

CONSERVATION ALERT

Amphibians and Reptiles of Dinghushan in Guangdong Province, China's Oldest Nature Reserve

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Abstract

Dinghushan is the only nature reserve at the Tropic of Cancer in mainland China with extensive old growth monsoonal hardwood forest. We here assemble a comprehensive list, with life history notes, of amphibians and reptiles of Dinghushan. Relevant records were scattered over three centuries since the first in 1886. A total of 71 species are known to occur in the reserve, and this number of species per area far exceeds that predicted by classic island biogeographic theory. Among these 71 species, nine are new records: Five frogs (*Amolops ricketti*, *Hylarana macrodactyla*, *Hylarana taipehensis*, *Odorrana schmackeri*, and *Occidozyga lima*) and four snakes (*Oligodon cinereus*, *Sinonatrix percarinata*, *Sinomicrurus maccllelandi*, and *Trimeresurus stejnegeri*). One undetermined skink may confound the generic definitions for the genera of *Scincella* and *Sphenomorphus*. Among these 71 species, 21 that are not closely associated with old growth forest have not been seen recently. Forest recovery and reforestation of farmland over five decades since the nature reserve was established in 1956 may have contributed to the decline of these species. Dinghushan has 97% of its species occurring strictly in the Oriental zone; among them, about 78% (55) occur both in the South China and Central China regions, 21% (15) occur only in the South China region, and one species was previously known only from the Central China region. The unique location of Dinghushan makes long-term monitoring of its herpetofaunal diversity important for future collaborative studies on a global scale.

中国最早的自然保护区-- 广东省鼎湖山的两栖爬行动物

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摘要

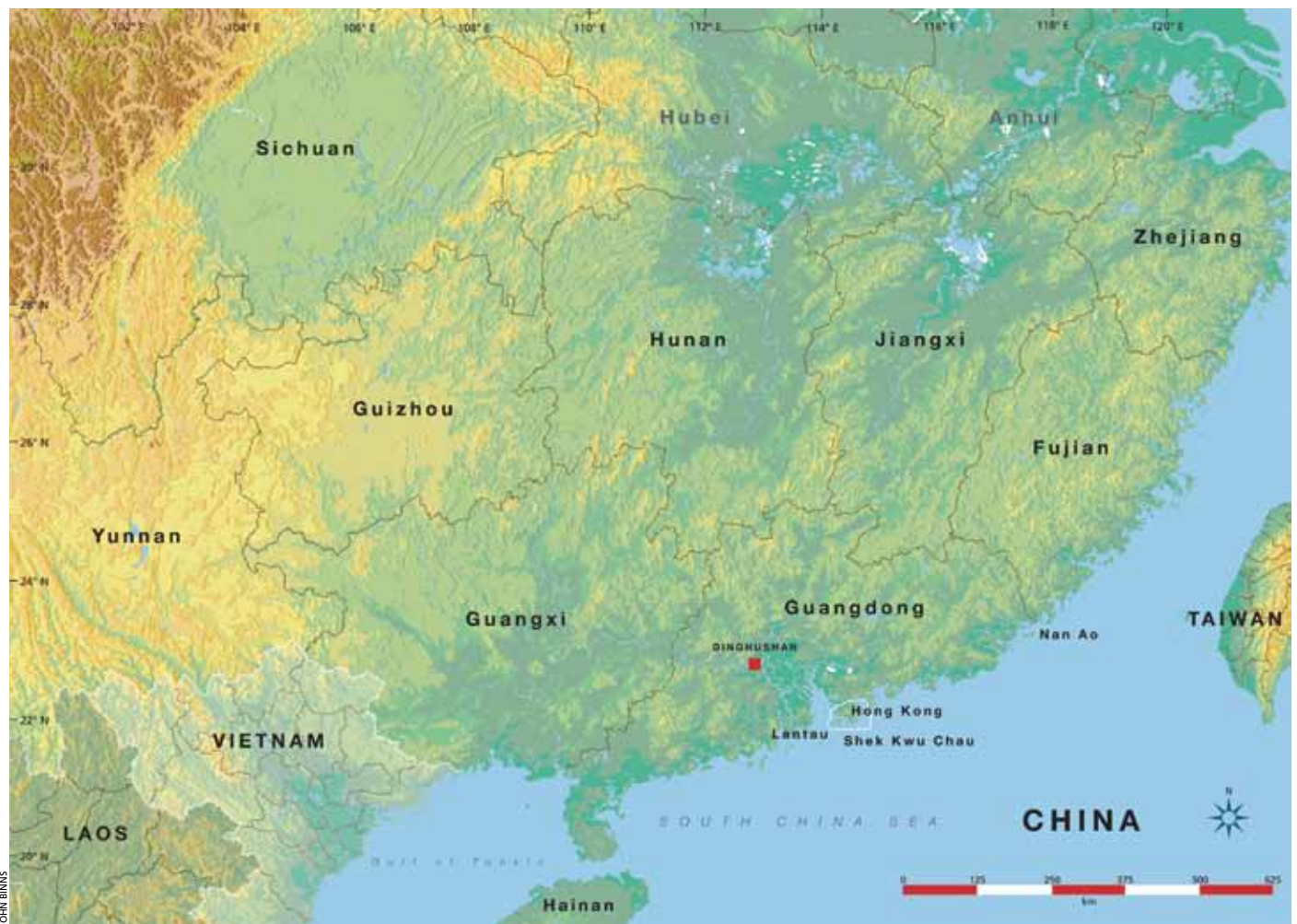
鼎湖山是中国大陆北回归线上唯一具广袤原生森林的季风雨林自然保护区。我们在此列出了自1886年以来跨越3个世纪的有关鼎湖山的两栖类和爬行类的名录及其生活史记录。至今为止鼎湖山共记录71种两栖爬行动物，这一数目远远超过由经典岛屿生物地理理论预测的种数。其中9种为新记录，含5种蛙类（华南湍蛙*Amolops ricketti*、长趾纤蛙*Hylarana macrodactyla*、台北纤蛙*Hylarana taipehensis*、花臭蛙*Odorrana schmackeri*、尖舌浮蛙*Occidozyga lima*）和4种蛇类（紫棕小头蛇*Oligodon cinereus*、乌华游蛇*Sinonatrix percarinata*、丽纹蛇*Sinomicrurus maccllelandi*、福建竹叶青*Trimeresurus stejnegeri*）。另有一未定种蜥蜴较为特殊，其分类特征介于滑蜥属*Scincella*和蜓蜥属*Sphenomorphus*之间。21个种类已多年未见，但多数是与原生森林无密切关系的种类。自然保护区自1956年建立至今，经过50余年的保护，使森林恢复及农田缩减，这也许是这些与原生森林无密切关系的种类种群数量减少的原因。鼎湖山97%的种类仅分布于东洋界，其中78%（55种）见于东洋界的华南和华中地区，21%（15种）仅见于华南地区，1%（1种）为以前仅在华中地区有报道的种类。鼎湖山独特的地理位置对其今后的全球性合作研究及长期的两栖爬行动物区系与多样性监测都具重要价值。

Introduction

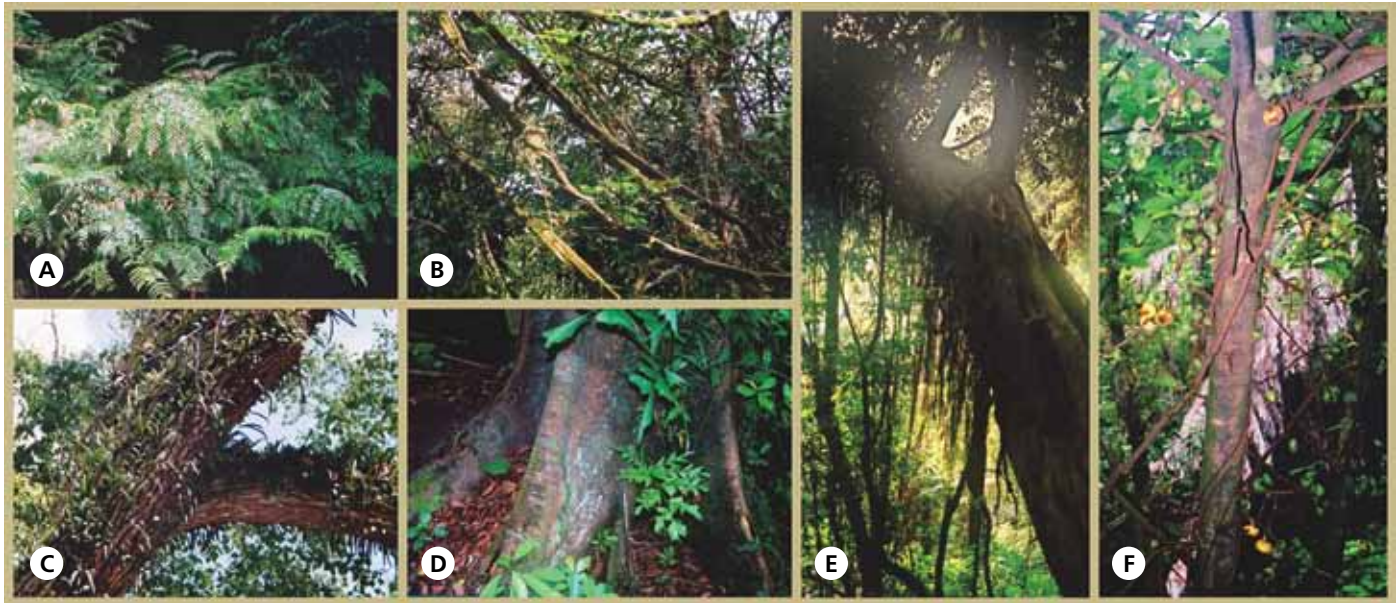
Dinghushan is a tropical treasure of extreme conservation and biogeographic importance. The reserve is located in central Guangdong Province, China, at 23°09'21" to 23°11'30"N, 112°30'39" to 112°33'41"E, on the Tropic of Cancer. It is a remnant of old growth monsoonal hardwood forest, whereas most of the world at the same latitude is either desert or ocean. At present the reserve is administered by the City of Zhaoqing in Gaoyao County. According to historical records, Dinghushan became a center of monastic activity during the Tang Dynasty, about two thousand years ago (Kong et al. 1993). The Baiyun Temple, in the heart of today's reserve, dates from this time. The Qingyun Temple, near the reserve entrance, was built during the Ming Dynasty (1633 AD). For religious reasons, the forest surrounding both temples was regarded as sacred; the area has thus had some measure of protection for almost 400 years. For several years after 1949, the area was managed as a national forest, entailing both timber extraction and plantation. In 1956, Dinghushan was designated the first national nature reserve in modern Chinese history. This provided protection for much of the forest, more management, and scientific research. The primary forest is characterized as monsoonal evergreen broad-leaf hardwood, with a forest canopy at about 20 m, and some 1,843 recorded wild species of vascular plants (Kong et al. 1993). The for-

est is rich in tropical species, diverse in relict species of ancient origin, and has a high proportion (50%) of woody species (Wang et al. 1982). Natural populations include tree ferns and cycads. Woody vines, such as *Mucuna birdwoodiana* and *Gnetum montanum*, are abundant and characteristic of tropical rain forests. Parasitic plants, stranglers, buttress roots, and trunk-flowering trees are phenomenal. At present, the reserve includes 1,133 ha (11 km²). A quarter century ago, this was 272 ha of primary natural forest, 397 ha of former tree plantation, 193 ha of mixed pine and hardwood secondary growth, and 271 ha of succeeding shrubland and meadow (Chen et al. 1982, Wang et al. 1982). Today, succession has proceeded dramatically and almost all of the reserve is in evergreen forest.

Dinghushan's forest is a remnant of the once vast Asian forest corridor that formed the only such continuous band uniting equatorial rainforest with boreal forest and taiga on Earth (Lazell 1987, 2002). It is unique among all such remnants in combining a position intermediate between tropical and subtropical zones with a monsoonal climatic regime. These characteristics in combination with its relatively well-protected status have attracted the attention of researchers worldwide. In 1979, Dinghushan became a United Nations' Man and Biosphere (MAB) Reserve and thus an international base of collaborative ecosystem research (Kong et al. 1993). Nevertheless, Dinghushan today is an island in a sea of deforesta-



Map of the southern provinces of China and four islands with herpetofaunas that are compared with that of Dinghushan in the text. The square marks the location of Dinghushan. Bar (lower right) = 100 km.



Characteristics of the subtropical monsoonal evergreen hardwood forest at Dinghushan Nature Reserve: Natural populations of tree ferns (a), woody vines (b), parasitic plants (c), buttress roots (d), stranglers (e), and trunk-flowering trees (f). Photos a and d–f by Xiao Zhi; b and c by Liu Shao-Rong.

tion, agriculture, and suburban development. The recorded number of amphibian and reptilian species now stands at 71. Of these 71 species, records of nine (13%) have never previously been published, despite the fact that some of them have been known for over four decades. Of these 71 species, 21 (30%) have apparently vanished. Consequently, this report is long overdue.

The massif of Dinghushan is largely Devonian (Paleozoic) marine sandstone and shale strata with some granitic intrusions (Wu et al. 1982, He et al. 1982). Three main ridges rise roughly southeast to northwest and run from lowland less than 30 m above sea level to heights of 491 m at *Sanbao Feng* (Three Treasures Peak — Dinghushan proper), high point of the southern ridge, and 1,003 m at *Jilong Shan* (Chicken Coop Mountain) in the northwest, the highest point of the massif. The ten highest peaks average 450–600 m. Consequently, two major valleys drain to the southeast. Slopes are typically 30–40° and many cliffs and hanging valleys are festooned with permanent waterfalls. The northern stream combines brooks from the Heavenly Lake (*Tian Hu*) and the Swan Lake (*Tiane Tan*), passes the Grassy Pond (*Chao Tang*), and forms Dinghu Lake and the Splashing Water Pool (*Feishui Tan*) — favorite sites for tourists. The western stream forms Old Dragon Pool (*Laolong Tan*) in the core reserve area closed to the public. The two streams meet at the Geological Bureau Retreat, a major landmark outside the Reserve. The combined flow enters the West River (*Xi Jiang*), which flows into the Pearl River (*Zhu Jiang*). Marshes and some cultivated rice paddies are in the valleys. A small area of alpine meadow is found above 980 m only on *Jilong Shan*. Outside the primary forest, soils are generally red to yellow and acidic with pH 4.1–5.0; in the forest, soils are more acidic, but acidity diminishes with elevation (He et al. 1982).

