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# 中国鹤类研究

## Crane Research in China



主 编：Chief Editors

王岐山：安徽大学生命科学学院

Wang Qi-Shan, School of Life Sciences, Anhui University

李凤山：国际鹤类基金会

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## 序

在鹤类生活的世界，中国的地位至关重要。世界15种鹤类中，中国就有9种，比其他任何国家都多。黑颈鹤的世界种群几乎都在中国繁殖，绝大多数在中国越冬。在西伯利亚繁殖的白鹤的3个种群中，中部种群已经消失了好几年，西部种群也正在减少，因此这个物种的生存越来越依赖于东部种群，而东部种群迁徙时要经过长距离跨越中国东部，到长江流域中部越冬。除此以外，丹顶鹤、白枕鹤和白头鹤等濒危鹤类的很多种群在中国度过全年或一年的大部分时间。

中国对鹤类的自然保护给予了很大的关注。截至目前，中国已建立了50个以鹤类及其赖以生存的湿地生态系统为主要保护对象的自然保护区，还有110个保护区具有保护鹤类栖息地的功能。与10年前相比，保护区的管理水平和人员能力已经有了很大的提高。另外，中国也重视湿地的保护和持续利用，并且于2000年颁布了《中国湿地保护行动计划》，湿地保护是保护区体制发展规划的重要环节。然而，尽管采取了这些措施，取得了一定成绩，鹤类、其他水禽以及湿地所面临的压力仍然很大。

科研是了解鹤类和其他野生动物生存需要的极为重要的手段，它可以衡量野生动物对人类活动以及生态系统变化的反应，评估自然保护工作的成败。没有良好的科学依据和科研项目支撑，自然保护工作是难以有效的。

本文集收录了28篇科学研究文章，总结报道了中国近年来对各种鹤类的科研活动，其目的是使这些研究成果提供给其他的科研人员、自然保护和保护区管理者，以及越来越多的对鹤类感兴趣的人们。我们希望本文集将鼓励更多的科研人员积极地参与到鹤类相关的科研和保护中来。

本文集中有几篇是关于鹤类和环境变化相互关系的文章。人口变化及其所带来的压力有时会对土地和水资源造成直接和间接的影响。鹤类的生存离不开湿地，自然或人为造成的干旱、水资源开发项目、气候的变化都直接影响湿地的面积和质量，进而影响鹤类的生存。

本文集的文章多属在鹤类不同的栖息地点所开展的研究。人们越来越意识到了了解和保护这些地点所在区域及其生态多样性的重要性，以便使鹤类顺利地完成它们一年的生活周期。只有当目前分散的湿地形成一个有机的网络，且这个网络不再受到破坏并得以发展，鹤类才有继续生存下去的生机。对于保护长途迁徙的鹤类而言，人们不仅应该把重点放在保护区的建设和保护上，还需要加强保护区以外作为停歇和觅食地点地区的保护工作。科研能够帮助我们找出这些地点，并且指导我们如何保障这些地点的保护价值。

中国在鹤类的饲养和繁殖方面有着悠久的历史。通过饲养工作，我们能够获得很多鹤类的科学信息。饲养繁殖的成功意味着饲养种群有潜在的能力给鹤类野外释放提供种源。出于公众教育或其他目的，现在一些保护区有试图维持一个鹤类饲养种群的趋势。这些人工

种群有时接近野生鸟类，或与野生鸟类混在一起。因此，要密切监测饲养鸟类的健康状况，以防传染性疾病削弱饲养种群的自然保护价值，或者对野生鹤类造成威胁。本文集中的“中国圈养鹤类健康现况调查”涉及诊断、治疗和预防鹤类疾病的问题，值得参考。

最后，我们感谢乔治·阿其博博士使用 Peter Jay Sharp Discretionary Fund 基金来支持本文集的出版。

詹姆斯·哈里斯  
国际鹤类基金会 主席  
2005年5月30日

## Preface

In the world of cranes, China is an extremely important place. Nine of the world's fifteen crane species have occurred here, more than any other country. Almost all of the world's population of Black-necked Cranes breed within China, and the vast majority of the species winters here as well. With the disappearance of the central Asian population of Siberian Cranes in recent years, and the dwindling number in the western Asian population, the fate of the species increasingly depends on the eastern population that migrates long distances across eastern China in spring and fall and winters in the mid Yangtze Basin. Significant populations of the threatened Red-crowned, White-naped and Hooded Cranes live in China for parts or all of the year.

