

中国鹤类通讯

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中国野生动物保护协会鹤类联合保护委员会
United Crane Conservation Committee of China Wildlife Conservation Association

贺 词

《中国鹤类通讯》是一份内部交流刊物，主要报道中国鹤类研究和保护的最新进展。该刊物早期由老一辈专家郑光美、王岐山、徐延恭、马逸清等教授倡议和创办，后来由丁长青、杨晓君、钱法文、邹红菲等中年学者接棒，总共出版了 39 期，其内容深受国内外读者的欢迎和喜爱。但遗憾的是，由于新冠肺炎疫情发生，这本刊物就没有再出版。

今天，新一期《中国鹤类通讯》终于又与大家见面了。在此，我谨代表中国动物学会鸟类学分会，对《中国鹤类通讯》的复刊表示热烈祝贺！感谢各位编委所付出的辛苦，特别感谢邹红菲教授、李凤山博士卓有成效的编辑工作！祝愿《中国鹤类通讯》越办越好！

中国动物学会鸟类学分会主任委员
中国野生动物保护协会鹤类联合保护专业委员会顾问



Message of Congratulations

China Crane News is an internal communication publication that mainly reports on the latest progress in the research and conservation of cranes in China. The publication was initiated and founded by the older generation of experts Zheng Guangmei, Wang Qishan, Xu Yangong, and Ma Yiqing. Later, it was taken over by middle-aged scholars such as Ding Changqing, Yang Xiaojun, Qian Fawen, and Zou Hongfei. A total of 39 issues have been published, and well received by readers at home and abroad. Unfortunately, due to the outbreak of Covid-19, this publication has become inactive.

Today, a new issue of *China Crane News* finally came out again. Here, on behalf of the China Ornithological Society, I would like to express my warm congratulations on the resumption of publication of *China Crane News*! Thank you all for the hard work of all editorial board members, especially Professor Zou Hongfei and Dr. Li Fengshan for their fruitful editing work! I wish *China Crane News* will get better and better!

Zhang Zhengwang

President of China Ornithological Society, and Advisor of United Crane Conservation Committee of China Wildlife Conservation Association

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Inside back cover: Duchang Management and Monitoring Station at Poyang Lake.	Text and Photos by Gao Xiang

【鹤类科研与监测】 [Crane Research and Monitoring]

向海保护区近年白鹤迁徙情况调查研究

李连山 夏占平 刘蕾 于海龙 王昊岩
吉林向海国家级自然保护区管理局, 吉林通榆 137215

根据吉林向海国家级自然保护区对 2016-2024 年迁徙的白鹤及其栖息地的实际调查, 白鹤主要停歇在保护区鹤类核心区境内的付老文泡、小塔甸子、团结屯东南甸子、新发苇点、超生屯、粮丰桥、黄鱼泡东南等区域。春季, 白鹤通常在 3 月下旬迁入向海, 5 月上旬基本迁离; 秋季, 白鹤在 10 月上旬迁入, 11 月中旬基本迁离飞往越冬地。在春季迁徙期, 白鹤的伴生鸟种和数量较多, 主要是雁鸭类、鹭鹤类和其它鹤类, 例如东方白鹤、灰鹤、白头鹤、丹顶鹤等, 这些鸟类的食性和对栖息地生境要求较为相似; 秋季, 白鹤的伴生鸟种和数量都相对较少, 但常与大群的白头鹤或灰鹤混群出现, 也有部分白鹤以 2-6 只成家族群或小群活动。秋季南迁时, 白鹤常集大群一起南飞。从表 1 可以看出, 白鹤秋季的迁徙数量明显高于春季, 这可能与秋季向海保护区内食物资源丰富有关。

表 1. 2016-2024 年迁徙季节向海自然保护区的白鹤数量监测最高值

Table 1. Numbers of Siberian Cranes at Xianghai National Nature Reserve during spring and fall migration from 2016-2024

年度 Year	季节 Season		合计 Total
	春 Spring	秋 Fall	
2016	101	550	651
2017	259	406	665
2018	69	398	467
2019	391	324	715
2020	429	345	774
2021	168	460	628
2022	332	1369	1701
2023	265	1238	1503
2024	237	3235	3472

白鹤在向海保护区的停歇地主要分布在 4 个区域 (图 1): (1) 向海保护区西南新发苇点湿地附近, 湿地类型主要是沼泽、草甸、小明水; (2) 小塔甸子—付老文泡—碱地泡—团结屯东南甸子组成的分布区, 湿地类型为沼泽、草甸、湖泊; (3) 粮丰桥—碱铺—海力营子—胜利屯—长胜马场围成的分布区, 湿地类型为草甸、农田及部分沼泽。 (4) 黄鱼泡东南湿地, 该区域位于向海保护区东部实验区及保护区外, 湿地生境与第三分布区相似。

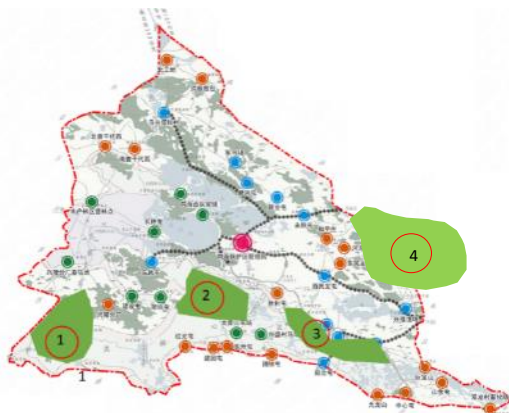


图 1. 迁徙期间的白鹤在向海保护区的主要分布区域

Figure 1. Major staging sites (with numbers circled) of Siberian Cranes at Xianghai National Nature Reserve during migration.

第一分布区在同发滚水坝北部、新发屯以南。第一分布区和第二分布区是春季白鹤数量较大的区域, 主要原因是这两个区域的栖息条件比较理想。其生境主要以湖泊、沼泽湿地及草甸为主, 湖泊沼泽的水

深一般不超过 60cm。春季冰面融化后，植物开始萌发，沼泽湿地长满了白鹤喜食的香蒲、三棱蔗草和扁秆蔗草的根茎类食物植物，还有很多甲壳动物、软体动物、昆虫、小型鱼类等动物性食物，是白鹤春季迁徙停歇补充能量的重要场所。第三分布区主要是草甸和农田，历史监测数据显示白鹤多喜欢在草甸上休息，以蝗虫、草籽、蒲公英、碱蓬等为食，经常在玉米地、绿豆地等农田内以农作物种子为食，也到沼泽湿地觅食蔗草根等植物根茎。第四分布区为草甸、沼泽、浅水等湿地类型，面积约 1 万 hm^2 ，湿地周边有农田分布，非常适宜白鹤在此栖息，白鹤种群在农田和湿地都有采食行为。

2024 年秋季在向海保护区主要栖息地日监测数量最高达 3,235 只，集群场面非常壮观，这是自 1981 年建区以来白鹤种群数量最多的一年。2020 年以来由于向海湿地生境逐渐恢复，浅滩和沼泽类适宜白鹤等涉禽栖息的低水位湿地面积和可采食的湿地植被数量都有所增加，近三年白鹤在湿地生境内觅食比例明显超过了历史年份，湿地食物的增多可能是白鹤种群降低对农田作物依赖的主要原因。



图 1.白鹤、丹顶鹤、白头鹤、灰鹤集群
Figure 1. A mixed flock of Siberian, Red-crowned, Hooded and Eurasian Cranes at Xianghai NNR.



图 2.白鹤种群
Figure 2. A flock of Siberian Cranes at Xianghai NNR.



图 3.白鹤一家
Figure 3. A family of Siberian Cranes at Xianghai NNR.



图 4.大群白鹤种群
Figure 4. A large flock of Siberian Cranes at Xianghai NNR.

Observations of Siberian Cranes during migration at Xianghai Nature Reserve in recent years

Li Lianshan, Xia Zhanping, Liu Lei, Yu Hailong, Wang Haoyan
Jilin Xianghai National Nature Reserve, Jilin 137215

Based on our field observations during migration from 2016-2024, Siberian Cranes mainly used areas Fulaowenpao, Xiaotadianzi, Dongnandianzi of Tuanjietun, Xinfaweidian, Chaoshengtun, Liangfengqiao, and

Huangyupo in the core area of the crane reserve. In spring, the Siberian Cranes usually migrate to Xianghai in late March and leave in early May; in fall, the cranes arrive in early October and depart to their wintering grounds in mid-November. During the spring migration, more species of other birds and their numbers besides the Siberian Cranes are seen at Xianghai, mainly ducks and geese, herons, egrets and storks, and other cranes, such as Oriental Storks, Eurasian Cranes, Hooded Cranes, and Red-crowned Cranes. All these birds have similar feeding habits and habitat requirements; in fall, Siberian Cranes are seen moving around with large flocks of Hooded Cranes or Eurasian Cranes; sometimes some 2-6 Siberian Cranes are alone in families. When migrating south in fall, Siberian Cranes are seen often flying in large groups. The number of Siberian Cranes in fall is significantly higher than that in spring (Table 1), possibly related to the abundant and diverse food resources in the reserve in fall.

There are four major sites of Siberian Cranes at Xianghai during migration (Figure 1): Xinfaweidian in the southwestern Xianghai, with wetland types of marsh, meadow, and open water; (2) a wetland complex of Xiaotadianzi-Fulaowenpao-Jiandipao-Dongnandianzi of Tuanjietun, with wetland types of marsh, meadow, and lakes; (3) a wetland complex of Liangfengqiao-Jianpu-Hailiyingzi-Shenglitun-Changsheng Horse Farm, with wetland types of meadow, farmlands, and some marshes; (4) a wetland in the southeast part of Huangyupo. This is located in the eastern experimental zone of the reserve, and part of the wetland is outside of the reserve. The type of wetland in this site is similar to Site 3.

The first site is in the northern Tongfa Overflow Dam and the south of Xinfatun. The first and second sites have a large number of Siberian Cranes in spring, mainly because their habitat conditions are relatively ideal, mainly including lakes, marshes and meadows. The water depth of the lakes and the swamps generally are less than 60cm. After the ice and snow melt in spring, plants begin to sprout. The wetlands are full of rhizomes of cattails and *Scirpus* that Siberian Cranes prefer to eat. There are also many crustaceans, mollusks, insects, small fish and other animal foods. It is an important place for them to stop and replenish energy during spring migration. The third site is mainly meadows and farmlands. Past data show that Siberian Cranes like to rest on meadows and feed on Grasshoppers, grass seeds, dandelions, and saltwort. They often feed on crop seeds in corn and mung bean fields, as well as in marshes to find rhizomes/roots for food. Site 4 has a wetland complex of meadow, marsh, and shallow water, with an area of 10,000ha, and some croplands are just around the wetland. The wetland-cropland combination provides an ideal habitat for Siberian Cranes, who forage both in cropland and wetland.

In the fall of 2024, a total of 3,235 Siberian Cranes were recorded at Xianghai. This was the largest count of Siberian Cranes since the establishment of the reserve in 1981. Since 2020, the habitat of Xianghai wetland has gradually recovered, and the area of low-water wetlands suitable for wading birds such as Siberian Cranes and the wetland vegetation have increased. In the past three years, the proportion of Siberian Cranes foraging in wetland habitats has significantly exceeded that of historical years, indicating that the increase in wetland food has reduced the dependence of Siberian Crane population on farmland crops.

内蒙野放蓑羽鹤的追踪与分析

虎贵琳¹ 郭玉民¹ 窦华山²

¹ 北京林业大学, 北京 100083

² 内蒙古呼伦湖国家级自然保护区 内蒙海拉尔 021406

2023 年 9 月 19 日, 21 只佩戴 GPS 跟踪器的蓑羽鹤 (*Anthropoides virgo*) 在内蒙古自治区呼伦贝尔市新巴尔虎右旗的乌兰诺尔被放回野外。这些个体经人工孵化、出壳后在圈养环境下长大, 没有野外生存经验。2023 年 10 月 11 日, 6 只个体被回收。2024 年 5 月 15 日, 在内蒙古辉河国家级自然保护区再次将被回收的个体放回野外。

第一次释放的个体中, 除了 6 只被回收外, 5 只个体死亡, 10 只个体情况未知 (表 1)。死亡个体中, G91 和 G99 离开释放地, 在到达天津时只见到它们与绿头鸭 (*Anas platyrhynchos*) 等游禽一起活动于一块湿地中, 附近未见其它鹤类。G99 到达江苏淮安后, 死于洪泽湖边。G91 顺利到达江西鄱阳湖越冬, 春迁时在山东东营撞击电线死亡。其余死亡个体中, G90 离开释放地后, 迁徙至内蒙古阿尔山附近

滞留 20 余天，经现场核实，只有它独自活动。迁徙到呼和浩特市清水河县时数据显示出现问题，经现场核实，死于山腰灌丛，未见外伤。G83 与 G88 则在释放地附近死亡。未知情况的个体中，G87 到达湖北武汉后失去信号，其余 9 个个体的移动情况完全未知。

表 1 佩戴 GPS 跟踪器后在内蒙被放归野外的蓑羽鹤

Table 1. Demoiselle Cranes tagged with GPS transmitters and released into wild in Inner Mongolia

编号 ID	死亡原因 Cause of Death	最后记录位置与日期 Last Recorded Location and Date
*G79 ^D	呛水 drown	河北省唐山市 (2024.10.03) Tangshan City, Hebei Province
*G93 ^D	呛水 drown	河北省唐山市 (2024.10.03) Tangshan City, Hebei Province
G91 ^D	撞击电线 colliding with power line	山东省东营市 (2024.04.13) Dongying City, Shandong Province
G83 ^D	未知 Unknown	内蒙古自治区呼伦贝尔市 (2023.09.19) Hulun Buir City, Inner Mongolia Autonomous Region
G88 ^D	未知 Unknown	内蒙古自治区呼伦贝尔市 (2023.09.18) Hulun Buir City, Inner Mongolia Autonomous Region
G90 ^D	未知 Unknown	内蒙古自治区呼和浩特市 (2023.10.12) Hohhot City, Inner Mongolia Autonomous Region
G99 ^D	未知 Unknown	江苏省淮安市 (2023.10.23) Huai'an City, Jiangsu Province.
*G86 ^S	-	内蒙古自治区赤峰市 (2024.10.10) Chifeng City, Inner Mongolia Autonomous Region
*G92 ^S	-	内蒙古自治区赤峰市 (2024.10.08) Chifeng City, Inner Mongolia Autonomous Region
*G97 ^S	-	西藏自治区那曲市 (2024.10.14) Naqu City, Tibet Autonomous Region.
*G98 ^N	-	内蒙古自治区呼伦贝尔市 (2024.05.16) Hulun Buir City, Inner Mongolia Autonomous Region
G87 ^N	-	湖北省武汉市 (2023.11.06) Wuhan City, Hubei Province.
G80 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.19) Hulun Buir City, Inner Mongolia Autonomous Region
G81 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.17) Hulun Buir City, Inner Mongolia Autonomous Region
G84 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.29) Hulun Buir City, Inner Mongolia Autonomous Region
G85 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.23) Hulun Buir City, Inner Mongolia Autonomous Region
G89 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.17) Hulun Buir City, Inner Mongolia Autonomous Region
G94 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.15) Hulun Buir City, Inner Mongolia Autonomous Region
G95 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.17) Hulun Buir City, Inner Mongolia Autonomous Region
G96 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.23) Hulun Buir City, Inner Mongolia Autonomous Region
D16 ^N	-	内蒙古自治区呼伦贝尔市 (2023.09.26) Hulun Buir City, Inner Mongolia Autonomous Region

编号一栏中，“*”指被回收的个体，“D”指死亡、“S”指存活、“N”指未知。

In the ID column, “*” refers to the recovered individual, “D” refers to death, “S” refers to survival, and “N” refers to unknown.