Seasonality is pronounced (Huang and Shen 1982, Kong et al. 1993). The summers are hot and rainy, averaging 28 °C and attaining 36.8 °C in July. The winters are cool and dry, with a January average of 12.6 °C and a record low of –0.2 °C; frost has not been recorded. Rainfall (measured at MAB headquarters, elevation ~30

m) averages 1,927 mm per year, with a record of 2,278 mm. About 80% of rain falls in April–September; relative humidity in summer averages 85%, but drops to 70% in November and December.

Striking changes characterize Dinghushan in the past quarter century. The introduction of natural gas in the adjacent village of *Dinghu* (now a small city) has relieved the woodlands from supplying cooking fuel, resulting in a concomitant burst of regrowth of woody vegetation in the shrub and secondary growth zones. On the other hand, expanding human population pressure and the demand for certain species for food and traditional medicine have apparently eliminated a suite of edible species. Several highly touted features of island biogeography seem evident now with the herpetofauna at Dinghushan: Faunal “relaxation” (species loss) since isolation, species turnover, and perhaps an approach to equilibrium. Whether these apparent factors truly explain the current herpetofauna or are artifacts is addressed after the species accounts.

Herpetofaunal Background and Methods

Although locally *Dinghu* and *Dinghushan* are used interchangeably, we use *Dinghu* for the immediate environment of the lowland town at the edge of the reserve and *Dinghushan* for the upland region. To the greatest extent possible, we have relied on hand-caught specimens preserved and accessioned into university or museum collections. We also have included written records, both published and as catalogue entries at institutions. Photographs with complete data and, rarely, personal testimonials have been accepted as evidence for the (at least former) presence of a species.

Scientific herpetological nomenclature is in a state of flux. For anuran amphibians we largely followed Fei et al. (2009), but we did adopt some subsequent innovations. For colubrine snakes, we have followed Burbrink and Lawson (2007). In addition to South China Normal University (SCNU), specimens also were examined or deposited at Chengdu Institute of Biology (CIB), Guangdong Institute of Entomology (GIE, which has a Department of Zoology; interestingly, perhaps a reflection of the relative importance of insect

pest management and wildlife conservation in historic perspective), and the Museum of Comparative Zoology, Harvard University (MCZ). Species are listed alphabetically within families as in Karsen et al. (1998).

Formal description of Dinghushan's herpetofauna began with Oskar Boettger's (1886) diagnosis of the Waterside Skink (*Tropidophorus sinicus*). Rupert Mell (1922, 1933) actually collected at Dinghushan (as *Dingwu*), added five species, and described habitats. While Clifford Pope (1935) never visited the site, his book provided an excellent summary of what was known at that time (as *Tinghu* or *Tinghushan*). For those species Pope (1935) listed but for which we lack voucher specimens, we checked the databases of both the American Museum of Natural History and the Field Museum of Natural History. We found no specimen records for these species from Dinghushan (or Guangdong Province) in either. Pope (1935) did not list the specimen repositories for his records.

Global and national events distracted from field biological investigations until the period 1956–1985, when periodic collecting was conducted by field teams from Zhongshan (Sun Yat Sen) University, The Conservation Agency (TCA), SCNU, and GIE. These were summarized by Zhou et al. (1962a, b, c; 1981), who tallied a total of 38 species, but overlooked Boettger's (1886) Waterside Skink, Mell's (1922) Bamboo Viper (*Trimeresurus albolabris*), and Pope's (1935) Chinese Gecko (*Gekko chinensis*). Amazingly, the former two of these three species, both common in the Hong Kong region (Karsen et al. 1998), have never been seen again at Dinghushan. Those specimens from this era deposited at Zhongshan University have all lost their data; labels fell off jars and tags faded to illegibility. Lazell and his TCA teams began systematic surveys during 1982–1995 and returned in July and September 2006 and July 2009 with teams from SCNU, especially to attempt solving some of the reserve's herpetological mysteries and obtain voucher specimens of species reported only as observed. Lazell and Liao (1986) added 10 species to the lists of Zhou et al. (1962a, b, c; 1981), one already recorded by Pope (1935), but missed by them (*Gekko chinensis*), and another misidentified as "*Leiopisma reevesii*" (see *Scincella* cf. *rupicola*). Lazell (1988) summarized herpetological knowledge at that time. We recorded 19 species and vouchers were obtained for four of the previous sight records in 2006.

Species Accounts

As of 2009 there have been records of 71 species (Table 1). We summarize below habitat, deposition of voucher specimens, and reproductive data if known from Dinghushan. The conservation status at national level (Wang and Zhao 1998) is given first, when relevant, followed by local status. The Chinese language species accounts below do not repeat status, specimen data, and citations provided in the English accounts. They instead provide identifying characteristics and general life history information of direct use to field workers, with specific information on feeding preferences of frogs from Su (1985) and lizards and snakes from Karsen et al. (1998).

1. Yellow-striped Caecilian 版纳鱼螈 (*Ichthyophis bannanicus*). Endangered. This is a fossorial, nocturnal species of lowland monsoon forest in riparian habitats. It sometimes travels on the surface, especially at night and during rains. It feeds on earthworms (Wang and Zhao 1998). Eggs are laid in burrows in streams in April and May. Qin (1985) recorded the first specimen from Dinghushan (as *I. glutinosus*), collected 26 February 1978 by Zheng Ci-Yin near the original guesthouse. The specimen was

deposited at Jinan University but has apparently been lost. Lazell and Liao (1986) were unaware of this record. Five more Dinghushan observations occurred between 28 April and 31 May 1984–7, all from between MAB headquarters and the power station, at 30–40 m. Vouchers are MCZ 107901 and 112771. This species is widespread in tropical China, reported from the far west of Yunnan Province east to Fujian Province (Fei et al. 2005), but the range is discontinuous. We suggest the taxonomic status of the widely disjunct populations may be worthy of investigation. 无四肢, 蠕虫状; 成体领褶的第1颈沟离口角较远, 为吻端至口间距2/5; 第2颈沟从头背看不到其两端; 两眼间处的宽大于吻眼间距。冬季气温降至15°以下进入冬眠, 次春气温回暖维持在20°以上后出来活动。在广东4-5月于溪边作穴产卵。穴居, 昼伏夜出。成体主要捕食蚯蚓。生活在鼎湖山海拔较低的林区山溪旁边。

2. Asian Common Toad 黑眶蟾蜍 (*Bufo melanostictus*). This is a widespread and abundant species of shrubland, farmland, villages, and forest edges. Breeding commences with the first warm rains of spring and extends into summer. More or less continuous records are available from 1983 to the present, with metamorphs (≤ 8 mm SVL) recorded 23 May 1984–10 May 1986. In mid-July 2006, juveniles were abundant around MAB headquarters and the botanical garden. On 16 July, we measured 10 in this area, 2.5–3.6 cm SVL (average 3.1 cm). These data accord well with this species' ontography at Hong Kong (Lazell 2002). The largest size record for this species is from Hainan Island, 11.5 cm SVL (Lu and Qing 2009). 具耳后腺; 鼓膜明显; 由吻端至眼后角上方、鼓膜的上缘有黑色骨质棱。在广东3月初春水初成, 即行产卵。昼夜活动, 捕食多种昆虫, 食量大, 其中有害昆虫占食物总量的70%以上。在鼎湖山主要分布在林区的灌丛、耕作区、林缘及村落周围。

3. Chinese Green Treefrog 华南雨蛙 (*Hyla simplex*). This species is apparently rare, but found in disturbed as well as forested habitats. It is a member of a suite of species showing classical Grayian distribution (*sensu* Lazell and Lu 2000, 2003), with members in both southeastern Asia and southeastern North America — like alligators and magnolias. Adults have been collected as low as the original guesthouse (–35 m; MCZ 113183) and as high as the tea garden (–230 m; MCZ 109527). Metamorphs were found at the latter locality on 28 April 1987. 体背深绿色; 体侧和前后肢均无黑斑; 指、趾端具吸盘; 胫长于足。在广东4月中旬开始产卵。以捕食鳞翅目、鞘翅目、半翅目、直翅目等农林害虫为主。在鼎湖山多夜间活动于近水的草灌丛及林缘。

4. Cascade Frog 华南湍蛙 (*Amolops ricketti*). Status uncertain, vanished. Although well within the species' range, and apparently providing ideal habitat, Dinghushan lacks voucher specimens or a published record. Ideal habitat consists of small cascading streams, which are plentiful at Dinghushan, and where we have searched diligently. The sole basis for its inclusion here is a catalog entry at GIE for two specimens dated 25 October 1969. 体扁, 有犁骨齿; 鼓膜小; 指、趾均有吸盘和横沟, 背面有横凹痕, 腹面呈肉垫状。在广东沿海5月产卵。以水生昆虫为食。栖息于鼎湖山大小山溪急流或瀑布下, 多见于黄昏及夜间活动。此蛙匿于石块下, 不易发现。

5. Paddy Frog 泽陆蛙 (*Fejervarya multistriata*). This abundant farmland species (formerly *Rana limnobaris*) occurs well up into the foothills in shrubland and even forest. Typically cryptic, hiding under objects by day, males call semi-submerged in open, still water at night. Breeding is centered on May, but can take place in most months. This species was common around the botanical garden in mid-July 2006. Specimens are in all of the collections that we checked, including MCZ 100571, collected 10 January 1982. 吻尖钝, 上、下颌缘有6-8条深纵纹; 无背侧褶, 体背纵肤褶长短不一; 无跖褶, 趾端无横沟。在广东5月是繁殖盛期。以捕食昆虫为主, 食性广, 食物种类达80种以上, 捕食有害昆虫达78%。从鼎湖山耕作区到低山、丘陵的林地、灌丛都有分布。

6. Chinese Bullfrog 虎纹蛙 (*Hoplobatrachus rugulosus*). Legally protected. Formerly widespread and abundant in marshlands and rice paddies, this species has been widely reduced to rarity because it is considered a delicacy. This species is farmed in some parts of Guangdong. It prefers larger and more permanent bodies of water than the Paddy Frog. Within

the reserve, we recorded breeding choruses at *Chao Tang* (Grassy Pond) during 4 April–24 May 1984. On 17 July 2006, we encountered many juveniles active in the rain between the botanical garden and Dinghu Lake. Four measured 3.6–4.2 cm SVL (average 3.9 cm). Vouchers are at GIE. 体大，皮肤粗糙，体侧有深色斑纹；无背侧褶，体背有许多长短不一的纵肤褶；下颌前部齿状突显著；趾端无横沟，趾间全蹼，无外趾突。在鼎湖山4月下旬可听到求偶鸣叫声。以捕食鞘翅目、鳞翅目昆虫为主，也捕食其他农林害虫，捕食害虫率达72%。生活在鼎湖山的池沼、湿地及水田中，白昼匿居。虎纹蛙数量在野外已明显减少，政府已立法禁捕野生个体，广东等地已被大量人工繁养。

7. Musical Frog 弹琴蛙 (*Hylarana adenopleura*). Status uncertain. This is a species of riparian habitats in forest. Zhou et al. (1981) listed it and LZC records it within the Dinghushan reserve from the 1960s to the present, but no voucher specimens are available. LZC and Peter Lynch of GATP examined and released one in the core area on 8 July 1997. Females can lay 100–350 eggs (Liu and Hu 1961). 头长、宽几相等；指、趾端稍膨大，末端有横沟；背侧褶较宽；雄性有肩上腺，具1对咽侧下外声囊。产卵期及食性不详。分布在鼎湖山保护区内近山溪的潮湿林地。

8. Gunther's Frog 沼水蛙 (*Hylarana guentheri*). This widespread and abundant species occurs from farmland and foothills well into the forest.

Breeding begins early, typically in late March, and continues through the warmer months. On 19 July 2006, dozens were calling around Heavenly Lake (*Tian Hu*) at midday in the sunshine. It climbs well. On 2 April 1984, JDL and his TCA team encountered one 3 m above the forest floor perched on a tree fern frond. Specimens are in all collections, including MCZ 100560 and 107382. Females can lay up to 1,000 eggs (Liu and Hu 1961). 头长大于头宽；背侧褶明显；指、趾端钝圆，不膨大；趾末端具横沟。雄蛙上臂基部有1肾形腺腺，具1对咽侧下外声囊。在广东3月气温回升即进入繁殖期。全肉食性，以捕食农林害虫为主，食物种类达24种以上。分布在鼎湖山低山丘陵、池沼及耕作区。

9. Three-striped Grass Frog 长趾纤蛙 (*Hylarana macrodactyla*). Status uncertain, vanished. This species is widespread in South China; the pond and marsh habitats in the Dinghushan lowlands should provide excellent habitat. However, we have not encountered it. The sole voucher specimen is GIE 117 from Dinghu, dated 29 October 1965, and no record was previously published. Breeding begins mid to late May; these frogs prefer grassy and weed-choked marshes to open water, and breed with the rains. 体背绿色或浅棕色，具背侧褶，体背面有4-5条浅黄色纵线纹，间有黑斑；指、趾端具横沟；指关节下瘤大而明显；后肢纤细而长，胫跗关节前伸超过吻端，左右跟部重叠颇多。在广东5月中下旬进入繁殖期。食物中直翅目昆虫占67%。在鼎湖山见于大山溪两旁的灌丛中；喜生活在低洼的湿草地及山坡的湿草丛中，尤其在在水田耕作区及空旷的荒田中，已极为少见。



Each photo credit also lists in parentheses the source of the animal in the photograph.



