

长江三峡库区昆虫

INSECTS OF THE THREE GORGE
RESERVOIR AREA OF YANGTZE RIVER

上

杨星科 主编

重庆出版社 ▲





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Edited by YANG Xingke

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内 容 简 介

本书是长江三峡库区陆生昆虫物种多样性调查的系统科学总结。对本地区昆虫区系特征、起源与演化,昆虫资源及物种多样性,农林害虫的发展历史及防治策略做了深入探讨。全书按分类系统记述了本区昆虫纲 19 目、242 科、1 940 属、3 418 种,其中新属 16 个、新种 289 个、新记录属 16 个、新记录种 94 个,同时还记述了蛛形纲 2 目、23 科、44 属、67 种,其中新记录种 2 个。本书可供教学、科研、环境保护及农林、医学科技工作者参考。

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序 一

三峡工程是治理和开发长江的关键性骨干工程,具有巨大的防洪、发电、航运等综合效益。从生态学的角度来说,三峡工程也是一项巨大的生态工程,具有明显的环境效益。

当然,三峡工程对生态环境也会带来不利影响,对此,党中央、国务院一直给予高度重视,已经组织大批的科研人员开展了大量论证研究,并与加拿大等国的环境保护专家进行了合作。

在可行性论证阶段,根据中华人民共和国有关法规和建设项目环境保护管理办法,1991年12月中国科学院环境评价部和长江水资源保护研究所共同完成了《长江三峡水利枢纽环境影响报告书》,由水利部和国家环境保护局分别组织全国知名的生态学家、环境保护专家进行了严格的评审,在此基础上,国家环境保护局1992年2月正式批准了《长江三峡水利枢纽环境影响报告书》。结论表明:三峡工程对生态环境的影响广泛而深远,时空分布不均匀,不利影响主要在库区。

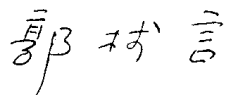
在枢纽工程初步设计阶段,以批准的环境影响报告书为基础,对各项环境保护措施进行了设计,并以“生态与环境补偿费”的方式列入枢纽工程概算,在中国水利工程建设史上这是第一次。

调查、检测表明:三峡工程动工以前,三峡库区乃至长江流域的环境背景状况已不容乐观。随着三峡工程的动工兴建,在国务院、国务院三峡工程建设委员会的领导下,中央各部委、三峡工程的建设单位、四川和湖北两省地方政府以及其他有关部门正在积极努力,坚持“科教兴国”和可持续发展战略,采取有效措施,在搞好枢纽工程建设和移民安置的同时,把三峡工程对生态环境的不利影响减少到最小。

中国科学院动物研究所组织人力、物力,在国家科学技术委员会、国家环境保护局、中国科学院及中国科学院动物研究所所长基金的支持下,在三峡库区大范围移民之前,历时3年,对整个库区的陆生昆虫及部分无脊椎动物进行了较为全面、细致、深入的调查,在此基础上,又组织了全国各大专院校、科研单位近百位专家共同研究,完成了《长江三峡库区昆虫》这部约300万字的专著。它是一部较为系统和完整的有关三峡库区昆虫的本底资料,其中部分属于新属、新种,对三峡库区生物多样性保护、研究及昆虫学事业的发展有重要意义。

环境保护是我们的一项国策。保护生态环境,科学地利用生物资源,促进三峡库区经济的可持续发展是一项长期的、艰巨的工作。我相信,在党中央、国务院的领导下,我们不仅能够建设好一流的三峡工程,也能把三峡库区建设得更美好。

是为序。



1996年9月于北京

PREFACE I

The Three Gorge Project is the backbone for harnessing and developing the Yangtze River. It has great comprehensive benefits such as controlling flood, generating electricity and improving navigation. From the point of ecology, it is a great ecological project with remarkable environmental benefits.

Of course, the Three Gorge Project will cause some negative impacts on ecosystem and environment. The Central Committee of the Communist Party of China and the State Council have been laying stress on it, and organized many scientists to make a lot of studies in collaboration with environmentalist from Canada and other countries.

During the feasibility stage of the project, according to related laws of the People's Republic of China and rules of the environmental protection for construction projects, the Environmental Impact Statement (EIS) for the Three Gorge Project was completed by the Environmental Assessment Department of the Chinese Academy of Sciences and the Research Institute for Protection of Yangtze Water Resources in Dec. 1991. Soon afterwards it was strictly reviewed by expert panels (including the wellknown ecologists and environmentalists), respectively appointed by the Ministry of Water Conservancy and the National Environmental Protection Agency (NEPA). The NEPA formally approved the EIS in Feb. 1992. The approved EIS shows that the Three Gorge Project will make extensive impacts on the ecosystem and environment, which are not uniformly distributed in time and space, with disadvantageous effects mainly in the reservoir area.

During the preliminary design stage, it is the first time in the history of water construction project of China that each measure of the environmental protection was designed on the basis of the EIS. The compensation funds were also accounted to the estimates of pivot engineering construction of the project.