再次释放的 6 个个体中，G79 和 G93 在 2024 年 10 月初迁徙到唐山的当夜死于溺水，1 个个体情况未知，3 个个体存活（见表 1）。G98 在释放地附近活动量异常，但缺乏证据表明其死亡。2024 年 10 月 5 日，G86 与 G92 一同从释放地向南迁徙，与之同行的还有一只一同被释放的灰鹤；2024 年 9 月 19 日，

G97 持续向西南方向迁徙，10 月 14 日时已到达西藏，可能已经与野生蓑羽鹤混群，有望到达位于印度的越冬地。

在所有死亡个体中，依据跟踪数据结合尸体解剖结果与生境特征能够确定 3 个个体的死因：G79 与 G93 气管内分别吸入 40 ml 和 10ml 左右的水，尸体分别位于深度为 40 cm、70 cm 的池塘中，初步判断为夜间飞行至停落点附近，因对环境生疏、直接落于水位较深的芦苇中，反复挣扎最后呛水而亡；G91 颅骨内出血，对应的皮肤内测可见淤血区（图 1），其陨落处附近有高约 17 m 的南北走向的配电线，可确定为飞行时头部撞击电线后导致颅内出血死亡。



图 1 左：G91 有淤血的颅骨、右：正常颅骨（图源：虎贵琳）

Figure 1. Skull of G91 with congestion (left) in comparison with normal skull (right). Photos by Hu Guilin.

初步看来，将缺乏野外生存经验的蓑羽鹤放归野外充满了挑战，所以很有必要掌握个体释放后的生存与移动情况。结果表明，野放的蓑羽鹤即使具备一定的野外生存与迁徙能力，但死亡的情况还是时有发生。因此，仍然需要优化释放技术以提升个体的存活率，具体建议为：（1）秋、冬季时保证圈养环境下充足的食物供应，让待释放个体积累足够的脂肪与能量；（2）在野外食物资源丰富的春季选择较为适宜的生境进行释放。（3）释放地附近有野生蓑羽鹤种群为宜，这样可以增加个体与之配对或混群的概率，进而使得缺乏野外经验的野放蓑羽鹤得以向野生个体学习生存与迁徙经验。

Tracking and Analysis of Captive-Born Demoiselle Cranes (*Anthropoides virgo*) Released in Inner Mongolia

Hu Guilin¹, Guo Yumin¹, Dou Huashan²

¹ Beijing Forestry University, Beijing 100083

² Hulun Lake National Nature Reserve, Inner Mongolia 021406

On September 19, 2023, 21 GPS-tracked Demoiselle Cranes (*Anthropoides virgo*) were released into the wild at Wulan Nur, Xinbaerhu Youqi County, Hulun Buir City, Inner Mongolia Autonomous Region. These cranes were artificially hatched and raised in captivity, with no prior survival experience in the wild. On October

11, 2023, six of the released were retrieved and later re-released on May 15, 2024, at Huihe National Nature Reserve, Inner Mongolia.

Among the first released individuals, six were retrieved, five died, and the remaining ten are still unknown (Table 1). Among the dead individuals, G91 and G99 left the release site, and were last observed together in a wetland with mallard (*Anas platyrhynchos*) and other waterfowl in Tianjin. Subsequently, G99 died near Hongze Lake after reaching Huai'an, Jiangsu Province. G91 wintered at Poyang Lake in Jiangxi Province but later perished after colliding with an electric wire during spring migration in Dongying, Shandong Province. G90, after leaving the release site, migrated to the Aershan Mountains in Inner Mongolia and was active alone for over 20 days based on on-site verification. It later behaved abnormally based on the data received near Qingshuihe County, Hohhot City, where it was found deceased later in shrubbery without visible external injuries based on on-site verification. G83 and G88 died near the release site. Of the individuals with unknown status, G87 lost signal after reaching Wuhan, Hubei Province, while the movements of the remaining nine individuals were entirely unable to be documented.

Of the six individuals re-released, G79 and G93 drowned during their migration to Tangshan in early October 2024. The status of one individual remains unknown, while the three others are confirmed alive (Table 1). G98 exhibited abnormal activity near the release site, but there is insufficient evidence to confirm whether it is dead or alive. On October 5, 2024, G86 and G92 began migrating south together, accompanied by a Eurasian Crane (*Grus grus*) that had been released alongside them. G97, after continuous southwestward migration starting on September 19, 2024, reached Tibet by October 14 and might have joined with wild Demoiselle Cranes, likely heading toward wintering grounds in India.

Among the deceased individuals, the causes of death for three were identified through tracking data, autopsy results, and habitat analysis. G79 and G93 inhaled approximately 40 ml and 10 ml of water, respectively, while their bodies were found in ponds measuring 40 cm and 70 cm of water in depth. It is preliminarily concluded that, during night flight, their unfamiliarity with the environment led them to land in deep water among the reeds and lotus pond, resulting in drowning after repeated struggles. G91 exhibited signs of intracranial hemorrhage, with a visible bruise on the corresponding area of skin (Figure 1). This sustained fatal head trauma might have been caused by colliding with a nearby north-south oriented powerline, approximately 17 meters high, during flight.

The release of Demoiselle Cranes lacking wild survival experience poses significant challenges, underscoring the need for careful monitoring of their post-release survival and movement. While the released cranes demonstrate some wild survival and migration capabilities, mortality still occurs. Therefore, optimizing release strategies is essential to enhance individual survival rates and facilitate normal migration. Specific recommendations include: (1) ensuring adequate food supply during autumn and winter to allow individual cranes to accumulate sufficient fat and energy. (2) In spring, when wild food resources are abundant, selecting suitable release habitats is crucial. (3) Additionally, proximity of the release site to established wild Demoiselle Crane populations can increase the likelihood of pairing and social integration, enabling released individuals to acquire survival and migration skills from experienced wild ones.

[Translation of this article by Hu Guilin]

鄱阳湖鹤类食源性植被恢复新模式——刺苦草有性繁殖培育途径探索

罗浩¹ 徐志文¹ 于倩² 王晓龙³ 肖克炎⁴ 龚磊强¹ 詹慧英¹ 余定坤¹ 黄锦波¹ 祁红艳¹ 李浙² 毛梦蕾⁵

¹江西鄱阳湖国家级自然保护区管理局, 南昌 330038

²国际鹤类基金会北京代表处, 北京 100125

³中国科学院南京地理与湖泊研究所, 南京 210008

⁴湖北秀湖植物园, 湖北云梦 432503

⁵江西农业大学, 南昌 330045

一、项目背景

鄱阳湖是中国第一大淡水湖, 国际重要湿地, 每年到鄱阳湖栖息的候鸟约 70 万只, 是白鹤最重要的越冬栖息地。近些年, 由于极端气候等因素的影响, 鄱阳湖沉水植被出现了严重的退化态势, 以沉水

植被块茎为食的白鹤在湖区无法获取足够的食物，出现了扩散至湖区周边农田及藕塘觅食的行为，这对白鹤在鄱阳湖的安全越冬和禽流感防控等带来了巨大挑战。

苦草是沉水植物，我国常见的苦草有三种：苦草 (*Vallisneria natans*)、密叶苦草 (*V. denserrulata*) 和刺苦草 (*V. spinulosa*)。第一种通过种子繁殖，不形成块茎，通常用于水产养殖。第二种是四季常绿植物，也不结块茎，主要用于城市水体净化。只有第三种——刺苦草，能具备种子（有性）和块茎（无性）繁殖，但由于刺苦草商业价值低，市场上很难通过购买获得。

刺苦草在鄱阳湖分布广泛，它主要通过块茎（冬芽）进行无性繁殖，形成的块茎（冬芽）是白鹤在鄱阳湖越冬的重要食物资源。

近年来，由于极端气候等因素的影响，鄱阳湖的刺苦草出现了严重退化的现象。1999 年至 2022 年，江西鄱阳湖国家级自然保护区与国际鹤类保护基金会（ICF）的合作监测（以沙湖为例）表明：近年来，刺苦草的生物量一直处于较低的水平（图 1）。

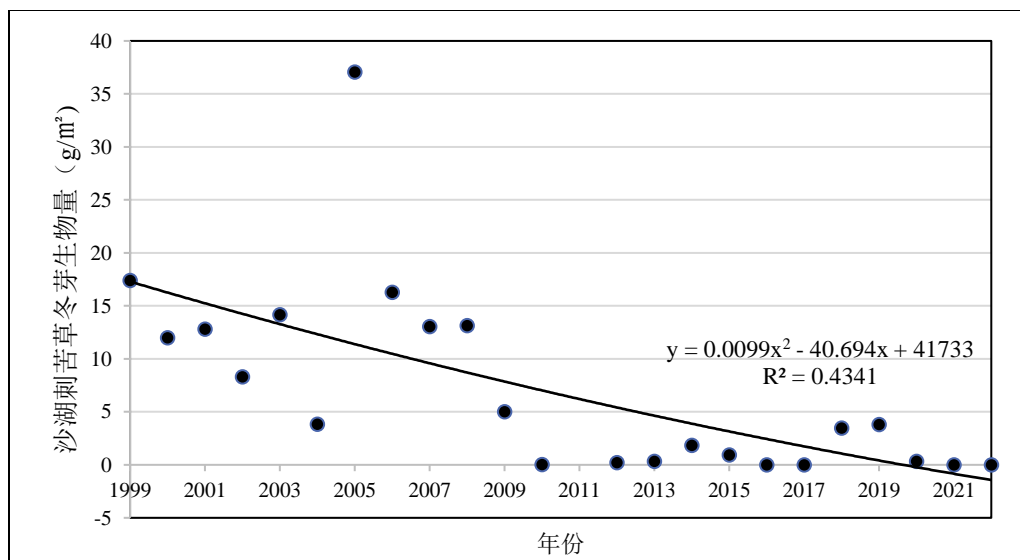


图 1 沙湖 1999--2022 年刺苦草冬芽生物量变化趋势图

Figure 1. Biomass of *Vallisneria spinulosa* tubers from 1999-2022 in Shahu at Poyang Lake National Nature Reserve.

为了恢复鄱阳湖鹤类的食源性植物，鄱阳湖国家级自然保护区在国际鹤类基金会的大力支持下，与中国科学院南京地理与湖泊研究所、湖北秀湖植物园共同开展了白鹤食源性水生植物——刺苦草种源野外培育工作，这是国内首个鹤类食源培育模式项目，创建了刺苦草种子库。

二、分析与方法

（一）现状分析

目前在鄱阳湖区开展的水生植被恢复工作，主要通过移栽幼苗完成，且恢复面积都相对较小，主要存在以下几个方面的风险：

一是水位难以控制。鄱阳湖属吞吐型湖泊，水位难以控制，过高的水位可能对沉水植物的生长带来抑制作用，甚至死亡，会对项目的实施成果带来不利影响，而过低的水位将导致刺苦草营养体（植株）干枯而死。所以合理的水位控制是刺苦草完成生长周期的必要条件。

二是鱼类取食影响。草鱼等植食性鱼类是影响沉水植被生长的重要因素之一，沉水植被在鄱阳湖的生长一定会受到鱼类取食的损耗，只有当沉水植被的生长量大于鱼类的取食需求时，沉水植被的恢复才能得到有效保障。

三是成果延续较难。即使当年通过购买沉水植被植株进行移栽的方式进行了恢复，第二年如果再遭遇极端气候等因素的影响，也可能对成果的延续带来不利影响。

（二）技术方法

为了减少不利因素对项目成果带来的负面影响，更大限度的降低项目实施风险，我们建立了培育基地，并开展了刺苦草的种源培育研究。(图 2、图 3)。

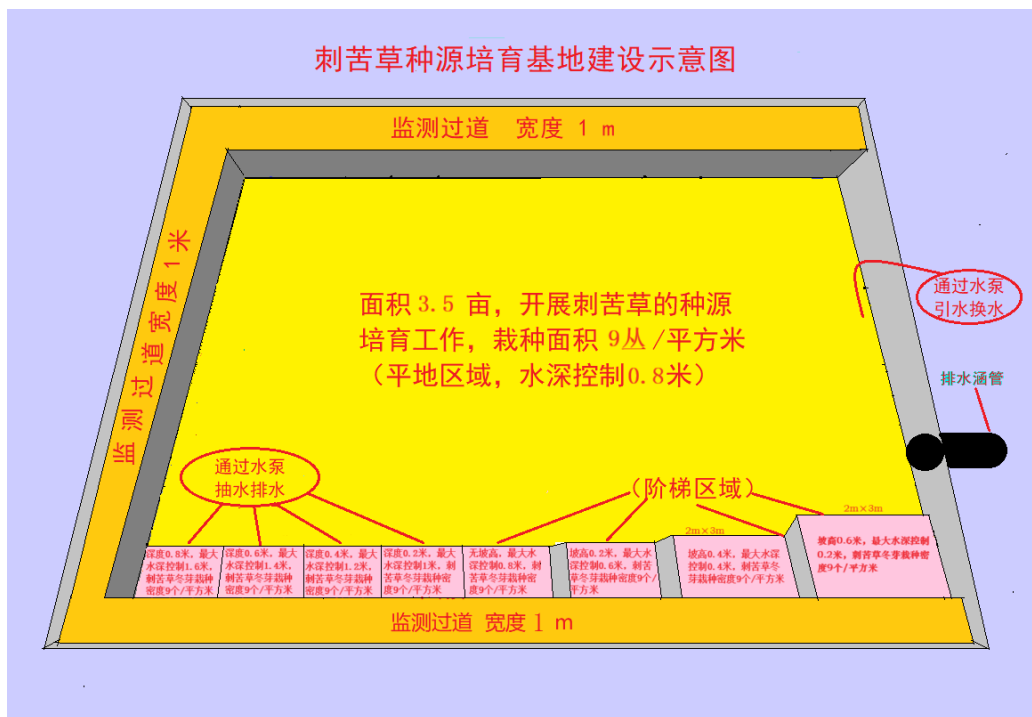


图 2 刺苦草种源培育基地建设示意图
Figure 2. Schematic diagram of seed source cultivation base.

培育基地面积 3.5 亩，无性繁殖区（培育冬芽）的栽种密度为 9 丛/m²（每丛 3 株刺苦草），有性繁殖区通过生境改造，完成了 8 个阶梯的建设任务。其中，每个阶梯面积 6m²，水深控制分别为 0.2m、0.4m、0.6m、0.8m、1.0m、1.2m、1.4m、1.6m。



图 3 刺苦草种源培育基地建设照
Figure 3. Project site preparation.

