福建龙栖山自然保护区生物资源考察丛书

龙栖山动物

黄春梅　主编

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祝　词

欣闻《龙栖山动物》专著即将出版。我对将乐县龙栖山动物资源调查取得的丰硕成果，心中感到十分高兴，在此特致以衷心的祝贺。

50年代前，在福建省采集昆虫标本，规模较大者 有二起。较早有德国人 Klapperich 于1938年在武夷山一带采集，实际工作375天，采去昆虫标本16万号，还有其他动物标本。这些标本都存在德国波恩博物馆。抗日战争期间，马骏超先生在邵武工作五六年，常到武夷山和省内其他地方采集，采得昆虫标本60万号。在这些标本中，除了膜翅目标本现在保存在台湾省农业试验所外，其他标本由马先生赠送给夏威夷 Bishop Museum。50年代后，福建省科委对于福建省生物资源调查，作了很大努力。由1979年开始，省科委组织广大科学家开展武夷山自然保护区综合科学考察；由1981年开始，出版《武夷科学》杂志，为科学家提供发表生物资源论文的园地；由1987年开始，开展闽西梅花山保护区科学考察，都取得很大的成绩。龙栖山动物资源考察，是福建省50年代后第三起规模较大、有组织、有领导的科学考察。它是由将乐县一个县发起的。该县龙栖山自然保护区与我国科研力量最为强大的中国科学院动物研究所合作研究，取得丰硕成果，这件事特别值得庆贺和赞扬。

《龙栖山动物》专著编委会同志约我写几句话。我借此机会，向《龙栖山动物》专著的出版表示祝贺，并向参加调查和编写的同志表示敬意。

赵修复

1993年3月25日

CONGRATULATIONS

I am very glad to know that the monograph: "Animals of Longqi Mountain" will be published in the near future. Here I offer my cordial congratulations on the success of the animal resources survey of the Longqi Mountain, Jiangle County of Fujian Province.

Before 50' there were two comparatively large scaled of insect specimens collecting, one was made by a German, Klapperich in 1938, in fact 375 days in the Wuyi Mountains Region, he had collected 160,000 insect specimens in addition to other animal specimens. All these specimens are now kept in the Bonn Museum, Germany. During the Anti-Japanese War, Mr. Maa Tsing-Chao had worked for about five or six years in the Shaowu County, and other localities of Fujian Province. Of these specimens, except Hymenoptera which are now kept in the Taiwan Agriculture Experimental Station, all were donated by him to the Bishop Museum, Honolulu, Hawaii. After 50', the Fujian Province Association for Science and Technology has made a great effort to the survey of bio-resources of Fujian Province. The first survey began in 1979, a large number of scientists participated in the Comprehensive Scientific Expedition to the Wuyi Mountains Natural Reserve. And the "Wuyi Science Journal" began to be published in 1981, which open up a field to the scientists for publishing these on bio-resources. The second survey: the Scientific Expedition to the Mei-hua Mountain Natural Reserve, Western Fujian, began in 1987. Both the aforementioned expeditions were very successful. The third survey was sponsored by the Jiangle County, organized and carried out under the co-leadership of the Longqi Mountain Natural Reserve Administration and the Institute of Zoology, CAS. The latter has an assemblage of many eminent scientists and experts. The fruitful achievements of this expedition are especially worthwhile to congratulate. The editorial committee of the "Animals of Longqi Mountain" asks me to write a few words to commemorate the publication of the monograph, and I am very glad to do so. May I take this opportunity to congratulate its birth among the scientific community and also to tender my respect to all those who have participated in the scientific expedition and have undertaken the writing and compilation of the monograph.

Zhao Xiu-fu (Chao Hsiufu)

March 25th, 1993

序

地球是人类赖以生存和繁衍生息的场所。她过去是、现在仍然是为人类提供衣、食、住、行所必需的一切。她像母亲一样无私地给人类奉献出一切。所以有人说，地球是人类的“母亲”。

由于人类的过度繁衍，使得宇宙中唯一有人类生存的地球，如今变得拥挤不堪，地球似乎变得越来越小了。更因为人类的贪得无厌，无限度地向自然索取，包括大肆地砍伐森林，以及对野生动、植物的滥捕、滥猎和毁坏，极大地破坏了自然生态系统，使大片大片的绿洲变为耕地，或荒漠、沙漠化。同时，随着人类物质文明的高度发达，城市的新建、扩建，各种现代化的工厂如雨后春笋般地出现，以及铁路、公路、机场、码头和矿山不断地扩展和增加，其结果是使大自然面目全非。加之，废渣、废气、废水大量产生，严重污染了自然环境，造成难以逆转的全球性的温室反应，继而不断地发生严重干旱、洪涝、风灾、虫灾、泥石流、冰雹和地震等自然灾害，这是大自然给人类的报应。

