>Blechnum orientale</i> L. <i>Brainea insignis</i> (Hook.) J. Sm. <i>Woodwardia japonica</i> (L.f.) Sm. <i>Woodwardia orientalis</i> Sw.	Protected II
Cyatheaceae	<i>Alsophila spinulosa</i> (Wall. ex Hook.) R.M. Tryon <i>Gymnosphaera podophylla</i> (Hook.) Copel.	Protected II Protected II
Davalliaceae	<i>Davallia tyermannii</i> (T. Moore) Hook. & Baker	
Dennstaedtiaceae	<i>Dennstaedtia scabra</i> (Wall.) Moore var. <i>glabrescens</i> (Ching) C. Chr. <i>Microlepia marginata</i> (Houtt.) C. Chr.	
Dicksoniaceae	<i>Cibotium barometz</i> (L.) J. Sm.	Protected II
Drynariaceae	<i>Pseudodrynaria coronans</i> (Wall. ex Mett.) Ching	
Dryopteridaceae	<i>Arachniodes chinensis</i> (Rosenst.) Ching <i>Cyrtomium balansae</i> (H. Christ) C. Chr. <i>Polystichum eximium</i> (Mett. ex Kuhn) C. Chr.	
Gleicheniaceae	<i>Dicranopteris linearis</i> (Burm. f.) Underw. <i>Dicranopteris pedata</i> (Houtt.) Nakaike <i>Diplopterygium chinensis</i> (Rosenst.) DeVol	
Hymenophyllaceae	<i>Trichomanes auriculatum</i> Blume	
Lindsaeaceae	<i>Lindsaea orbiculata</i> (Lam.) Mett. ex Kuhn	
Lygodiaceae	<i>Lygodium japonicum</i> (Thunb.) Sw. <i>Lygodium scandens</i> (L.) Sw.	
Marattiaceae	<i>Angiopteris fokiensis</i> Hieron.	
Nephrolepidaceae	<i>Nephrolepis auriculata</i> (L.) Trimea	
Osmundaceae	<i>Osmunda vachellii</i> Hook.	
Polypodiaceae	<i>Arthromeris lehmannii</i> (Mett.) Ching <i>Colysis elliptica</i> (Thunb.) Ching <i>Colysis hemionitidea</i> (Wall. ex Mett.) C. Presl <i>Lemmaphyllum microphyllum</i> C. Presl <i>Microsorium fortunei</i> (T. Moore) Ching <i>Pyrrosia adnascens</i> (Sw.) Ching <i>Pyrrosia lingua</i> (Thunb.) Farw	
Pteridaceae	<i>Histiopteris incisa</i> (Thunb.) J. Sm. <i>Pteris fauriei</i> Hieron. <i>Pteris insignis</i> Mett. ex Kuhn <i>Pteris multifida</i> Poir. <i>Pteris semipinnata</i> L. <i>Pteris vittata</i> L.	
Selaginellaceae	<i>Selaginella doederleinii</i> Hieron	
Sinopteridaceae	<i>Onychium japonicum</i> (Thunb.) Kunze	
Thelypteridaceae	<i>Cyclosorus parasiticus</i> (L.) Farw. <i>Dictyocline griffithii</i> Moore <i>Pronephrium triphyllum</i> (Sw.) Holttum	

Family	Scientific name	Notes
<b>GYMNOSPERMAE</b>		
Gnetaceae	<i>Gnetum montanum</i> Markgr.	
Pinaceae	<i>Pinus massoniana</i> Lamb.	
Podocarpaceae	<i>Podocarpus neriifolius</i> D. Don	
Taxodiaceae	<i>Cunninghamia lanceolata</i> (Lamb.) Hook.	planted
<b>ANGIOSPERMAE</b>		
<b>Dicotyledonae</b>		
Acanthaceae	<i>Baphicacanthus cusia</i> (Nees ) Bremek. <i>Championella tetrasperma</i> (Champ. ex Benth.) Brem. <i>Dicliptera chinensis</i> (L.) Juss. <i>Hygrophila salicifolia</i> (Vahl.) Ness <i>Justicia ventricosa</i> Wall.	
Aceraceae	<i>Acer fabri</i> Hance <i>Acer tutcheri</i> Duthie	
Actinidiaceae	<i>Actinidia eriantha</i> Benth. <i>Actinidia latifolia</i> (Gardner & Champ.) Merr. <i>Saurauia tristyla</i> DC.	
Alangiaceae	<i>Alangium chinense</i> (Lour.) Harms.	
Amaranthaceae	<i>Achyranthes aspera</i> L. <i>Alternanthera philoxeroides</i> (Mart.) Griseb. <i>Alternanthera sessilis</i> (L.) DC.	panropical weed
Anacardiaceae	<i>Amaranthus viridis</i> L. <i>Rhus chinensis</i> Mill. <i>Toxicodendron succedaneum</i> (L.) Kuntze.	
Annonaceae	<i>Desmos chinensis</i> Lour. <i>Fissistigma glaucescens</i> (Hance) Merr. <i>Fissistigma oldhamii</i> (Hemsl.) Merr. <i>Uvaria boniana</i> Finet & Gagnep. <i>Uvaria calamistrata</i> Hance <i>Uvaria microcarpa</i> Champ. ex Benth.	
Apiaceae	<i>Centella asiatica</i> (L.) Urb.	
Apocynaceae	<i>Alyxia sinensis</i> Champ. ex Benth. <i>Kopsia arborea</i> Blume <i>Pottsia laxiflora</i> (Blume) Kuntze <i>Strophanthus divaricatus</i> (Lour.) Hook. & Arn. <i>Trachelospermum jasminoides</i> (Lindl.) Lem.	
Aquifoliaceae	<i>Ilex asprella</i> (Hook. & Arn.) Champ.ex Benth. <i>Ilex dasyphylla</i> Merr. <i>Ilex ficoidea</i> Hemsl. <i>Ilex hanceana</i> Maxim. <i>Ilex kwangtungensis</i> Merr. <i>Ilex micrococca</i> Maxim. <i>Ilex pubescens</i> Hook. & Arn. <i>Ilex rotunda</i> Thunb. <i>Ilex triflora</i> Blume	
Araliaceae	<i>Aralia chinensis</i> L. <i>Aralia decaisneana</i> Hance <i>Aralia spinifolia</i> Merr. <i>Dendropanax proteus</i> Benth. <i>Diplopanax stachyanthus</i> Hand.-Mazz. <i>Schefflera octophylla</i> (Lour.) Harms	Vulnerable
Asclepiadaceae	<i>Dischidia chinensis</i> Champ. ex Benth. <i>Toxocarpus fuscus</i> Tsiang	
Asteraceae	<i>Ageratum conyzoides</i> L.  <i>Artemisia indica</i> Willd. <i>Bidens pilosa</i> L.  <i>Blumea megacephala</i> (Randeria) Ching & Tseng <i>Crassocephalum crepidioides</i> (Benth.) S. Moore  <i>Elephantopus scaber</i> L.	introduced from tropical America  introduced from tropical America  introduced from Africa

