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田秀华 王进军 著



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内 容 简 介

本书为作者多年来从事野生大鸨生态考察及人工驯化繁殖研究成果的总结。全面介绍了世界鸨类和国内鸨类的种类、分布、形态、生境、习性、鸣叫、取食、繁殖种群现状等。重点阐述大鸨人工驯化、繁殖、孵化、育雏等技术，并对大鸨外部形态、内部解剖、组织学的研究，卵壳、羽毛超微结构及成分分析，同工酶、染色体核型、血液生理、生化指标的测定，雏鸟的体温调节、行为时间分配及疾病防治等进行了系统研究。同时还回顾了中国古代大鸨和现代国内大鸨的研究现状，论述了大鸨的资源保护与管理对策。书中图文并茂，内容丰富，可供从事动物学研究的学者、自然保护区管理人员和广大鸟类爱好者阅读和参考。

PROSPECTUS

In this book, generalized the authors long term researches in the field of ecology and artificial breeding of Great Bustard. It wholly covers the taxonomy, distribution, reproduction, morphology, behavior, voice, feeding, habitat and population status. It emphasized the technology of taming, breeding, hatching and brooding under artificial conditions. Systematical introductions are also made on outer appearances, anatomy, histology, eggshell and feather structure and ingredients analysis, Karyotype analysis, isoenzymetic typing, physiological and biochemical parameters of blood, temperature regulation of nestling and disease preventing and curing. Also, the authors reviewed ancient Great Bustard of China and the status on the past decade, base on which, discussed the resource conservation and management of the species. There are also many beautiful pictures attached in this book. It can be read and referenced by zoological researchers, persons in nature reserves and bird-lovers.

《中国大鸨》编委会

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序

鸟类是大自然的重要组成部分，是宝贵的自然资源，也是人类的朋友。大鸨，作为草原生态系统的指示物种，在维持草原生态平衡方面起着重要作用。大鸨是倍受人们关注的世界濒危鸟类。

由田秀华女士等编著的《中国大鸨》一书的出版，是我国鸟类学研究方面的一项重要成果。本书是作者多年研究的系统总结，对大鸨的研究历史、形态特征、系统分类地位、野外生态以及涉及生长、换羽、染色体、同功酶、生理生化、人工驯化、繁殖、疾病防治等方面进行了全面、细致的研究，取得了翔实的第一手材料。作者在从事本项研究中曾多次深入到荒芜人烟的草原地带，饱经风吹、日晒、雨淋和蚊虫叮咬，作为女同志，其吃苦耐劳精神是令人敬佩的。大鸨在人工饲养条件下很难成活，作者历尽艰辛在哈尔滨动物园与大鸨吃住在一起，硬是攻克了这一难关，使其人工育雏成活率达到 88.5%，建立了一个 40 多只的大鸨人工饲养种群，并于 2001 年在中国哈尔滨动物园首次取得人工繁殖成功。此外在大鸨的血液指标测定，生理常数的测定，内部器官的解剖研究，卵壳超微结构的研究，卵壳、羽毛、微量元素分析以及行为活动时间分配等诸方面，也都取得了开拓性成果，填补了国内外大鸨研究方面的空白。

本书除对大鸨进行了细致、全面的研究、论述之外，还对世界的鸨类现状、鸨类生物学、中国鸨类的研究与现状进行了论述。这也为我们日后进行其他鸨类的研究奠定了基础。

田秀华女士毕业 20 年来，一直工作在鸟类科学研究的第一线，常年坚持研究，硕果累累，被评为黑龙江省有突出贡献的青年专家并享受政府津贴，1998 年被中国鸟类学会授予第三届

“郑作新鸟类科学青年奖”。在她身上始终会感受到一种奋发向上的精神，一种为鸟类学研究献身的精神，这对于鸟类学工作者来说是至关重要的，也是值得我们学习的。相信本书的出版必将推动国内鸨类研究的进程，使鸨类资源的保护、利用和科学管理提高到一个新的水平。

中国鸟类学会理事长

郑光美

于北京师范大学生命科学学院

2001年5月15日

PREFACE

Birds are not only important part of the nature, but also precious natural resource and friends of human. As an indicative species of grassland ecosystem, great bustard plays an important role in keeping its balance. It becomes a worldwide-endangered species that attracting the world's attention.

The publication of Ms. Tian Xiuhua's work, *Great Bustard of China*, is a very valuable achievement in Chinese ornithology research, which concentrates her long term and systematic work on the species. She spent many years in the research of great bustard, involving research history, morphology, taxonomy, ecology, development, molting, karyotype, isozyme, physiology, biochemistry, artificial domestication, reproduction and disease prevention and cure. Ms. Tian has been the desolate grassland to study the great bustard, fighting against strong wind, burning sunshine, awful rainstorm and unbearable pest disturbance. I appreciate such spirits of a woman scientist very much. Great bustard is very easy to die under artificial conditions. Ms. Tian spent her days and nights in Harbin Zoo staying with her great bustard, overcoming many difficulties. At last, she set up an artificial population of 40 birds, and achieved an unimaginable survival rate, 88.5%. She brought an artificial bred great bustard into the world in 2001. This is the first time in the world. Ms. Tian also gained many firsts in great bustard in the analysis and measurement of blood parameters, physiological constants, anatomy of inner organs, microstructure of eggshell, trace element contents in egg shell and feather, behavior and active rhythms etc.