根据 2020–2023 年刺苦草的培育经验，培育工作需严格落实三个方面的管控：一是严格控制食草性

鱼类，减少刺苦草的损耗；二是加强外来入侵物种的生物防治，如福寿螺等；三是根据刺苦草的生长情况，适时科学调控水位。



图 4 刺苦草块茎（冬芽）
Figure 4. Winter buds of *Vallisneria spinulosa*

本研究除了无性繁殖培育刺苦草块茎（冬芽）外，将重点攻克方向放在有性繁殖（种子）培育，旨在通过建立鄱阳湖种子库，为大规模恢复鄱阳湖水生植被提供基础。

有性繁殖培育具有以下几方面的优势：

1、种子资源获取量大。通过对刺苦草有性繁殖产生的果实进行定量分析，22 个果实样本，平均每个果实含有种子 289.9 粒，与理论数据的 300 粒较为接近。（图 5）。由于果实中有大量的种子，通过有性繁殖培育，能迅速建立种子库，用于大规模恢复湖面水生植被。由于刺苦草种子密度大于水，高密度种子可以在水中自然沉降，播种成本将显著降低。因此，即使当年由于条件不利导致刺苦草恢复失败，也可以通过多年连续播撒实现种子库恢复的目的。

2、种子萌发率高。研究发现在 20~35℃ 范围内刺苦草属种子都保持较高的萌发率，达到 80% 以上。综合考虑上述研究结果，20~30℃ 日均温度是苦草属种子萌发较为适宜的温度，在恢复苦草时，可以参照此温度范围撒播种子，保证苦草种子的快速萌发。

3、可度过实生苗期。刺苦草种子萌发的芽非常脆弱，俗称“实生苗”，在过水性较强的水域易折断，不易存活。但在 3 月至 4 月，鄱阳湖的碟形湖与主湖区断开，过水性弱，正好符合实生苗生长环境所需。



图 5 刺苦草果实样本及种子样本
Figure 5. Fruit and seed samples of *Vallisneria spinulosa*

三、结果

(一) 无性繁殖成果

2023 年 11 月 10 日，鄱阳湖保护区、国际鹤类基金会、湖北武汉秀湖植物园共同就种源培育工作进行检查，现场多次采样结果显示，平均冬芽含量约 850 颗/m²，相比于种植初期每平米 9 颗冬芽的栽种量，扩大到 90 余倍。

(二) 有性繁殖成果

2024 年 1 月 30 日，鄱阳湖保护区就培育基地 8 个阶梯区的刺苦草有性繁殖情况进行采样检查，成果情况如下：



图 6 不同水深条件下刺苦草的果实数量

Figure 6. Number of *Vallisneria* fruits at different water depth

经现场采样，1.6 m 水深区收集到的刺苦草果实最多，但为了降低成本，同时便于技术推广，建议采用 0.8 米至 1.2 m 水深进行人工控制即可。



图 7 不同水深条件下刺苦草的果实数量

Figure 7. Fruits of *Vallisneria* at different water depth



图 8 工作人员在不同水深条件下采集刺苦草果实。

Figures 8 and 9. Collecting *Vallisneria* fruits



图 9 在野外挖取刺苦草种源

四、问题及应对策略

在刺苦草的培育过程中，我们发现了以下问题并提出了应对策略：

(1) 物种选择问题

2020 年，鄱阳湖保护区在开展刺苦草种源培育初期，发现刺苦草品种存在问题，市面上尝试了多家供苗商的货源，发现均不是刺苦草品种。

应对策略：通过野外人工挖取收集。

(2) 草食性鱼类胁迫

2021 年，鄱阳湖保护区在开展刺苦草种源培育过程中，基地遭遇了植食性鱼类的入侵，本已生长茂盛的刺苦草损失严重。

应对策略：在培育基地建设初期就严格控制鱼类的入侵，后期管理维护过程中，定期对鱼类进行捕捞清理。

(3) 科学控水

水位调节对刺苦草生长至关重要。2022 年，鄱阳湖保护区在开展刺苦草种源培育过程中，遭遇了罕见的极端高温干旱天气，基地水源蒸发量持续加大，由于得不到及时补给，无法控制水位，被迫进行了移栽。

应对策略：在种源培育基地建设初期，建设补水设施，务必确保水位可调控。

(4) 外来入侵种防治

2023 年 9 月，刺苦草种源培育基地遭遇过一次较大范围的福寿螺侵害，刺苦草叶片损失近 2/3，对冬芽及果实的形成带来了直接的影响。

应对策略：通过生物防治的方法解决，即投放青鱼等食螺类鱼，但数量不宜过多。

五、结论

沉水植物刺苦草的种源培育是鄱阳湖鹤类食源恢复探索的新模式，通过对其无性繁殖和有性繁殖的双向研究，不断扩大种子库储备，将为鄱阳湖湿地植被恢复提供重要保障。

A Pilot Experiment of Restoring Foodborne Vegetation for Wintering Cranes at Poyang Lake---- Exploration of Sexual Reproductive Cultivation Pathways for *Vallisneria spirulosa*

Luo Hao¹, Xu Zhiwen¹, Yu Qian², Wang Xiaolong³, Xiao Keyan⁴, Gong Leiqiang¹, Zhan Huiying¹, Yu Dingkun¹, Huang Jinbo¹, Qi Hongyan¹, Li Zhe², Mao Menglei⁵

1 Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

2 International Crane Foundation Beijing Office, Beijing 100125

3 Nanjing Institute of Geography and Limnology of Chinese Academy of Sciences, Nanjing 210008

4 Hubei Xiu Lake Botanical Garden, Yunmeng 432503, Hubei

5 Jiangxi Agricultural University, Nanchang 330045

1. Introduction

Poyang Lake is the largest freshwater lake in China and an internationally important wetland. It is a winter home for approximately 700,000 migratory birds, including the largest population of Siberian cranes in the world. In recent years, due to extreme weather and other factors, the submerged vegetation in Poyang Lake has experienced serious degradation. The Siberian cranes, which mainly feed on submerged vegetation tubers, have been unable to acquire sufficient food in the natural wetland at Poyang Lake, and shifted to forage on farmlands and lotus ponds in the lake basin. This is a great challenge for the natural resource management authorities to maintain the long-term survival of the Siberian cranes in the wild and prevent from avian influenza outbreak for large numbers of wintering waterbirds at Poyang Lake.

To address the problem of aquatic plant deterioration, the Poyang Lake National Nature Reserve (PLNR) has conducted thorough discussions and assessments with relevant institutions on the situation and decided focusing

on the experiment by documenting the seed bank of *Vallisneria spinulosa*, a most common species of submerged plants in Poyang Lake.

There are three species of *Vallisneria* China, *V. natans*, *V. spinulosa*, and *V. denseserrulata*. *V. natans* propagates in seed form without producing winter buds and is generally used in aquaculture; *V. denseserrulata* is an evergreen variety that grows all year round and does not produce winter buds. It is mainly used for purifying urban water bodies.

Vallisneria spinulosa is a dominant species in aquatic vegetation communities at Poyang Lake. Widely distributed in the lake basin, it mainly completes its life cycle by asexual reproduction to form tubers. It is the only one of the three *Vallisneria* species that can form tubers to provide a source of food for wintering Siberian cranes. Due to extreme weather and other factors in recent years, the submerged vegetation represented by *Vallisneria spinulosa* in Poyang Lake has been continuously degraded, as shown below for Shahu (Figure 1), one of the nine sub-lakes within PLNR over the past 20 more years, and its seed bank has been consumed year by year and cannot be replenished effectively.

In order to restore the food-source vegetation for cranes in Poyang Lake, the Poyang Lake Nature Reserve, with the strong support of International Crane Foundation, Nanjing Institute of Geography and Limnology of Chinese Academy of Sciences and Hubei Xiu Lake Botanical Garden, carried out the field cultivation of *Vallisneria spinulosa*, a food plant for Siberian Cranes. This is the first crane food source cultivation project in China, and a *Vallisneria spinulosa* seed bank was established.

2. Methods

2.1 Current Situation Analysis

At present, the restoration of submerged vegetation in the Poyang Lake has been mainly undertaken through transplanting *Vallisneria* seedlings, and the project site is relatively small, mainly due to the following challenges: (1) water depth is hard to control. Hydrology at Poyang Lake is highly dynamic between and within years and the water level is difficult to control. Extremely high waters may prevent submerged plants from growing, or even lead to death. (2) fish consumption. Fish feeding of plants is one of the important factors affecting the growth of submerged vegetation. When the growth of submerged vegetation exceeds the feeding demand of fish, the restoration of submerged vegetation can be effectively sustained, or *vice versa*. (3) difficult to sustain the project. Even if recovery is carried out in the first year, encountering extreme weather conditions in the second year may still have a negative impact on the continuation of the results.

2.2 Technical Methods

In summary, in order to further reduce the negative impact of adverse factors on project results, carrying out submerged vegetation source cultivation work can save costs to a greater extent, and reduce the risks caused by unexpected losses of the project through self-sufficiency.

We chose a 3.5-mu sub lake as project site in the lake basin, and divided the sub lake into two areas -- asexual and sexual reproduction (see Figures 2 and 3).

A cultivation base of 3.5 mu was constructed, with the planting density of the asexual reproduction area (cultivation of winter buds) was 9 clumps/m² (3 *Vallisneria spinulosa* in each clump), and the sexual reproduction area had 8 zones through habitat transformation. Among them, each zone had an area of 6m², and the water depth was controlled at 0.2m, 0.4m, 0.6m, 0.8m, 1m, 1.2m, 1.4m, and 1.6m respectively.

According to the cultivation experience of Poyang Lake Nature Reserve from 2020 to 2023, the cultivation work needed to strictly implement three aspects of control: first, strictly control herbivorous fish to reduce the loss of *Vallisneria spinulosa*; second, strengthen the biological control of invasive species, such as Golden Apple Snail; third, scientifically regulate the water level in a timely manner according to the growth of *Vallisneria spinulosa*.

In addition to asexual reproduction and cultivation of *Vallisneria spinulosa* tubers (winter buds), this study focused on sexual reproduction (seed) cultivation, aiming to provide a basis for large-scale restoration of aquatic vegetation in Poyang Lake by establishing a Poyang Lake seed bank.

There were three advantages of sexual reproduction of *Vallisneria spinulosa*. Sexual reproduction cultivation was thus employed in 2023, as it has three advantages in carrying out large-scale restoration of seed banks in Poyang Lake:

(1) High Seed Content

Through quantitative analysis of the fruits produced by sexual reproduction of *Vallisneria spinulosa*, 22 fruit samples were collected, with an average of 289.9 seeds per fruit, which is close to the theoretical data of 300 seeds.

(2) High Germination Rate

It was found that within the temperature range of 20-35 °C, seeds of *Vallisneria spinulosa* have a high germination rate, reaching over 80%.^[2] Considering the results that we have discussed, the most suitable temperature for the germination of *Vallisneria spinulosa* seeds is 20-30°C, which we use as our temperature range to sow seeds and ensure the rapid germination of them.

According to meteorological data from Poyang Lake, from March to April, as time goes on, the temperature continues to rise, with more and more days exceeding 20°C, which meet with the temperature requirements for seed germination.

(3) Can pass through the Seedling Stage

Seedlings of *Vallisneria spinulosa* that have just germinated are prone to breakage and not easy to survive in fast running water. Small sub lakes in Poyang Lake from March to April, fortunately, begin to separate from the main lake, and their surface water moves quite slow, which perfectly meets with the needs of the growth environment for seedlings.

In summary, sexual reproduction of submerged vegetation can effectively restore the foodborne vegetation of cranes in Poyang Lake, which will be a new model.

3. Results

(1) Asexual Reproduction Results

On November 10, 2023, the project participating parties jointly inspected the project site. The inspection team measured the density of tubers generated, counting an average of 850 tubers/m², over 90 times higher than the planting density of tubers (or 9 winter buds per square meter) in the asexual reproduction area in the project site.

(2) Sexual Reproduction Achievements

On January 30, 2024, the Poyang Lake National Nature Reserve conducted an inspection of the fruit of *Vallisneria spinulosa*. The number of fruits increased as water depth got deeper and deeper.

In the project site, the area with a water depth of 1.6 meters collected the most fruits of *Vallisneria spinulosa*. However, in order to reduce costs and facilitate technical promotion, it is recommended to use the water depth from 0.8 to 1.2 meters for control.

4. Problems and Response Strategies

(1) Wild resources are the most effective source for obtaining the seedlings of *Vallisneria spinulosa*

In 2020, when we were carrying out the cultivation of *Vallisneria spinulosa*, we found that there were problems with the variety of *Vallisneria* in cultivation. We tried multiple suppliers of seedlings on the market and found that none of them were the correct varieties.

Response strategy: manual collection in the field.

(2) Herbivorous fish are an important stress factor for the successful cultivation of *Vallisneria spinulosa*.

In 2021, during cultivation in the Poyang Lake National Nature Reserve, the site was invaded by herbivorous fish, causing severe damage to the *Vallisneria spinulosa* which had grown very well already.

Response strategy: in the early stage of project site construction, the invasion of herbivorous fish should be controlled strictly, and during the subsequent management and maintenance phases, herbivorous fish should be fished and cleared regularly.

(3) The regulation of water level is crucial

In 2022, when we were carrying out the cultivation, the weather became extremely hot and dry, and the water in the site was lost constantly and dramatically due to the evaporation. Due to the inability to control the water level, *Vallisneria spinulosa* was forced to transplant.

Response strategy: Select a base that can control water level to carry out the cultivation work.

(4) Strengthen the prevention of invasive alien species

In September 2023, the project site suffered a large-scale invasion by *Pomacea canaliculata*, resulting in nearly two-thirds of the loss of *Vallisneria spinulosa*, which had a serious impact on the growth of tubers and fruits. If there were no *Pomacea canaliculata*, the results in 2023 might have been even better.

Response strategy: Use biological methods to control by releasing carnivorous fish for *Pomacea canaliculata* control, but the quantity should not be too large.

5. Conclusions

The seed cultivation of the submerged vegetation *Vallisneria spinulosa* is a new model for exploring the restoration of food sources for cranes in Poyang Lake. Through two-way research on its asexual and sexual

reproduction, the seed bank reserves are continuously expanded, which will provide important guarantees for the restoration of vegetation in the Poyang Lake wetlands.