Family	Scientific name	Notes
	<i>Emilia sonchifolia</i> (L.) DC.	pantropical weed
	<i>Eupatorium chinense</i> L.	
	<i>Inula cappa</i> (Buch.-Ham. ex D. Don) DC.	pantropical weed
	<i>Senecio scandens</i> Buch.-Ham.	
	<i>Vernonia cinerea</i> (L.) Less.	
	<i>Xanthium sibiricum</i> Patrín ex Widder	
Begoniaceae	<i>Begonia palmata</i> D. Don	
Berberidaceae	<i>Mahonia bealei</i> (Fortune) Carrière	
Boraginaceae	<i>Ehretia longiflora</i> Champ. ex Benth.	
Burseraceae	<i>Canarium album</i> (Lour.) Raeusch.	
	<i>Canarium pimela</i> Leenhouts	
Caesalpiniaceae	<i>Bauhinia championii</i> (Benth.) Benth.	
Capparaceae	<i>Capparis acutifolia</i> Sweet	
	<i>Capparis cantoniensis</i> Lour.	
Caprifoliaceae	<i>Lonicera confusa</i> (Sweet) DC.	
	<i>Lonicera japonica</i> Thunb. ex Murray	
	<i>Viburnum fordiae</i> Hance	
	<i>Viburnum hanceanum</i> Maxim.	
	<i>Viburnum odoratissimum</i> Ker Gawl.	
	<i>Viburnum sempervirens</i> Koch	
Celastraceae	<i>Celastrus hindsii</i> Benth.	
	<i>Euonymus laxiflorus</i> Champ. ex Benth.	
Chloranthaceae	<i>Chloranthus spicatus</i> (Thunb.) Makino	
Clethraceae	<i>Clethra faberi</i> Hance	
Clusiaceae	<i>Calophyllum membranaceum</i> Gardner & Champ.	
	<i>Cratoxylum cochinchinense</i> (Lour.) Blume	
	<i>Garcinia multiflora</i> Champ. ex Benth.	
	<i>Garcinia oblongifolia</i> Champ. ex Benth.	
	<i>Hypericum japonicum</i> Thunb. ex Murray	
Connaraceae	<i>Rourea microphylla</i> (Hook. & Arn.) Planch.	
Cucurbitaceae	<i>Gynostemma pentaphylla</i> (Thunb.) Makino	
Daphniphyllaceae	<i>Daphniphyllum calycinum</i> Benth.	
	<i>Daphniphyllum oldhami</i> (Hemsl.) Rosenth.	
Dilleniaceae	<i>Tetracera asiatica</i> (Lour.) Hoog.	
Ebenaceae	<i>Diospyros eriantha</i> Champ. ex Benth.	
	<i>Diospyros morrisiana</i> Hance ex Walpers	
Elaeagnaceae	<i>Elaeagnus gonyanthes</i> Benth.	
Elaeocarpaceae	<i>Elaeocarpus chinensis</i> (Gardner & Champ.) Hook. f. ex Benth.	
	<i>Elaeocarpus decipiens</i> Hemsl.	
	<i>Elaeocarpus japonicus</i> Siebold & Zucc.	
	<i>Sloanea sinensis</i> (Hance) Hemsl.	
Ericaceae	<i>Lyonia ovalifolia</i> (Wall.) Drude	
	<i>Rhododendron cavaleriei</i> H. Lév.	
	<i>Rhododendron championiae</i> Hook. f.	
	<i>Rhododendron levinei</i> Merr.	
	<i>Rhododendron mariesii</i> Hemsl. & E.H. Wilson	
	<i>Rhododendron moulmainsense</i> Hook. f.	
	<i>Rhododendron ovatum</i> (Lindl.) Planch. ex Maxim.	
	<i>Rhododendron simsii</i> Planch.	
	<i>Vaccinium bracteatum</i> Thunb.	
Escalloniaceae	<i>Itea chinensis</i> Hook. & Arn.	
Euphorbiaceae	<i>Alchornea trewioides</i> (Benth.) Müll. Arg.	
	<i>Antidesma bunius</i> (L.) Spreng.	
	<i>Antidesma fordii</i> Hemsl.	
	<i>Antidesma japonicum</i> Siebold & Zucc.	
	<i>Aporosa dioica</i> (Roxb.) Müll. Arg.	
	<i>Bischofia javanica</i> Blume	
	<i>Bischofia polycarpa</i> (H. Lév.) Airy Shaw	
	<i>Breynia fruticosa</i> (L.) Hook. f.	
	<i>Bridelia insulana</i> Hance	
	<i>Bridelia tomentosa</i> Blume	
	<i>Euphorbia hirta</i> L.	
	<i>Flueggea virosa</i> (Roxb. ex Willd.) Voigt.	
	<i>Glochidion hirsutum</i> (Roxb.) Voigt.	