Besides above, Ms. Tian still took a few chapters to discuss the

status of world bustard, biology of bustard and status of bustard research in China. I believe this information could be a base for the coming researches on other bustards.

During the 20 years since she graduated from university, she kept on working in the front of ornithology research. Her hard working gained lots of achievements. She was named Young Specialist of Outstanding Contribution of Heilongjiang Province, and won the governmental allowance. In 1998, she won Zheng Tso-Hsin Ornithological Prize awarded by the China Ornithological Society. You will find a kind of active spirit, and contributing spirit. These spirits are very valuable for an ornithologist, and deserve our learning from her. I believe that the publication of the book must accelerate the progress of Chinese bustard researches, and improve the conservation, utilization and scientific management of bustards.

Director of China Ornithological Society

Zheng Guangmei

Department of Life Science

Beijing Normal University

May 15, 2001

前言

大鸨 (*Otis tarda*) 隶属于鹤形目 (Gruiformes)、鸨科 (Otididae), 俗称地鸨、老鸨、羊须鸨, 是世界濒危鸟类之一。国际自然与自然资源保护联盟 (IUCN) 将其载入“红皮书”, 1993 年 4 月被列入《濒危野生动植物国际贸易公约》附录 II 中。我国将其列为国家 I 级重点保护野生动物。

大鸨为古北界鸟类, 分为两个亚种, 即指名亚种 (*Otis tarda tarda*) 和普通亚种 (*Otis tarda dybowskii*)。其中, 指名亚种分布于欧洲、中亚和我国新疆, 普通亚种分布于指名亚种以东的东亚地区, 即俄罗斯东南、蒙古草原和我国东北、华北及黄河和长江流域。

我国关于大鸨的研究起步较晚, 研究进展比较缓慢。我国最早研究大鸨的学者是程光潮先生, 他于 1959 年发表了第一篇大鸨生态调查的文章。此后的 20 年关于大鸨的研究一直停滞不前。1979 年以后, 特别是近十年来, 国内涌现出了一大批致力于大鸨研究的学者, 形成了一个研究高潮, 先后发表论文 40 余篇, 内容涉及大鸨的野外生态、人工饲养、生理解剖、生化分析、疾病防治等诸多领域, 可谓进行了较全面系统的研究。

本书作者长期以来从事大鸨的研究工作, 先后在黑龙江、内蒙古、吉林等多个大鸨栖息地进行过野外观察研究, 并在齐齐哈尔龙沙公园、哈尔滨动物园对大鸨的饲养、繁殖、人工孵化、人工育雏、解剖学、生理生化、卵壳超微结构、行为活动时间分配以及疾病防治等方面进行研究。1995 年作者承担了哈尔滨市科委下达的“大鸨人工饲养及雏鸟生长发育的系统研究”课题, 于 1997 年 12 月通过哈尔滨市科委组织的专家鉴定, 达到国内领先水平, 获 1998 ~ 1999 年度哈尔滨市、国家林业局科技进步三等奖。本书的出版既是对多年研究大鸨工作全面系统的总结, 也是

作为一个青年鸟类学工作者的大胆探索，希望能在大鸨的研究和保护方面尽一些绵薄之力，抛砖引玉，推动大鸨研究和保护事业的发展。

本书除了作者的部分研究成果外，还引用了国内外有关研究成果及公开发表的文献，在书中及书后的参考文献中均注明了作者及年份。在此向原作者表示感谢。本书在编著过程中，东北林业大学马建章院士、常家传教授、高中信教授、曾科文教授、贾竞波教授、吴建平副教授、李晓民副教授、孙中武副教授、费荣梅副教授、杨淑慧副教授、徐艳春博士、黑龙江省科学院自然资源研究所马逸清研究员、东北师范大学高玮教授、中国科学院新疆生物土壤沙漠研究所马鸣研究员、华南濒危动物研究所的高育仁研究员、兰州大学生命科学院刘迺发教授、内蒙古大学邢莲莲教授、东北农业大学贺桂馨副教授、内蒙古扎赉特旗环保办刘复成主任等为素材的收集、提供给予了及时的指导和帮助。特别是安徽大学王岐山教授为本书提供大量的信息资料，东北林业大学鲁长虎副教授对本书初稿给予指点、帮助，杭馥兰副教授为本书的校对、物种分类地位及名称确定倾注了大量的心血，度过了许多不眠之夜，还有郭立新、李艺松、高桂华、张琼、齐智、王建荣、何相宝、王强、于学伟、江志、付海真、姜丰等同志对本书译稿、校对、绘图等诸方面给予了大力支持和帮助，哈尔滨动物园徐美荣、张新茹、魏淑琴、宋金宝、李秀云、高照弘、黄守华、董凤友、邹希明等在研究中给予无私的帮助。可以说没有各位恩师的教诲、鼓励、扶植与栽培以及同行们的鼎力相助，我是没有能力完成此书的。在此再次表示深深的谢意。

因本书涉及面比较广泛，作者知识水平有限，书中错误、失当之处难免，恳请各位专家及同仁不吝赐教，予以斧正。

作者

2001年春于哈尔滨

Introduction

Great bustard (*Otis tarda*), belonging to Otididae of Gruiformes, is one of the endangered species worldwide. It was listed in the Red Data Book of IUCN and Conventions on International Trade in Endangered Species (CITES) of Wild Fauna and Flora Appendix II. China preserve it as The First Category of Protection Bird.