江西南矶湿地 2023-2024 年越冬期 4 种鹤种群数量动态和空间分布变化

余冠军 汪凌峰 刘艳芳 钱建鑫 邵菁 杨小兰
江西鄱阳湖南矶湿地国家级自然保护区管理局, 南昌 330100

鄱阳湖位于长江中游南岸, 江西省北部, 是我国面积最大的淡水湖。鄱阳湖多样的湿地生境, 独特的演替过程, 构成了江西鄱阳湖南矶湿地国家级自然保护区 (简称南矶保护区) 较为完整的湿地生态系统。保护区处在东亚-澳大利西亚迁飞区, 是重要的水鸟越冬地和中继站, 在候鸟保护上具有国际意义。为全面了解掌握南矶湿地保护区内越冬候鸟的种群数量及空间分布, 我们于 2023 年 9 月至 2024 年 4 月在每月 8 日、18 日、28 日对该保护区内 21 个越冬候鸟重点分布碟形湖群进行了 24 次越冬期鸟类同步调查与监测 (逢八监测)。

一、研究地概况

南矶保护区于 2008 年 1 月晋升为国家级保护区, 于 2020 年 2 月被认定为国际重要湿地, 同时也是长江中下游湿地保护网络成员单位。

保护区位于鄱阳湖主湖区的南部, 处在赣江北支、中支和南支汇入鄱阳湖冲积形成的三角洲前缘, 保护区总面积 333 Km^2 , 主要保护对象是赣江口—鄱阳湖复合湿地生态系统以及赖以生存的野生动物资源。

南矶保护区水体面积年内和年际间变化很大。每年丰水季节, 保护区内除了南山和矾山两岛出露外其余部分均为水体覆盖, 水体面积大致为 32,894 hm^2 , 占整个保护区总面积的 98.78%。枯水季节, 水位下降, 保护区内呈现河、湖、洲滩交错的湿地景观, 此时水体面积大致为 12640 hm^2 , 占整个保护区总面积的 37.96%。

二、研究方法

2023 年-2024 年越冬期鸟类同步调查与监测共分 5 条样线, 时间跨度 8 个月, 每月定期进行三次调查, 如遇阴雨大雾天气顺延或提前一天。调查采用定点统计的方法, 采用单筒望远镜 (25-60 \times 65)、相机、计数器等工具记录调查过程中遇见鸟类的种类、数量、分布情况。

数据处理采用 Excel 2003 和 SPSS19.0 进行数据的统计分析, 文中数据表示为平均值 \pm 标准差, 显著性水平设置为 $P<0.05$ 。

三、结果与分析

1. 越冬期栖息数量动态

1.1 越冬期白鹤数量动态

白鹤在越冬期的栖息数量呈现为先增加后减少的态势, 均值为 738.80 ± 671.96 , 峰值出现在 2023 年 11 月 18 日, 为 1986 只。白鹤在越冬期开始时为集群大批量抵达保护区, 而在越冬期即将结束时为小幅振荡, 缓慢减少。对上述现象考虑为随着保护区食物量的减少, 白鹤迁往鄱阳湖周边藕田、农田进行觅食, 这一原因有待结合全鄱阳湖越冬候鸟同步调查进行分析与探讨。

从图 1 中可以发现, 白鹤在保护区内的越冬期为 2023 年 9 月中下旬至 2024 年 4 月上旬, 在 12 月至次年 1 月的集中越冬期内都稳定存在于保护区内的碟形湖群中。2024 年 2 月 18 日出现了一波小高峰, 检验数据后发现为白鹤种群北迁的一种集群行为。结合鄱阳湖区周边县区气象资料发现, 2024 年 2 月 8 日鄱阳湖区为大雾转阴天气, 这一天气现象导致调查人员无法观察到湖区较远距离的白鹤种群分布, 因鄱阳湖区相似体形与颜色的鸟类较多 (白琵鹭、大白鹭、小天鹅等), 因此本次调查的未识别鸟类较多, 导致本次调查数量较少。

从近两年的监测情况看, 2023-2024 年调查到的保护区白鹤种群峰值数量为 1,986 只, 与 2022-

2023 年峰值 524 只相比有较大幅度上升，上升了 1462 只，上升比例为 279%。

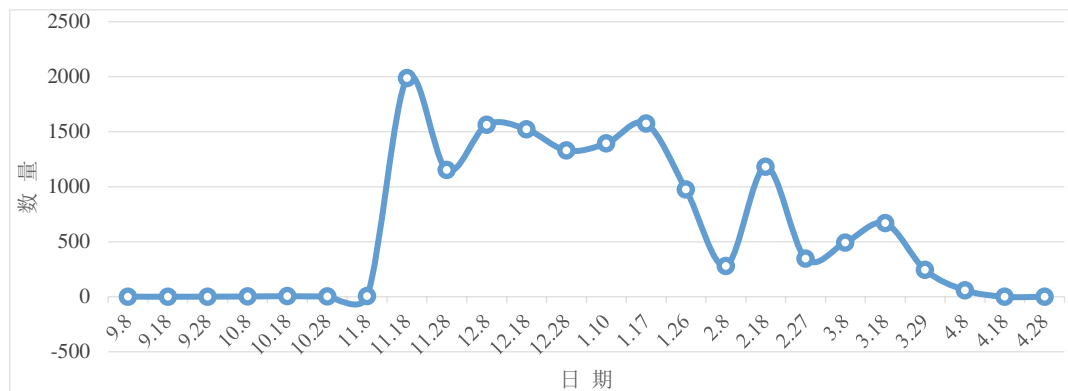


图 1. 2023-2024 越冬期白鹤在南矾保护区的数量
Figure 1. Number of Siberian Cranes at Nanji Reserve in winter 2023/24

1.2 越冬期灰鹤数量动态

灰鹤在越冬期的栖息数量呈现为先增加后减少的态势，峰值出现在 2023 年 11 月 8 日，为 1,686 只。

从图 2 中可以发现，灰鹤在保护区内的越冬期为 2023 年 10 月下旬至 2024 年 3 月下旬，在 12 月至次年 1 月的集中越冬期内都稳定存在于保护区内的碟形湖群中。

灰鹤在保护区内的数量分布呈现一种波浪式的分布，考虑原因为灰鹤主要取食碟形湖内的新鲜苔草、下江菱零菜等，主要栖息环境为碟形湖周边草洲，因此需要不断变换选择湖泊周边的觅食地。

从近两年的监测情况看，2023-2024 年调查到的保护区灰鹤种群峰值数量为 1944 只，与 2022-2023 年峰值 2070 只相比无较大变化。

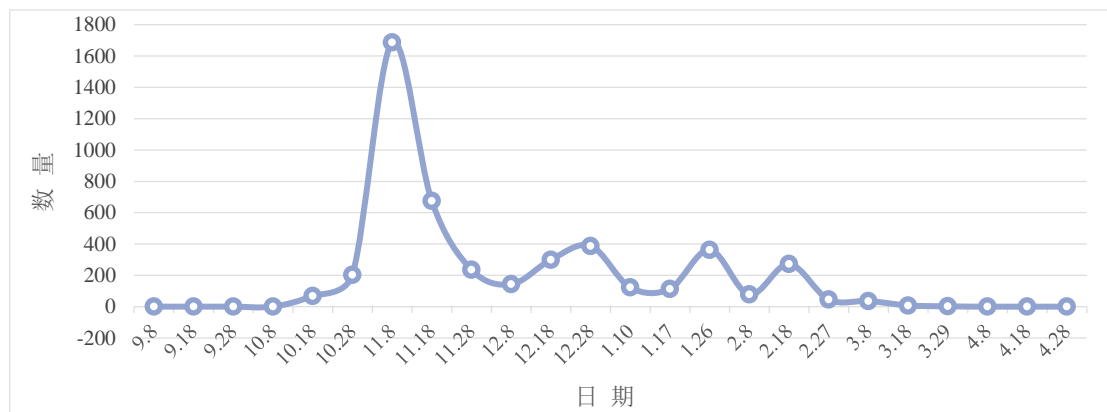


图 2. 2023-2024 越冬期灰鹤在南矾保护区的数量
Figure 2. Number of Eurasian Cranes at Nanji Reserve in winter 2023/24

1.3 越冬期白枕鹤数量动态

白枕鹤在越冬期的栖息数量呈现为先增加后减少的态势，峰值 51 只；从图 3 中可以发现，白枕鹤在保护区内的越冬期为 2023 年 11 月中旬至 2024 年 3 月上旬，整个越冬期波动性不大，较白鹤、灰鹤在鄱阳湖的越冬期短。

从近两年的监测情况看，2023-2024 年调查到的保护区白枕鹤种群峰值数量为 51 只，与 2022-2023

年峰值 55 只相比无较大变化。

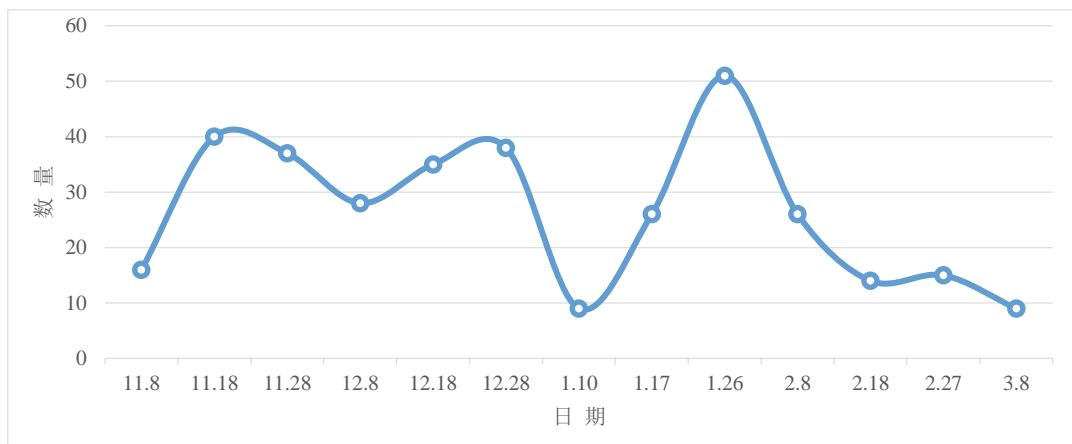


图 3. 2023-2024 越冬期白枕鹤在南矶保护区的数量

Figure 3. Number of White-naped Cranes at Nanji Reserve in winter 2023/24

1.4 越冬期白头鹤数量动态

白头鹤在越冬期的栖息数量呈现为稳定态势，峰值 28 只；由于白头鹤有集小群分布的习性，2024 年 1 月 26 日，在保护区红星湖发现了一群 26 只群体。从图 4 中可知，白头鹤由于群体数量较小，在保护区内趋势不明显。

从近两年的监测情况看，2023-2024 年调查到的保护区白头鹤种群峰值数量为 28 只，与 2022-2023 年峰值 38 只相比有减少趋势。

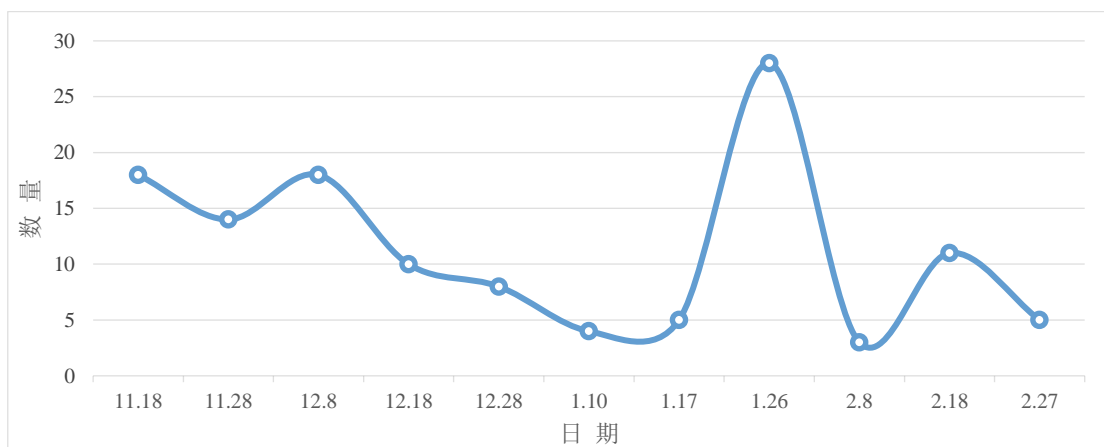


图 4. 2023-2024 越冬期白头鹤在南矶保护区的数量

Figure 4. Number of Hooded Cranes at Nanji Reserve in winter 2023/24

2. 越冬期碟形湖空间分布

2023-2024 年越冬期间，湖泊承载量较高的有神宕湖、凤尾湖、战备湖、上北甲湖。上述 4 个湖泊的高程较高，均为 13 m 以上，在鄱阳湖的枯水期间分布大量的草洲植被。分析可知，湖泊面积大小对鹤类的承载量没有相关性 ($P=0.564$, $r=0.103$)，湖底高程与鹤类的承载量具有中度的相关性 ($P=0.01$,

$r=0.655$)。

表 3. 四种鹤类碟形湖空间分布

Table 3. Number of Siberian, Eurasian Hooded, and White-naped Cranes combined in sub lakes at Nanji Wetland Reserve

碟形湖名称 Lake	均值 ^a (只) Average of birds	标准差 SD	碟形湖高程 (m) Elevation/m ASL	面积 (hm^2) Area/ha	承载力 ($\text{hm}^2/\text{只}$) Capacity (ha/birds)
涧塘岭	275.33	381.27	13.2	628.35	2.36
草皮角	73.28	173.75	12.3	524.99	9.55
南深湖	44.50	145.93	12.5	357.19	10.70
红星湖	56.83	50.14	12.6	501.78	11.33
三泥湾	93.00	111.11	12.2	891.58	12.67
上茶湖	23.00	31.91	12.7	376.24	21.81
白沙湖	34.28	53.87	11.8	582.89	22.67
下北甲湖	22.17	26.25	12.2	404.91	24.36
常湖	35.06	47.80	12.5	675.87	25.67
珠湖	3.06	5.97	12.9	81.37	35.51
上段湖	33.17	92.42	13.6	1138.78	45.78
北深湖	16.94	22.67	13.4	603.35	47.48
下茶湖	15.78	18.93	12.7	600.67	50.76
凤尾湖	7.72	14.79	13.3	358.93	61.97
战备湖	3.06	3.28	13.7	269.19	117.46
上北甲湖	7.61	10.53	13.4	774.71	131.87
神宕湖	17.44	15.61	13.4	2200.75	168.21
赣江尾闾	15.33	10.74		河流	
赣江中支	171.89	378.62		河流	
太子河	13.06	43.26		河流	
东湖	34.72	80.39		开放性湖泊	

a - 均值为整个越冬期 4 种鹤类数量平均值。碟形湖高程为黄海高程。

2023-2024 年越冬期南矶保护区鹤类主要集中在保护区核心区的涧塘岭、草皮角、红星湖、三泥湾，保护区碟形湖分布的鹤类占调查总数的 78.26%，保护区周边农田集中分布的鹤群占 15.42%，其余分布于保护区赣江中支、赣江尾闾及太子河内，与 2022-2023 年越冬期差异不大。

分析显示：(1) 白鹤在涧塘岭、三泥湾、草皮角、红星湖分布较多，保护区碟形湖分布占比较高，为 81.89%，此外在保护区临近周边的稻田也有种群分布，占比 9.18%，其余越冬种群分布在河道及开放水域中。(2) 灰鹤在草皮角、上茶湖、下茶湖、红星湖分布较多，碟形湖分布的灰鹤数量占比为 37.21%，在保护区周边稻田中有较大种群的灰鹤分布，占比为 35.49%，在保护区其它洲滩也有较大比例存在。(3) 白枕鹤在上茶湖、草皮角、红星湖、上段湖有较多分布，碟形湖分布的白枕鹤数量占比为 66.56%，在保护区其它河道、开放水域分布占比为 33.44%，保护区周边稻田没有发现。(4) 白头鹤在红星湖、草皮角、北深湖、凤尾湖有较多分布，白头鹤在保护区碟形湖分布较多，占比为 81.81%，保护区其它水域占比 18.19%。