10. Two-striped Grass Frog 台北纤蛙
(*Hylarana taipehensis*)

11. Rough-skinned Floating Frog 尖舌浮蛙
(*Occidozyga lima*)

12. Green Cascade Frog 大绿臭蛙
(*Odorrana chloronota*)

13. Schmacker's Stinking Frog 花臭蛙
(*Odorrana schmackeri*)

14. Lesser Spiny Frog 小棘蛙
(*Paa exilispinosa*)

15. Giant Spiny Frog 棘胸蛙
(*Paa spinosa*)

10. **Two-striped Grass Frog** 台北纤蛙 (*Hylarana taipehensis*). Locally scarce. This widespread species of marshland and rice paddies is unaccountably scarce at Dinghushan. JDL and his TCA team found two on a stream bank just inside the woods at *Chao Tang* (Grassy Pond) on 2 May 1984, but failed to catch one. SCNU has a voucher specimen. Breeding begins in April and May; Karsen et al. (1998) reported tadpoles in May at Hong Kong. 体细长，体背绿色，背侧褶金黄色，股后方有2-3条纵纹；指、趾末端稍膨大成吸盘状；后肢贴体前伸肘关节可达鼻眼之间。在广东4-5月产卵。以昆虫为食。喜在鼎湖山周边和区内的水田等湿草地昼夜活动。

11. **Rough-skinned Floating Frog** 尖舌浮蛙 (*Occidozyga lima*). Status uncertain, vanished. This is a species of open-water ponds and permanent wetlands in the lowlands. It has declined dramatically in places like Hong Kong (Karsen et al. 1998) due to habitat loss. Suitable habitat persists around Dinghu, but none of us has yet encountered this species. Breeding coincides with the monsoonal rains. Two of the three specimens from Dinghu at GIE (J005 for both) are dated 3 August 1966; J006 is dated 25 October 1965. 体小，肥硕，体背布满刺疣；口小，舌较狭长，后端尖；无犁骨齿；趾间满蹼；股后方有棕色条纹。在鼎湖山地区4月中旬到6月为繁殖期。以捕食膜翅目昆虫为主。分布在鼎湖山周边和区内的水田等湿地中，已极为少见。

12. **Green Cascade Frog** 大绿臭蛙 (*Odorrana chloronota*). Common. Dinghushan provides ideal habitat for this species along streams in the uplands. Females are much larger than males. This species was the subject of a population study at *Feishui Tan* that estimated a population density of ~123/ha at that site 20 years ago (Lazell et al. 1988; as *Rana livida*; see Che et al. 2007); but that assessment needs to be repeated. Adults typically are perched conspicuously on rocks along streams at night. They produce a noxious, smelly skin secretion said to be toxic to at least other frogs (Karsen et al. 1998). Voucher specimens are MCZ 107898–107900. LZC captured and examined a male found streamside in the core area at 300 m on 30 June 1996; the specimen was released. 体较扁；具背侧褶；活体背纯绿色；指、趾端有吸盘及横沟，趾间全蹼。雄蛙具1对咽侧下外声囊。雌雄个体差异甚为显著，雄蛙小，雌蛙大。在广东5月进入产卵期。食物中鞘翅目昆虫可占67%，有害昆虫可占84%。晚上活动为主。分布在鼎湖山保护区核心区山溪旁。

13. **Schmacker's Stinking Frog** 花臭蛙 (*Odorrana schmackeri*). Status uncertain. This is a stream-dwelling species of forested areas. Females are much larger than males. LZC captured and examined a female found streamside in the core area on 10 July 1997, but the specimen was released. Females can lay up to 1,000 eggs (Liu and Hu 1961). 体侧扁，无背侧褶；体背绿色，间以棕色大斑；指、趾端有吸盘及横沟，趾间全蹼。雄蛙有1对咽侧下外声囊。雌雄个体差异显著，雌蛙大，雄蛙小。在广东5-7月为繁殖期。以昆虫为食，其中直翅目昆虫可占食物总量的70%。白天匿居，夜间活动。生活在鼎湖山林区的山溪或潮湿的溪边。

14. **Lesser Spiny Frog** 小棘蛙 (*Paa exilispinosa*). Status uncertain. This is a species of permanent water in upland streams in forested habitats, but it can occur as low as sealevel. Lau (1996) recorded this species at Dinghushan, and LZC has examined specimens in the field. However, no voucher specimens exist. Museum specimens of its close relative, *P. spinosa* (below) have been rechecked and are not this species. 体形肥硕；趾端无横沟；皮肤粗糙，无背侧褶；雄蛙前肢粗状，仅胸部长有刺，但不分成2团。第4趾缺刻较深，其余满蹼。此蛙最大不超过80 mm。在广东4月中下旬开始产卵。主要捕食昆虫。生活在鼎湖山林区山溪附近。

15. **Giant Spiny Frog** 棘胸蛙 (*Paa spinosa*). Vulnerable. This species was formerly common in the streams within the forested core area of the reserve. It is sought for human food. A female (8.5 cm SVL) was attacked by a Diamond-back Water Snake (see species 63) on 2 June 1984 in a stream in the forest, at an elevation of ~230 m, and died of apparent envenomation (MCZ 107897). Specimens were regularly captured between that incident and 28 April 1987. All were checked for diagnostic characters and all fit this species, not *P. exilispinosa*, including a second voucher (MCZ 115325). LZC heard calling and examined one specimen in the core area on 30 June 1996, but the specimen was released. 体大肥硕；体背有长短不一的窄长疣；趾末端无横沟。雄蛙前肢粗短，仅胸部长有黑刺疣。在广东5月进入繁殖期。主要捕食直翅目、鞘翅目、鳞翅目昆虫，食物种类达64种。喜在山溪中生活。棘胸蛙一直以来被大量捕食，在鼎湖山已少见。

16. **Chaochiao Wood Frog** 昭觉林蛙 (*Rana chaochiaoensis*). Status uncertain, vanished. This species (formerly *R. japonica*) was recorded regularly around artificial farm ponds and along streams in shrubland in the foothills. Readily found before the 1980s, it has not been seen recently. We have found no voucher specimen. Females can lay 900–1,500 eggs (Liu and Hu 1961). 颞部具三角形黑斑; 背侧褶直, 在鼓膜处不弯曲, 自眼后直达胯部; 雄蛙第1指婚垫分团隆起, 上面具刺疣; 无声囊。主要捕食昆虫。主要分布在鼎湖山保护区内的山溪灌丛旁, 已极为少见。在广西3–8月产卵 (Zhang and Wen 2000)。

17. **Dennys' Treefrog** 大树蛙 (*Rhacophorus dennysi*). Status uncertain. Xu (2001) reported this species from Dinghushan for the first time. This record and another reported from the same latitude in Guangdong Province (Chang et al. 1997) are the southernmost localities for this species. In April 2007, we made an effort to locate the published voucher but to no avail. 体大; 鼓膜大而圆, 犁骨齿列强; 指、趾端均具吸盘和横沟; 指间蹼发达, 第3、4指间全蹼; 趾间全蹼, 第1、5趾游离缘有缘膜; 体背绿色, 有镶浅色纹的棕黄色或紫色斑点。在广东3月中旬产卵于田埂壁或水坑壁上, 亦产于灌丛或树枝叶上。一般夜间活动。以捕食直翅目、鞘翅目、同翅目昆虫为主。

18. **Brown Treefrog** 斑腿树蛙 (*Rhacophorus megacephalus*; also known as *Polypedates leucomystax* and combinations of those four names). An abundant species in natural and disturbed habitats, these frogs can be found under dead leaves of standing banana trees even in the winter. These frogs can breed in almost any vessel of fresh water. JDL and his TCA team recorded eggs and tadpoles on 12 and 14 May 1984 and 1986. Individuals were encountered 16–19 July 2006 from the entrance area to Heavenly Lake (*Tian Hu*). Vouchers include those at SCNU, GIE, and MCZ 107902 and 113186. 体背有“X”形花纹; 指间无蹼; 指、趾末端均具吸盘, 背面具“Y”形骨迹。雄蛙具1对咽侧下内声囊。在鼎湖山4–5月为繁殖期。捕食鞘翅目昆虫为主, 也捕食直翅目、膜翅目、半翅目、同翅目等昆虫。在鼎湖山常见藏在芭蕉叶鞘内越冬。

19. **Spotted Narrow-mouthed Frog** 花细狭口蛙 (*Kalophrynus interlineatus*). Usually scarce, but in May of 1984 and July of 2006, we found this species extremely abundant. Pairs in amplexus were found 16 May, and chorusing was in full voice from MAB headquarters to as high as Heavenly Lake (300 m) until departure on 31 May. During 16–17 July 2006, large

choruses were singing in the rain around the botanical garden. When handled, these frogs exude a gummy whitish fluid that they spread with their feet over their bodies; we assume this is toxic or at least distasteful, but we have not sampled it. Specimens bearing field tags Z-19738 and Z-19739 were deposited at GIE, but not found in 2004. Five vouchers from 2006 by QN and her SCNU team are CIB 084528–32. This species has been separated from *K. pleurostigma* by Matsui et al. (1997). 头高而小; 吻较尖, 无上颌齿; 前肢细; 后肢短, 左右跟部不相遇; 皮肤粗糙, 全身满布疣粒; 体背一般有4–8条黑色纵纹。在广州地区3月中旬天气转暖进入产卵期。主要捕食鞘翅目、直翅目、膜翅目昆虫。分布在鼎湖山低矮山地的林缘及湿草丛中。

20. **Asiatic Painted Frog** 花狭口蛙 (*Kaloula pulchra*). This abundant species is largely fossorial and breeds in ditches and storm sewers in Dinghu, farmland, and tree plantations. It can climb well and sometimes forages well off the ground at night. Heavy rain triggers breeding from March through at least May. Males make their bellowing calls from under cover, such as in drain pipes, leading to the vernacular name “underground ox.” Disturbed individuals secrete a glue-like fluid. Vouchers are at SCNU. 体大, 头宽吻短, 吻端平直; 体背有“/ \”形斑; 指末端宽阔, 前缘平整, 呈“7”形; 趾基有蹼。在广州地区3月下旬至5月繁殖期间, 叫声如牛。大雨过后产卵于水潭中, 繁殖期后极少发现成蛙。嗜食蚁类, 也捕食其他昆虫和其他节肢动物。在鼎湖山的平原耕作区、人工林及灌丛内都有分布, 穴居。

21. **Heymons' Pigmy Frog** 小弧斑姬蛙 (*Microhyla heymonsii*). Status uncertain, but apparently rare. A single specimen was collected along a stream in the core primary forest on 26 September 1995 by Lau (1996), and is in the collection of Kadoorie Farm and Botanical Garden, Hong Kong (Fellowes et al. 2002). Habitat and behavior at Dinghushan remain little-known. 体小, 头呈三角形; 体背和腹面皮肤光滑; 体背面有小纵沟, 具脊线; 脊线上有1–2个黑色小弧形斑。在广东5月繁殖季节才容易见到。捕食膜翅目、鞘翅目、等翅目、鳞翅目等昆虫。生活在鼎湖山林区山溪旁。

22. **Ornate Pigmy Frog** 饰纹姬蛙 (*Microhyla ornata*). Very common at lower elevations (to ~100 m), but known to occur to elevations as high as 750 m (Karsen et al. 1998). This small frog frequently breeds in roadside ditches, beginning in March and throughout the monsoon season. It lays





22. Ornate Pigmy Frog 饰纹姬蛙
(*Microhyla ornata*)

23. Marbled Pigmy Frog 花姬蛙
(*Microhyla pulchra*)

24. Big-headed Terrapin 大头平胸龟
(*Platysternon megacephalum*)

25a. Black-necked Terrapin 黑颈拟水龟
(*Chinemys nigricans*)

25b. Black-necked Terrapin 黑颈拟水龟
(*Chinemys nigricans*)

26. Three-banded Box Terrapin 三线闭壳龟
(*Cuora trifasciata*)

27. Chinese Soft-shelled Turtle 中华鳖
(*Pelodiscus sinensis*)

28. Chinese Gecko 中国壁虎
(*Gekko chinensis*)

29. Bowring's Gecko 原尾蜥虎
(*Hemidactylus bowringi*)

floating eggs. Vouchers are at SCNU. 体小，头短小，呈三角形，吻端钝尖；鼓膜不显；体背有不相套叠的“八”形斑，第1个起自两眼间；掌突2个；指、趾端圆；趾间仅具蹼迹。广州地区从3月下旬至6月为产卵期。捕食膜翅目、鞘翅目、等翅目、鳞翅目等昆虫。在鼎湖山海拔30-100 m的潮湿的草丛和山路旁常可见到。

23. **Marbled Pigmy Frog** 花姬蛙 (*Microhyla pulchra*). Less common and usually much larger than its relative *M. ornata*, this frog utilizes the same habitats and similarly begins breeding in late March and continues through the rainy season. It also lays floating eggs. Two individuals at the botanical garden on 16 July 2006 measured 1.6 and 3.0 cm SVL. A voucher from the aqueduct above the original guesthouse (elevation ~40 m) is MCZ 112769. 体小，头呈三角形，吻尖钝；体背颜色鲜艳，土黄色或棕黄色，嵌有相互套叠的若干“八”形斑；指端圆；趾间半蹼。在广东3月下旬进入繁殖期。主要捕食膜翅目、鞘翅目、半翅目昆虫。生活环境与饰纹姬蛙相同。

24. **Big-headed Terrapin** 大头平胸龟 (*Platysternon megacephalum*). Endangered, locally vanished. This stream-dwelling turtle was formerly abundant, but has been hunted to rarity even within the reserve, where the last individual was seen in the 1960s. With stringent law enforcement, it might begin to recover. It is carnivorous and defends itself by snapping. It prefers permanent streams but sometimes will travel overland, presumably from one drainage to another. The first record at Dinghushan was in Mell (1922). No voucher specimens exist. 头大、尾长、都不能宿入壳内，

体扁；喙强，上喙钩曲，呈鹰嘴状；具下缘盾。在广东5-7月为产卵期。肉食性。生活在鼎湖山林区山溪中。原为广东的广布种，由于人为大量捕猎，已极为少见。

25. **Black-necked Terrapin** 黑颈拟水龟 (*Chinemys nigricans*). Endangered, locally vanished. Without a specimen, the status of this record is undetermined; what was called *C. nigricans* a decade or two ago has now been fragmented. In any case, the species is almost certainly extirpated at Dinghushan. This is a pond and stream turtle highly sought for food even within the reserve, where the last individual was recorded in the 1960s in natural woodland. The first record for Dinghushan was in Mell (1922). No vouchers are known. 体型较大，吻略突出上缘，向内下侧斜切；甲桥宽，棕褐色或褐色，与腹甲颜色不同；背甲具纵棱，但无侧棱。生活于林区山溪中。杂食性。由于人为大量捕猎，已极为少见。广东市场偶见有售。