It has been shown, by investigating and monitoring, that the ecological and environmental current conditions of the Three Gorge Reservoir Area and Yangtze River valley trend to be deteriorative and anxious. As the project started, led by the State Council and the State Council Three Gorge Project Construction Committee, many related ministries of the Central Government, construction unites and local governments of both Sichuan and Hubei are trying their best to adopt effective measures to reduce the negative impacts of the project on ecosystem and environment to the least when carrying out the project and resettlement.

A comprehensive survey of terrestrial insects including some invertebrates of the whole

reservoir area was made by the scientists from the Institute of Zoology of the Chinese Academy of Sciences for three years, funded by the State Science and Technology Commission of China, the NEPA of China, the Chinese Academy of Sciences (CAS) and the Institute of Zoology of CAS. Nearly 100 scientists from the universities and institutes participated in the research work and finally completed the book named "Insects of the Three Gorge Reservoir Area of Yangtze River", which provide us with the systematic and original information about insects (including new genera and new species) of the Three Gorge Reservoir Area. It has a great significance for the bio-diversity conservation and research, and for the development of Entomological Science.

The environmental protection is a basic policy of our country. It is a long-term and hard work to protect ecosystem and environment, to put biological resources to rational use, and to promote sustainable development of economy in the Three Gorge Reservoir Area. I believe that, under the leadership of the Central Committee of the Communist Party of China and the State Council, we can not only build the first-class project, but also make the Three Gorge Reservoir Area better and better.

Guoshunyan

September 1996

Beijing

序 二

三峡工程是世界上最大的水利工程,它的实施将使三峡地区的环境发生巨大变化,生物的生存、栖息环境将受到威胁,加之该地区昆虫的调查工作在此之前基本上属于空白,对三峡库区昆虫的调查就显得更加迫切。为了在世界昆虫科技史上永远保留这份珍贵的资料,中国科学院动物研究所杨星科等同志在国家科委、国家环保局、院长基金及所长基金的共同支持下,从1993年至今历时3年,在昆虫活动季节进行了详细的、全面的调查研究,采集了7万余号标本,并聘请了全国许多科研、教学单位的专家进行了全面系统的研究鉴定,目前这项研究成果业已完成,将以专著《长江三峡库区昆虫》问世了。

本书是三峡库区昆虫,包括部分陆生无脊椎动物考察结果的全面系统的科学总结。其内容包括总论和各论两大部分。各论部分由全国30个科研、教学单位99位有关知名专家教授撰写,按目、科分类系统独立成文,自成单元。共记述昆虫及部分陆生无脊椎动物21目、265科、1984属、3485种,其中包括16新属、289新种。各类群首先简要记述该类群的形态特征和经济意义,然后按种类分别记述其分类地位、形态特征、发生时间和种群数量、国内外分布、寄主和经济意义,附必要的形态特征图和黑白全图。对本次发现的新属、新种按学报论文格式用中、英文进行详细形态记述。部分类群除种类记述外,还有区系分析,讨论其区系渊源和演变。

总论部分是在各论所提供资料的基础上进行综合归纳、分析,从库区昆虫区系特征及其起源与演变、库区昆虫及无脊椎动物物种多样性分析以及库区农林害虫的现状与综合治理等三方面在理论上加以概括和总结,并提出了作者们的见解。

本次考察,不仅收集了库区完整的工程开工之前的科学资料,为库区移民前后的生产发展战略及环境保护提供了科学依据,而且为与工程完工后的对比研究打下了坚实基础。本书的编辑出版,是该地区有关昆虫包括无脊椎动物的第一本综合性专著,它不仅填补了地区综合考察的空白,而且在理论上做了探讨,有所突破,具有很高的学术水平,是留给后人极其宝贵的科学史料,无论在科学研究和生产上都有十分重要的意义。

张广学

中国科学院动物研究所研究员

中国科学院院士

1996年9月4日于北京

PREFACE II

The environment will be greatly changed after the construction of Three Gorge Project, which is the largest water conservancy in the world. This inevitably brings changes to the survivals and habitats of organisms in the area. Because of the very limited work on faunal research, it is imperative to survey the insects in order to preserve the precious information before the change. Financed by the State Science and Technology Commission of China, the National Environmental Protection Agency of China, the CAS and the Institute of Zoology of CAS, Professor Yang Xingke and others carried out an extensive expedition in the Three Gorge Reservoir Area from 1993 to 1995. More than 70 000 specimens were collected and identified. A monograph "Insects of the Three Gorge Reservoir Area of Yangtze River" is published.

The monograph is a complete and systematic summary on insects and terrestrial invertebrates collected in the Three Gorge Reservoir Area. It consists of general accounts and subsections prepared by 99 experts from 30 research and education units in China. Each subsection arranged as an independent paper according to families and orders. In the monograph, 3 485 species of Insects and invertebrates are described, belonging to 1 984 genera, 265 families and 21 orders. It includes 289 new species and 16 new genera. Namely, the morphological characteristics and economical value were first described for the group. Then, taxonomic status, morphological characteristics, occurring seasons, population abundance, distribution in China and the world, hosts and economical value described species by species, including necessary morphological illustrations and black-and-white photos. Detailed descriptions for new genera and new species were written both in Chinese and English. Furthermore, origin and evolution were discussed for some groups.