对比 2022-2023 年越冬期，保护区碟形湖承载力显著上升的碟形湖有红星湖、南深湖；承载力显著下降的碟形湖有上北甲湖、东湖。

四、讨论

4.1 四种鹤类的种群数量动态

对比上一年度，2023-2024 年越冬期南矶保护区鸟类同步调查与监测中，白鹤分布数量有较大程度的增长，2022-2023 年冬季白鹤数量偏低的原因，是因为 2022 年夏季丰水期时鄱阳湖长时间受极端干旱天气的影响，沉水植被无法生长发育，导致食物匮乏，加之鄱阳湖周边人工食堂的建立，最终导致大量的白鹤等越冬水鸟在鄱阳湖周边的农田（余干插旗洲）、人工湿地（南昌五星藕田）等区域觅食。

灰鹤的分布数量有显著性下降，比上一年度数量减少 55.37%，导致这一现象的原因为 2022 年的极端干旱天气导致洲滩植被生长状况受限，保护区及时采取了关闸控水措施，随着碟形湖水量的蒸发与沉

降, 逐渐显露出新鲜的食源地, 苔草、南荻等洲滩植被得以较快生长, 吸引大量灰鹤前来觅食; 2023 年鄱阳湖丰、枯水期的水文节律合适, 退水时间较为正常, 苔草、南荻等洲滩植被生长状况良好, 以家庭为单位的灰鹤有较多的食源地可供选择, 较为分散。

白枕鹤的分布数量与上年度相比未有显著性差异, 整体数量与分布上保持稳定, 2023–2024 年度的峰值 (51 只) 与上一年度 (55 只) 相差不大。

白头鹤的分布数量与上年度相比有下降趋势, 下降幅度为 49.79%。考虑原因为极端干旱天气影响和保护区采取的控水措施有关, 具体原因有待进一步研究。

4.2 白鹤、灰鹤空间分布分析

近年来气候变化导致的鄱阳湖水文节律异常, 对鄱阳湖区稳定存在的白鹤、灰鹤产生了不同程度的影响。

白鹤是典型涉禽, 全球 98% 的白鹤种群以鄱阳湖及其周边区域为主要越冬地, 主要取食苦草冬芽等沉水植物, 因此鄱阳湖的水文节律对其在鄱阳湖区域的空间分布变化具有极强的相关性。2022 年, 鄱阳湖区白鹤种群数量的减少主要原因是自然湿地中沉水植被的退化, 越冬食物资源短缺, 导致白鹤由湖区向周边的农田、藕田等人工湿地扩散, 导致天然湿地中个体数量下降。2023 年, 鄱阳湖丰水期水文节律趋于往年均值, 沉水植被得以恢复生长, 冬季退水后吸引大量白鹤前来保护区越冬栖息, 峰值较上一年度上升 279%。因此, 加强保护区周边区域的宣传和保护; 加强对白鹤等鹤类种群的长期监测; 针对农田、藕塘等人工生境中的鹤类种群数量的急剧增加进行深入研究; 制定并采取实施有效的保护措施, 这些对白鹤种群的进一步增加尤为重要。

灰鹤食性较杂, 全球种群数量较多, 越冬期广泛分布于长江中下游地区。在鄱阳湖区, 灰鹤以苔草、南荻等挺水植被和水稻、昆虫为主要食源。因此, 灰鹤种群的空间变化受鄱阳湖水文节律影响较白鹤小。2022 年鄱阳湖极端干旱天气下, 得益于保护区的保水控水措施, 灰鹤在南矶保护区的峰值为近 5 年来最高值, 达到 2,070 只, 2023 年趋于均值的水文节律并未引起灰鹤种群的增加。因此, 加强鄱阳湖区灰鹤种群的持续监测、加强鄱阳湖周边水稻田等人工湿地的鹤类保护与宣传、制定针对鄱阳湖周边人工湿地中越冬候鸟的保护策略与监测方案, 对灰鹤种群在鄱阳湖长期安全稳定越冬至关重要。

Population and spatial distribution changes of four wintering crane species in Nanji Wetland, Jiangxi from 2023 to 2024

Yu Guanjun, Wang Lingfeng, Liu Yanfang, Qian Jianxin, Shao Jing, Yang Xiaolan
Nanji Wetland National Nature Reserve, Poyang Lake, Jiangxi 330100

Poyang Lake is located on the south of Yangtze River and in the northern part of Jiangxi Province. It is the largest freshwater lake in China. The diverse wetland habitats of Poyang Lake constitute a relatively complete wetland ecosystem in the Jiangxi Poyang Lake Nanji Wetland National Nature Reserve, Jiangxi Province. The reserve is one of many wetlands along the East Asia-Australasian Waterbird Flyway. It is an important wintering and stopover site for waterbirds and has international significance in the global migratory bird conservation. In order to fully understand the population size and spatial distribution of wintering migratory birds in the Nanji Wetland Reserve, we conducted 24 coordinated counts September 2023 to April 2024, or three counts on the 8th, 18th and 28th of each month in 21 sub lakes of the reserve.

1. Overview of the research site

The Nanji Wetland National Nature Reserve in Poyang Lake, Jiangxi Province was promoted to a national nature reserve in January 2008 and was designated as an internationally important wetland in February 2020. It is also a member of the Yangtze River Middle and Lower Reaches Wetland Protection Network.

The reserve is located in the southern part of the main lake area of Poyang Lake, on the delta region formed by the confluence of the northern, middle and southern tributaries of the Ganjiang River into the Poyang Lake. The total area of the reserve is 333 km². The reserve was set aside mainly for protecting the Ganjiang delta-Poyang Lake composite wetland ecosystem and the wildlife resources that depend on it for survival.

The water area of the reserve varies greatly within the year and between years. In the flood season every year, except for the two islands of Nanshan and Jishan, the rest of the reserve is covered by water, with a water area of approximately 32,894 ha, accounting for 98.78% of the total area of the reserve. During the dry season,

the water level drops and the reserve presents a wetland landscape with rivers, lakes and meadows. During the dry season, the water area is approximately 12,640 ha, accounting for 37.96% of the total area of the reserve.

2. Study Methods

The coordinated counts of birds during the winter from 2023 to 2024 was in 5 sample routes, with a time span of 8 months. The count was conducted three times a month regularly. In case of rainy and foggy weather, it was postponed or one day in advance. The count used a combination of sampling points and sample transects to record types, number and location of birds encountered during the count. Swarovski telescopes (25-60×65), cameras, counters and other tools were used to observe and count the number and locations of cranes in the sub lakes.

Data processing used Excel 2003 software and SPSS19.0 software for statistical analysis of data. The data in this article are expressed as (mean ± standard deviation), and the significance level is set at $P < 0.05$.

3. Results and Analysis

3.1 Wintering Number of Siberian Cranes

The number of Siberian Cranes showed a trend of increasing first and then decreasing, and a peak of 1986 on November 18, 2023. Siberian Cranes were found arriving in large numbers in flocks at the beginning of the wintering period, became stable, and then slowly decreased at the end of the wintering period. The above phenomenon is thought to be that as the amount of food in the reserve decreases, Siberian Cranes start to move to the lotus fields and farmland around Poyang Lake to forage. This statement needs to be analyzed and discussed in consideration with other coordinated surveys of wintering migratory birds in the entire Poyang Lake.

The wintering period of Siberian Cranes in the reserve was from mid-to-late September 2023 to early April 2024 (Figure 1). The high number of Siberian Cranes was seen from December to January, and they were commonly seen foraging in the sub lakes in the reserve. A small peak appeared On the February 18, 2024, a peak number of the Siberian Cranes occurred, possibly indicating that they were gathering here for spring migration. The Poyang Lake area that day was foggy and cloudy, preventing the investigators from observing the cranes at a distance in the lake area. Because there were many birds that have similar size and color in the Poyang Lake area (such as spoonbills, egrets, Tundra Swans, etc.), there were possibly many birds unidentified in this survey.

The peak number of Siberian Cranes in the reserve in winter 2023/2024 was 1,986, an increase of 1,462 birds compared to the peak number of 524 birds in 2022/2023, an increase of 279%.

3.2 Wintering Number of Eurasian Cranes

The number of Eurasian Cranes showed a trend of increasing first and then decreasing, and a peak of 1,686 on November 8, 2023.

The wintering period of Eurasian Cranes in the reserve was from late September 2023 to late March 2024 (Figure 2). The high number of Siberian Cranes was seen from December to January. Eurasian Cranes mainly foraged in sedge meadow zones in the reserve, feeding on *Vallisneria* and *Potentilla* etc. They moved from one sub lake to another sub lake very often.

Over the past two winters, the peak numbers of Eurasian Cranes were from 2070 in 2022/23 to 1944 in 2023/24.

3.3 Wintering Number of White-naped Cranes

The number of White-naped Cranes showed a trend of increasing first and then decreasing, with a peak of 51 birds (Figure 3). The White-naped Cranes spent from mid-November 2023 to early March 2024 in the reserve, shorter than Siberian and Eurasian Cranes.

Over the past two winters, the peak numbers of White-naped Cranes were from 55 in 2022/23 to 51 in 2023/24.

3.4 Wintering Number of Hooded Cranes

The number of Hooded Cranes showed a trend of increasing first and then decreasing, with a peak of 28 birds (Figure 4). At Hongxing Lake, a flock of 26 birds were recorded on January 26, 2024.

Over the past two winters, the peak numbers of Hooded Cranes were from 38 in 2022/23 to 28 in 2023/24.

3.5 Wintering Numbers of cranes species by sub lakes

During the wintering period of 2023-2024, the lakes with higher carrying capacity include Shendang Lake,

Fengwei Lake, Zhanbei Lake, and Shangbeijia Lake. The elevations of the above four lakes are relatively high, all above 13 meters asl, and the four sub lakes have a large number of grasslands during the winter dry season. Through the bivariate correlation analysis of the data (see Table 3), the size of the lake area has no correlation with the carrying capacity of cranes ($P=0.564$, $r=0.103$), and the lake bottom elevation has some correlation with the carrying capacity of cranes ($P=0.01$, $r=0.655$).

During the wintering period of 2023-2024, Siberian cranes mainly concentrated in Jiantangling, Caopijiao, Hongxing Lake and Sandiwan in the core area of the reserve. The number of cranes in these sub lakes accounted for 78.26% of the total in the reserve, and the number of cranes in the farmlands around the reserve accounted for 15.42%. The rest cranes were seen in the middle reach of Ganjiang River, Ganjiang River delta and Taizi River in the reserve, which was not much different from the wintering period of 2022-2023.

In winter 2023/24, Siberian Cranes were common in Jiantangling, Sanniwan, Caopijiao, and Hongxing Lake. The number of Siberian Cranes in sub lakes account for 81.89% of the total count, and 9.18% in rice paddies and the rest in rivers and open waters. Eurasian Cranes are common in Caopijiao, Shangcha Lake, Xiacha Lake, and Hongxing Lake, with the number in sub lakes accounting for 37.21%. During the survey, a large flock of Eurasian Cranes was found in the rice fields around the reserve, accounting for 35.49%; there was a large proportion in other sedge meadows in the reserve. White-naped Cranes were common in Shangcha Lake, Caopijiao, Hongxing Lake, and Shangduan Lake, with the number sub lakes accounting for 66.56%; there were many birds in rivers and open waters of the reserve, accounting for 33.44%. No white-naped Cranes were found in the rice fields around the reserve. Hooded Cranes were mostly in Hongxing Lake, Caopi Cape, Beishen Lake and Fengwei Lake. The number of Hooded Cranes in the sub lakes accounted for 81.81% of the total count, while Hooded Cranes in other waters in the reserve accounted for 18.19%.

4. Discussion

(1) Numbers of four crane species

Compared with the previous year, the number of Siberian Cranes increased significantly. The reason for this change was that in summer 2022, Poyang Lake was affected by extreme drought for a long time, and submerged vegetation could not grow well, resulting in food shortage. In addition, the establishment of crane feeding areas around Poyang Lake eventually led to a large number of wintering waterbirds such as Siberian Cranes foraging in farmlands (such as in Chaqizhou of Yugan County) and artificial wetlands (Nanchang Wuxing Farm) around Poyang Lake.

The number of Eurasian Cranes showed a significant downward trend, a decrease of 55.37% compared with the previous year. The reason for this decrease was that the extreme drought in 2022 affected negatively the growth of sedge zone vegetation. The nature reserve took timely measures to close the gates and control water. With the evaporation and sedimentation of the sub lake water, fresh food sources gradually emerged, and sedge zone vegetation such as sedge and *Miscanthus* grew rapidly, attracting a large number of Eurasian Cranes to come for food; in 2023, the water regime of Poyang Lake during the flood and dry seasons was normal, and the water level decreased relatively normally. The growth of sedge zone vegetation such as sedge and *Miscanthus* was good, and the Eurasian Cranes in family had more food sources to choose from and were relatively scattered.

There were no much change for White-naped Cranes from 2022/23 to 2023/24 in terms of distribution by sub lakes. For Hooded Cranes, their numbers have reduced to 49.79%, most likely due to the extreme drought and water level control by the reserve.

(2) Spatial distribution of Siberian and Eurasian Cranes

The abnormal water change of Poyang Lake caused by climate change in recent years has had varying degrees of impact on the Siberian and Eurasian Cranes that have lived stably in the Poyang Lake.

The Siberian Crane is a typical wading bird species. 98% of the Siberian Cranes in the world use Poyang Lake and its surrounding areas as their main wintering grounds. They mainly feed on submerged vegetation such as winter buds of *Vallisneria*, so the water regime of Poyang Lake has a strong correlation with the spatial distribution changes of the cranes in the Poyang Lake area. In 2022, the main reason for the decrease in the number of Siberian Cranes in Poyang Lake was the degradation of submerged vegetation in natural wetlands and the shortage of food resources for wintering, leading to the spread of Siberian Cranes from the natural wetland to surrounding farmlands, lotus fields and other artificial wetlands, resulting in a decrease of the cranes in natural wetlands. In 2023, the water regime of Poyang Lake during the flood season tended to the average of previous years, and submerged vegetation was able to come back. After the water receded in fall and winter, a large number of Siberian Cranes were attracted to the protected area for wintering, with a peak value of 279% higher than the previous year. Therefore, it is particularly important to strengthen publicity and protection of areas surrounding the nature reserve; strengthen long-term monitoring of crane populations; conduct in-depth research on the rapid

increase in the number of crane populations in artificial habitats such as farmland and lotus ponds; and formulate and implement effective protection measures to further increase the Siberian Crane population.