The Government of China has paid great attention to the conservation of cranes. Fifty nature reserves have been established specifically to protect cranes and the ecosystems on which they depend, while a total of 110 reserves benefit cranes. Many improvements have occurred in the management and staff capacity of these reserves, in comparison with ten to fifteen years ago. In addition, China has focused on protection and sustainable use of its wetlands, and adopted a China National Wetlands Conservation Action Plan in 2000. Plans for future expansion of the nature reserve system have a special emphasis on wetlands. Despite these gains, the pressures on cranes, other waterbirds and wetlands remain intense.

Research is extremely important as a means of understanding what cranes and other wildlife need, as a way to measure the response of wildlife to human activities and ecosystem change, and as a means of assessing threats and also success of conservation programs. Effective conservation is not possible without a foundation of good research and the support of on-going studies.

This volume has gathered twenty-eight research papers that represent the great diversity of crane research occurring in China in recent years. The collection aims to make these studies more accessible to other scientists, to conservation and nature reserve authorities, and to the growing numbers of people interested in cranes. In addition, we hope this volume will encourage more researchers to become active with cranes and related topics.

A number of these papers address the relationship between cranes and broad-scale changes to the environment, sometimes the direct or indirect of expanding numbers of people and their impacts on lands and waters. Given the dependence of cranes upon wetlands, drought whether natural or human-caused, water development projects and climate change are all likely to have growing impacts on China's cranes.

While the enclosed papers focus on specific sites—some wetlands used by cranes for breeding, others significant as migratory stopovers, and still others critical as wintering locations, there is growing recognition of the importance of understanding and maintaining the geographic and ecological diversity of locations that cranes need for their entire annual cycle. Only if this scattered network of wetlands is sustained, intact, will cranes be able to survive. While much emphasis has been placed on creating nature reserves, cranes due to their long migrations must often depend on resting and feeding sites outside the system of protected areas. Research is helping us identify such sites and learn how their wildlife values

can be safeguarded.

China has a tradition going back centuries for the care and breeding of cranes in captivity. Captive conditions offer many opportunities for research, as evidenced by several papers in this volume. Successes of captive breeding mean that captive flocks have the potential to produce cranes for release to the wild. There has also been a growing tendency for some nature reserves to maintain flocks of captive cranes, for public education purposes, and these captive birds sometimes approach or mingle with wild birds. There is an urgent need to monitor the health of these captive birds and to ensure that contagious diseases do not negate the conservation value of captive collections or threaten wild cranes. The paper *China Captive Crane Health Survey 2004* in this volume is an important contribution to what should be a growing effort to diagnose, treat, and prevent spread of diseases among cranes.

We are grateful to Dr. George Archibald who has supported publication of this volume with income of the Peter Jay Sharp Discretionary Fund.

James Harris  
President  
International Crane Foundation  
May 30, 2005

## 前 言

出版学术文集能较集中地反映同一专业的研究内容和阶段性成果，有利于国内外开展学术交流与合作。例如，1987年在齐齐哈尔市召开国际鹤类学术会议之后，由黑龙江省林业厅（1990）出版了该会议的论文集《国际鹤类保护与研究》，对国内外鹤类研究工作起了积极地推动作用，参考价值和引用率都很高。然而，由于受到出版经费、发起策划、筹备人员以及其他因素的限制，15年来国内未再见有鹤类论文集正式出版发行。

1997年3月，在秦皇岛市召开的“湿地与水禽保护（东北亚）国际研讨会”会议期间，中国鸟类学会和国际鹤类基金会决定由国际鹤类基金会资助创办《中国鹤类通讯》期刊，由中国鸟类学会鹤类及水鸟专业委员会（专业委员会名称与中国科协的规定不符时，改称专家组）编辑出版，此后从1999年又资助启动“中国鹤类小额研究基金”，2002年8月中国鸟类学会和国际鹤类基金会在北京联合举办了“国际鹤类学术研讨会”。以上各项工作，从一个侧面标志着中国鹤类研究领域的进步和蓬勃发展，取得了许多可喜的研究成果。与此同时，国际鹤类基金会多年来资助并参加在鄱阳湖进行大型水禽航空调查等多项研究，在西藏和云南进行黑颈鹤数量调查和迁徙研究等，特别是积极争取到白鹤全球环境基金项目，这些工作对中国鹤类事业的前进和发展起到有力的推动和促进作用。中国鸟类学会和国际鹤类基金会经过多次磋商，认为把上述有关项目取得的研究成果与其他鹤类研究成果结合起来，编辑出版中国鹤类研究文集的条件已经成熟，于是从2003年开始策划征稿和出版事宜，到2004年底征稿结束，2005年4月在北京召开编委审稿会审稿、定稿。