26. **Three-banded Box Terrapin** 三线闭壳龟 (*Cuora trifasciata*). Critically endangered, locally vanished. The primary habitat, well-preserved at Dinghushan, is riparian upland woodland. This species is the most highly sought after Chinese turtle because it is believed to enhance longevity. Old, wild individuals are believed to be the best; therefore even successful farming does little to relieve the pressure on wild populations. On 31 May 1984, JDL and his TCA team caught and released one at *Chao Tang* that was photographed by Martin Michener. Those four photographs (MCZ K-965-8) constitute the only voucher. This species has not been

recorded at Dinghushan since, but was listed by most authors beginning with Mell (1922). 背甲与腹甲、胸盾与腹盾由韧带相连, 腹甲前、后叶可动, 与背甲闭合; 头背光滑, 黄色; 背甲棕色, 有3条黑色纵棱; 腹甲黑色, 边缘近黄色。在广东5月下旬至8月上旬产卵, 雌性成熟需6-7年, 雄龟需4-5年。在人工孵化条件下, 70天可孵出 (Wu 1987)。杂食性, 偏食肉。喜栖于山区林密的山涧溪流。由于人为大量捕猎, 已极为少见。

27. Chinese Soft-shelled Turtle 中华鳖 (*Pelodiscus sinensis*). Vulnerable, locally vanished. This is a species of ponds and large streams in low hills and agricultural areas. It was formerly common in the wild, but most populations today are farmed. The first published record for Dinghushan was in Zhou et al. (1981). We have seen no voucher specimen. 体色青灰色; 体被柔软革质皮肤, 无角质盾片; 吻端有长的肉质吻突, 与眼径等长; 颈基两侧及背甲前缘均无明显的瘰粒或大疣; 腹部散有7个膀胱体。在广东产卵期为4-8月 (其中6-7月为产卵盛期)。肉食性。生活在鼎湖山的山塘、鱼池中, 野外已极为少见。广东市场常见有售人工养殖个体。

28. Chinese Gecko 中国壁虎 (*Gekko chinensis*). This common nocturnal species inhabits big trees in the forest and sometimes buildings; the latter especially if not occupied by humans. We have frequent records from the forest and the original guesthouse from 1983 through 1986, and from the botanical garden at MAB headquarters on 30 June 1996. Four adults in mid-July 2006 measuring 7.0–8.1 cm SVL (average 7.5 cm) were notably larger than those at Hong Kong (Karsen et al. 1998, Lazell 2002). Life history traits were described by Lazell (2002) for the Hong Kong region. A comparative study at Dinghushan would be most valuable. These geckos squeal and bite vigorously when captured. These and the other species of geckos in China and America are the subject of mitochondrial DNA investigations by QN and her students at SCNU. Vouchers include MCZ 170511, 174891, GIE Z-08972, and SCNU 39427-8 and 39434-5. 背部粒鳞间有疣鳞10-14行; 尾基部每侧肛疣1个; 指、趾下瓣单行, 指、趾间基部有蹼。雄性有肛前孔和股孔17-27个。在广州5月中旬可见产在树缝内的卵。捕捉小型昆虫为食。生活在鼎湖山林区大树上或建筑物中, 晚上活动。

29. Bowring's Gecko 原尾蜥虎 (*Hemidactylus bowringi*). This is the common nocturnal "house gecko" of South China. As the common name

implies, it frequents buildings occupied by humans. In the Hong Kong region, this species matures in one year or less; females oviposit in the spring following their hatching (Lazell 2002). These geckos do not bite or squeal when captured. Voucher specimens are SCNU 39423–5 from the guesthouse. 体背粒鳞大小一致, 其间有纵向断续的棕褐色斑纹; 额片2对, 内侧1对比外侧1对大; 指、趾下瓣双行, 指、趾间蹼不发达, 指、趾端具爪; 尾近圆柱形。雄性的肛前孔及股孔在肛前被2-4片鳞分隔。在广东5-8月为繁殖期。常在鼎湖山保护区内的建筑物捕食灯光下的小昆虫。

30. House Gecko 疣尾蜥虎 (*Hemidactylus frenatus*). Status uncertain anywhere in southern China, locally vanished. This nocturnal species was recorded for Dinghushan by Pope (1935) and a catalog entry at GIE dated 12 August 1966 seems to apply to it, but we have found no voucher specimen. *Hemidactylus frenatus* is probably introduced regionally because it turns up rarely, sporadically, and always in human dwellings (Karsen et al. 1998). 指、趾下瓣双行; 尾稍扁, 两侧无锯齿; 体、尾背面粒鳞间散有稀疏较大疣鳞; 尾鳞分节排列, 节后缘有大而尖的疣鳞6枚。雄性肛前孔及股孔在肛前相遇。在广东5-6月为繁殖期。主要捕食蚊蝇等小型昆虫。喜生活在近鼎湖山林区及乡村的建筑物中, 白天匿居, 傍晚及夜间活动。

31. Changeable Lizard 变色树蜥 (*Calotes versicolor*). This common species frequents stone walls, fences, tree plantations, and forest edges, especially in the lowlands. These lizards bask conspicuously in the sun. Colors change largely from lighter and greener to darker and grayer. We recorded it regularly from 10 January 1982 (MCZ 162843) through May 1986 (MCZ 174890), but rarely at elevations above 100 m. A heavily gravid female 9.6 cm SVL was collected 3 June 2006 (SCNU 0606031) and another was observed active in the rain on 16 July 2006 near the botanical garden. A probable young of the year measured 3.5 cm SVL on 9 September 2006; a subadult measured 7.2 cm SVL on 17 July 2009 (SCNU 26083). 头较大, 头顶无对称大鳞; 吻端钝圆, 吻棱明显; 鼓膜裸露; 无肩褶; 无眶后棘; 背鬣发达; 后肢贴体前伸最长趾端可达鼓膜; 环体中段鳞少于52枚。在广东4月下旬至9月产卵。主要捕食昆虫。分布在鼎湖山的平原耕作区、人工林、灌丛及自然林内。

32. Grass Lizard 南草蜥 (*Takydromus sexlineatus*). Locally scarce. This is a species of tall grass and low shrubs in farmland, tree plantations, and



30. House Gecko 疣尾蜥虎 (*Hemidactylus frenatus*)

31. Changeable Lizard 变色树蜥 (*Calotes versicolor*)

32. Grass Lizard 南草蜥 (*Takydromus sexlineatus*)

33. Chinese Forest Skink 光蜥 (*Ateuchosaurus chinensis*)

34. Chinese Skink 中华石龙子 (*Plestiodon chinensis*)

35. Five-lined Blue-tailed Skink 蓝尾石龙子 (*Plestiodon elegans*)



forest edges. It is swift and an agile climber, often using its prehensile tail. It was common into the 1980s around Dinghu. JDL and his TCA team recorded seeing three in May 1984, two in pine and eucalyptus plantations and one on the Baiyun Temple loop trail. Its recent scarcity probably reflects its popularity as food for cage birds. Oviposition is from May to July. No voucher specimen seems to have been collected until 19 July 2006, when LWH secured CIB 084023 at Heavenly Lake (*Tian Hu*) in bamboo thicket. 体型细长; 眶上鳞3枚; 下眼睑被细鳞; 背鳞起棱大鳞4纵行; 体侧被细鳞; 腹部起棱大鳞10行; 尾细长, 约为体长3倍; 鼠蹊窝1对。在广东5-7月产卵。主要捕食昆虫。生活在鼎湖山山地草丛或林下。

33. **Chinese Forest Skink** 光蜥 (*Ateuchosaurus chinensis*). Recently common. Remarkably, following Pope's (1935) mention, this species was not recorded again at Dinghushan until 1998 (Fellowes et al. 2002). Individuals have been seen regularly since then; 10 animals were recorded on 17–19 July 2006, far more than any other reptile. Four more were collected 15–18 July 2009. The escalation of *A. chinensis* abundance may directly reflect the cessation of forest litter consumption for human fuel. Of two females caught on 30 June 1996, one contained no ova (SCNU D966309), but the other contained eight (5 large and 3 small) in the right and six (3 large and 3 small) in the left oviduct (SCNU D9663010). Two adults collected 3 June 2006 measured 6.3 and 6.5 cm SVL, but were not dissected (SCNU 0606032–3). Of the 10 observed in July 2006, six adults measured 6.5–8.5 cm SVL (average 7.6 cm) and four juveniles measured 2.6–3.0 cm SVL (average 2.8 cm). Of a dozen measured and released on 8–9 September 2006, 10 were apparent young of the year, measuring 3.1–4.1 cm SVL (average 3.5 cm). The larger two were unremarkable at 6.3 and 7.7 cm SVL. The 17–18 July 2009 specimens were 6.7 and 4.3 cm SVL (SCNU 26082, 26084), respectively. On 15–16 July 2009, two juveniles, both 2.8 cm SVL (SCNU 26067 and 26070), were collected, also below Heavenly Lake. A life history study at Dinghushan comparable to that for Nan Ao Island off eastern Guangdong and the Hong Kong region (Lazell et al. 1999) would be most instructive. A voucher collected 17 July 2006 is CIB 084025. 体丰腴; 下眼睑被鳞; 无上鼻鳞; 额鳞长, 中部缢缩; 四肢短小, 前、后肢贴体相向距离较远, 相隔约1个前肢长; 无扩大的肛前鳞; 环体中段鳞28-30行。在广东5-7月产卵。主要捕食昆虫及蚯蚓等。常可在鼎湖山保护区内落叶较多的石块、枯木下发现。

34. **Chinese Skink** 中华石龙子 (*Plestiodon chinensis*). These are large skinks, reaching about 13 cm SVL; they are golden brown with orange-red blotches as adults, but near-black with three light bright stripes and a blue tail as hatchlings. Formerly common in farmland around Dinghu and in open areas within the reserve, this species may have declined as succession has advanced. JDL and his TCA team observed a large adult that escaped by swimming at *Chao Tang* (Grassy Pond) on 12 May 1983, and individuals there and at the MAB headquarters fish pond on 19–20 May 1995. A catalog entry at GIE is dated 16 August 1966, but we have been unable to locate a voucher specimen. Zhou et al. (1981) listed it. 成体的头、体背面棕黄色或浅棕色, 颈侧有红色; 有上鼻鳞, 无后鼻鳞; 下眼睑被小鳞; 后颈鳞2枚; 背鳞平滑, 环体中段鳞22行; 尾下鳞正中1行鳞片宽大。在鼎湖山5-6月产卵。主要捕食昆虫。分布在鼎湖山平原耕作区、人工林及灌丛中。

35. **Five-lined Blue-tailed Skink** 蓝尾石龙子 (*Plestiodon elegans*). Status uncertain, vanished. These are small, near-black skinks with striking yellow stripes and bright blue tails. Although the core forest habitat appears perfect for this species, none of us has ever encountered it at Dinghushan. It is included here only on the basis of Pope's (1935) record. It is of considerable biogeographical interest because of its apparent Nearctic affiliations and disjunct distribution between interior upland China and some small islands in the South China Sea (Lazell 2004). 头、体背面黑色, 有5条黄白色纵纹, 正中1条在顶鳞处分叉向前达吻部; 成体尾部依然保持蓝色; 有上鼻鳞, 无后鼻鳞; 后颈鳞1枚; 颈鳞1对; 股后有1团大鳞。在广东连县大东山7-8月见到产卵。以捕食昆虫为主。在鼎湖山栖息于山区道旁的杂草丛中或乱石堆中, 喜在向阳的山坡上活动。

36. **Four-lined Blue-tailed Skink** 四线石龙子 (*Plestiodon quadrilineatus*). This common species was regularly encountered from the vicinity of the original guesthouse (elevation ~35 m) to the top of *Sanbao Feng* (491 m; MCZ 170517) by JDL and his TCA team from June 1984 to May 1995. These skinks regularly bask, especially at higher elevations; they are rare in forests. A specimen collected 17 July 2006 is CIB 084772. Like its close relative, *P. elegans* (above), this species is of great biogeographical interest (Lazell 2002, 2004). Its life history parameters have been chronicled in the Hong Kong region (Lazell and Ota 2000) and a comparison to those in Dinghushan would be most interesting. 体背有4条黄白色纵纹; 背中部2行鳞片大于相邻的体鳞; 环体中段鳞20-22枚。据在鼎湖山

采到的幼体估计5-6月繁殖。主要捕食甲虫、蟑螂、直翅目昆虫及蚯蚓等。栖息在鼎湖山道旁的杂草丛中或乱石堆中，喜在气温较高的午后活动。

37. Reeves' Smooth Skink 南滑蜥 (*Scincella reevesi*). Locally scarce. This generally is a common species in lowlands and disturbed habitats. It is a small species, to perhaps 6 cm SVL, with dorsolateral stripes; males have red tints on the lower sides. Females produce 2–3 live young, typically in June. Evidence from mitochondrial DNA, developed by QN and her students at SCNU, confirms the close relationship of this species, and other Chinese *Scincella*, to the American species *S. lateralis*, as suggested by Pope (1935). Although Zhou et al. (1981) listed this species, we found no voucher specimen. Lazell and Liao (1986) erroneously reported it at Dinghushan, but their record was based on a specimen of the following unidentified species. Not until 9 September 2006 were three vouchers obtained from leaf litter along the cell phone tower trail, just southeast of MAB headquarters, overlooking Dinghu. These adults measured 3.9, 4.9, and 5.1 cm SVL (SCNU 39442–4). 头、体及尾背面棕色，散有黑色斑点；体侧左右各有1条黑色纵纹，黑纵纹间的背鳞为8+2(1/2)行；无上鼻鳞；前额鳞1对，彼此相接；眶上鳞4枚；下眼睑有睑窗。春季繁殖，卵胎生，一次可产幼蜥2-3条。主要捕食蟋蟀、甲虫幼虫等。生活在鼎湖山林地、山溪旁、路旁的落叶下或草灌丛中，喜在每天气温较高的时间活动。