Family	Scientific name	Notes
	<i>Glochidion puberum</i> (L.) Hutch.	
	<i>Glochidion wrightii</i> Benth.	
	<i>Glochidion zeylanicum</i> (Gaertn.) A. Juss.	
	<i>Macaranga denticulata</i> (Blume) Müll. Arg.	
	<i>Macaranga sampsoni</i> Hance	
	<i>Mallotus apelta</i> (Lour.) Müll. Arg.	
	<i>Mallotus japonicus</i> (Thunb.) Müll. Arg.	
	<i>Mallotus paniculatus</i> (Lam.) Müll. Arg.	
	<i>Mallotus philippinensis</i> (Lam.) Müll. Arg.	
	<i>Mallotus repandus</i> (Willd.) Müll. Arg. var. <i>chrysocarpus</i> (Pamp.) S.M. Hwang	
	<i>Phyllanthus emblica</i> L.	
	<i>Phyllanthus reticulatus</i> Poir.	
	<i>Sapium discolor</i> (Champ. ex Benth.) Müll.-Arg.	
	<i>Sapium sebiferum</i> (L.) Roxb.	
	<i>Vernicia fordii</i> (Hemsl.) Airy Shaw	
	<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 fargesii</i> Franch.	
	<i>Castanopsis fissa</i> (Champ. ex Benth.) Rehder & E. H. Wilson	
	<i>Castanopsis fordii</i> Hance	
	<i>Castanopsis kawakamii</i> Hayata	Lower Risk (nt)
	<i>Castanopsis lamontii</i> Hance	
	<i>Cyclobalanopsis championii</i> (Benth.) Oerst.	
	<i>Cyclobalanopsis chungii</i> (F.P. Metcalf) Y.C. Hsu & H. Wei Jen	
	<i>Cyclobalanopsis fleuryi</i> (Hickel & A. Camus) Chun ex Q. F. Zheng	
	<i>Cyclobalanopsis myrsinifolia</i> (Blume) Oerst.	
	<i>Lithocarpus corneus</i> (Lour.) Rehder	
	<i>Lithocarpus glaber</i> (Thunb.) Nakai	
	<i>Lithocarpus hancei</i> (Benth.) Rehder	
	<i>Lithocarpus uvariifolius</i> (Hance) Rehder	
Flacourtiaceae	<i>Casearia balansae</i> Gagnep.	
	<i>Casearia glomerata</i> Roxb.	
	<i>Homalium cochinchinense</i> (Lour.) Druce	
Gentianaceae	<i>Gentiana davidii</i> Franch.	
	<i>Gentiana loureiroi</i> (G. Don) Griseb.	
Gesneriaceae	<i>Chirita anachoreta</i> Hance	
	<i>Chirita eburnea</i> Hance	
	<i>Lysionotus pauciflorus</i> Maxim.	
	<i>Oreocharis benthami</i> C. B. Clarke ex A. & C. DC.	
	<i>Rhynchotechum ellipticum</i> (Wal. ex D. Dietr.) A. DC.	
Haloragidaceae	<i>Haloragis chinensis</i> (Lour.) Merr.	
Hamamelidaceae	<i>Altingia chinensis</i> (Champ. ex Benth.) Oliv. ex Hance	
	<i>Distylium myricoides</i> Hemsl.	
	<i>Eustigma oblongifolium</i> Gardner & Champ.	
	<i>Exbucklandia tonkinensis</i> (Lecomte) Steenis	
	<i>Liquidambar formosana</i> Hance	
	<i>Loropetalum chinense</i> (R. Br.) Oliv.	
Hydrangeaceae	<i>Hydrangea kwangsiensis</i> Hu var. <i>hedyotidea</i> (Chun) C.M. Hu	
	<i>Pileostegia viburnoides</i> Hook. f. & Thomson	
Ixonanthaceae	<i>Ixonanthes chinensis</i> Champ.	Vulnerable
Juglandaceae	<i>Engelhardtia fenzelii</i> Merr.	
	<i>Engelhardtia roxburghiana</i> Wall.	
Lamiaceae	<i>Anisomeles indica</i> (L.) Kuntze ( <i>Epimeredi indica</i> Rothm.)	
	<i>Paraphlomis javanica</i> (Blume) Prain	
	<i>Scutellaria indica</i> L.	
Lardizabalaceae	<i>Akebia quinata</i> (Houtt.) Decne.	
	<i>Stauntonia hexaphylla</i> Decne. fo. <i>uropphylla</i> (Hand.-Mazz.) Wu	
Lauraceae	<i>Beilschmiedia tsangii</i> Merr.	
	<i>Cassytha filiformis</i> L.	
	<i>Cinnamomum burmanni</i> (Nees & T. Nees) Blume	
	<i>Cinnamomum camphora</i> (L.) J. Presl.	Protected II
	<i>Cinnamomum porrectum</i> (Roxb.) Kosterm.	
	<i>Cryptocarya chinensis</i> (Hance) Hemsl.	

Family	Scientific name	Notes
	<i>Cryptocarya concinna</i> Hance	
	<i>Lindera communis</i> Hemsl.	
	<i>Litsea cubeba</i> (Lour.) Pers.	
	<i>Litsea elongata</i> Benth. & Hook. f. var. <i>subverticillata</i> (Y.C. Yang)	
	Yen C. Yang & P.H. Huang	
	<i>Litsea monopetala</i> (Roxb. ex Baker) Pers.	
	<i>Litsea rotundifolia</i> Hemsl. var. <i>oblongifolia</i> (Nees) C. K. Allen	
	<i>Litsea verticillata</i> Hance	
	<i>Machilus chinensis</i> (Champ. ex Benth.) Hemsl.	
	<i>Machilus robusta</i> W.W. Sm	
	<i>Machilus thunbergii</i> Siebold & Zucc.	
	<i>Machilus velutina</i> Champ. ex Benth.	
	<i>Neolitsea pulchella</i> (Meissn ) Merr	
Loganiaceae	<i>Gelsemium elegans</i> (Gardner & Champ.) Benth.	
	<i>Strychnos cathayensis</i> Merr.	
Lythraceae	<i>Rotala rotundifolia</i> (Buch.-Ham. ex Roxb.) Koehne	
Magnoliaceae	<i>Manglietia fordiana</i> Oliv.	
	<i>Manglietia moto</i> Dandy	
	<i>Michelia foveolata</i> Merr. ex Dandy	
	<i>Michelia odora</i> (Chun) Nooteb. & B. L. Chen	cultivated in Guanyin Villas
Malpighiaceae	<i>Hiptage benghalensis</i> (L.) Kurz	
Malvaceae	<i>Sida rhombifolia</i> L.	pan-tropical weed
	<i>Urena lobata</i> L.	pan-tropical weed
	<i>Urena procumbens</i> L.	
Melastomataceae	<i>Blastus cochinchinensis</i> Lour.	
	<i>Blastus pauciflorus</i> (Benth.) Guillaumin	endemic to Guangdong & Jiangxi
	<i>Melastoma candidum</i> D. Don	
	<i>Melastoma dodecandrum</i> Lour.	
	<i>Melastoma sanguineum</i> Sims	
	<i>Memecylon ligustrifolium</i> Champ. ex Benth.	
	<i>Osbeckia crinita</i> Benth. ex Triana	
	<i>Phyllagathis cavaleriei</i> (H. Lév. & Vaniot) Guillaumin	
Meliaceae	<i>Toona ciliata</i> M. Roem.	Protected II
	<i>Toona sinensis</i> (Juss.) Roem.	
Menispermaceae	<i>Cocculus orbiculatus</i> (L.) DC.	
	<i>Cyclea hypoglauca</i> (Schauer) Diels	
	<i>Pericampylus glaucus</i> (Lam.) Merr.	
Mimosaceae	<i>Acacia pennata</i> (L.) Willd.	
	<i>Adenantha pavonina</i> L. var. <i>microsperma</i> (Teijsm. & Binnend.) I. C. Nielsen	
	<i>Albizia chinensis</i> (Osbeck) Merr.	
	<i>Albizia corniculata</i> (Lour.) Druce	
	<i>Pithecellobium clypearia</i> (Jack) Benth.	
	<i>Pithecellobium lucidium</i> Benth.	
Moraceae	<i>Artocarpus hypargyreus</i> Hance ex Benth.	Vulnerable
	<i>Artocarpus styracifolius</i> Pierre	
	<i>Artocarpus tonkinensis</i> A. Chev. ex Gagnep.	
	<i>Broussonetia kaempferi</i> Sieb.	
	<i>Broussonetia papyrifera</i> (L.) L'Hér. ex Vent.	
	<i>Cudrania cochinchinensis</i> (Lour.) Kudo & Masam.	
	<i>Ficus erecta</i> Thunb.	
	<i>Ficus esquiroliana</i> H. Lév.	
	<i>Ficus fistulosa</i> Reinw. ex Blume	
	<i>Ficus formosana</i> Maxim. fo. <i>shimadai</i> Hayata	
	<i>Ficus hirta</i> Vahl	
	<i>Ficus hispida</i> L. f. var. <i>rubra</i> Corner	
	<i>Ficus langkokensis</i> Drake	
	<i>Ficus microcarpa</i> L. f.	
	<i>Ficus nervosa</i> B. Heyne ex Roth.	
	<i>Ficus pandurata</i> Hance	
	<i>Ficus pumila</i> L.	