Great bustard is a palearctic species, including two subspecies, *Otis tarda tarda* and *Otis tarda dybowskii*. *O. t. tarda* distributes in Europe, Central Asia and Xinjiang of China. *O. t. dybowskii* can be found in the areas eastern to the regions where *O. t. tarda* lives, e.g. southeast of Russia, Grassland of Inner Mongolia, Northeast, North and Yellow basin river and Yangtsi River basin of China.

Researches on great bustard started late and the proceedings were rather slow. The first report on the ecology of the species was proposed by Mr. Cheng Guangchao, who was the first man studying great bustard in China. There was no report seen in the following 2 decades until 1979. The past decade is the time that lots of achievements were gained in great bustard research. A big lot of specialists came to pay attention to great bustard, and published 40 especially on ecology, artificial breeding, anatomy, physiology, biochemistry, disease prevention and cure etc, basically being systematic.

I spent very long time in the research of great bustard, carried out surveys in the distributing areas in Heilongjiang, Inner Mongolia and Jilin. Artificial raising and reproduction, artificial hatching and nursing of nestlings, anatomy, physiology, biochemistry, egg shell ultra structure, behavior rhythm, and disease prevention and cure were conducted in

Longsha Zoo of Qiqihar and Harbin Zoo. In 1995, I undertook the project allotted by Harbin government entitled A Systematic Study on the Artificial Breeding and Development of Nestling in Great Bustard. This project was finished and passed appraisal by specialist group of Committee of Science and Technology of Harbin in Dec. 1997, won the third prize for the Science and Technology Progress of both Harbin and National Forestry Bureau in 1998 ~ 1999. This book systematically concentrates my work of a long time in great bustard. As a young ornithologist, I also embed my adventurous explorations in this book. I hope my work would accelerate the research and conservation of great bustard.

In additional to the work of mine, this book also enclosed published achievements in both domestic and abroad. I listed them in the Reference part including the author's name and publishing year, and thank these authors. In the process of editing this book, the following scientists provided a lot of help and support: Academician Ma Jianzhang, Prof. Chang Jiachuan, Prof. Gao Zhongxin, Prof. Zeng Kewen, Prof. Jia Jingbo, Associate Prof. Wu Jianping, Associate Prof. Li xiaomin, Prof. Sun Zhongwu, Associate Prof. Fei Rongmei, Associate Prof. Yang Shuhui, Dr. Xu Yanchun of the Northeast Forestry University; Prof. Ma Yiqing of Natural Resources Institute of Heilongjiang Academy; Prof. Gao Wei of Northeast Normal University; Senior researcher Ma Ming of Xinjiang Institute of Biology, Soil and Desert of Chinese Academy; Senior researcher Gao Yuren of Institute of South China Endangered Animal; Prof. Liu Naifa of Lanzhou university. Prof. Xing Lianlian of Inner Mongolia University. Associate prof. He Guixin of the Northeast Agrology University, Mr. Liu Fucheng of Environment Protection Office of Jalaid Banner, Inner Mongolia. I especially appreciate Prof. Wang Qishan of Anhui University who provided a lot of informations, Associate

Prof. Lu Changhu of Northeast Forestry University who provides many good suggestions for the structure and first draft of the book, Associate prof. Hang Fulan of Northeast Forestry University who verified and converted basic knowledge of species taxonomy. In addition, Ms. Guo Lixin, Ms. Li Yisong, Mr. Gao Guihua, Ms. Zhang Qiong, Mr. Qi Zhi, Mr. Wang Jianrong, Mr. He Xiangbao, Mr. Wang Qiang, Ms. Yu Xuewei, Mr. Jiang Zhi, Mr Fu haizhen, Mr Jiang Feng helped me with verification, iconography and foreign language interpretation. Ms. Xu Meirong, Ms. Zhang Xinru, Ms. Wei Shuqin, Mr. Song Jinbao, Ms. Li Xiuyun, Ms. Gao Zhaohong, Mr. Huang Shouhua, Mr. Dong Fengyou, Mr. Zou Ximing of Harbin Zoo helped to do experiments. I can not imagine to publish this book without the tuition, encourage, and support of my teachers and friends. Again, I acknowledge them all.

This book involves many aspects of a large field, it's very hard to eliminate all problems and mistakes. I hope readers would correct and improve it.

The author
Spring of 2001, Harbin

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