38. "Unidentified" skink 拟滑蜥属新种 (*Scincella cf. rupicola*). Scarce. JDL and his TCA team collected a skink they mistook for *Scincella reevesi* (above) in primary forest at an elevation of ~150 m on 6 June 1984 (MCZ 170514). The specimen was subsequently examined by Allen Greer, Australian Museum, who pointed out to JDL (in litt.) that this skink was not only unlike *S. reevesi* in several critical ways, it lacked the windowed lower eyelid diagnostic of the genus *Scincella*. Nevertheless, Greer opined that it was most similar to *Scincella rupicola* in most respects, despite the generic character discrepancy. Evidence from mitochondrial DNA, developed by QN and her students at SCNU, confirmed this relationship. Subsequently, LZC collected an individual on 6 May 1998 at Dinghushan and Fellowes et al. (2002) reported finding this mystery skink there. On 19 July 2006, JDL and the SCNU team collected two specimens below Heavenly Lake, a female (5.1 cm SVL) with two shelled eggs (both ~5 mm) in the right oviduct and one (~6 mm) in the left, and a male (4.6 cm SVL). They were field-tagged (Z-39439 and Z-39440) and deposited at CIB. No one yet has had the temerity to describe and name this species because attempting this will require a basic generic revision of small brown skinks. 蜥蜴属和滑蜥属有很多相似的地方，有没有下睑窗是蜥蜴属和滑蜥属的重要分类依据。该种连属的分类都有争议；下眼睑无下睑窗，不属滑蜥属；但体型及大小也不同于蜥蜴属。

39. Thigh-shield Skink 股鳞蜥 (*Sphenomorphus incognitus*). This common species typically is found on and among rocks in and beside streams and pools in the forest. First identified at Dinghushan by Fellowes et al. (2002) in September 1995, this species also has been collected by LZC in January 1997 and May 1998. However, no one preserved a voucher specimen prior to the capture of CIB 084026–7 on 17 July 2006. These individuals, a female (8.1 cm SVL) and an unsexed individual (6.0 cm

SVL), were in the same woodpile near Dinghu Lake dam as *S. indicus* (see species 40). This species can be distinguished from the following by the enlarged plate-like scales in a patch on the posterior thigh. 体型及体色等颇似铜蜓蜥，但股后外侧有1团大鳞；体侧黑宽纵带纵纹间排有浅黄绿色斑点。卵生。主要捕食昆虫。生活在鼎湖山山溪边、水潭旁的乱石堆中，5-8月上旬10时至下午2时常见其活动。

40. Brown Forest Skink 铜蜓蜥 (*Sphenomorphus indicus*). Common, like its close relative *S. incognitus* (above), this is a diurnal species frequenting rocks in streams. Of 11 *Sphenomorphus* seen along the aqueduct above the original guesthouse on 24 May 1986, three bearing field tags Z-30305–7 were preserved. One of these was deposited at GIE but could not be found in 2004. Two were accessioned as MCZ 175805–6, but only MCZ 175805 could be located in 2004. That specimen and a second collected 25 May 1986 are definitely this species, as is SCNU 39432, 17 July 2006, noted above. A series collected 15–16 July 2009 included a subadult 5.7 cm SVL (SCNU 26068) and four juveniles 4.1–4.6 (average 4.3) cm SVL (SCNU 26069 and 28071–3). A study of the ecologies and life histories of the two species of *Sphenomorphus* at Dinghushan is clearly needed. 体背古铜色，背脊有1条黑色脊纹；体侧棕黑色宽纵纹从眼后达股后，一般不向尾延伸；环体中段鳞34-38行；第4趾下瓣16-22枚。卵胎生，在8月上中旬产仔。常见于鼎湖山溪旁捕食昆虫。

41. Chinese Waterside Skink 中国棱蜥 (*Tropidophorus sinicus*). Status uncertain, vanished. This is a small, stout, brown skink with keeled dorsal scales. This typically is a stream dweller in forested hills, and both the stout body and keeled scales enhance water resistance and facilitate swimming. Dinghushan appears to provide perfect habitat for this species and is, indeed, its type locality (Boettger 1886). However, we have never encountered it at Dinghushan and have seen no voucher specimen. Pope (1935) gives "Dinghushan" as Boettger's type locality. 头呈三角形，吻窄长；头背鳞片有线纹；体背鳞片明显起棱；顶鳞一侧与4-5枚鳞片相接；颊鳞2枚；额鼻鳞2枚；后颊鳞纵裂为2；前、后肢贴体相向时，指、趾不相遇。卵胎生，早春繁殖一次可产仔3-6尾。主要捕食昆虫。在鼎湖山溪边的草灌丛活动，日间常匿于水边的枯枝落叶或石砾中。

42. Common Blind Snake 钩盲蛇 (*Ramphotyphlops braminus*). Status uncertain, vanished at Dinghushan, but one of the most abundant vertebrates generally in South China and the world. Fossorial, but, as a rule, it is easily and regularly uncovered by herpetologists engaged in their standard activity of turning over rocks, logs, and junk. Features of life history in the Hong Kong region were described by Lazell (2002). It feeds on termites and ant larvae. We have not encountered this species at Dinghushan and have not seen a voucher specimen. Zhou et al. (1962a, 1981) listed it and two catalog entries at GIE are for 30 March and 16 June 1965. 体小，形似蚯蚓，全身被复相同的平滑鳞片；眼隐于眼鳞下；鼻鳞全裂成2。卵生。主要捕食直翅目昆虫、双翅目蛹、蚁类等。穴居，昼伏夜出。

43. Burmese Python 蟒蛇 (*Python molurus*). Critically endangered, locally vanished. This is a species of shrubland and forest that was formerly common at Dinghushan. Eggs are laid in April and May. Pythons



42. Common Blind Snake 钩盲蛇
(*Ramphotyphlops braminus*)



43. Burmese Python 蟒蛇
(*Python molurus*)



44. Jade Vine Snake 绿瘦蛇
(*Ahaetulla prasina*)



are highly sought for meat and fat and have been widely extirpated in South China. We doubt any survive in the wild at Dinghushan, but, on 19 July 1995, a fat captive of unknown provenance about 2.5 m long was on exhibit just inside the reserve entrance. A voucher specimen is at GIE. Given adequate protection, this species could recover (Karsen et al. 1998). Its ability to generate body heat is well known. Females incubate eggs in cold climates, but most likely guard rather than incubate them in warmer climates. 体大; 具吻窝; 泄殖孔两侧有退化成爪状的后肢残余。在广东4-5月产卵。肉食性。生活在鼎湖山常绿阔叶林区的溪涧或灌丛中。由于人为大量捕猎, 已极为少见。

44. Jade Vine Snake 绿瘦蛇 (*Ahaetulla prasina*). Locally scarce. This is an arboreal species necessarily confined to woodland and forest; it is viviparous and mildly venomous. Zhou et al. (1962a, 1981) recorded it at Dinghushan and a GIE voucher (YUE006) is dated simply 1961. A specimen (MCZ 174896) was collected 10 May 1983 by JDL and his TCA team in the forest at an elevation of ~200 m. Several more were seen between then and 4 May 1986, when another (MCZ 174899) was found dead on a trail above *Chao Tang* (Grassy Pond). Martin Williams photographed a live individual in April 1991; that photograph is catalogued as MCZ 183643. None have been seen since. These specimens all show the dark infralabial pigmentation characteristic of Chinese specimens. This is something of a mystery snake in South China; specimen records, in keeping with its forest habitat, are few and scattered. A most distinctive variant form is known from just two specimens from the little island of Shek Kwu Chau off Hong Kong (Lazell 2002). 微毒。头大而长, 吻尖细, 体瘦尾长; 瞳孔横置; 体呈绿色; 颊区成一凹槽; 脊鳞稍大; 背鳞15-15-13行; 腹鳞两侧各有1条白色纵纹; 腹鳞及尾下鳞具侧棱。卵胎生。捕食蛙类、蜥蜴类及小鸟等。树栖。

45. Buff-striped Keelback 草腹链蛇 (*Amphiesma stolata*). Rare. This is a snake of marshland and pond edges, often quite common in agricultural areas. It closely resembles American Garter and Ribbon snakes in appearance and behavior, but is an egg-layer. It seems to have declined in abundance in South China in recent years. Zhou et al. (1962a, c; 1981) listed it, and an untagged specimen is at GIE in a bottle labeled “*Dinghu*.” SCNU has a specimen. JDL and his TCA team found a decapitated carcass (64 cm long) in a paddy near Dinghu on 8 May 1986, but did not save it. 头、颈部一般棕黄色; 体背有2条浅色纵纹及由许多黑斑组成大波纹状的横纹; 背鳞19-17-17行, 除最外1行平滑外, 均起棱。在广东5月进

入繁殖期。主要捕食蛙类。生活于鼎湖山周围的平原耕作区及山坡草地, 近年已少见。

46. Large-spotted Cat Snake 繁花林蛇 (*Boiga multomaculata*). Rare. This is an arboreal, nocturnal species that inhabits plantations and shrubland as well as forest. Zhou et al. (1962c, 1981) listed it, and an undated catalog entry at GIE is for a specimen we could not locate. It is a lizard-hunting specialist. A roadkill found on the main road at an elevation of ~220 m on 14 April 1987 is MCZ 172042. 微毒。头较大, 略呈三角形, 颈细; 头背有1黑色箭形斑, 体背及尾部有近圆形黑色斑; 脊鳞明显扩大; 背鳞19-19-13行。在广东8月间产卵。捕食小鸟、鸟卵及蜥蜴类等。善攀爬, 常在树上活动, 喜夜间活动。分布在鼎湖山的人工林、灌丛及自然林区内, 近年已少见。

47. Northern Reed Snake 钝尾两头蛇 (*Calamaria septentrionalis*). Scarce. This is a fossorial species of woodland and forest. It feeds on earthworms and is sometimes found on the surface — even crossing roads — particularly in rainy weather. JDL and his TCA team recorded seven individuals at Dinghushan between 22 May 1984 (MCZ 170515) and 20 July 1995, none at elevations above 230 m. Three of these were salvaged roadkills and bear field tags F-30286, Z-30297, and Z-30319; all were deposited at GIE, but we found none in 2004. 头椭圆形; 额鳞长、宽相等, 有眶前鳞、鼻间鳞、颊鳞及颞鳞缺; 尾端钝圆, 色斑似头; 体两侧各有1条由白点组成的线纹; 尾部腹面中央有1黑线。卵生。以蚯蚓为食。生活在鼎湖山林区内, 隐居于泥土下, 近年已少见。

48. Copperhead Racer 三索锦蛇 (*Coelognathus radiatus*, formerly in *Elaphe*). Endangered. Like the two species of *Ptyas* (below), this is a formerly widespread lowland species that frequented agricultural areas, shrubland, and woodland. It has been widely reduced to rarity because it is very popular as human food. It feeds on rodents and birds. Cornered, this snake defends itself with an open-mouthed threat display involving vertical neck-spreading (opposite to that of the cobras) and hissing. Oviposition is typically in May or June, but Lazell (2002) found hatchlings as late as November. Listed by Zhou et al. (1962a, 1981), two Dinghushan specimens are at GIE (J010 and one untagged), both undated. LZC saw and released an individual in the core primary forest at an elevation of 116 m in the 1980s. 体背棕黄色, 头侧、眼后向下有3条放射状黑纹; 枕后有1黑横斑; 体前部有4条断续的黑色纵纹。5-6月在鼎湖山的人工林和灌丛的落叶下产卵。主要捕食鼠类, 也捕食鸟类、蜥蜴类和蛙类等。

49. **Greater Green Snake** 翠青蛇 (*Cyclophiops major*). Regularly encountered at Dinghushan; eight records are from 30 May 1984–June 1989. Interestingly, it was never recorded earlier and no GIE specimens or catalog entries exist. A roadkill on 7 May 1986 (MCZ 174899) was preserved as a voucher. This species specializes on earthworms for its diet. It is generally slow and rarely bites, but will writhe in an attempt to escape and often defecates on its captor. It is generally an upland species and does not occur in agricultural areas. It frequents shrubland, forest, and even grassland at high elevations. 头、颈可区分; 眼较大, 尾细长; 头、体背面草绿色; 腹面黄绿色; 背鳞通身15行。卵生。以蚯蚓为食。喜夜间活动。分布在鼎湖山的人工林、灌丛及自然林区。

50. **Chinese Water Snake** 中国水蛇 (*Enhydris chinensis*). Locally scarce or vanished. This is an aquatic species of low-elevation wetlands, especially marshes and rice paddies. The reduction of the habitat around Dinghu has made these snakes hard to find. They also are caught and sold for food. They eat frogs and fish. They bear live young in August and September. Karsen et al. (1998) reported defensive biting and mild envenomation, with symptoms including swelling, headache, and nausea. Zhou et al. (1962a, 1981) listed this species and an untagged specimen is in a bottle labeled “Dinghu” at GIE. 微毒。体粗壮, 尾短; 鼻间鳞1枚, 与颊鳞不相切; 上唇鳞1枚入眶; 背鳞中段23行; 体背一般橄榄色。卵胎生, 在广东8-9月产仔。以鱼、蛙为食。常栖于水田、池沼。由于鼎湖山附近农田大量开发, 栖息地缩小, 近年已少见。

51. **Plumbeous Water Snake** 铅色水蛇 (*Enhydris plumbea*). Locally scarce or vanished. Like *E. chinensis* (above), this aquatic marshland and paddy species has lost a great deal of habitat in recent years. Its life history parameters are chronicled from the Hong Kong region (Lazell 2002) and seem similar to *E. chinensis*. Karsen et al. (1998) reported snappy defense behavior, as with its congener above, but no more than slight swelling as a result of envenomation. We have not seen a Dinghushan specimen. Zhou et al. (1962a, 1981) listed it, and a catalog entry at GIE is dated 6 July 1965. 微毒。体型较小, 尾短; 鼻孔具瓣膜, 位于吻端; 鼻间鳞1枚, 位于左右鼻鳞之后中央, 与颊鳞不相切; 上唇鳞8枚, 2枚入眶; 背鳞中段19行。卵胎生, 在广东8月产仔。以鱼、蛙类为食。栖息环境和食性与中国水蛇相同, 与中国水蛇一样, 近年已少见。

52. **Golden Kukri Snake** 紫棕小头蛇 (*Oligodon cinereus*). Rare. This species inhabits grassland, shrubland, and woodland edges (Karsen et al. 1998) and seems rare generally in South China; little is known of its natural history. On 26 May 1986, Numi Mitchell (TCA) found a specimen (MCZ 175895) dead on a trail in *Cha Chang* (Tea Garden) at an elevation of ~320 m at 0100 h. This peculiar snake was first thought to be a new species. Van Wallach of MCZ solved the mystery by identifying it to this species. The name derives from the enlarged, blade-like rear teeth reminiscent of the kukri knives of Gurkha soldiers (Karsen et al. 1998). An untagged specimen is in a bottle labeled “Dinghu” at GIE. No previously published records exist for Dinghushan. 头小, 与颈不易区分; 吻鳞大; 头背及体腹面无斑; 体背红色, 由许多背鳞边缘的黑色形成波状横纹。卵生。捕食蟋蟀、蜘蛛及甲虫等。生活在鼎湖山林区的草灌丛中。