如今愈来愈多的有识之士开始意识到：破坏大自然的生态平衡最终势必伤及人类自身，并将严重地威胁人类的生存。1992 年 9 月在巴西里约热内卢召开的有 150 多个国家首脑参加的世界环境保护大会，目的在于保护全球的自然环境和维持生物多样性，缓解全球性的温室反应，维护自然生态平衡，最终建立人类和大自然更为和谐的关系。建立自然保护区是其中的重要措施之一。

龙栖山自然保护区地处闽西北腹地将乐县西南部，距县城 57km，属武夷山脉东南延伸的支脉。地理坐标为东经 117°12′—117°20′，北纬 26°27′ —26°33′，总面积 6371.5ha。境内群峰耸立，峡谷幽深，千米以上高峰 11 座，最高山峰海拔 1620.4m。这里密林深幽，潭多水清，峡谷中流泉、飞瀑、深潭相间，因传说潭中有龙栖息，故得名“龙栖山”。

龙栖山由于人为破坏较少，保存着丰富完整的较原始的森林，仍保存了许多古老、珍稀的植物。已发现的珍稀濒危野生动物有云豹、黑熊、小麂、猕猴、苏门羚、鼯鼠、隼林雕、黄腹角雉、白鹇等。因此，龙栖山自然保护区被誉为“天然植物园”、“珍稀濒危野生动物的基因库”。

龙栖山自然保护区气候宜人，冬无严寒，夏无酷暑，古树参天，浩瀚竹林，清溪深潭，鸟语花香，珍禽异兽繁杂且频繁出现。这一得天独厚的优美的自然环境，已经吸引了中国科学院动物研究所、植物研究所、中国科学院和国家计委自然资源综合考察委员会、中国人与生物圈委员会、南京林业大学、中南林学院、福建林学院、福建农学院、三明林业学校等十几个大专院校和科研单位的几百名专家学者以及日本专家先后来到龙栖山进行考察和教学实习。

龙栖山自然保护区以她特有的魅力正在吸引着一批批科学考察、艺术创作、旅游观光的人，她将为创造人与自然的和谐作出重要的贡献。我们衷心希望龙栖山自然保护区这颗绿色宝珠闪烁出更加绚丽光彩。

胡可喜

1993 年元旦

PREFACE

The earth is the place where the mankind exists and reproduces. Not only in the past, but also today she provides all existing conditions such as clothing, feeding, dwelling and moving for mankind. She offers all her own unselfishly like a mother, so we can say: the earth is the mother of mankind.

Because of the over-producing, the earth only where in the universe the human beings exist becomes more and more crowded, as if it becomes smaller and smaller. Furthermore, the mankind's insatiable avarice, including unbridled deforesting excessive hunting of the wildlife, destroying of the natural ecosystem cruelly, making vast amount of oases cultivated or desert. At the same time, the mankind's highly developed material civilization, the cities' building and extending, springing up of various modern factories, building and expanding of railways, highways, airports, docks and mines continually, all these distorted the mature beyond recognition. In addition, the waste residue, gas and water seriously pollute the natural environment, which have resulted in global greenhouse effect that is difficult to be riversed, then the natural calamities occur such as serious drought, flood, wind disaster, plague of insects, mud-rock flow, hailstone and earthquake. These are the retributions of the nature on the mankind.

More and more people realize that destroying the natural ecological balance is sure to damage the mankind itself ultimately, and ever seriously threaten the existence of the human beings. In September 1992, in Rio de Janeiro, Brazil, heads of more than 150 countries attended the World Environment Preservation Conference. The aim of the Conference is to protect the natural environment and the biodiversity, relieve the global greenhouse effect, retain natural ecological balance, finally establish the harmonious relations between nature and mandind. While one of the most important steps is to establish natural preservation regions.

The Longqi Mountain Natural Reserve locates in the southwest of the Jiangle County that is the northwest hinterland of the Fujian Province, 57 km away from the center of the county, being a southeast branch range of the Wuyi Mountains. It locates at 26°27′-26°33′N latitude, 117°12′-117°20′ E longitude, covering 6371.5 hectare. There are high peaks, deep valleys, among them many deep pools, springs and waterfalls scattered here and there. The highest peak is 1620.4 meters above sea level. The legend says that there is a dragon dwelling in the pool, so the mountain is called Longqi.