本文集是近些年来有关中国鹤类现阶段的主要研究成果，在一定程度上反映了当前的研究内容和学术水平，它的特点是：第一，研究领域较为全面，涉及综述、数量分布、栖息地、繁殖、迁徙、食物、行为、疾病防治和谱系分析，其中有些论文有较高的学术水平和应用价值；第二，论文作者代表性广泛，既有研究员、博士和教授，也有在读的硕士研究生、自然保护区和动物园的科研人员以及国际鹤类基金会的专家，如此广泛的覆盖面在一般文集中并不多见；第三，论文成果多属国际合作项目或有关基金资助项目，例如本文集包括世界自然基金会（WWF）、国际鹤类基金会（ICF）、国家自然科学基金和中国鹤类小额研究基金等资助项目的研究成果。

本文集由于经费和时间等原因，未能更广泛地收录到有关论文，有些研究工作还有待于提高，但我们仍然希望它能提供给鹤类研究和保护人员以及相近学科的工作人员参考使用，更期待着读者提出宝贵意见。

为表达我们对中国鸟类学奠基人郑作新院士和国际鹤类基金会创始人乔治·阿其博博



士的崇敬心情，谨以本文集献给他们，铭记他们对中国鸟类学和鹤类事业做出的巨大贡献。

感谢国际鹤类基金会多年来对中国鹤类事业的大力支持与关怀，感谢本文集各位作者和各位审稿专家付出的艰辛努力。

王岐山

于安徽大学生命科学学院

2005年4月12日

## Introduction

It is significant to summarize and publish scientific research and enhance research cooperation and information exchange in China and abroad over the past 20 years. After the 1987 International Crane Symposium in Qiqihar, the Forestry Department of Heilongjiang Province published the proceedings, *International Crane Conservation and Research*. The symposium and subsequent publication of the proceedings have dramatically motivated crane research and information exchange among researchers in China and around the world. Due to lack of funding, initiative and other factors, however, no crane proceedings have been officially published in China since.

During the "International Workshop on Wetland and Waterbird Conservation in North East Asia" held at Qinhuangdao in March 1997, the China Ornithological Society (COS) and the International Crane Foundation (ICF) decided to work together. Through this agreement, ICF would sponsor the Waterbird and Crane Specialist Group (WCSG) of the China Ornithological Society to publish the *China Crane News*. Again, in 1999, ICF worked with WCSG to initiate the China Crane Small Grants Program. In August 2002, COS and ICF jointly organized an International Crane Symposium in Beijing. These activities to some extent reflect progress achieved in crane research in China. At the same time, ICF has sponsored and participated in several aerial surveys on large waterfowl at Poyang Lake, winter counts and migration studies of Black-necked Cranes in Tibet and Yunnan, and most significantly, ICF has made its best effort to start the United Nations Environmental Programme/Global Environmental Facility project "Development of a Wetland Site and Flyway Network for Conservation of the Siberian Crane and other Migratory Waterbirds in Asia." To further crane research and information exchange, COS and ICF decided in 2003 to publish this book.

This book includes papers mainly on crane research in recent years. To some extent this work represents current research areas and updates on crane research, because (1) the papers cover research review, populations, distribution, habitat use, breeding, migration, food habits, behavior, disease prevention and studbook analysis; (2) authors are from various research areas, such as senior researchers, professors, graduate students, nature reserve managers, zoo keepers; and (3) much of the research is based on international cooperative projects or is financed by related grants, such as the World Wild Fund for Nature, International Crane Foundation, National Science Foundation, and China Crane Small Grants Program.

Due to time restraints and funding, we were not able to collect more papers, but we still hope that this book will be helpful to crane researchers and conservationists and to specialists of related disciplines.

We dedicate this book to Cheng Tso-Hsin, the founder of Chinese ornithology, and Dr. George W. Archibald, co-founder of ICF, for their great contributions to bird and crane research and conservation.

Thanks to ICF for supporting and caring for crane conservation in China for many years. I also would like to thank all authors and reviewers who have made this book possible.

Wang Qi-Shan

Professor

College of Life Science, Anhui University

12 April, 2005

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