Family	Scientific name	Notes	
Myricaceae Myrsinaceae	<i>Ficus pyriformis</i> Hook. & Arn.		
	<i>Ficus stenophylla</i> Hemsl.		
	<i>Myrica rubra</i> (Lour.) Sieb. & Zucc.		
	<i>Ardisia crenata</i> Sims		
	<i>Ardisia hanceana</i> Mez		
	<i>Ardisia lindleyana</i> D. Dietr.		
	<i>Ardisia mamillata</i> Hance		
	<i>Ardisia primulifolia</i> Gardner & Champ.		
	<i>Ardisia pusilla</i> A.DC.		
	<i>Ardisia quinquegona</i> Blume		
	<i>Embelia parviflora</i> Wall. ex A. DC.		
	<i>Embelia ribes</i> Burm. f.		
	<i>Embelia rudis</i> Hand.-Mazz.		
	<i>Embelia undulata</i> (Wall.) Mez		
	<i>Embelia vestita</i> Roxb.		
	<i>Maesa japonica</i> (Thunb.) Moritzi & Zoll.		
	<i>Maesa perlarius</i> (Lour.) Merr.		
<i>Mysine seguinii</i> H. Lév			
Myrtaceae	<i>Baeckea frutescens</i> L.	introduced from tropical America	
	<i>Psidium guajava</i> L.		
Oleaceae	<i>Rhodomyrtus tomentosa</i> (Aiton) Hassk.		
	<i>Syzygium buxifolium</i> Hook. & Arn.		
	<i>Syzygium hancei</i> Merr. & L. M. Perry		
	<i>Syzygium levinei</i> (Merr.) Merr. & L. M. Perry		
	<i>Fraxinus chinensis</i> Roxb.		
Onagraceae	<i>Osmanthus matsumuranus</i> Hayata		
	<i>Ludwigia octovalvis</i> (Jacq.) Raven		
Oxalidaceae	<i>Oxalis corniculata</i> L.		
Papilionaceae	<i>Oxalis corymbosa</i> DC.		
	<i>Bowringia callicarpa</i> Champ. ex Benth.		
	<i>Dalbergia hancei</i> Benth.		
	<i>Desmodium heterocarpon</i> (L.) DC.		
	<i>Lespedeza bicolor</i> Turcz.		
	<i>Lespedeza formosa</i> (Vogel) Koehne		
	<i>Millettia dielsiana</i> Harms		
	<i>Millettia reticulata</i> Benth.		
	<i>Mucuna birdwoodiana</i> Tutch.		
	<i>Ormosia pachycarpa</i> Champ. ex Benth. var. <i>tenuis</i> Chun	endemic to Guangdong	
Pentaphylacaceae	<i>Ormosia semicastrata</i> Hance		
	<i>Phyllodium pulchellum</i> (L.) Desv.		
	<i>Podocarpium laxum</i> (DC.) Yen C. Yang & P.H. Huang		
	<i>Pueraria lobata</i> (Willd.) Ohwi		
	<i>Pueraria phaseoloides</i> (Roxb.) Benth.		
Piperaceae	<i>Tadehagi triquetrum</i> (L.) H. Ohashi		
	<i>Pentaphylax euryoides</i> Gardner & Champ.		
Pittosporaceae	<i>Piper hancei</i> Maxim.		
	<i>Piper hongkongense</i> C. DC.		
Plantaginaceae	<i>Piper sarmentosum</i> Roxb.		
	<i>Pittosporum glabratum</i> Lindl.		
Polygalaceae	<i>Plantago major</i> L.	introduced	
	<i>Polygala fallax</i> Hemsl.		
	<i>Polygala japonica</i> Houtt.		
	<i>Salomonina cantoniensis</i> Lour.		
	<i>Xanthophyllum hainanense</i> Hu		
	<i>Polygonum chinense</i> L.		
	<i>Polygonum hastato-sagittatum</i> Mak.		
	<i>Polygonum perfoliatum</i> L.		
	<i>Reynoutria japonica</i> Houtt.		
	Proteaceae	<i>Helicia cochinchinensis</i> Lour.	
		<i>Helicia reticulata</i> W. T. Wang	
	Ranunculaceae	<i>Clematis chinensis</i> Osbeck	
<i>Clematis meyeniana</i> Walp.			
Rhamnaceae	<i>Berchemia floribunda</i> (Wall.) Brongn.		