Eurasian Crane has a diverse diet and a large global population. This species is widely distributed in the middle and lower reaches of the Yangtze River. In the Poyang Lake area, Eurasian Cranes mainly feeds on emergent vegetation zones, such as sedge and *Miscanthus*, rice, and insects. Therefore, the spatial variation of Eurasian Crane population is less affected by the water regime of Poyang Lake than Siberian Cranes. In 2022, under the extremely dry weather in Poyang Lake, thanks to the water conservation and control measures of the reserve, the peak number of Eurasian Cranes in the Nanji Wetland Reserve was the highest in the past five years, reaching 2,070. The hydrological pattern that tended to the normal in 2023 did not make an increase in the Eurasian Crane population. Therefore, it is crucial to strengthen the monitoring of Eurasian Crane population in the Poyang Lake area; strengthen the protection and publicity of cranes in artificial wetlands such as rice fields around Poyang Lake; and formulate protection strategies and monitoring plans for artificial wetlands around Poyang Lake for the long-term safe and stable wintering of Eurasian Crane population in Poyang Lake.

白枕鹤连续两年在向海保护区繁殖

李连山 夏占平 刘蕾 王昊岩 于海龙
吉林向海国家级自然保护区管理局, 吉林通榆 137215

吉林向海国家级自然保护区付老文泡、碱地泡、青年坝芦苇沼泽及同发滚水坝两侧沼泽湿地曾经是白枕鹤的重要繁殖区。由于向海湿地生境的变迁, 2008 年监测到 1 对白枕鹤在区内繁殖之后, 再无白枕鹤繁殖记录。2023 年春季, 科研人员在仙鹤岛南侧沼泽湿地中监测到 1 对野生白枕鹤筑巢繁殖, 这是 2009 年以来首次在区内繁殖的白枕鹤。这对白枕鹤在 2024 年春季再次在此繁殖, 繁育出 2 只幼鸟。

白枕鹤迁徙季节主要栖息在付老文泡、同发滚水坝、新发苇点、青年坝等地, 在向海保护区数量较少, 经常与白鹤、灰鹤、白头鹤混群。近五年来较大种群出现在 2019 年 3 月 29 日同发滚水坝东侧湿地 (23 只), 2022 年 10 月 14 日团结屯南甸子 (30 只)。白枕鹤一般 3 月下旬迁徙到向海保护区, 4 月中旬基本离开, 10 月下旬基本全部南迁, 较其它鹤类离开的要早。



图 1. 2024 年在向海保护区繁殖的白枕鹤和它们的雏鸟

图 1. A breeding pair of White-naped Cranes with their chicks in 2024 at Xianghai NNR.

White-naped cranes recorded breeding at Xianghai of Jilin for two consecutive years

Li Lianshan, Xia Zhanping, Liu Lei, Wang Haoyan, Yu Hailong
Jilin Xianghai National Nature Reserve Administration, Tongyu, Jilin 137215

Wetlands of Fu Laowenpao, Jiandipao, Qingnianba reed marsh and Tongfa Overflow Dam at Xianghai National Nature Reserve in Jilin were once important breeding areas for White-naped Cranes. Due to changes in the wetland habitat, there has been no record of White-naped Crane breeding since a pair of White-naped Cranes breeding in 2008. In spring of 2023, a pair of White-naped Cranes were seen nesting in the southern part of Xianhe Island marsh. This was the first time for the White-naped Cranes to breed since 2009. This pair bred here again in the spring of 2024 and had two chicks.

During the migration, White-naped Cranes mainly were seen in Fulaowenpao, Tongfa Overflow Dam, Xinfaweidian, Qingnian Dam, etc. Numbers of White-naped cranes were normally not large during the migration in the reserve, often seen with Siberian, Eurasian and Hooded Cranes. In the past five years, a large flock of 23 White-naped Cranes appeared in Tongfa Overflow Dam on March 29, 2019 and 30 birds in Nandianzi of Tuanjietun on October 14, 2022. White-naped cranes usually migrate to Xianghai in late March and leave in mid-April during spring migration; during fall migration, they stay at Xianghai short and all leave in late October, earlier than other crane species.

白枕鹤西部种群的研究与保护

张琦
国际鹤类基金会北京代表处，北京 100088

白枕鹤 (*Grus vigio*) 于 2021 年升级为国家一级保护野生动物，是世界自然保护联盟 (IUCN) 濒危物种红色名录中的易危 (VU) 物种。白枕鹤全球种群数量约为 7,100–8,000 只，分为东部和西部两个种群，其中西部种群主要繁殖于蒙古东北部、俄罗斯东南部以及内蒙古东部，主要在我国长江中下游的江西鄱阳湖越冬。在过去 20 年里，白枕鹤西部种群数量从 4,000 只降至 1,000 只左右 (Wetland International, 2021)，呈明显下降趋势，成为亟待加强研究与保护的重要物种。



图 1. 在内蒙古锡林郭勒盟正蓝旗栖息的白枕鹤。斯琴巴图摄

Figure 1. A White-naped Crane in Zhenglan Banner of Inner Mongolia. Photo by Siqinbatu

白枕鹤西部种群数量下降的原因，既有气候变化的全球性影响，也有栖息地退化和丧失的人为因素

影响。蒙古国东北部是目前已知的白枕鹤西部种群主要繁殖地。近年来，该地区干旱严重且畜牧压力增加，影响了白枕鹤的繁殖成功率。在迁徙路线上，曾经重要的中途停歇地渤海湾和北京密云水库因湿地退化和丧失、水位上升等因素均已不再适合白枕鹤长时间停歇。

国际鹤类基金会（ICF）联合中蒙两国合作伙伴在蒙古繁殖地和鄱阳湖越冬地开展了多年的研究与实地保护工作。2013 年 8 月，为了实现白枕鹤西部种群迁徙路线尺度的协同保护，填补知识空缺，ICF、蒙古共和国科学院、蒙古野生动物科学与保护中心以及北京林业大学东亚-澳大利亚候鸟迁徙研究中心（CEAAF）在蒙古国启动了白枕鹤卫星跟踪项目，首次发现位于内蒙古自治区锡林郭勒盟多伦县、正蓝旗和河北省沽源县区域的闪电河流域河谷取代渤海湾成为白枕鹤西部种群迁徙路线上最为重要的停歇地。每年迁徙季节，有超过 85% 的跟踪个体在此停歇超过 30 天。

2021 年，ICF、CEAAF、中国野生动物保护协会（中动协）共同启动白枕鹤西部种群保护项目，该项目通过科学研究、能力建设、合作交流、社区保护以及环境教育等多种方式开展保护行动。2022 年，项目组在内蒙古地区开展了鹤类繁殖生态研究，结果显示锡林郭勒盟是我国已知最大的白枕鹤西部种群繁殖地，还是丹顶鹤大陆种群繁殖地最西缘。但繁殖地或停歇地的大部分均未被纳入保护地范围，属于保护空缺地区。并且该地区属于干旱半干旱地区，也是生态环境敏感区域，由于气候变化、干旱等因素，鹤类栖息地仍面临着一定的环境压力。

近年来，ICF 与中蒙两国的研究机构合作，利用卫星跟踪技术，揭示了白枕鹤西部种群迁徙路线的变化，识别出了重要的停歇地和繁殖地，确定保护范围。利用国际组织的优势，加强国际交流与合作，并组织中、蒙、俄、日、韩、美专家编写《白枕鹤保护策略和行动计划》。除此以外，ICF 积极促进多方合作，包括政府机构、非政府组织、科研院所、社区和志愿者等。培养地方保护机构，提供能力建设培训，提高地方保护能力和专业技能。

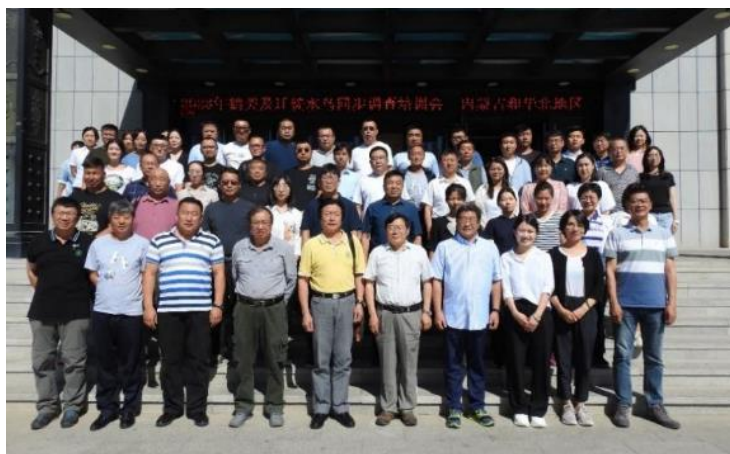


图 2. 2023 年鹤类及迁徙水鸟同步调查培训会在内蒙古锡林郭勒盟锡林浩特市顺利召开。ICF 摄

Figure 2. Group photo of participants in 2023 Crane and Waterbird Coordinated Survey Workshop in Xilinhot of Inner Mongolia. Photo provided by ICF

白枕鹤西部种群重要栖息地大多分布在农、牧民的农田和牧场中，他们的农业种植结构、农作方式和牲畜放养模式等都有可能影响鹤类栖息地环境。社区是鹤类保护重要的利益相关方，因此 ICF 通过培养地方机构项目管理和社区宣传能力，促进地方合作伙伴带动社区参与保护行动。



图 3. ICF 与内蒙古正蓝旗野生动物保护协会进入当地社区走访和宣传。正蓝旗野生动物保护协会摄

Figure 3. Visit to a family by ICF and Zhenglan Banner Wildlife Conservation Association. Photo by Zhenglan Banner Wildlife Conservation Association

ICF 致力于提升公众，尤其是当地社区周边青少年和社区居民的保护意识。通过口头宣讲、分发宣传品等方式，增强社区对鹤类的了解，收集社区面临的问题。与当地 NGO 合作开展以“鹤类与湿地”为主题环境教育活动，培养青少年对鹤类及栖息地的保护意识。培养基层环境教育工作者，通过深度参与的环境教育形式，激发青少年对家乡自然环境的热爱以及自豪感。



图 4. 内蒙古锡林郭勒盟“我鹤你一起”主题活动合影。铜锣钵环保志愿者协会摄

Figure 4. Group photo of students participating in activity *Cranes Unite Us*. Photo by AEYi Environmental Protection Volunteer Association

随着对白枕鹤西部种群保护工作的不断深入，我们越来越清晰地认识到，保护这一珍稀物种不仅是对生物多样性的维护，更是对我们共同家园的珍视。白枕鹤，以其优雅的身姿和独特的生态价值，成为了连接不同地区、不同文化和不同人群的纽带。在这一过程中，我们见证了国际合作的力量，看到了多方合作的重要性，也体会到了科学研究对保护工作的重要指导作用。让我们继续前行，在保护的道路上不断探索和进步，为白枕鹤，为我们共同的地球家园，绘制一个更加美好的未来。

参考文献:

Wetland International, Waterbird Population Estimates (wetlands.org), White-naped Crane China(non-bre) Population, EAAFP CSR1, 2021

Research and Conservation of western population of White-naped Cranes

Zhang Qi

International Crane Foundation Beijing Office, Beijing 100088

White-naped Crane (*Grus vigio*) was upgraded to a State Class I of Protection species in 2021 and is considered as Vulnerable (VU) on the Red List by IUCN. The global population of White-naped Cranes is about 7,100-8,000, divided into two populations, the eastern and western populations. The western population mainly breeds in northeastern Mongolia, southeastern Russia and Inner Mongolia, and winters in the middle and lower reaches of the Yangtze River in China, mainly in Poyang Lake of Jiangxi. Over the past 20 years, the number of White-naped Cranes in the western population has dropped from 4,000 to about 1,000 (Wetland International, 2021), showing a clear downward trend, becoming an important species that urgently needs for more research and conservation.

The decline in the western population of this species is due to both the global impact of climate change and the impact of habitat degradation and loss. Northeastern Mongolia is the main known breeding ground for the western population of White-naped Cranes. In recent years, severe droughts and increased livestock grazing in the region have affected the breeding success of White-naped Cranes. Along the migration, Bohai Bay and Miyun Reservoir of Beijing that both have suffered wetland degradation and loss, rising water levels and other factors, were once important stopover sites, but now are no longer suitable for this species.

International Crane Foundation (ICF) has been conducting research and conservation work in Mongolian breeding grounds and the wintering ground in Poyang Lake with partners from China and Mongolia for many years. In August 2013, to better understand of this species, make conservation efforts on the flyway and fill knowledge gaps, ICF, Mongolian Wildlife Science and Conservation Center, and Center for East Asian-Australasian Bird Flyway Research (CEAAF) of Beijing Forestry University carried out a satellite tracking project for White-naped Cranes in Mongolia. For the first time, it was discovered that the Shandian River valley in Duolun County, Zhenglan Banner of Inner Mongolia and Guyuan County of Hebei Province has replaced the Bohai Bay as the most important stopover for the western population of White-naped Cranes on their migratory routes. During the annual migration season, more than 85% of the tracked individuals stayed here for more than 30 days.

In 2021, ICF, CEAAF, and China Wildlife Conservation Association (CWA) jointly initiated the White-naped Crane Western Population Conservation Project, which implements conservation actions through scientific research, capacity building, exchanges, community-based conservation, and environmental education. In 2022, the project team conducted a crane breeding ecological research in Inner Mongolia. Results from the survey indicated that Xilin Gol League is the largest known breeding ground for the western population of White-naped Cranes in China, and the westernmost of the breeding ground for the mainland population of Red-crowned Cranes. Unfortunately, most of the breeding areas or stopover sites are not under legal protection, in another word, not within the protected area. In addition, the area is an arid and semi-arid area, ecologically sensitive. Due to climate change, drought and other factors, the crane habitat is facing environmental pressures.

In recent years, ICF has cooperated with research institutions in China and Mongolia to use satellite tracking technology to determine changes in the migration routes of the western population of White-naped Cranes, identify important stopover and breeding sites, and document the scope of protection. ICF, as an international organization, is able to help strengthen international exchanges and cooperation among China, Mongolia, Russia, Japan, South Korea, and U.S., and organize experts to compile the White-naped Crane Conservation Strategy and Action Plan. In addition, ICF has actively promoted multi-party cooperation, including government and non-government agencies, research institutes, communities, and volunteers, as well as cultivated local conservation groups in providing capacity building training.

Most important habitats of the western population of White-naped Cranes are in the farmlands and pastures. Their crop types, farming methods and livestock grazing patterns may affect the habitat of cranes. Communities in these areas are important stakeholders in crane conservation. Therefore, ICF has promoted local communities to participate in conservation actions by strengthening empowerment of grassroots institutions.

ICF is committed to raising awareness of the public, especially local young people and community residents. Through the introduction of crane knowledge and distribution of education materials, we have enhanced the community's understanding of cranes and understood more about the problems faced by the community. We have cooperated with local NGOs to carry out environmental education activities with the theme of "Crane and Wetland" to improve youth's awareness of protecting cranes and their habitats. We have trained grassroots environmental educators and inspired young people's love and pride for the natural environment of their

hometown through in-depth environmental education.