53. **Taiwan Kukri Snake** 台湾小头蛇 (*Oligodon formosanus*). Scarce. This species occupies a broad spectrum of habitats from grassland and pond edges to forest. The primary diet seems to consist of reptilian eggs, the opening of which is facilitated by the enlarged blade-like rear teeth (Karsen et al. 1998). In the Hong Kong region, hatchlings appear in June (Lazell 2002). This species was listed by Zhou et al. (1962a, 1981), and two specimens (J013 and one untagged) from Dinghushan are at GIE, both undated. Richard Lutman (TCA) observed a live individual (~60 cm total length) near Qingyun Temple at ~1000 h on 18 July 2006. 头顶具有“灭”字形的棕黑色斑; 体背有距离相等约1鳞片宽的黑色波浪状横纹; 背鳞19-19-17行。嗜食爬行动物的卵。栖息于鼎湖山林区路旁、山坡草丛及灌丛下。

54. **Banded Stream Snake** 横纹后棱蛇 (*Opisthotropis balteata*). Status uncertain, vanished. This is a species of upland streams in forest, so the Dinghushan habitat is perfect for it. It is nowhere common in South China and little is known of its life history. Karsen et al. (1998) reported it to be diurnal and docile and willing to eat small fishes. Zhou et al. (1962a, 1981) listed it, but we have not found a specimen. A catalog entry at GIE dated 5 October 1965 may refer to this species. 有颊鳞; 背鳞中段19行; 上唇鳞7-10枚; 全身有黑褐色环纹。捕食小鱼、小虾及蚯蚓等。半水栖, 常见于岩石下, 近年已极为少见。



51 Plumbeous Water Snake 铅色水蛇 (*Enhydris plumbea*)

52. Golden Kukri Snake 紫棕小头蛇 (*Oligodon cinereus*)

53. Taiwan Kukri Snake 台湾小头蛇 (*Oligodon formosanus*)

54 Banded Stream Snake 横纹后棱蛇 (*Opisthotropis balteata*)

55. Red Mountain Racer 紫灰锦蛇 (*Oreophis porphyraceus*)

56. Black-browed Satin Snake 黑眉锦蛇 (*Orthriophis taeniurus*)



55. **Red Mountain Racer** 紫灰锦蛇 (*Oreophis porphyraceus*; formerly in *Elaphe*). Vulnerable. This is a forest species and has probably not been common for centuries. Karsen et al. (1998) reported it to be largely diurnal, usually docile, and easily kept in captivity on a diet of mice. The only Dinghushan record (MCZ 170513) was collected on 30 May 1984 in primary forest at an elevation of 116 m. 成体一般不超过1米; 头、体背面紫铜色, 头背有3条黑色纵纹; 体、尾背面有淡黑色横斑; 背鳞平滑, 在颈部鳞列不超过19行。在广东7月产卵。以小型啮齿动物等为食。见于鼎湖山林区路旁。

56. **Black-browed Satin Snake** 黑眉锦蛇 (*Orthriophis taeniurus*; formerly in *Elaphe*). Vulnerable. This is a species of diverse habitats ranging from open farmland to forest. It feeds on rodents and frogs and oviposits from May to July. It is highly sought for human food, and populations in South China are widely depleted. It was not recorded at Dinghushan until 11 May 1983, when a 1.5-m male was collected, preserved, and deposited at GIE, bearing field tag Z-08984. We could not locate this specimen in 2004. JDL and his TCA team also examined and released three more individuals between 1983 and 27 May 1986, two of which were in forest at elevations of ~220–300 m elevation, and the last was far back in an artificial cave at an elevation of ~40 m, we suspect hunting bats. 头、体背面黄绿色或棕灰色; 眼后有明显黑纹; 体前中段有黑色梯状或蝶斑状斑纹, 至尾段逐渐不显; 从体中段开始两侧有明显的黑纵带达尾端; 体背中央数行背鳞稍有起棱。在广东5-7月为产卵期。喜捕食鼠、蛙类。见于鼎湖山人工林和灌丛。

57. **White-spotted Slug Snake** 横纹钝头蛇 (*Pareas margaritophorus*). Locally rare. This is a fairly common snake in much of South China, frequenting woodland, shrubland, and gardens. It is nocturnal and eats slugs and snails; the enlarged teeth facilitate removal of the snails from their shells (Karsen et al. 1998). When captured, this snake balls up with its head tucked in its coils. One roadkill (MCZ 174888) was salvaged on 10 May 1986 at Dinghushan at an elevation of ~70 m. A second roadkill was found on 27 May 1986 and bears field tag Z-30318; it was deposited at GIE, but we could not find it in 2004. LZC saw a roadkill in September 1995, but the specimen was too mangled to save. 体色紫蓝色, 杂以黑白各半的鳞片彼此缀连成短横斑; 前额鳞入眶; 颊鳞不入眶; 背鳞通身15行, 平滑无棱; 腹鳞152-160枚; 尾下鳞39-44对。卵生。捕食陆栖软体动物及小鱼。在鼎湖山林近年已少见。

58. **Mock Viper** 紫沙蛇 (*Psammodynastes pulverulentus*). This is a common species of forest, shrubland, and even tree plantations. It climbs well and feeds on frogs and lizards. Zhou et al. (1962a, 1981) listed it. We have four records, all in May, from 1984 to 1986 (Lazell and Liao 1986). One of these was a heavily gravid female (MCZ 170512) captured at 0500 h at an elevation of ~30 m in woodland. The species was not recorded again until 16–19 July 2006, when we found three individuals, two released females (31.5 and 54.0 cm total length) and a newborn roadkill (with yolk sac scar) of 19.5 cm (CIB 083791). This latter specimen accords well with available life history data for the Hong Kong region, where these snakes bear young in July and August (Lazell 2002). It also closely fits a newborn series of five

individuals from Nan Ao Island, eastern Guangdong (SCNU F4080–4), collected 25 July 2004, which measured 18.4–19.8 cm total length (average 19.2 cm). Two juveniles measured and released on 8 September 2006 were 21.6 and 24.1 cm total length, indicating post-natal growth. A juvenile collected 16 July 2009 (SCNU 26066) was, however, 28.1 cm total length; possibly a yearling? 微毒。头三角形；吻尖钝，吻棱显著；头顶和头侧有对称的褐色纵条纹数条；体背紫褐色，有多个不规则镶黑边的土黄色横斑；背鳞17–15行。卵胎生。主要捕食蛙及蜥蜴类。栖息于鼎湖山人工林、灌丛及自然林，能爬树。

59. Indo-Chinese Rat Snake 灰鼠蛇 (*Ptyas korros*). Endangered, locally vanished. Formerly a common snake in most habitats from farmland to forest, this species is highly sought for human food and has been reduced to rarity in much of South China today. In appearance and behavior this species resembles the American racers in the genera *Coluber* and *Masticophis*. Zhou et al. (1962a, c; 1981) listed it, and two specimens are at GIE (J011–2) from Dinghushan. The generic status of this and the following species was discussed by Lazell (2002), Nagy et al. (2004), and Burbrink and Lawson (2007) without any consensus. 头长，眼大，尾长。颊部内陷；背鳞灰褐色，每一鳞片中央黑褐色，前后缀连成黑纵纹。在广东5–6月产卵。主要捕食蛙、鼠。栖息于鼎湖山平原耕作区、人工林、灌丛和自然林中，近年已极为少见。

60. Common Rat Snake 滑鼠蛇 (*Ptyas mucosus*). Endangered, locally vanished. Like its close relative, *P. korros* (above), this is a species of most terrestrial habitats, so highly sought for human food as to be rare over much of South China today. It feeds on a broad spectrum of vertebrates, from toads to birds, and even on carrion. It looks and acts like a larger version of the American racers, but, like its relative above, no relationship to them has been demonstrated. Oviposition is typically in May or June and hatchlings in the Hong Kong region appear in August (Karsen et al. 1998, Lazell 2002). Zhou et al. (1962a, c; 1981) listed this species and an untagged Dinghushan specimen is at GIE (dated 20 December 1963). 头背黑褐色，体背灰棕色，腹面黄白色；体后有不规则的黑色横斑，横斑至尾部形成网状；腹鳞后缘黑色；颊鳞一般3枚；背鳞19–17–14行。在广东5–6月产卵。嗜食鼠。在鼎湖山的平原耕作区、人工林、灌丛的沟溪边昼夜活动，行动迅速。灰鼠蛇和滑鼠蛇历来都是人们捕食的重要对象，近年已极为少见。

61. Red-necked Keelback 红脖颈槽蛇 (*Rhabdophis subminiatus*). This common species occupies a wide range of habitats from agricultural areas to primary forest, often associated with water. This snake is highly reminiscent in habitus and behavior of an American Garter Snake (*Thamnophis*) or a European Grass Snake (*Natrix*). Records at Dinghushan go back to Mell (1922), and we have five dated records from 8 May 1983 through 20 July 1995. Two of these, from primary forest and pine plantation, are MCZ 166902 and 174898. Several were observed on 8 July 1997, 6 May 1998, and in July of 2006 and 2009. Oviposition in the Hong Kong region is from May through July; the diet is largely frogs and toads (Karsen et al. 1998). A juvenile measured and released on 8 September 2006 was 24.6 cm SVL (32.5 cm total length), another on the same date was larger (25.1 cm SVL), but had a stumped tail. A released hatchling with yolk sac scar measured 13.4 cm SVL on 16 July 2009. 颈部及躯体前部呈红色，无

横斑；颈背的颈槽明显；背鳞中段19行。在广东5月产卵。主要捕食蛙类也捕食昆虫。分布在鼎湖山的平原耕作区、林区及灌丛。

62. Chinese Mountain Snake 黑头剑蛇 (*Sibynophis chinensis*). Status uncertain. This is nowhere known to be a common species. It inhabits upland habitats including forest, shrubland, and even open grassland at high elevations. Karsen et al. (1998) reported this to be a docile, diurnal species that feeds on skinks and Grass Lizards. We have not seen this species at Dinghushan and include it here solely on the testimony of Michael Lau (Lau 1996, Fellowes et al. 2002), who examined and released a specimen in the core primary forest on 26 September 1995 at an elevation of ~220 m. 头背黑色，体背棕褐色；颈背有1黑色宽横斑与体背中央黑褐色脊线相连；上唇鳞9枚；前颞鳞2枚。在广东7–8月产卵。捕食蛙类及蜥蜴等。分布在鼎湖山林区。

63. Diamond-back Water Snake 环纹华游蛇 (*Sinonatrix aequifasciata*). Regularly encountered, this is a species of streams in forest, usually in uplands but sometimes at low elevations. The diet of fish and frogs necessitates considerable flow and pools. This snake climbs well and typically perches in vegetation over water. The resemblance in habitus, activity, and behavior of this species to the southeastern American Diamondback Water Snake (*Nerodia rhombifer*) is striking. First recorded at Dinghushan by Mell (1922), we have three records from 2 April 1984 through 25 May 1986. The first of these was the individual that killed a Giant Spiny Frog (see species 15) through apparent envenomation — and escaped. Two more were collected in May 1986 (MCZ 174887 and one deposited at GIE bearing field tag Z-30311). Of the former, JDL noted “caused local swelling at tooth punctures” when it bit its captor. 头、颈可区分；躯体棕褐色，其上的环纹在体侧形成“X”形斑；背鳞19–17行，起棱。在广东5–6月产卵。以鱼、蛙为食。栖息于鼎湖山自然林区山溪中。

64. Mountain Water Snake 乌华游蛇 (*Sinonatrix percarinata*). Regularly encountered, like its relative *S. aequifasciata* (above), this is a species of upland streams with cascades and pools; it too eats frogs and fish, but is not so regular a climber in vegetation. This species looks and acts very much like the common water snakes (*Nerodia*) of eastern North America. That no previous records exist of this species at Dinghushan is surprising because the habitat is ideal and JDL and his TCA team recorded six between 11 May 1983 and 18 May 1986, beginning with a roadkill (MCZ 166906; a second voucher is MCZ 175808). Twice these snakes were found in the original guesthouse cistern at an elevation of ~32 m. 头略呈三角形；体背灰褐色，体侧具黑色横斑（特别是幼蛇）；鼻间鳞前端窄；通常有2枚上鼻鳞入眶；背鳞中段19行。在广东6–8月产卵。捕食蛙类和鱼类。栖息于鼎湖山林区山溪，多白天活动。

65. Checkered Keelback 渔游蛇 (*Xenochrophis piscator*). Common; this is a species of marshes, rice paddies, and pond edges in the lowlands. Because of habitat decrease, this species is not as easily found as in earlier years. It feeds on fishes, frogs, and toads. In the Hong Kong region, it oviposits in March and April (Karsen et al. 1998). The species was listed by Zhou et al. (1962a, c; 1981); also, three untagged specimens in a bottle labeled “*Dinghu*” are at GIE. An apparent juvenile was collected in July 2006 by XZ and deposited at CIB (field tagged Z-39446), but its identity is



66. Banded Krait 金环蛇
(*Bungarus fasciatus*)



67. Many-banded Krait 银环蛇
(*Bungarus multicinctus*)



68. Chinese Coral Snake 丽纹蛇
(*Sinomicrurus maccllellandi*)



69. Chinese Cobra 舟山眼镜蛇
(*Naja atra*)

70. White-lipped Bamboo Viper 白唇竹叶青
(*Trimeresurus albolabris*)

71. Stejneger's Bamboo Viper 福建竹叶青
(*Trimeresurus stejnegeri*)

in question. 鼻孔位于头背侧面；眼下方一般都有2条向后的黑纹；体背、体侧有网纹斑和较大的黑色斑；体腹面有排列整齐的黑白相间的横纹。以鱼、蛙为食。栖息于鼎湖山低山林区的池沼、湿地或溪边，半水栖。