Because of comparatively less manmade destruction, the Longqi Mountain keeps plentifully primitive forests and there are many ancient, precious plants. Some rare and endangered wild animals, such as *Neofelis nebulosa* Griffith, *Selenarctos thiberanus* G. Cuvier, *Muntiacus*

reevesi Ogily, *Macaea mulatta* Zimmermann, *Ictinaetus malayensis* (Temminck), *Petaurista petaurista* Pallas, *Lophura nyethenera jokiensis* Delacour, *Capricornis sumatraensis* Bechstein et al., have been found in the region. The Longqi Mountain Natural Reserve is therefor reputed as the "natural botanical garden"as well as "the gene pool of the rare wild animals".

The weather of the Longqi Mountain Natuarl Reserve is pleasant, where the winter is not very cold and summer not so hot, old trees towering, immense bamboo trees, clear pools and many kinds of birds and beasts, all of this beautiful natural environment attracts some hundreds specialists of the tens Institutions and colleges, including the specialists from Institute of Zoology CAS, Institute of Botany CAS, Commission for Integrated Survey of Natural Resources under the Chinese Academy of Sciences and the State Planning Committee, Chinese National Committee for Man &Biosphere, Fujian Agricultural College, Fujian Forestry College, Nanjing Forestry College, Central-South Forestry College, Sanming Forestry School et al. and also some Japanese specialists to carry out scientific expeditions and teaching exercises, The publication of the monograph Animals of Longqi Mountain, compiled by the experts from the Institute of Zoology CAS, will be of great significance for the protecting of biodiversity and the appropriate using of the animal resource in the Reserve.

By its peculiar fascination, the Longqi Mountain Natural Reserve is attracting a lot of scientists, artists and tourists. She will play an important role in creating the harmony between the nature and the mankind. Longqi Mountain, the green jewel at the southeast China, will twinkle more and more brightly.

(Translated by Su Jing-jun and Xue Da-yong)

Hu Ke-xi
New Years Day, 1993

前　言

龙栖山自然保护区地处武夷山脉南段，位于东经 117°12′－117°20′，北纬 26°27′－26°33′。其森林覆盖率达 97%，是将乐县的一座绿色宝库。这里峰峦叠嶂，林深谷幽，动物种类丰富，其中不乏珍稀物种。

为了摸清景观独特的龙栖山的动物资源，中国科学院动物研究所脊椎、无脊椎、昆虫三个分类区系研究室于 1990 年 10 月至 1991 年 10 月组织了从事研究鸟、兽、虫、鱼等脊椎和无脊椎动物的科技人员 40 余人次，按各类动物的不同活动季节，在该地区进行了野外专业考察。他们不畏艰辛，走遍了龙栖山的每一个角落，取得了考察的预期成果。

龙栖山动物考察是继福建省 1979－1985 年武夷山自然保护区科学考察、1987－1990 年梅花山自然保护区考察后，又一次规模较大、学科齐全，而且又是地方出经费、科研单位组队的科学考察。

通过 2 年的考察，共采集了动物标本近 2 万号，经近 80 位专家鉴定表明：龙栖山是动物物种的天然基因库，鸟、兽、虫、鱼等脊椎和无脊椎动物共有 13 纲 58 目 289 科 1450 属 2127 种，其中有 1 新属、73 新种。龙栖山的昆虫种类约占福建省昆虫总数的 1/3（赵修复，1981）。仅占全省面积 1/2000 的龙栖山之所以动物种类如此丰富，是与该保护区生态环境的多样性以及对这种多样性进行有效保护分不开的。

《龙栖山动物》这本专著的编写过程是脊椎、无脊椎、昆虫三个不同类群的作者根据编委会统一规定的格式和要求撰稿，先送各编委（各目的主审人）修改后，再请顾问编委审核定稿的。本专著既有种上阶元的检索表、种类描述，又有动物区系组成和特点的分析。对于有经济价值的资源动物还进行了简要的评价，并提出保护和利用的对策，进而使龙栖山自然保护区的生产与保护向着良性的方向发展。因此，《龙栖山动物》一书不仅具有较高的学术水平，而且也具有重要的经济价值。