As the conservation work on the western population of white-naped cranes continues to deepen, we have come to realize more and more that protecting this rare species is not only about maintaining biodiversity, but also about cherishing our common home for people and wildlife. The White-naped Crane, with its elegant figure and unique ecological value, has been a tie between different regions, cultures and people. In this process, we have witnessed the power of international cooperation, the importance of multilateral cooperation, and the important role of scientific research in conservation work. Let us continue to move forward, constantly explore and make progress along the path of conservation and build a bright future for the White-naped Cranes and our common home, the Earth.

Literature (Omitted)

【黑颈鹤网络】

【Black-necked Crane Conservation Network】

黑颈鹤保护网络的建立和成效

杨晓君¹ 李凤山² 钱法文³

1 中国科学院昆明动物研究所 昆明 650201

2 国际鹤类基金会, 美国 53913

3 全国鸟类环志中心, 北京 100091

黑颈鹤 (*Grus nigricollis*) 是世界 15 种鹤类中惟一终生生活在高原的鹤类, 分布以青藏高原为主, 高度依赖于高原湿地, 其物种形成和对高原环境的适应与青藏高原的隆起密切相关, 从海拔 2,200m 至 5,000m 均有分布, 因此也是青藏高原湿地的旗舰物种。

黑颈鹤是 15 种鹤类中采用现代分类学方法后最晚记录的一种鹤类, 是 1876 年由俄国博物学家尼古拉·普热瓦斯基在青海湖发现并命名的鹤类, 同时也曾经是了解最少的鹤类, 由于其生活在高原地区, 受环境和交通等情况的限制, 在其被发现定名后的百余年中, 人类从科学上对它的了解一直十分有限。1983 年 2 月在印度召开的国际鹤类学术研讨会, 首次较为详细和系统地介绍了当时对黑颈鹤生物学、分布和数量的研究情况, 会上公布的黑颈鹤种群数量不足 300 只, 其中中国分布有 200 只, 因此引起了大家的关注。此后才开展了一系列的调查和研究工作, 二十世纪 90 年代在西藏雅鲁藏布江河谷发现大群越冬黑颈鹤, 因此在 1991 年估计全球种群数量为 4,025 只。

2001-2003 年云南省林业厅、中国科学院昆明动物研究所和国际鹤类基金会合作开展的云贵高原黑颈鹤数量调查, 是中国首次在一个区域范围内对一个单一物种进行的同步数量调查。为了总结和宣传云贵高原的调查成果, 2004 年 3 月在云南昆明召开了“云贵高原黑颈鹤保护现状研讨会”。研讨会上评估黑颈鹤世界种群数量大约为 7,800 只, 种群数量较 20 年前明显增加。但这次会议中也暴露出除对黑颈鹤的生态生物学习性缺乏了解外, 各栖息地、相关单位、研究人员、保护人员等各部门、专业和人员间均缺乏交流, 有关研究、调查和统计工作简单且重复。因此让所有对黑颈鹤研究和保护感兴趣的人员及时掌握最新的动态、共享资源、避免简单的重复, 同时加强保护管理、宣传教育和科研人员间的信息交流, 对提高黑颈鹤的研究和保护工作的水平具有非常好的推动作用。

云贵高原黑颈鹤调查结束后, 中国科学院昆明动物研究所、全国鸟类环志中心和国际鹤类基金会合作, 开展了黑颈鹤卫星跟踪项目, 使得合作区域覆盖整个黑颈鹤的中部和东部迁徙路线, 也使得需要拥有一个平台来实现信息的及时交流更加迫切。在项目执行期间, 上述三个机构的项目主要负责人国际鹤类基金会李凤山博士、全国鸟类环志中心钱法文副研究员和中国科学院昆明动物研究所杨晓君副研究员共同商议建立一个黑颈鹤保护网络, 将黑颈鹤研究和保护管理的相关人员团结在一起

经反复筹划, 2012 年 8 月在云南昆明召开了“中国黑颈鹤保护与发展研讨会--暨黑颈鹤保护网络第一届年会”, 正式成立了黑颈鹤保护网络, 此后网络共连续举办了 7 次年会, 受到疫情的影响, 网络年会不得不中断。疫情结束后, 2023 年 2 月在贵州威宁再次举办年会, 这次是与中国野生动物保护协会鹤类联合保护委员会联合召开的“2021-2022 年度中国鹤类研究与保护研讨会、中国野生动物保护协会鹤类联合保护委员会年度工作会议暨第八届黑颈鹤保护网络年会”, 同时也开始了与中国野生动物保护协会鹤类联合保护委员会的合作。

1. 历届年会

自 2012 年召开第一次网络会后, 到目前已经举办了 8 届, 有关会议的情况见表 1。

表 1. 历届黑颈鹤保护网络年会

届期	时间	地点	会议名称	单位	人数	报告
第 1 届	2012. 8. 2	云南昆明	中国黑颈鹤保护与发展研讨会—暨黑颈鹤保护网络第一届年会	17	39	16
第 2 届	2013. 7. 26-27	贵州威宁	云贵高原鹤类和大型水禽调查总结会暨第二届黑颈鹤保护网络年会	28	40	18
第 3 届	2014. 7. 7-9	青海西宁	中国第三届黑颈鹤保护网络年会	21	50	16
第 4 届	2015. 7. 17-19	四川若尔盖	黑颈鹤保护网络第四届年会暨若尔盖湿地黑颈鹤保护研讨会	29	90	17
第 5 届	2016. 8. 21-23	甘肃肃北	第五届黑颈鹤国际保护网络年会暨黑颈鹤迁徙与保护研讨会	43	100	25
第 6 届	2017. 12. 11-14	云南会泽	第六届黑颈鹤保护网络年会	36	81	25
第 7 届	2019. 7. 31-8. 2	甘肃尕海	第七届黑颈鹤保护网络年会暨国际重要湿地监测管理研讨会	57	118	33
第 8 届	2023. 2. 10-11	贵州威宁	2021-2022 年度中国鹤类研究与保护研讨会、中国野生动物保护协会鹤类联合保护委员会年度工作会议暨第八届黑颈鹤保护网络年会	19 省	207	37

2. 运行机制

2015 年 7 月在“黑颈鹤保护网络第四届年会暨若尔盖湿地黑颈鹤保护研讨会”会后，针对网络的运行情况。三位创始人在成都对保护网络的运行进行了总结，进一步明确了网络的目的、机制和分工（表 2）。此后，黑颈鹤网络的联系从 QQ 群转移到微信群，年会亦明确按每年举办一次，繁殖地和越冬地之间转换顺延半年的时间举行。截至目前，在黑颈鹤保护网络微信群注册的有 177 人，涉及中国、美国和不丹 3 个国家，云南、四川、贵州、西藏、青海、甘肃和新疆 7 个有黑颈鹤分布的省区，同时也包括北京、黑龙江、江苏等与鹤类研究有关的省区，除这些省区的野生动物保护管理和自然保护区工作人员外，还有全国 11 个科研教学单位、多个保护团体、摄影爱好者、以及从事宣传教育和媒体工作的人员参加。

表 2. 黑颈鹤保护网络运行机制

目的	主要人员	运作
保护黑颈鹤及其栖息地生态环境，旨在通过建立一个覆盖黑颈鹤所有栖息地、分布地的数据、资源共享的协同保护网络，促进黑颈鹤保护、科研资源的整合与共享，推进黑颈鹤各分布区域和栖息地间的交流与合作，从而实现黑颈鹤这一全球濒危物种跨区域有效保护。	杨晓君：负责工作组的工作 李凤山：国际协调、经费筹集 钱法文：种群监测协调 韩联宪：中国鹤类通讯黑颈鹤专栏 孔德军：鹤类环志、资料收集、发布 常云艳：微信群的维护、成员联系 除以上人员外，承办年会的联络人员作为当年的工作组成员	机制：信息实时交流、成员间的合作 成员：黑颈鹤保护管理、研究、宣传教育人员 方式：以网络交流为主，网络年会为辅 年会：各分布省区轮流，每年举办一次，繁殖地和越冬地之间转换顺延半年

3. 运行特点

黑颈鹤保护网络的运行体现了如下特点：

- （1）及时性：微信群及时反映各地有关黑颈鹤的动态信息。
- （2）全面性：涉及生态学、保护、管理、宣传教育，包括整个分布区。
- （3）深广结合：人员层次从巡护员到博士、教授；涉及范围从保护区、宣传教育到科研教学单位；从保护实践到科学研究。
- （4）时效性：年会报告均为当年和近两年的工作；微信群交流的为实时的行为、数量和迁徙信息。
- （5）实用性：保护区工作为主，着力促进种群增长，解决保护管理问题。
- （6）国际化：年会和微信群均国际化，除会议报告需人工翻译外，微信群的 AI 翻译及时解决了相关国家人员间语言交流的障碍。

4. 主要成就

经 12 年的实践，黑颈鹤保护网络取得了如下主要成就：

- (1) 如前所说，黑颈鹤保护网络是为保护单一物种成立的为数不多的网络，是中国 9 种鹤类中唯一的保护网络。其地域覆盖之大，在我国也是极少的。黑颈鹤保护网络的建立有力地提升黑颈鹤的监测、保护水平。
- (2) 黑颈鹤保护网络协调和促进了黑颈鹤在中国的种群监测，这为国际保护组织，尤其是 IUCN 的物种保护红皮书的黑颈鹤保护等级评定提供了重要的信息依据。
- (3) 黑颈鹤保护网络整合了黑颈鹤保护的所有利益相关者，促进了保护区、科研和教育人员间的交流和合作，共同促进物种和环境保护。
- (4) 网络成立后，论文年均发表数量为成立前的 2 倍，且高水平论文占比超过 80%，同时培养了 30 多名从事黑颈鹤研究的研究生。
- (5) 黑颈鹤保护网络的主体是基层黑颈鹤自然保护区。通过交流和比较促进了保护区和管理者开展黑颈鹤保护工作的热情，工作人员踊跃交流自己在保护、监测方面的工作经验，发表科研论文数量逐年递增。
- (6) 在《中国鹤类通讯》上开通“黑颈鹤网络”专栏，既提升了《中国鹤类通讯》的水平，也帮助宣传了黑颈鹤保护网络的工作，促进了公众的环境教育和环境意识的提高。
- (7) 黑颈鹤保护网络为一些非政府组织、自然保护区和学校提供了交流科普宣教和环境教育活动的平台，激发了更多在地中小学在教师培训教育、乡土教材出版和讲授等活动的开展。通过参加网络会，开展环境教育的教师学到了黑颈鹤方面的新知识。
- (8) 经过 10 年努力，2020 年国际自然保护联盟（IUCN）已将黑颈鹤从易危降为近危，从受胁物种中移除，表明黑颈鹤保护工作取得显著效果。“黑颈鹤保护网络”也入选生物多样性 100+ 全球典型案例。

5. 建议

2024 年 8 月初，黑颈鹤保护网络主要成员在内蒙古乌兰浩特召开会议，商讨了新老交接等事项。会议推选贵州大学粟海军教授为新一任黑颈鹤保护网络工作组组长，成员由中国科学院昆明动物研究所吴飞和伍和启，兰州大学张立勋，云南大学孔德军，西南林业大学刘强、全国鸟类环志中心王毅花等年轻的博士们，以及国际鹤类基金会中国项目办公室主任杨波等组成，三位创始人将作为顾问继续为保护网络贡献力量，同时确定 2024 年 12 月在云南会泽召开第九届保护网络年会，会议上将正式进行新旧交接，并讨论和完善黑颈鹤保护网络的运行机制。相信在新的一届（2024-25）工作组的领导下，黑颈鹤保护网络将越来越好。在此提几点建议：

- (1) 完善黑颈鹤保护网络的运行操作，完善网络运行条例。
- (2) 吸收更多的年轻科研和保护人员成为网络的骨干。
- (3) 继续办好黑颈鹤网络年会。
- (4) 进一步加强成员间的合作，联合申请和开展跨区域和单位的国际和国内科研项目。
- (5) 加强黑颈鹤保护网络与中亚候鸟迁徙路线各机构的联系和交流。

Establishment and achievements of Black-necked Crane Conservation Network

Yang Xiaojun¹, Li Fengshan², Qian Fawen³

1 Kunming Institute of Zoology of Chinese Academy of Sciences, Kunming 650201

2 International Crane Foundation, USA 53913

3 National Bird Banding Center, Beijing 100093

Black-necked Crane (*Grus nigricollis*) is the only plateau crane species among 15 crane species in the world. It is mainly distributed on the Qinghai-Tibet Plateau and is highly dependent on plateau wetlands. The species formation and adaptation of this species to the plateau environment are closely related to the uplift of the Qinghai-

Tibet Plateau. The Black-necked Crane lives at altitude ranging from 2200m to 5000m above sea level, making it the flagship species of the Qinghai-Tibet Plateau wetlands.

The Black-necked Crane is the latest crane species recorded scientifically among the 15 crane species. It was discovered and named by Russian naturalist Nikolai Przevalsky in Qinghai Lake in 1876. It was also the least understood crane species before the 1990s. Due to its living in plateau areas and the limitations of environment and transportation, scientific understanding of it had been very limited for more than a hundred years since its discovery and naming. International Crane Workshop held in India in February 1983 presented the research on the biology, distribution and population of the Black-necked Cranes in relative detail for the first time, and relevant expert participants estimated its global population of less than 300, of which 200 were distributed in China, making this species one of highlights at the workshop. After that, more thorough surveys and research were carried out. In the 1990s, large flocks of wintering Black-necked Cranes were found in the Yarlung Zangbo River Valley in Tibet, with an estimation of 4025 for its global population in 1991.

From 2001 to 2003, the Yunnan-Guizhou Plateau Black-necked Crane coordinated winter Survey was conducted by Yunnan Forestry Department, Kunming Institute of Zoology of the Chinese Academy of Sciences (KIZ) and International Crane Foundation (ICF) from 2001 to 2003. This survey was the first coordinated population survey of a single species in a region in China. To summarize and publicize the survey results, the "Workshop of Black-necked Crane Conservation Status on Yunnan-Guizhou Plateau" was held in Kunming, Yunnan in March 2004. The workshop estimated that the world population of Black-necked Cranes was about 7,800, a significant increase from 20 years ago. This meeting also found some issues in research and conservation of this species, such as lack of deep understanding of its ecology and biology, lack of communication among resource managers and research professions, and too general and repetitive in research and crane counts. Therefore, it is necessary for all those who are interested in Black-necked Cranes to share information in research, management and education.

After the coordinated survey of Black-necked Cranes on the Yunnan-Guizhou Plateau was completed, Kunming Institute of Zoology of the Chinese Academy of Sciences, National Bird Banding Center (NBBC) and International Crane Foundation cooperated to carry out a satellite tracking project for Black-necked Cranes, which covered the entire central and eastern migration routes of Black-necked Cranes, making it more urgent to establish a platform for timely exchange of information. During the project, main project leaders of the above three organizations, Dr. Li Fengshan of ICF, Dr. Qian Fawen of NBBC, and Associate Professor Yang Xiaojun of KIZ, discussed the establishment of a Black-necked Crane conservation network to pull together relevant colleagues in the research and conservation of Black-necked Cranes.