66. **Banded Krait** 金环蛇 (*Bungarus fasciatus*). Endangered, locally vanished. This highly venomous species was formerly fairly common in lowland agricultural areas. It is ophiophagous — a snake eater. Karsen et al. (1998) noted how these snakes, so often docile and inoffensive by day, become vicious and aggressive with nightfall. One clutch can have as many as 16 eggs (Zhou et al. 1962a). Because it is so highly desired for human food and traditional medicine, it has been widely reduced to rarity. Our only evidence for its occurrence at Dinghushan are listings by Pope (1935) and Zhou et al. (1962a, 1981). 剧毒，具前沟牙。头、颈区分不明显，吻圆钝；体背有黑黄相间的横纹；背脊棱起呈嵴，脊鳞扩大；尾短，端部钝圆。在广东5-6月产卵。捕食鱼、蛙、蜥蜴、鼠和蛇。夜间见于鼎湖山的人工林、灌丛或自然林区内。由于大量滥捕，已极为少见。

67. **Many-banded Krait** 银环蛇 (*Bungarus multicinctus*). Vulnerable. Highly venomous; like its close relative *B. fasciatus* (above), this species inhabits a wide spectrum of lowland habitats, from farmland to forest, usually closely associated with water. In addition to snakes, it may eat lizards, rodents, frogs, and fish. Not docile even by day, this is an aggressive snake; it is the species that killed the prominent herpetologist Joe Slowinski in Myanmar in 2001 (James 2008). It mates in September and oviposits the next June; eggs hatch in one month (Zhou et al. 1962a). Zhou et al. (1981) listed it. On 30 June 1996, LZC captured and released a specimen about 2 km up the west valley trail. A photograph of it by Peter Lynch (GATP) is accessioned as MCZ K-955, our only voucher. 剧毒，具前沟牙。头、颈区分不明显，无颊鳞；脊鳞扩大；背鳞通身15行；尾短，尾下鳞单行；体背黑白相间，黑横纹远宽于白横纹。在广东4月出蛰，6月产卵，11月进入冬眠。捕食鱼、蛙蛇等。夜间见于鼎湖山的人工林、灌丛或自然林区内。

68. **Chinese Coral Snake** 丽纹蛇 (*Sinomicrurus maccllellandi*). Locally rare. This highly venomous species is secretive and usually not aggressive. It resembles a drabber version of the American coral snakes (*Micrurus* and *Micruroides*) and is similarly ophiophagous. Semifossorial and nocturnal, it inhabits woodland and forest, but rarely open areas. However, on 12 May 1983, JDL and his TCA team found a flat and dried roadkill in the agricultural area at Dinghu. This one was not salvaged, but a second roadkill (MCZ 174897) was found within the reserve, near *Cha Chang* (Tea Garden) at an elevation of ~240 m on 26 May 1986. 有毒，上颌前沟牙后有2枚小牙。体色棕红色，头背黑色，有1醒目的暗白横斑，横斑不呈“八”形；背鳞平滑，通身13行。在广东8月产卵。捕食蛇类及蜥蜴类幼体。多夜间见于鼎湖山林区的山路。

69. **Chinese Cobra** 舟山眼镜蛇 (*Naja atra*). Vulnerable; status uncertain, vanished. Formerly common, this species occurs in a broad spectrum of habitats from farmland to forest. It is rare today because of its popularity as human food. Cobras eat almost any sort of vertebrate animal they can kill with their highly potent venom. These cobras are famous for their defensive

posture of rearing the anterior third of their bodies and spreading their iconic hoods. Although related to cobras that spit venom, such behavior has rarely been observed. They seem to assume that their posture and hood will warn humans and seem reluctant to actually bite unless captured. They do not rear or spread hoods when striking prey. In the Hong Kong region, hatchlings appear in August and September (Lazell 2002). We have seen no voucher specimen, but a catalog entry for a specimen from Dinghushan is at GIE (dated 22 December 1963). Pope (1935) and Zhou et al. (1981) also recorded it here. 剧毒，具前沟牙。头椭圆形；颈部能膨扁，颈部有眼镜状斑纹，无颊鳞；上唇鳞第2、3枚入眶；下唇鳞的第4、5枚之间有小鳞。在广东5月前出蛰，5-6月交配，7-8月产卵，11月进入冬眠。食性广，鱼、蛙、蛇、鼠、鸟都捕食。在鼎湖山活动范围较广。由于大量捕猎，近年已极为少见。

70. **White-lipped Bamboo Viper** 白唇竹叶青 (*Trimeresurus albolabris*). Status uncertain, vanished. This highly venomous snake is usually common in farmland, shrubland, and forest edges. Habitat in the Dinghushan lowlands appears optimal, but the only record is Mell (1922). Mell clearly separated this species from the following, and listed “*Dingui*” as a locality. In the Hong Kong region, these viviparous snakes produce young throughout the warm season, spring to autumn, and eat amphibians, reptiles, mammals, birds, and even insects (Lazell 2002). They are typically nocturnal and climb in vegetation to some extent. The species name and the Chinese name both translate as “white-lipped,” but in life the lips are bright yellow to pale green, only fading to whitish in preservative. 剧毒，具管牙。头大，呈三角形；头、颈区分明显，具颊窝；鼻鳞一般与第1枚上唇鳞愈合或有短鳞沟；鼻间鳞大，彼此一般不相接；通身绿色，体侧有1白色纵线纹；尾部焦红色。卵胎生，在广东5月交配，6-7月产仔。捕食鼠类，也捕食蛙类、蜥蜴及鸟等。喜在鼎湖山较湿的溪边、灌丛活动或树栖。

71. **Stejneger's Bamboo Viper** 福建竹叶青 (*Trimeresurus stejnegeri*). Locally scarce. This recent addition to the herpetofauna of Dinghushan seems rare. This species is ecologically and behaviorally similar to its close relative, *T. albolabris* (above), but ranges more inland, upland, and farther north. It is viviparous, and young have been recorded in July and August. Two specimens at SCNU were collected by LZC, both along forest edge roadsides within the reserve, on 29 June 1996 and 8 July 1998. Another collected 1 July 1997 by LZC is CIB 085045. 剧毒，具管牙。头大，呈三角形；颈细与头区分明显；全头被小鳞，具颊窝；体绿色，外侧背鳞中央白色，自颈后形成1条白色纵线纹，在白色纵线纹下方还伴有1条红色侧线；鼻鳞与第1枚上唇鳞之间有完整鳞沟。卵胎生，在广东7-8月产仔。捕食蛙类、蜥蜴类、鸟类、鼠类。在鼎湖山林区溪旁或林缘灌丛活动，有时缠绕在树上。

Discussion and Conclusions

According to Zhao and Adler (1993) and Wang and Zhao (1998), these 71 species are distributed mainly in the Oriental Zone, which often is divided into three regions as Southwestern China, Central China, and South China. Of the 23 amphibians, about 79% (18 species) are spread across both the Central and South China

regions, and 17% (4 species) occur only in the South China region: Yellow-striped Caecilian (*Ichthyophis bannanicus*), Three-striped Grass Frog (*Hylarana macrodactyla*), Spotted Narrow-mouthed Frog (*Kalophrynus interlineatus*), and Asiatic Painted Frog (*Kaloula pulchra*). Only one species (4%), Schmacker's Stinking Frog (*Odorrana schmackeri*), was previously reported as occurring only in the Central China region. Of the 48 reptiles, most are strictly in the Oriental Zone. Only two species are widely distributed across both the Palearctic and Oriental zones, the Chinese Soft-shelled Turtle (*Pelodiscus sinensis*) and the Black-browed Satin Snake (*Orthriophis taeniurus*). Of the others, 77% (37 species) are spread across both the Central and South China regions, 23% (11 species) occur only in the South China region: Black-necked Terrapin (*Chinemys nigricans*), Three-banded Box Terrapin (*Cuora trifasciata*), Bowring's Gecko (*Hemidactylus bowringi*), House Gecko (*Hemidactylus frenatus*), Changeable Lizard (*Calotes versicolor*), Four-lined Blue-tailed Skink (*Plestiodon quadrilineatus*), Reeves' Smooth Skink (*Scincella reevesi*), the undetermined skink (*Scincella* cf. *rupicola*), Chinese Waterside Skink (*Tropidophorus sinicus*), Banded Stream Snake (*Opisthotropis balteata*), and White-spotted Slug Snake (*Pareas margaritophorus*). Thus, the new Dinghushan records have documented the range of only one species southward from the Central China region to the South China region in the Oriental zone.

Of the 71 recorded species, at least 21 (nearly 30%) seem to have vanished. Among these, 11 species (>50%) are highly desired for human consumption, and this alone may account for their disappearance. This includes all four turtles, the python, both species of *Ptyas*, both species of *Enhydryis*, and two large elapids, the Banded Krait and the cobra. Some of these also may suffer from the demise of local agriculture, notably the two water snakes.

Of the remaining vanished species, four (nearly 20%) may be closely enough tied to agricultural areas to have declined recently, or simply to survive now only in areas we have not searched: Chaochiao Wood Frog (*Rana chaochiaensis*), Three-striped Grass Frog (*Hylarana macrodactyla*), Rough-skinned Floating Frog (*Occidozyga lima*), and White-lipped Bamboo Viper (*Trimeresurus albolabris*). The viper may be an unlikely candidate for this group, because it is abundant in shrubland and second-growth forest, even on very small islands in Hong Kong (Karsen et al. 1998, Lazell 2002).

The remaining six vanished species defy ready explanations. The Cascade Frog (*Amolops ricketti*) is very tenuously recorded; one might argue its paper trace is a mistake, but we opine it should be present. Alone among this group of six, it might also be a victim of global warming, because it is an upland and generally more northern species. The House Gecko (*Hemidactylus frenatus*) may have been an edificarian introduction that simply did not persist. The Five-lined Skink (*Plestiodon elegans*) is also an upland and largely more northern species, but is locally common south in the tropics and even at sea level (Lazell 2004). The Waterside Skink (*Tropidophorus sinicus*), as mentioned in the species accounts, seems truly bizarre. Well within its range, Dinghushan seems perfect for the skink and is the species' type locality. Why have we not found it since 1886? Our failure to find recent specimens of the Common Blind Snake (*Ramphotyphlops braminus*) must have been simple oversight. It should be abundant around the buildings and nursery. Lastly, the Stream Snake (*Opisthotropis balteata*) is generally rare in South China; failing to find it recently could just be bad luck — but Hong Kong has it and three more species of *Opisthotropis*.

Dinghushan seems ideal habitat for this genus with plenty of cascading streams. The absence of all these species seems mysterious.

Nine (13%) of the Dinghushan's species are among those we think of as closely associated with forest. Eight of them have been recorded only since 1984. Only one, the Jade Vine Snake (*Ahaetulla prasina*), was previously collected in 1961. The possibility is heartening that these may be species that are recovering since the termination of woody fuel gathering has allowed regrowth of the forest understory and deposition of more ground cover, processes that began in the mid 1980s. Six of these species, the caecilian (*Ichthyophis bannanicus*), Heymons' Pigmy Frog (*Microhyla heymonsii*), Chinese Forest Skink (*Ateuchosaurus chinensis*), Thigh-shield Skink (*Sphenomorphus incognitus*), Brown Forest Skink (*S. indicus*), and Mock Viper (*Psammodynastes pulverulentus*), are vouchered and well-documented. We still need better documentation and we still lack voucher specimens for the remaining two, Schmacker's Stinking Frog (*Odorrana schmackeri*) and the Chinese Mountain Snake (*Sibynophis chinensis*).

At first glance, two pairs of congeneric species are suggestive of replacement turnover. In the last decade or a little longer, the Lesser Spiny Frog (*Paa exilispinosa*) has been found and the Giant Spiny Frog (*P. spinosa*) has not. The very common White-lipped Bamboo Viper (*Trimeresurus albolabris*), only recorded at Dinghushan by Mell in 1922, has not been collected for nearly a century, whereas the northern and upland Stejneger's Bamboo Viper (*T. stejnegeri*) has been collected three times since 1996. These possible examples of turnover seem quite unlikely to have involved the invasion and displacement model or, for that matter, the extinction followed by colonization model. We can envision no source areas for the newly recorded species. Each would have had to cross deforested, largely agricultural lands to invade Dinghushan, and neither seems likely to survive in such habitats. If these are real examples of species replacement, the replacing species must, we believe, have been there all along; they must have been invisibly rare and must have undergone very recent dramatic population growth. This scenario would require that the replacing species are now driving, or have driven, their congeners to local extinction. Can cessation of forest fuel collection and succeeding understory regrowth have enabled this? The first test of this hypothesis will be to see if the apparent replacements are even true. Have the two species really vanished and been replaced by remarkably similar congeners? We doubt it. Renewed collecting efforts probably will rediscover both of these species at Dinghushan.

A striking feature of Nearctic biogeography is the strong resemblance and potentially close relationship of species between East Asia (especially South China) and eastern North America (especially the Southeast). Long hailed as the "alligators and magnolia" pattern, this is known as *Grayian Distribution*, named for the nineteenth century Harvard botanist, Asa Gray (Lazell and Lu 2000, 2003). Some 24 of Dinghushan's 71 species — more than one third — require molecular biological tests of affinity to eastern North American species and, if pertinent, calculations of separation times. These species include *Bufo melanostictus*, *Hyla simplex*, at least three ranid "brown" frogs (under study by Kiley Briggs, University of Vermont), all three *Microhyla*, the turtles *Platysternon megacephalum* and *Cuora trifasciata*, all skinks in the genus *Plestiodon* (currently under study by Matt Brandley, Peabody Museum of Yale University), skinks in the genus *Scincella* (currently under study

Table 1. Herpetofauna of Dinghushan with the earliest reference for each species. Specimens are at South China Normal University (SCN), Chengdu Institute of Biology (CIB), Guangdong Institute of Entomology (GIE), and Museum of Comparative Zoology, Harvard (MCZ), with X, voucher specimen extant in 2004; •, specimen examined, tagged, and catalogued by us but not found in 2004; O, a catalog entry with data for a specimen not found by us in 2004; and *, a catalog entry possibly referring to a species but with no specimen found by us, and thus of questionable status. Status: V, vanished; H, consumed by humans; A, associated with agriculture; F, associated with forest; R, possibly recovering populations.