本项目从野外考察、标本制作、种类鉴定，直至专著编写的完成，共用了 3 年时间。此项工作自始至终得到保护区管理处领导和职工的全力支持。参加本专著编写的除动物研究所 3 个分类研究室的一些专家学者外，还得到所外有关专家的大力协助。因此，本书的出版是所内、外分类学者团结协作的结果，也是中央研究单位与地方保护区真诚合作的硕果。

本专著原有属种的引证、属征描述、种检索表等内容，后因篇幅有限，不能如愿以偿，实在是一大憾事。又由于本书所涉及的范围很广，编写时间有限，错误之处在所难免，敬请读者批评指正。

本书在整理出版过程中得到潘树青、幸兴球、谢为平、张学忠、丁莹、崔云琦、成新跃等同志的大力支持和帮助。另外，本书的祝词、序、前言和“动物资源的保护和利用”分别由谭娟杰教授、苏静君和薛大勇博士、袁德成博士、黄大卫博士担任中译英的工作。在此，特致以衷心的感谢。

编委会

1993 年 3 月

FORWORD

Longqi Mountain Natural Reserve is located in the south part of Wuyi Mountains at 26° 27′—26°33′ N latitude and 117°12′—117°20′ E longitude. It has a forest coverage of 97% and is the "green jade house" of Jiangle County. There are many lofty peaks, stiff cliffs, quiet valleys and numerous animal species, rare and prize animals also occassionally seen.

In order to explore the animal resources in Longqi Mountain, which bears such unique landscape, a scientific expedition was organized and carried out from 1990—1991, by the Insect, Invertebrate and Vertebrate Taxonomy and Faunistic Departments of the Instiute of Zoology, CAS. Over 40 resarch workers and technicians participated in this expedition, and the field work was carried out according to the seasonal characteristics of the activities of animals. Through the zest and unyielding efforts of all participants of the expedition, which nearly cover every corner of the Longqi Mountain, expected results were obtained.

Longqi Mountain Animal Resource Expedition is another large-scale and comprehensive scientific expedition following the Scientific Expedition of Wuyi Natural Reserve in 1979—1985 and the Scientific Expedition of Meihua Mountain Natural Reserve in 1987—1990, also financed by the local government and organized by the scientific research institution.

In the two years of expedition, near 20000 animal specimens were collected. The identification of the specimens by near 80 experts indicate that Longqi Mountain is a natural gene bank of animal species, there are totally 2127 species, which belong to 1450 genera, 289 families, 58 orders and 13 classes, including one new genus and 73 new species. About one third of the total number of insect species in Fujian province can be found in Longqi mountain (Chao Xiufu, 1981). The fact that so abundant animal diversity is contained in Longqi mountain, which occupies only an area of 1/2000 of the total area of Fujian province, is inseparable with its high environmental and ecological diversity and the efficient conservation efforts of the natural reserve.

The editorial process of the present monograph "Animal of Longqi Mountain" is: authors of different reseach groups of insects, invertebrates and vertebrates write manuscripts according to the standard format and requirements given by the editorial committee, then the members of editorial committee (the chief examiner of each order) revise the manuscripts, lastly the advisory editorial committee make the final review and approval of the manuscripts. The following items are contained in the present monograph: keys to species and higher taxa, species descriptions, analyses of faunal compositions and characteristics, brief evaluations to animals of economic values, suggestions for their protections and utilizations are also given.

This project last for three years from field survey, specimens preparation, species indentification till finishing the edition of the monograph. The Management Department of the Longqi

Natural Reserve gave the necessary financial support for the whole project. Besides the experts form the three Departments of Animal Taxonomy and Faunistics of the Institute of Zoology, CAS, experts from some other institutions are also involved. The publication of the monograph is an achievement of common efforts of taxonomical experts of different institutions and the sincere cooperation of the central reseach institution and the administration of the local reserve. Our gratitudes are due to all persons and institutions participating in the project, especially our colleagues: Liu Jupen, Pan Shuquing, Xin Xingqiu, Zhang Xuezhong, Xie Weiping, Cui Yongqi, Sun Hongguo, Ding Ying, Xia Jingshi, Wang Jun, Jiang Guomei and Cheng Xinyue, who made various contributions towards the publication of the book. Prof. Tan Juanjie is responsible for the translation of the congratulations, Mrs. Su Jingjun and Dr. Xue Dayong for the translation of the preface, Dr. Yuan Decheng for the translation of the foreword and Dr. Huang Daiwei for the translation of the Protection and Utilization of Animal Resources from Chinese to English.