Family	Scientific name	Notes
	<i>Berchemia lineata</i> (L.) DC.	
	<i>Sageretia thea</i> (Osbeck) M.C. Johnst.	
Rhizophoraceae	<i>Ventilago leiocarpa</i> Benth.	
Rosaceae	<i>Carallia brachiata</i> (Lour.) Merr.	
	<i>Agrimonia nipponica</i> Koidz. var. <i>occidentalis</i> Skalicky	
	<i>Photinia benthamiana</i> Hance	
	<i>Photinia prunifolia</i> (Hook. & Arn.) Lindl.	
	<i>Prunus adenodonta</i> Merr.	
	<i>Prunus campanulata</i> Maxim.	
	<i>Pygeum topengii</i> Merr.	
	<i>Pyrus calleryana</i> (L.) Lindl.	
	<i>Rhaphiolepis indica</i> (L.) Lindl.	
	<i>Rosa laevigata</i> Michx.	
	<i>Rubus alceaefolius</i> Poir.	
	<i>Rubus leucanthus</i> Hance	
	<i>Rubus pirifolius</i> Sm.	
Rubiaceae	<i>Adina pilulifera</i> (Lam.) Franch. ex Drake	
	<i>Aidia canthioides</i> (Champ. ex Benth.) Masam.	
	<i>Aidia cochinchinensis</i> Lour.	
	<i>Canthium dicoccum</i> (Gaertn.) Teysmann & Binnedijk	
	<i>Cephalanthus tetrandrus</i> (Roxb.) Ridsdale & Bakh. f.	
	<i>Diplospora dubia</i> (Lindl.) Masam.	
	<i>Gardenia jasminoides</i> J. Ellis	
	<i>Hedyotis auricularia</i> L.	
	<i>Hedyotis consanguinea</i> Hance	
	<i>Hedyotis hedyotideia</i> (DC.) Merr.	
	<i>Ixora chinensis</i> Lam.	
	<i>Lasianthus chinensis</i> (Champ. ex Benth.) Benth.	
	<i>Morinda umbellata</i> L.	
	<i>Mussaenda pubescens</i> W. T. Aiton	
	<i>Ophiorrhiza cantoniensis</i> Hance	
	<i>Ophiorrhiza japonica</i> Blume	
	<i>Paederia scandens</i> (Lour.) Merr.	
	<i>Pavetta hongkongensis</i> Brem.	
	<i>Psychotria asiatica</i> L.	
	<i>Psychotria serpens</i> L.	epiphytic
	<i>Tarenna mollissima</i> (Hook. & Arn.) B.L. Rob.	
	<i>Uncaria hirsuta</i> Havil.	
Rutaceae	<i>Acronychia pedunculata</i> (L.) Miq.	
	<i>Evodia glabrifolia</i> (Champ. ex Benth.) C.C. Huang	
	<i>Evodia leptota</i> (Spreng.) Merr.	
	<i>Fortunella hindsii</i> (Champ. ex Benth.) Swingle	
	<i>Skimmia reevesiana</i> (Fortune) Fortune	
	<i>Toddalia asiatica</i> (L.) Lam.	
	<i>Zanthoxylum avicennae</i> (Lam.) DC.	
	<i>Zanthoxylum nitidum</i> (Roxb.) DC.	
	<i>Zanthoxylum scandens</i> Blume	
Sabiaceae	<i>Meliosma rigida</i> Siebold & Zucc.	
	<i>Meliosma squamulata</i> Hance	
	<i>Sabia japonica</i> Maxim.	
	<i>Sabia limoniacea</i> Wall. ex Hook. f. & Thomson var. <i>ardisioides</i> L. Chen	
Santalaceae	<i>Dendrotrophe frutescens</i> (Champ. ex Benth.) Danser	
Sapindaceae	<i>Eurycorymbus cavaleriei</i> (H. Lévl.) Rehder & Hand.-Mazz.	Protected II, Lower Risk (nt)
Sapotaceae	<i>Sarcosperma laurinum</i> (Benth.) Hook. f.	
Schisandraceae	<i>Schisandra viridis</i> A.C. Sm.	
Scrophulariaceae	<i>Paulownia fortunei</i> (Seem.) Hemsl.	
	<i>Torenia fournieri</i> Linden ex E. Fourn.	
Solanaceae	<i>Solanum americanum</i> Mill.	introduced from America
Staphyleaceae	<i>Turpinia arguta</i> (Lindl.) Seem.	
Sterculiaceae	<i>Byttneria aspera</i> Colebr. ex Wall.	
	<i>Helicteres angustifolia</i> L.	
	<i>Pterospermum heterophyllum</i> Hance	
	<i>Reevesia thyrsoidea</i> Lindl.	

Family	Scientific name	Notes
Styracaceae	<i>Sterculia lanceolata</i> Cav.	
	<i>Alniphyllum fortunei</i> (Hemsl.) Makino	
	<i>Huodendron biaristatum</i> (W.W. Sm.) Rehder	
	<i>Styrax confusus</i> Hemsl.	
Symlocaceae	<i>Styrax odoratissimus</i> Champ. ex Benth.	
	<i>Styrax suberifolius</i> Hook. & Arn.	
	<i>Symplocos adenophylla</i> Wall. ex G. Don	
	<i>Symplocos cochinchinensis</i> (Lour.) S. Moore	
	<i>Symplocos cochinchinensis</i> (Lour.) S. Moore subsp. <i>laurina</i> (Retz.) Noot.	
	<i>Symplocos congesta</i> Benth.	
	<i>Symplocos glauca</i> (Thunb.) Koidz.	
Theaceae	<i>Symplocos lancifolia</i> Siebold & Zucc.	
	<i>Symplocos paniculata</i> (Thunb.) Miq.	
	<i>Adinandra millettii</i> (Hook. & Arn.) Benth. & Hook. f. ex Hance	
	<i>Camellia caudata</i> Wall.	
	<i>Camellia furfuracea</i> (Merr.) Cohen-Stuart	
	<i>Cleyera japonica</i> Thunb.	
	<i>Eurya chinensis</i> R. Br.	
	<i>Eurya ciliata</i> Merr.	
	<i>Eurya distichophylla</i> Hemsl.	
	<i>Eurya groffii</i> Merr.	
	<i>Eurya macartneyi</i> Champ.	
	<i>Eurya nitida</i> Korthals	
	<i>Schima superba</i> Gardn. & Champ.	
	<i>Ternstroemia gymnanthera</i> (Wight & Arn.) Bedd.	
	<i>Ternstroemia kwangtungensis</i> Merr.	
Thymelaeaceae	<i>Wikstroemia indica</i> (L.) C. A. Mey.	
	<i>Wikstroemia nutans</i> Champ. ex Benth.	
Tiliaceae	<i>Triumfetta cana</i> Blume	
Ulmaceae	<i>Aphananthe aspera</i> (Thunb.) Planch.	
	<i>Celtis tetrandra</i> Roxb. subsp. <i>sinensis</i> (Pers.) Y.C. Tang	
	<i>Trema cannabina</i> Lour.	
Urticaceae	<i>Trema orientalis</i> (L.) Blume	
	<i>Pellionia radicans</i> (Siebold & Zucc.) Wedd.	
	<i>Pellionia repens</i> (Lour.) Merr.	
Valerianaceae	<i>Patrinia villosa</i> (Thunb.) Juss.	
Verbenaceae	<i>Callicarpa brevipes</i> (Benth.) Hance	
	<i>Callicarpa cathaya</i> H.T. Chang	
	<i>Callicarpa formosana</i> Rolfe	
	<i>Callicarpa integerrima</i> Champ.	
	<i>Callicarpa kochiana</i> Makino	
	<i>Callicarpa macrophylla</i> Vahl	
	<i>Callicarpa rubella</i> Lindl.	
	<i>Clerodendrum chinense</i> (Osbeck) Mabb.	mainly cultivated
	<i>Clerodendrum cyrtophyllum</i> Turcz.	
	<i>Clerodendrum fortunatum</i> L.	
<i>Clerodendrum japonicum</i> (Thunb.) Sweet		
<i>Lantana camara</i> L.	introduced	
<i>Verbena officinalis</i> L.		
<i>Vitex negundo</i> L. var. <i>cannabifolia</i> (Siebold & Zucc.) Hand.-Mazz.		
<i>Vitex quinata</i> (Lour.) F.N. Williams		
Violaceae	<i>Viola confusa</i> Champ. ex Benth.	
	<i>Viola diffusa</i> Ging.	
	<i>Viola japonica</i> (Thunb.) Gagnep.	
Vitaceae	<i>Ampelopsis cantoniensis</i> (Hook. & Arn.) Planch.	
	<i>Parthenocissus dalzielii</i> Gagnep.	
	<i>Tetrastigma planicaule</i> (Hook. f.) Gagnep.	
<b>Monocotyledonae</b>		
Amaryllidaceae	<i>Curculigo capitulata</i> (Lour.) Kuntze	
	<i>Curculigo orchioides</i> Gaertn.	
Araceae	<i>Acorus gramineus</i> Sol.	
	<i>Alocasia macrorrhiza</i> (L.) Schott	
	<i>Arisaema erubescens</i> (Wall.) Schott	