Considering the information in subsections, general accounts summed up from the opinions from different author as following aspects: origin, evolution and bio-diversity of insects and some of invertebrates, present situation of agro-forestry pests and integrated management methods.

The monograph laid a scientific foundation for designing and planning the developmental strategy at present time. It also provided a solid basis for evaluating the impacts of Three Gorge Project after its completion. It is the first comprehensive monograph on insects and invertebrates in the Three Gorge Reservoir Area. More important, authors probed into some theoretical subjects and made certain breakthroughs. Their significance is undoubtedly valu-

able whether in a sense of theory or practice.

Zhang Guangxue

Professor of the Institute of Zoology of CAS

Member of CAS

September 4, 1996

Beijing

前 言

三峡工程是世界上最大的水利工程,它建成后水位将升高到 175m,大量的耕地将被淹没,100 余万人需要易地安置,在很大程度上改变了原来的气候及生态环境。由于移民工作的大范围开展及农事活动范围加大,自然植被区域缩小,库区内植物的丰富度将会降低。而昆虫及其他动物,其种类和数量都将随着植物的丰富度减小发生相应的变化。在新的生态环境下,生物群落将发生怎样的变化,以及新的群落的形成对人类及自然生态环境将产生何种影响等理论课题有待于作进一步的研究和探讨。

本地区有关昆虫本底的系统调查及研究基本上属于空白。而昆虫是生态系统中重要的和庞大的生物类群,与人类的生存和经济生活有着极为密切的关系,为此,我们选择了昆虫作为主要研究对象。

在国家科学技术委员会、国家环境保护局、中国科学院及中国科学院动物研究所所长基金的支持下,我们从 1993~1995 年,对库区陆生昆虫(包括部分无脊椎动物)进行了较为详细的调查。共采集标本 7 万余号。在全国 30 个科研、教学单位、99 位专家的努力下,共鉴定出昆虫 19 目、242 科、1 940 属、3 418 种,其中包括 16 新属、289 新种,另外,还包括了蛛形纲 2 目 23 科 44 属 67 种。在此基础上完成了《长江三峡库区昆虫》这本专著。它是集体的智慧和大家共同努力的结果;是我国生物资源研究的又一丰硕成果,为水库建成后进行对比研究打下了坚实基础。

本项目自始至终得到中国科学院动物研究所领导及昆虫分类室各位专家的大力支持。在野外工作中,湖北省宜昌市林业局、秭归县林业局、兴山县龙门河林场、巴东县林业局,四川省巫山县林业局、万县龙驹森林经营所、丰都县林业局、世坪林场、重庆市长寿县林业局、重庆市森林病虫害防治站及缙云山自然保护区管理处等单位给予了很多帮助和支持。

在本书的编写过程中,不少同事、朋友都给予了各方面的帮助和鼓励,特别应提到的是张广学研究员、吴国平教授、杨朝飞先生、朱广庆先生、黄真理博士、殷蕙芬教授、梁铭求教授、杨定博士、于延芬女士及崔俊芝女士等,在此我们谨致以衷心的感谢。

本书的出版得到国务院三峡工程建设委员会的资助及重庆出版社科学学术著作出版基金资助,我们课题组全体成员及本书编委会向他们表示十分感谢。最后,我们还要感谢国家计划委员会副主任、国务院三峡工程建设委员会副主任郭树言先生,中国科学院院士、中国科学院动物研究所研究员张广学先生为本书作序。

由于时间仓促,加之我们的知识水平有限,书中错误之处,望读者不吝赐教。

《长江三峡库区昆虫》编辑委员会

1996 年 9 月

FOREWORD

The construction of the Three Gorge Reservoir is a great project. Before the construction of the reservoir, more than a million people there will be immigrated to the neighbour lands. When the construction of the reservoir is finished, thousands of animal and plant life will be drowned and disappeared. The largest hydropower in the world will stand there with the water of 175 m in depth. While the new reservoir is building, a new ecological environment is shaping, under which what an impact and action will happen to the animal and plant life, what a kind of living community will be formed there. All of these problems need to be studied.

With this intention in mind, supported by the funds from the State Science and Technology Commission of China, the National Environmental Protection Agency of China, the Chinese Academy of Sciences and the Institute of Zoology of the Chinese Academy of Sciences, we carried a series of field work in the reservoir area during the period of 1993~1995. More than 70 000 specimens of insects and some of invertebrates were obtained, which represent 3 418 species and belong to 1 940 genera, 242 families and 19 orders of Insecta, and 67 species belonging to 44 genera, 23 families and two orders of Arachnida after being identified. Among those specimens 16 genera and 289 species are described as new to science.

On the basis of a series studies we have completed the book "Insects of the Three Gorge Reservoir Area of Yangtze River". 99 scientists from universities and institutions have participated in the work. So it is the results of collective efforts. The book should be an important reference to the research of biological resources and it must be useful for a comparative studying of insect fauna before and after the construction of the reservoir.

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