The Editorial Committe
March, 1993

动物资源的保护和利用

龙栖山自然保护区从自然地理区域来看，属于中亚热带常绿阔叶林区的武夷山-戴云山亚区。这里气候温暖湿润，森林茂密，植被类型复杂。这种优越的生态环境为动物的繁衍提供了极为有利的场所。保护区内动物资源丰富，种类繁多。现将有关情况介绍如下。

一、物种的多样性和种类成分

正如前言所述，保护区共有动物2127种，它们分别隶属于13纲58目289科1450属。各类群种类的丰富度如下：昆虫纲21目187科1224属1821种；无脊椎动物7纲11目32科77属116种；脊椎动物5纲26目70科149属190种。

根据以上种类的分布记录，得知这些种类可分为东洋种、广布种和特有种三种成分。各类群的种类成分见表。

各类群动物的种类成分

	总种数	东洋种		广布种		特有种	
		种数	所占比例(%)	种数	所占比例(%)	种类	所占比例(%)
昆虫纲（含蜱螨亚纲）	1821	1278	70.2	455	25.0	61	4.8
无脊椎动物	116	78	67.3	16	13.7	12	10.3
鱼纲	31	15	48.3	16	51.6		
两栖纲	11	10	90.9	1	9		
爬行纲	22	11	100				
鸟纲	80	36	45	44	55		
兽纲	46	21	45.5	25	54.3		
总计	2127	1448	68.1	708	33.3	73	3.4

从上表可以看出，昆虫纲、无脊椎动物及脊椎动物中两栖、爬行纲东洋种占优势，鱼纲中东洋种略少于广布种，鸟纲和兽纲东洋种成分少于广布种。

二、关于动物资源的评价

龙栖山自然保护区有着丰富的动物资源，主要包括：

1. 珍禽异兽种类繁多

现已查明龙栖山有较多的珍禽异兽，其中被列入国家一级保护动物的有蟒蛇、豹、云豹；国家二级保护动物有大鲵、凤头鹃隼 、林雕、赤腹鹰、白鹇、领鸺鹠、褐林鸮、穿山甲、苏门羚、

小灵猫、黑熊、猕猴和拉步甲。这些珍贵动物需要人类加以保护，为其创造良好的生存条件，让它们能很好地繁衍下去。

2. 药用动物的开发利用

据世界卫生组织统计表明：发展中国家80%的农村人口靠传统的药用动物、植物治病。如今人们还在不断地发现新的药用动物，期待从中寻找到治疗癌症和爱滋病的良药。

龙栖山的药用动物如刺猬、鼯鼠、中华竹鼠、豪猪、野猪、豹猫、穿山甲、红腹松鼠、蟾蜍、南草蜥、角菊头蝠、少棘蜈蚣等，它们的肉、部分器官或粪便可直接入药。另外，在一些昆虫体内(如芫菁、蟑螂、麻蝇以及某些蝶类)，近年来相继发现有活性抗癌物质和某些抗菌肽。在药用昆虫中较常用又有重要利用前景的是芫菁。芫菁又名斑蝥，现代科学研究已证实了芫菁体内所含的斑蝥素对肝癌等多种疑难病有较好的疗效，自古以来就是重要的中药材。在龙栖山境内已知有6种芫菁，有些种类数量还很多，如能收集利用，无疑可创造一定的经济效益。芫菁的幼虫还是竹蝗卵期的重要天敌，用芫菁来控制竹蝗的危害，在国内已为人所共知。但芫菁在大发生年份，亦可对农作物构成危害。因此，如何合理地开发利用芫菁的药用资源，并控制其有害的一面，值得今后深入研究。

3. 食用动物的开发利用

我国传统的山珍海味指的都是动物。鱼、虾、螺以及肉质鲜美的鸟类、蛙类、麂、熊掌等，它们在龙栖山境内可以说应有尽有。

随着人们生活水平的不断提高，野味(即吃天然的野生动物)和昆虫作为餐桌上的美味佳肴已越来越被国内外人士所青睐。1987年河北省曾同日本国签订了出口28t 食用稻蝗的合同。昆虫作为人类食品，既可增加蛋白质的来源，补充人类食品的不足，又可化害为益，创造经济价值。