Family	Scientific name	Notes	
Commelinaceae Cyperaceae	<i>Pothos chinensis</i> (Raf.) Merr.		
	<i>Pothos repens</i> (Lour.) Druce		
	<i>Murdannia triquetra</i> (Wall. ex C.B. Clarke) A. Brückn.		
	<i>Carex baccans</i> Nees		
	<i>Carex cruciata</i> Wahlenb.		
	<i>Kyllinga brevifolia</i> Rottb.		
	<i>Lepidosperma chinensis</i> Nees & Meyen		
	<i>Rhynchospora rubra</i> (Lour.) Makino		
	<i>Schoenoplectus juncooides</i> (Roxb.) Palla		
	<i>Scleria chinensis</i> Kük.		
Dioscoreaceae	<i>Scleria terrestris</i> (L.) Fassett		
	<i>Dioscorea cirrhosa</i> Lour.		
Liliaceae	<i>Eriocaulon buergerianum</i> Körn.		
	<i>Asparagus cochinchinensis</i> (Lour.) Merr.		
	<i>Aspidistra elatior</i> Blume		
	<i>Aspidistra minutiflora</i> Stapf		
	<i>Dianella ensifolia</i> (L.) DC.		
	<i>Smilax china</i> L.		
	<i>Smilax glabra</i> Roxb.		
Musaceae	<i>Smilax hypoglauca</i> Benth.		
	<i>Musa balbisiana</i> Colla		
Orchidaceae	<i>Arundina graminifolia</i> (D. Don) Hochr.		
	<i>Cymbidium ensifolium</i> (L.) Sw.	terrestrial	
	<i>Habenaria leptoloba</i> Benth.	terrestrial, Endangered	
	<i>Habenaria rhodocheila</i> Hance	terrestrial, new record for Guangdong	
	<i>Pholidota chinensis</i> Lindl.	terrestrial	
	<i>Spathoglottis pubescens</i> Lindl.	epiphytic	
Pandanaceae	<i>Pandanus austrosinensis</i> T. L. Wu	terrestrial	
Poaceae	<i>Arundinella anomala</i> Steud.		
	<i>Cyrtococcum patens</i> (L.) A. Camus		
	<i>Eleusine indica</i> (L.) Gaertn.		
	<i>Eragrostis atrovirens</i> (Desf.) Trin. ex Steud.		
	<i>Eragrostis perennans</i> Keng		
	<i>Imperata koenigii</i> (Retz.) P. Beauv.		
	<i>Ischaemum ciliare</i> Retz.		
	<i>Lophatherum gracile</i> Brongn.		
	<i>Microstegium vagans</i> (Nees ex Steud.) A. Camus		
	<i>Miscanthus floridulus</i> (Labill.) Warb. ex K. Schum & Lauterb.		
	<i>Miscanthus sinensis</i> Andersson		
	<i>Panicum brevifolium</i> L.		
	<i>Panicum notatum</i> Retz		
	<i>Panicum repens</i> L.		
	<i>Paspalum conjugatum</i> Bergius		
	<i>Paspalum thunbergii</i> Kunth ex Steud.		
	<i>Pennisetum alopecuroides</i> (L.) Spreng.		
	<i>Schizachyrium sanguineum</i> (Retz.) Alston		
	<i>Setaria palmifolia</i> (J. Koenig) Stapf		
	<i>Setaria plicata</i> (Lam.) T. Cooke		
	<i>Setaria pumila</i> (Poir.) Roem. & Schult.		
	<i>Themeda villosa</i> (Poir.) A. Camus		
	<i>Thysanolaena maxima</i> (Roxb.) Kuntze		
	Zingiberaceae	<i>Alpinia chinensis</i> (J. König) Roscoe	
		<i>Alpinia japonica</i> (Thunb.) Miq.	
		<i>Costus speciosus</i> (J. Koenig) Smith	
		<i>Zingiber mioga</i> (Thunb.) Roscoe	

### **Mammals**

- A medium-sized carnivore scat, probably from a Small Indian Civet *Viverricula indica*, was found on 11 August.
- At the time of writing no records were available on the mammal fauna of Guanyinshan. Some of the species previously recorded from Yingde City, such as Indochinese Shrew

*Crocidura attenuata*, Rhesus Monkey *Macaca mulatta*, Asiatic Black Bear *Ursus thibetanus* (recorded as *Selenarctos thibetanus*), Sika Deer *Cervus nippon*, Indian Muntjak *Muntiacus muntjak*, Reeves's Muntjac *Muntiacus reevesi*, Chinese Goral *Naemorhedus caudatus* (recorded as *N. goral*) and Chinese Pangolin *Manis pentadactyla* (Zhang Y. *et al.*, 1997 and references therein) may have occurred at Guanyinshan, but more specific and up-to-date information is required.

### **Birds**

- Twenty-eight bird species were recorded at Guanyinshan (Table 2). Both abundance and richness were rather low.
- The most frequently encountered species included Chestnut Bulbul *Hemixos castanonotus*, Grey-cheeked Fulvetta *Alcippe morrisonia* and Red-rumped Swallow *Hirundo daurica*.

**Table 2.** Birds recorded at Guanyinshan Nature Reserve, 10-12 August 2000. Sequence follows Clements (2000).

<b>Scientific name</b>	<b>English name</b>
<i>Aviceda leuphotes</i>	Black Baza
<i>Spilornis cheela</i>	Crested Serpent Eagle
<i>Falco peregrinus</i>	Peregrine Falcon
<i>Centropus sinensis</i>	Greater Coucal
<i>Megalaima oorti</i>	Black-browed Barbet
<i>Picumnus innominatus</i>	Speckled Piculet
<i>Blythipicus pyrrhotis</i>	Bay Woodpecker
<i>Hirundo daurica</i>	Red-rumped Swallow
<i>Pericrocotus solaris</i>	Grey-chinned Minivet
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul
<i>Hemixos castanonotus</i>	Chestnut Bulbul
<i>Hypsipetes mccllellandii</i>	Mountain Bulbul
<i>Hypsipetes leucocephalus</i>	Black Bulbul
<i>Myophonus caeruleus</i>	Blue Whistling Thrush
<i>Prinia atrogularis</i>	Hill Prinia
<i>Orthotomus sutorius</i>	Common Tailorbird
<i>Phylloscopus ricketti</i> *	Sulphur-breasted Warbler
<i>Enicurus scouleri</i>	Little Forktail
<i>Enicurus leschenaulti</i>	White-crowned Forktail
<i>Pomatorhinus ruficollis</i>	Streak-breasted Scimitar Babbler
<i>Pnoepyga pusilla</i>	Pygmy Wren Babbler
<i>Stachyris ruficeps</i>	Rufous-capped Babbler
<i>Alcippe morrisonia</i>	Grey-cheeked Fulvetta
<i>Yuhina castaniceps</i>	Striated Yuhina
<i>Parus major</i>	Great Tit
<i>Aethopyga christinae</i>	Fork-tailed Sunbird
<i>Zosterops japonicus</i>	Japanese White-eye
<i>Lanius schach</i>	Long-tailed Shrike

\* Identity in question, as taxonomy has recently been revised (P.J. Leader, Hong Kong, pers. comm., February 2003).