Species	Chinese Name	English Name	Museum				Reference	Status
			SCN	CIB	GIE	MCZ		
1 <i>Ichthyophis bannanicus</i>	版纳鱼螈	Yellow-striped Caecilian				X	Qin 1985	F
2 <i>Bufo melanostictus</i>	黑眶蟾蜍	Asian Common Toad	X		X		Zhou et al. 1962c	
3 <i>Hyla simplex</i>	华南雨蛙	Chinese Green Treefrog				X	Zhou et al. 1981	
4 <i>Amolops ricketti</i>	华南湍蛙	Cascade Frog			O			V
5 <i>Fejervarya multistriata</i>	泽陆蛙	Paddy Frog	X		X	X	Zhou et al. 1962b, c	
6 <i>Hoplobatrachus rugulosus</i>	虎纹蛙	Chinese Bullfrog			X		Zhou et al. 1962c	
7 <i>Hylarana adenopleura</i>	弹琴蛙	Musical Frog					Zhou et al. 1981	
8 <i>Hylarana guentheri</i>	沼水蛙	Gunther's Frog	X		X	X	Zhou et al. 1962b, c	
9 <i>Hylarana macrodactyla</i>	长趾纤蛙	Three-striped Grass Frog				X		VA
10 <i>Hylarana taipehensis</i>	台北纤蛙	Two-striped Grass Frog	X					
11 <i>Occidozyga lima</i>	尖舌浮蛙	Rough-skinned Floating Frog			X			VA
12 <i>Odorrana chloronota</i>	大绿臭蛙	Green Cascade Frog				X	Lazell and Liao 1986	
13 <i>Odorrana schmackeri</i>	花臭蛙	Schmacker's Stinking Frog						RF
14 <i>Paa exilispinosa</i>	小棘蛙	Lesser Spiny Frog					Lau 1996	
15 <i>Paa spinosa</i>	棘胸蛙	Giant Spiny Frog				X	Zhou et al. 1981	F
16 <i>Rana chaochiaoensis</i>	昭觉林蛙	Chaochiao Wood Frog					Zhou et al. 1981	VA
17 <i>Rhacophorus dennysi</i>	大树蛙	Dennys' Treefrog					Xu 2001	RF
18 <i>Rhacophorus megacephalus</i>	斑腿树蛙	Brown Treefrog	X		X	X	Zhou et al. 1981	
19 <i>Kalophrynus interlineatus</i>	花细狭口蛙	Spotted Narrow-mouthed Frog		X			Lazell and Liao 1986	
20 <i>Kaloula pulchra</i>	花狭口蛙	Asiatic Painted Frog	X				Zhou et al. 1981	
21 <i>Microhyla heymonsi</i>	小弧斑姬蛙	Heymons' Pigmy Frog					Lau 1996	RF
22 <i>Microhyla ornata</i>	饰纹姬蛙	Ornate Pigmy Frog	X				Zhou et al. 1981	
23 <i>Microhyla pulchra</i>	花姬蛙	Marbled Pigmy Frog	X		X	X	Zhou et al. 1981	
24 <i>Platysternon megacephalum</i>	大头平胸龟	Big-headed Terrapin					Mell 1922	VH
25 <i>Chinemys nigricans</i>	黑颈拟水龟	Black-necked Terrapin					Mell 1922	VH
26 <i>Cuora trifasciata</i>	三线闭壳龟	Three-banded Box Terrapin				X	Mell 1922	VH
27 <i>Pelodiscus sinensis</i>	中华鳖	Chinese Soft-shelled Turtle					Zhou et al. 1981	VH
28 <i>Gekko chinensis</i>	中国壁虎	Chinese Gecko	X		X	X	Pope 1935	
29 <i>Hemidactylus bowringi</i>	原尾蜥虎	Bowring's Gecko	X				Zhou et al. 1981	
30 <i>Hemidactylus frenatus</i>	疣尾蜥虎	House Gecko			*		Pope 1935	V
31 <i>Calotes versicolor</i>	变色树蜥	Changeable Lizard	X		X	X	Zhou et al. 1962c	
32 <i>Takydromus sexlineatus</i>	南草蜥	Grass Lizard		X	O		Zhou et al. 1981	

by QN at SCNU), the five “ratsnakes” of controversial relationships (Nagy et al. 2004 versus Burbrink and Lawson 2007), and all of the natricine snakes currently placed in the genera *Amphisma*, *Rhabdophis*, *Sinonatrix*, and *Xenochrophis* (Lazell and Lu 2003).

In terms of classic island biogeographic theory, Dinghushan agrees with islands in the South China Sea in having vastly more

species in a given area than do most Neotropical islands (Lazell 2002). The prediction from MacArthur and Wilson (1967) for a Neotropical island herpetofauna on 1,200 ha would be about 25 species. Even if we dismiss the 21 “missing” species and allow Dinghushan only 50, that is still double the prediction of classic theory. The number of species per area for Dinghushan, with 50–71

33	<i>Ateuchosaurus chinensis</i>	光蜥	Chinese Forest Skink	X	X		Pope 1935		
34	<i>Plestiodon chinensis</i>	中华石龙子	Chinese Skink			O	Zhou et al. 1981		
35	<i>Plestiodon elegans</i>	蓝尾石龙子	Five-lined Blue-tailed Skink				Pope 1935	V	
36	<i>Plestiodon quadrilineatus</i>	四线石龙子	Four-lined Blue-tailed Skink		X	X	Pope 1935		
37	<i>Scincella reevesi</i>	南滑蜥	Reeves' Smooth Skink	X			Zhou et al. 1981		
38	<i>Scincella cf. rupicola</i>	-	undetermined skink		X	X	Lazell and Liao 1986		
39	<i>Sphenomorphus incognitus</i>	股鳞蜥蜥	Thigh-shield Skink		X		Fellowes et al. 2002	F	
40	<i>Sphenomorphus indicus</i>	铜蜥蜥	Brown Forest Skink	X		X	Fellowes et al. 2002	F	
41	<i>Tropidophorus sinicus</i>	中国棱蜥	Chinese Waterside Skink				Boettger 1886	V	
42	<i>Ramphotyphlops braminus</i>	钩盲蛇	Common Blind Snake			O	Zhou et al. 1962a		
43	<i>Python molurus</i>	蟒蛇	Burmese Python			X	Zhou et al. 1962a	VH	
44	<i>Ahaetulla prasina</i>	绿瘦蛇	Jade Vine Snake			X	X	Zhou et al. 1962a	F
45	<i>Amphisma stolata</i>	草腹链蛇	Buff-striped Keelback	X		X	Zhou et al. 1962a, c		
46	<i>Boiga multomaculata</i>	繁花林蛇	Large-spotted Cat Snake			O	X	Zhou et al. 1962c	
47	<i>Calamaria septentrionalis</i>	钝尾两头蛇	Northern Reed Snake			•	X	Lazell and Liao 1986	
48	<i>Coelognathus radiatus</i>	三索锦蛇	Copperhead Racer			X		Zhou et al. 1962a	VH
49	<i>Cyclophiops major</i>	翠青蛇	Greater Green Snake				X	Lazell and Liao 1986	
50	<i>Enhydryis chinensis</i>	中国水蛇	Chinese Water Snake			X		Zhou et al. 1962a	VH
51	<i>Enhydryis plumbea</i>	铅色水蛇	Plumbeous Water Snake			O		Zhou et al. 1962a	VH
52	<i>Oligodon cinereus</i>	紫棕小头蛇	Golden Kukri Snake			X	X		
53	<i>Oligodon formosanus</i>	台湾小头蛇	Taiwan Kukri Snake			X		Zhou et al. 1962a	
54	<i>Opisthotropis balteata</i>	横纹后棱蛇	Banded Stream Snake			*		Zhou et al. 1962a	V
55	<i>Oreophis porphyraceus</i>	紫灰锦蛇	Red Mountain Racer				X	Lazell and Liao 1986	
56	<i>Orthriophis taeniurus</i>	黑眉锦蛇	Black-browed Satin Snake			•		Lazell and Liao 1986	
57	<i>Pareas margaritophorus</i>	横纹钝头蛇	White-spotted Slug Snake			•	X	Fellowes et al. 2002	
58	<i>Psammodynastes pulverulentus</i>	紫沙蛇	Mock Viper		X		X	Zhou et al. 1962a	F
59	<i>Ptyas korros</i>	灰鼠蛇	Indo-Chinese Ratsnake			X		Zhou et al. 1962a, c	VH
60	<i>Ptyas mucosus</i>	滑鼠蛇	Common Ratsnake			X		Zhou et al. 1962a, c	VH
61	<i>Rhabdophis subminiatus</i>	红脖颈槽蛇	Red-necked Keelback	X			X	Mell 1922	
62	<i>Sibynophis chinensis</i>	黑头剑蛇	Chinese Mountain Snake					Lau 1996	RF
63	<i>Sinonatrix aequifasciata</i>	环纹华游蛇	Diamond-back Water Snake			•	X	Mell 1922	
64	<i>Sinonatrix percarinata</i>	乌华游蛇	Mountain Water Snake				X		
65	<i>Xenochrophis piscator</i>	渔游蛇	Checkered Keelback		X	X		Zhou et al. 1962a, c	
66	<i>Bungarus fasciatus</i>	金环蛇	Banded Krait					Pope 1935	VH
67	<i>Bungarus multicinctus</i>	银环蛇	Many-banded Krait				X	Zhou et al. 1981	
68	<i>Sinomicrurus maccllelandi</i>	丽纹蛇	Chinese Coral Snake				X		
69	<i>Naja atra</i>	舟山眼镜蛇	Chinese Cobra			O		Pope 1935	VH
70	<i>Trimeresurus albolabris</i>	白唇竹叶青	White-lipped Bamboo Viper					Mell 1922	VA
71	<i>Trimeresurus stejnegeri</i>	福建竹叶青	Stejneger's Bamboo Viper	X	X				

species on 1,133 ha may be compared to well-studied South China Sea islands like Lantau Island (with 67 species on 14,200 ha), Hong Kong Island (with 58 species on 7,800 ha), or Shek Kwu Chau (with 24 species on a mere 127 ha) (Lazell 2002). These highly irregular numbers of species per area cause us to reject the null hypothesis that area alone determines species numbers (MacArthur and Wilson 1967) and prefer the hypothesis that diversity results

from complex interactions of history, geology, and ecology peculiar to each individual island or insular region (Lazell 2005).

In conclusion, the number of 71 species of amphibians and reptiles at Dinghushan far exceeds the per area prediction of classic island biogeographic theory. Among these 71 species, nine are new records (five frogs, *Amolops ricketti*, *Hylarana macrodactyla*, *Hylarana taipehensis*, *Odorrana schmackeri*, and *Occidozyga lima*, and

LI ZHEN-CHANG (LZC) obtained his BA from South China Normal University (SCNU) in 1962 and taught biology there beginning in 1978. He is retired as Associate Professor Emeritus. Since the 1950s, he has been able to visit Dinghushan regularly, originally as a hometown naturalist and later opportunistically as an ichthyologist or mammalogist whenever demand arose, even during the turmoil of the Cultural Revolution in the 1970s. His focus on herpetology began in the 1980s. He has published over 50 papers and is currently working on a comprehensive volume on the amphibians and reptiles of Guangdong Province.

XIAO ZHI (XZ) has been a colleague of LZC since the 1990s at SCNU and is an assistant professor. He obtained his BA from Central China Agricultural University in 1985. His research interest extends from ecology to herpetological endoparasites. His experience with amphibians and reptiles at Dinghushan began in 1998. Since then he has led summer camp at Dinghushan every year for high school students from all over China.

QING NING (QN) was a student of LZC at SCNU where she obtained both BA and MS degrees with a focus on fish population genetics and physiological chemistry by 1985. She has been a colleague of LZC as an associate professor since 1996. She joined this project in 2006, when we realized that the fieldwork was a full decade out of date, and put together several field teams from SCNU to address those issues through 2009. She is the project leader on molecular work (DNA) to test relationships of pairs of amphibians and reptiles within and between North America and China. She has published over 30 papers, mainly dealing with fish population genetics and biogeography.

LU WEN-HUA (LWH) visited Dinghushan as a teenage naturalist in the 1970s. She was a student of LZC at SCNU where she obtained her BA in biology in 1982. She went on to get her MS (South China Agricultural University) in 1985 and began her professional career there on insect taxonomy and ecology. Her Ph.D. (University of Rhode Island) in 1992 focused on beetle population genetics. She and QN were classmates, and Dinghushan became a highpoint of their practical training at SCNU, but LWH's emphasis was largely on botany and entomology. In the early 1990s, she began noting the herpetofauna as a guide and instructor with the Green Across the Pacific (GATP) teams from the USA and has returned several times, most recently in 2009. She is a senior researcher for The Conservation Agency (TCA). She has published over 60 papers, mainly dealing with insects, amphibians, and reptiles.

JAMES LAZELL (JDL) began his professional career in biology a half century ago in 1957, collecting animals for the Philadelphia Zoo. He accumulated diplomas of BA (University of the South, Sewanee, Tennessee), MS (University of Illinois), MA (Harvard University), and Ph.D. (University of Rhode Island) by 1970. He first visited China in 1979, brought the first largely American team to Dinghushan from TCA in January 1982, and began surveys at the site that included seven of the next 13 years, to 1995. He returned several times in 2006 and 2009 with teams of colleagues. His research focuses on documenting speciation and geographic variation, biogeography, and conservation biology. He is the founder and president of TCA and has authored or coauthored over 300 papers and four books, the most recent in 2005, *Island: Fact and Theory in Nature* (University of California Press).

four snakes, *Oligodon cinereus*, *Sinonatrix percarinata*, *Sinomicrourus maclellandi*, and *Trimeresurus stejnegeri*). Of the 71 species, 21 have not been seen recently, but none of those is closely associated with old-growth forest. Faunal "relaxation" here seems to be the result of two artificial factors, human food or medicinal consumption and the demise of agriculture. Forest conservation in the last five decades may have contributed to the current abundance of some species. We doubt the possible cases of disappearance of some species and abundance of the other species are really "species turnover," and suspect additional fieldwork will reveal that the possibly replaced species are still present. Dinghushan's location is unique at the Tropic of Cancer and long-term monitoring of its herpetofaunal diversity may contribute to future collaborative studies on a global scale.

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Shooting a Desert Horned Lizard (*Phrynosoma platyrhinos*) from behind shows the pattern on its back, while the over-the-shoulder look adds eye contact and makes the photo more engaging.