对于可食用的野生动物，我们主张一定要合理捕捉或实行人工繁殖。这样既可满足人们的需要，又可以达到维持生态平衡、保护生物多样性的目的。

4. 观赏动物的开发利用

目前已知龙栖山有80种色泽鲜艳的鸟类，104种绚丽多姿的蝶类，多种形态各异的甲虫以及大动物猕猴等，它们是天然的观赏动物，给保护区增添了不少生机。其中蝴蝶是传统的贸易商品。国际上有的国家以养蝶业为重要经济收入来源。因此，在龙栖山进行人工繁殖一些珍奇名贵的蝶类品种，在“余家坪”建立一个彩蝶纷飞的蝴蝶公园，不仅可提高保护区的知名度，又可以创造可观的经济效益。

5. 有害动物的综合治理

在龙栖山境内同时存在着对人、畜有害的动物，例如直接威胁人、畜生命的毒蛇，可传播钩端螺旋体病的宿主动物灰麝鼩，传播鼠疫和流行性出血热等病的鼠类。小小的剑水蚤，虽然是鱼类的天然饵料，但一旦与生水同饮入人体，也会引起多种寄生虫病。为此，大家必须注意环境卫生减少疾病的传播。

这里特别要谈一谈害虫的综合治理问题。龙栖山有竹海之称的大片竹林和茂密的森林，它们是龙栖山的财富之源。然而竹林常遭黄脊竹蝗和青脊竹蝗的严重危害，影响毛竹的生

产；一些林木，特别是有观赏价值的林木也常遭受虫害，造成了不可弥补的损失。

对于害虫的防治，我们认为除了贯彻“以防为主，加强预测预报”的方针外，在措施上应采取综合治理的办法，保护各种天敌，发挥它们在自然控制中的作用，并且要尽量少用化学农药以保护环境，造福人民。即使必须使用化学农药，也要注意施药的时间和场所。如竹蝗在3龄前通常聚集在狭小的孵化场所附近，此时施药不仅用药少，效果好，而且对环境污染也小，可起到事半功倍的效果。现已查明龙栖山境内害虫的捕食性天敌有鸟类、蛙类、穿山甲、蜘蛛和各种昆虫（如芫菁、步甲、虎甲、瓢虫、食蚜蝇、食虫虻、猎蝽、蚂蚁、草蛉等）；寄生性天敌有寄蝇和寄生蜂类。它们在维持龙栖山自然保护区的生态平衡中起着举足轻重的作用，应该加以保护和利用。

黄春梅

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THE PROTECTION AND UTILIZATION OF ANIMAL RESOURCES

In the view of the natural geography, Longqi Mountain Natural Reserve belongs to Wuyi —Daiyun subarea in the laurilignosa band of the subtropical zone. Here the climate is warm, forestry rich, types of vegetation complicate. Such ecological environments offer a beneficial place for animals to reproduce and develop. The Natural Reserve is rich in animal resources and species. A brief introduction is given as follows:

I. Species diversity and component

As described in the preface, there are 2127 animal species in the conservation area, which belong to 13 classes, 58 orders ,289 families and 1450 genera. Among them, the Insecta consists of 21 orders, 187 families, 1224 genera and 1821 species, other invertebrate 7 classes, 11 orders, 32 families, 77 genera and 116 species, and vertebrate 5 classes, 26 orders, 70 families , 149 genera and 190 species.

According to the geographical distribution of the species, the species are divided into the following three components: oriental species, cosmopolitan species and endemic species. Table 1 shows the species components of the various groups.

Table 1. Species components in Longqi Mountain Natural Reserve

Class	Number of Species	Oriental Species		Cosmop. species		Endemic species	
		Number	Prop. (%)	Number	Prop. (%)	Number	Prop. (%)
Insecta (incl. Acarina)	1821	1278	70. 2	455	25. 0	61	4. 8
Invertebrate	116	78	67. 3	16	13. 7	12	10. 3
Pisces	31	15	48. 3	16	51. 6	—	—
Amphibia	11	10	90. 9	1	9	—	—
Reptilia	22	11	100	—	—	—	—
Aves	80	36	45	44	55	—	—
Mammalia	46	21	45. 5	25	54. 3	—	—
Total	2127	1448	68. 1	708	33. 3	73	3. 4

From table 1 we can see that the Oriental Species is predominant in Insecta, Invertebrate, as well as in Amphibia and Reptilia of vertebrate; In Pisces the number of the Oriental species is a little less than the cosmopolitan species, while in Aves and Mammalia the Orental species is much less than the cosmopolitan species.

Ⅱ. Evaluation on animal resources

Longqi Mountain Resserve is rich in animal resouces. A brief introduction is given as follows.