- Black Baza *Aviceda leuphotes*, Crested Serpent Eagle *Spilornis cheela*, Peregrine Falcon *Falco peregrinus* and Greater Coucal *Centropus sinensis* are Class II Protected in China.
- The presence of forest-dependent birds (including a barbet, woodpeckers, bulbuls and babblers) indicates quite intact forest habitat in the vicinity.

### **Reptiles and Amphibians**

- Four species of amphibian and seven species of reptile (three lizards and four snakes) were recorded during the survey (Table 3). No reptiles or amphibians were found on 12 August.
- One lizard species could not be firmly identified and is provisionally assigned to *Platyplacopus kuehnei*.
- The most frequently encountered species was *Rana limnocharis*.

**Table 3.** Amphibians and reptiles recorded in Guanyinshan Nature Reserve from 10 to 12 August 2000. Sequence follows Zhao E.-M. & Adler (1993).

Species	Habitat	
<b>AMPHIBIA</b>		
<i>Rana limnocharis</i>	reservoir edge	✓
	paddy field	tadpoles
	marsh	✓
	pool	tadpoles
<i>Polypedates megacephalus</i>	pool	tadpoles
<i>Microhyla heymonsi</i>	pool	tadpoles
<i>Microhyla pulchra</i>	paddy field	tadpoles
	pool	tadpoles
<b>REPTILIA</b>		
<i>Calotes versicolor</i>	shrubland/plantation	✓
	shrubland	✓
<i>Platyplacopus</i> (cf. <i>kuehnei</i> ) sp.	plantation edge	✓
<i>Sphenomorphus incognitus</i>	stream	✓
<i>Psammodynastes pulverulentus</i>	tall shrubland	✓
	forest	✓
<i>Ptyas korros</i>	marsh	✓
<i>Sinonatrix percarinata</i>	stream	✓
	forest ditch	✓
<i>Ophiophagus hannah</i>	forest	✓

- The sites covered did not have much mature forest; hence the lack of forest specialists in this survey.

#### **Fish**

- Ten freshwater fish species were recorded from Guanyinshan Nature Reserve and Fangniudong Reservoir (Table 4).
- The most frequently encountered species recorded in the nature reserve were *Acrossocheilus parallens* and *Rhinogobius duospilus*, while *Zacco platypus* and *Rhinogobius giurinus* were most abundant in Fangniudong Reservoir.
- The reservoir visited appeared to have a different fish community to the streams.
- The stream catfish *Pterocryptis* sp. is a new species for science. A specimen from Guanyinshan, collected on 11 August, has been assigned as a paratype (Ng & Chan, in preparation).

**Table 4.** Freshwater fish recorded from Guanyinshan Nature Reserve, Guangdong, 10-12 August 2000 ("\*" = nomenclature follows Pan, 1991). Sequence of families follows Nelson (1994).

Species
<i>Zacco platypus</i>
<i>Hemiculter leucisculus</i> *
<i>Acrossocheilus parallens</i>
<i>Oreonectes platycephalus</i>
<i>Vanmanenia pingchowensis</i>
<i>Pseudogastromyzon fangji</i>
<i>Pseudogastromyzon changtingensis tungpeiensis</i>
<i>Pterocryptis</i> sp.
<i>Rhinogobius duospilus</i>
<i>Rhinogobius giurinus</i>

- Fish diversity and abundance at Guanyinshan were rather low and the fish fauna was of low conservation interest except for the new-to-science *Pterocryptis* sp.



### **Dragonflies**

- Only 29 species were recorded during the three-day survey (Table 5). One of these (*Vestalis* sp.) remains unidentified.

**Table 5.** Dragonflies at Guanyinshan, 10-12 August 2000. Sequence of families follows Schorr *et al.* (2001a, 2001b).

<b>Species</b>
<i>Archineura incarnata</i>
<i>Calopteryx melli</i>
<i>Matrona basilaris</i>
<i>Vestalis</i> sp.
<i>Rhinocypha drusila</i>
<i>Euphaea decorata</i>
<i>Coeliccia cyanomelas</i>
<i>Prodasineura autumnalis</i>
<i>Chlorogomphus papilio</i>
<i>Epopthalmia elegans</i>
<i>Macromia calliope</i>
<i>Macromia malleifera</i>
<i>Heterogomphus retroflexus</i>
<i>Lamelligomphus camelus</i>
<i>Melligomphus sommeri</i>
<i>Brachythemis contaminata</i>
<i>Crocothemis servilia</i>
<i>Onychothemis testaceum tonkinensis</i>
<i>Orthetrum glaucum</i>
<i>Orthetrum luzonicum</i>
<i>Orthetrum pruinosum</i>
<i>Orthetrum sabina</i>
<i>Palpopleura sexmaculata</i>
<i>Pantala flavescens</i>
<i>Pseudothemis zonata</i>
<i>Sympetrum parvulum</i>
<i>Tamea virginia</i>
<i>Trithemis aurora</i>
<i>Trithemis festiva</i>

- The presence of four calopterygids and two *Macromia* species indicates that streams in the study area were of high water quality.

### **Butterflies**

- Forty-five species were recorded during the three-day survey (Table 6). These included two species (*Aeromachus* sp. and a papilionid) which are currently unidentified.

**Table 6.** Butterflies at Guanyinshan, 10-12 August 2000. Species abundance data were not collected. Sequence of families follows Bascombe (1995).

<b>Species</b>
<i>Aeromachus</i> sp.
<i>Astictopterus jama</i>
<i>Bibasis oedipodea</i>
<i>Hasora vitta</i>
<i>Iambrix salsala</i>
<i>Parnara guttata</i>
<i>Graphium sarpedon</i>
<i>Papilio bianor</i>
<i>Papilio helenus</i>
<i>Papilio memnon</i>
<i>Papilio paris</i>
<i>Papilio polytes</i>
<i>Papilio protenor</i>
unidentified papilionid
<i>Eurema blanda</i>
<i>Eurema hecabe</i>
<i>Hebomoia glaucippe</i>

**Species**

*Leptosia nina*  
*Pieris candida*  
*Abisara echerius*  
*Acytolepis puspā*  
*Horaga onyx*  
*Taraka hamada*  
*Apatura (Rohana) parisatis*  
*Athyma perius*  
*Euploea core*  
*Euploea midamus*  
*Ideopsis similis*  
*Lethe confusa*  
*Mandarinia regalis*  
*Mycalesis minues*  
*Mycalesis zonata*  
*Neope muirheadii*  
*Neptis clinia*  
*Neptis hylas*  
*Parantica aglea*  
*Parathyma sulphitia*  
*Penthema adelma*  
*Polygonia (Kaniska) canace*  
*Precis (Junonia) almana*  
*Precis (Junonia) orithya*  
*Stibochiona nicea*  
*Symbrenthia lilaea*  
*Ypthima baldus*  
*Ypthima lisandra*

- The two unidentified species are of potential conservation interest.
- Of the species recorded, some (e.g. *Hasora vitta*, *Iambrix salsala*, *Horaga onyx*, *Mandarinia regalis*, *Neope muirheadii*, *Penthema adelma* and *Stibochiona nicea*) are typical of forest habitat.

**Summary of flora and fauna**

- The present survey covered only the southern buffer zone of Guanyinshan Nature Reserve. The surveyed area was found to be mainly young secondary broadleaf forest about 4-15 m in height. Older broadleaf forest less than 40 years old was found in more inaccessible ravines. There was reportedly more mature forest within two days walk of one of the hills; access was difficult due to a lack of trails.
- The present survey recorded 538 vascular plant species, a rather high figure, but the composition was typical of degraded vegetation. The orchid *Habenaria leptoloba* was previously known only from Hong Kong, and now has only two known sites. The recorded flora included nine globally Threatened or nationally Protected species and one Near-threatened species. Two globally restricted species were found in the present survey.
- Rather few vertebrate species were recorded during the survey: 28 birds, four amphibians, seven reptiles and ten fish. Four of the birds recorded are nationally Protected.
- Twenty-nine dragonfly and 45 butterfly species were recorded. One dragonfly and two butterflies have yet to be identified. Several dragonfly species found are dependent on clean water.
- MacKinnon *et al.* (1996) suggested re-evaluating Guanyinshan Nature Reserve, implying it was too small and degraded to be of biodiversity importance. Degradation is rather severe, but since the site was found to support some species of conservation concern it is here considered of local importance.

### Threats and problems

- Much of the natural vegetation has been damaged at Guanyinshan, and it is likely that much biodiversity has been lost. The young secondary forest was very dry at the time of our visit (during the summer wet season), and fire could be a risk to the regenerating vegetation.
- Tourism was evidently being promoted through the usual attractions such as karaoke, and the stream had been dammed to make a swimming pool. There was no evidence that either nature conservation or environmental education were primary management objectives.

### Opportunities

- If the regenerating habitats are carefully protected from fire, logging, hunting, grazing and other unsuitable activities, there is potential for natural forest to re-establish itself in future decades.
- Tourist facilities at Guanyinshan (e.g. Guanyin Villas) provide a good opportunity for promoting environmental awareness among the general public.
- A lot of the hillsides are now covered with degraded young forest and shrubland, and here forest regeneration could be accelerated by planting native trees. Priority might be given to linking up more mature forest patches to establish contiguous forests spanning the altitudinal range of the reserve. To achieve this, there is probably a need to establish a tree nursery to produce seedlings. Advice could be sought from regional centres of expertise (such as South China Agricultural University, The University of Hong Kong and KFBG) regarding reforestation techniques and in managing native tree nurseries.

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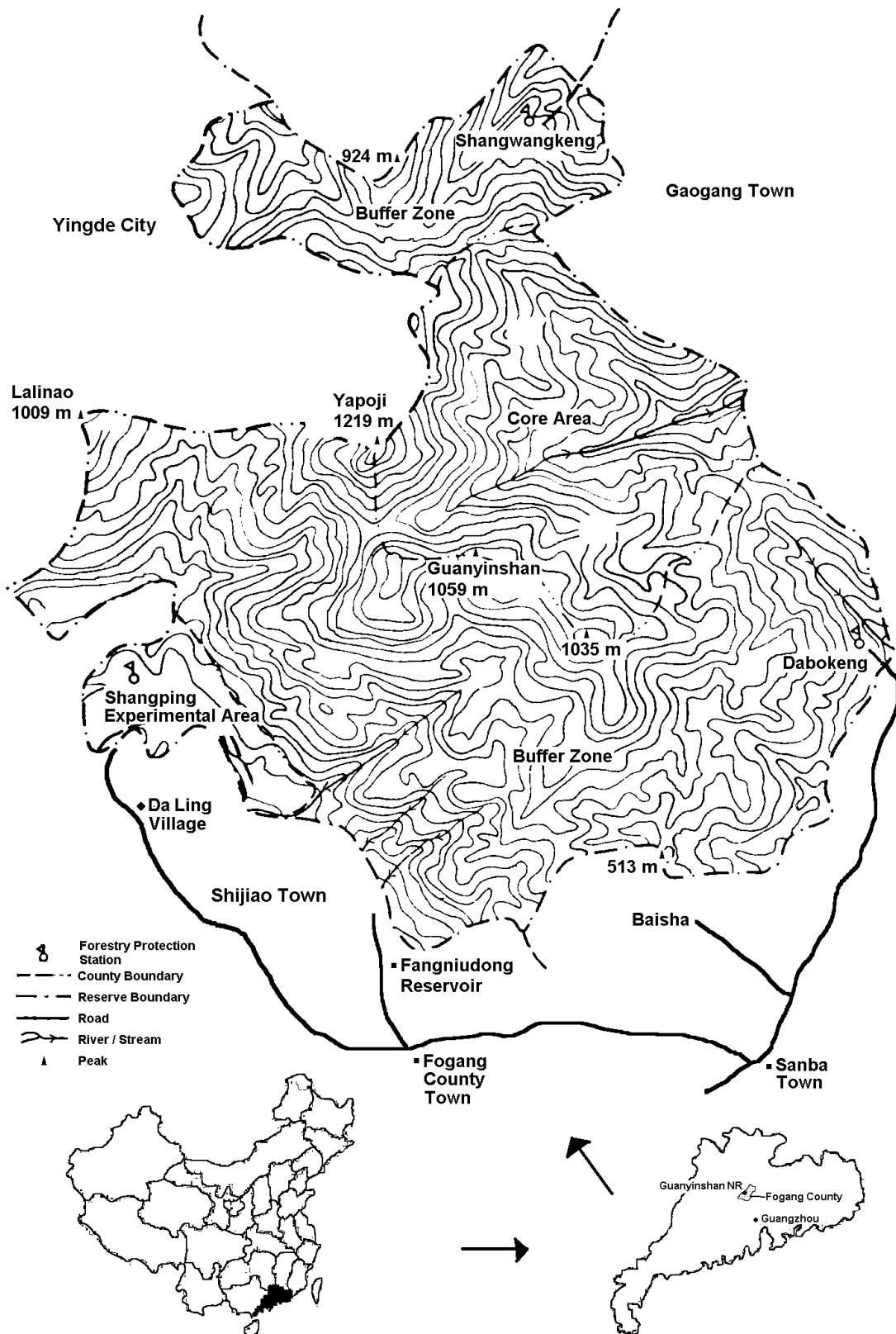
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**Figure 1.** Map showing location of Guanyinshan Nature Reserve, Central Guangdong, China.