The "First Annual Meeting of Black-necked Crane Conservation Network -- China Black-necked Crane Conservation and Development Workshop" was held in Kunming, Yunnan in August 2012, marking the formal establishment of the Black-necked Crane Conservation Network. Since then, the network had held consecutively 7 annual meetings, before the interruption due to the epidemic. After the epidemic, the 8th annual meeting "2021-2022 China Crane Research and Conservation Workshop, United Crane Conservation Committee Annual Work Group Meeting, and 8th Black-necked Crane Conservation Network Annual Meeting" was held at Cao Hai National Nature Reserve in Weining, Guizhou in February 2023. At the same time, cooperation with the China Wildlife Conservation Association Crane Joint Conservation Committee also began.

1. Past annual meetings

Since the establishment of the network, 8 annual meetings have been held as blow:

Table 1. A list of Black-necked Crane Conservation Network Annual Meetings

Date (yyyy.mm.dd)	Meeting Place	Meeting Title	No of organizations	No of Participants	No of presentations
2012.08.02	Kunming, Yunnan	1 st Annual Meeting of Black-necked Crane Conservation Network - China Black-necked Crane Conservation and Development Workshop	17	39	16
2013.07.26-27	Weining of Guizhou	2nd Annual Meeting of Black-necked Crane Conservation Network – Summary Workshop of Coordinated Survey of Black-necked Cranes on Yunnan-Guizhou Plateau	28	40	18
2014.07.07-09	Xining of Qinghai	3rd Annual Meeting of Black-necked Crane Conservation Network	21	50	16
2015.07.17-19	Ruoergai of Sichuan	4th Annual Meeting of Black-necked Crane Conservation Network—Ruoergai Wetland Black-necked Crane Conservation Workshop	29	90	17
2016.08.21-23	Subei of Gansu	5th Annual Meeting of Black-necked Crane Conservation Network – Black-necked Crane Migration and Conservation Workshop	43	100	25
2017.12.11-14	Huize of Yunnan	6th Annual Meeting of Black-necked Crane Conservation Network	36	81	25
2019.07.31-08.02	Gahai of Gansu	7 th Annual Meeting of Black-necked Crane Conservation Network – Workshop of Monitoring and Management Workshop of Ramsar Sites	57	118	33
2023.02.10-11	Weining of Guizhou	2021-2022 China Crane Research and Conservation Workshop, United Crane Conservation Committee Annual Work Group Meeting, and 8th Black-necked Crane Conservation Network Annual Meeting	19 provinces	207	37

2. Operational Mechanism

After the 4th annual meeting in July 2015, the three founders discussed the operation of the network in Chengdu, specifically about the purpose, mechanism and responsibilities of network core group members (Table 2). Since then, a WeChat group of people with interest in the network was established, and the annual meeting has been decided held once a year or once every 1.5 years depending where to hold the meeting (breeding or wintering place). There are 177 people today in the WeChat group, including people from three countries, China, the United States and Bhutan. For China, there are people from all 7 range provinces or autonomous regions of Black-necked Cranes including Yunnan, Sichuan, Guizhou, Tibet, Qinghai, Gansu and Xinjiang, as well as some other provinces, such as Beijing, Heilongjiang, Jiangsu etc. Participants in the WeChat group consists of wildlife/nature reserve staff, scientific researchers, photographers, bird watchers, educators and news media personnel.

Table 2. Operational Mechanism of Network

Purpose	Core group members	Mechanism
The purpose of the network is to protect Black-necked Cranes and their habitats by establishing a collaborative protection network covering all habitats and distribution areas of the Black-necked Crane, and sharing and promoting exchanges and cooperation among the various distribution areas/regions, so as to achieve effective cross-regional protection of this globally endangered species.	<p>Yang Xiaojun: Responsible for the work of the working group</p> <p>Li Fengshan: International coordination, fund raising</p> <p>Qian Fawen: Population monitoring coordination</p> <p>Han Lianxian: Black-necked Crane column of <i>China Crane News</i></p> <p>Kong Dejun: Crane banding, data collection, and publication</p> <p>Chang Yunyan: WeChat group maintenance, member contact</p> <p>In addition to the above personnel, coordination people who host or help to host the annual meeting will serve as members of the working group for that year</p>	<p>Mechanism: Information exchange and cooperation among members</p> <p>Members: managers, researchers, educator and conservationists of Black-necked Cranes</p> <p>Method: Mainly through network annual meetings, as well as virtual meetings</p> <p>Annual meetings: once a year normally</p>

3. Operational characteristics

The operation of the Black-necked Crane Conservation Network has the following characteristics:

- (1) Timeliness: The WeChat group promptly reflects the information about the Black-necked Crane in various places.
- (2) Comprehensiveness: Involving ecology, conservation, management, publicity and education, including the entire distribution area.
- (3) Combination of depth and breadth: The members including all field people from reserve rangers, reserve managers to research professors from protected areas, schools and research institutions.
- (4) Meet annually: The annual meeting reports are all about the work in recent years; the WeChat group exchanges real-time behavior, number and migration information.
- (5) Practicality: The work of the protected area mainly focused on solving conservation and management problems to help Black-necked Crane population grow.
- (6) Internationalization: Both the annual meeting and the WeChat group including information from all range countries. In addition to the need for manual translation of the conference report, the AI translation of the WeChat group promptly solves the language communication barriers between people from relevant countries.

4. Major achievements

After 12 years since the establishment, the Black-necked Crane Conservation Network has achieved the following major achievements:

- (1) The Black-necked Crane Conservation Network is one of the few networks established to protect a single species. It is the only conservation network among the nine crane species in China. Its geographical coverage is large in China. The establishment of the network has effectively improved the monitoring and

protection level of the Black-necked Crane.

(2) The Black-necked Crane Conservation Network coordinates and promotes the population monitoring of the Black-necked Crane in China, which provides important information basis for the assessment of the conservation level of the Black-necked Crane for international conservation communities, especially the IUCN.

(3) The Black-necked Crane Conservation Network integrates all stakeholders in the protection of the Black-necked Crane, promotes exchanges and cooperation between protected areas, scientific research and education personnel, and jointly promotes species and environmental protection.

(4) After the establishment of the network, the average annual number of papers published was twice that before its establishment, and high-level papers accounted for more than 80%. In the same time, more than 30 postgraduate students have become engaged in Black-necked Crane research.

(5) Main participating organizations of the network are Black-necked Crane nature reserves. Through participating in the network, the reserve staff have been very motivated to carry out the conservation work of the Black-necked Cranes. The staff members have actively exchanged their work experience in protection and monitoring, and the number of research and monitoring articles published by the reserves has increased dramatically.

(6) A "Black-necked Crane Conservation Network" column was set aside in the "China Crane News", which not only improved the level of the "China Crane News", but also helped to publicize the work by the Black-necked Crane Conservation Network. It has promoted the public's environmental education and environmental awareness.

(7) The Black-necked Crane Conservation Network provides a platform for some non-governmental organizations, nature reserves and schools to exchange popular science education and environmental education activities, and has inspired more local primary and secondary schools to carry out activities such as teacher training education, local school curriculum publishing and teaching. By participating in the network meeting, teachers who carry out environmental education have learned new knowledge about the Black-necked Crane.

(8) After 10 years of efforts, the International Union for Conservation of Nature (IUCN) downgraded the Black-necked Crane from vulnerable to near threatened in 2020, indicating that the conservation of the Black-necked Crane has made remarkable achievements. The Black-necked Crane Conservation Network was also selected as one of the 100+ global typical cases of biodiversity.

5. Suggestions

In early August 2024, core group members of the network held a meeting in Ulanhot, Inner Mongolia to discuss the future operation of the network, mainly focusing on promoting leadership for the younger generation. The meeting elected Professor Su Haijun of Guizhou University as the new leader of the Black-necked Crane Conservation Network Working Group, and members of the working group include Wu Fei and Wu Heqi from the Kunming Institute of Zoology of Chinese Academy of Sciences, Zhang Lixun from Lanzhou University, Kong Dejun from Yunnan University, Liu Qiang from Southwest Forestry University, Wang Yihua from NBBC and other young researchers, as well as Yang Bo, Director of ICF's China Project Office. The three founders of the network will continue to contribute to the conservation network as consultants. At the same time, it was decided that the 9th Annual Meeting of the Conservation Network would be held in Huize, Yunnan in December 2024. At the December meeting, the new working group will formally take over, and discuss and improve the operation mechanism of the Black-necked Crane Conservation Network. It is believed that under the leadership of the new working group (2024-25), the Black-necked Crane Conservation Network will get better and better. Here are a few suggestions:

(1) Improve the operation of the Black-necked Crane Conservation Network through developing and approving Network Operation Regulations.

(2) Recruit more young scientific researchers and conservationists to become the backbone of the network.

(3) Continue to hold the annual meeting of the Black-necked Crane Conservation Network.

(4) Further strengthen cooperation among members, jointly apply for and carry out international and domestic scientific research projects across regions.

(5) Strengthen the connection and communication between the Black-necked Crane Conservation Network and various organizations along the Central Asian Migratory Flyway.

2017 年以来黑颈鹤新增分布区整理

伍和启¹ 杨稀² 侯鑫磊³ 代红炆⁴ 李泽辉⁵ 李志军⁵ 卓玛姐⁶

1 中国科学院昆明动物研究所, 云南昆明 650201

2 荣经县大相岭自然保护区管护中心, 四川雅安 625200

3 大理大学, 云南大理 671003

4 会泽黑颈鹤国家级自然保护区管护局, 云南会泽 654200

5 云南剑湖湿地省级保护区管护局, 云南剑川 671300

6 四川若尔盖湿地国家级自然保护区管理局 四川若尔盖 624500

近期, 得益于中国政府的系列保护行动, 以及公民科学的发展, 黑颈鹤保护的自然、社会和人文环境显著改善。基于黑颈鹤环志回收记录, 以及新分布区扩展的记录显著增加的现状, 我们整理了自 2017 年以来黑颈鹤的新分布记录。通过对黑颈鹤的野外环志、新发现地点进行整理, 共回收到 16 条信息。现对相关记录分析如下, 以期推动黑颈鹤种群的监测和保护。

在所有的数据中, 涉及到环志回收的信息有 7 条, 这些环志回收记录分布在黑颈鹤的 3 个迁飞区。东部越冬种群的迁飞区有 4 条, 中部越冬种群的迁飞区有 2 条, 西部越冬种群的迁飞区有 1 条。这些环志个体的回收记录, 未呈现跨不同越冬种群的运动, 表明了黑颈鹤迁徙路线选择的稳定性。并扩展了我们对黑颈鹤寿命的认识。例如, 2005 年在草海环志的个体 (2023 年在云南巧家马树湿地记录到), 在野外存活了至少 18 年, 且其在不同越冬区 (贵州威宁草海和云南巧家马树湿地) 之间存在运动。在纳帕海环志的个体重复在原环志地点发现, 在野外存活了至少 14 年, 其对越冬地纳帕海湿地的选择具有稳定性。

5 条信息与迁徙路线上新地点的发现有关, 扩展了我们对迁徙中停地点的认识。其中, 大理剑川剑湖湿地 (2020 年 12 月 13 日, 鸟类摄影爱好者拍摄) 和云南宁蒗泸沽湖格姆女神山下竹地海子等湿地 (泸沽湖落水村村委会副主任杨宾玛) 均为近 30 年的首次记录。其他 4 个地点, 均为新发现的迁徙路线上的中停地点。

1 条信息是新增的繁殖记录。2023 年 7 月, 在甘肃安西极旱荒漠国家级自然保护区南片试验区的疏勒河中下游葫芦河湿地内, 工作人员拍摄到黑颈鹤育雏的影像, 记录到 2 成 1 幼的家庭, 当地海拔高度为 1,300 m, 是目前已知的黑颈鹤海拔最低的繁殖地。

3 条信息与黑颈鹤的分布区扩展有关。扩展的区域为越冬季节的盈江县昔马镇 (2017 年 2 月上旬, 盈江县昔马镇政府工作人员武必恒拍摄), 内蒙古自治区包头市土默特右旗明沙淖乡黄河湿地 (2023 年 3 月 7 日; 赵巍等, 2023), 以及繁殖度夏季的内蒙古额济纳旗 (2022 年 7 月 15 日, 内蒙古额济纳旗农牧业综合行政执法大队湿地保护股工作人员)。

这些新越冬地、繁殖地和度夏地的发现, 可能表明在整体种群增长背景下, 部分黑颈鹤向周边区域扩张。当前, 在全国越冬鹤类同步调查的背景下, 我们对黑颈鹤的越冬分布区已经基本了解。但是, 对黑颈鹤的繁殖种群及其分布, 了解依然有限。未来, 增加黑颈鹤繁殖区域的种群调查和监测, 以及扩展迁徙路线相关重点区域的监测工作, 对黑颈鹤的保护管理, 具有重要的作用。

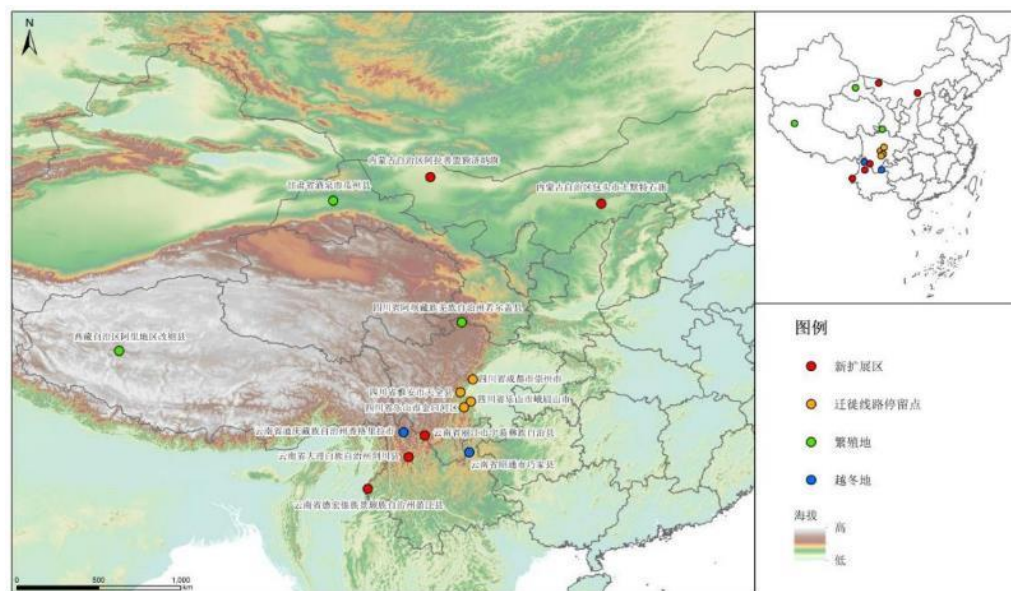


图 1. 2017 年以来环志黑颈鹤回收等新纪录点分布图

Figure 1. New sites of Black-necked Cranes discovered through banding or other means since 2017 in China.

参考文献:

赵巍, 鲁海, 孙建华, 刘瑞龙, 吴彩虹. 内蒙古鸟类新记录——黑颈鹤. 2023. *四川动物* 42 (3): 332

New sites of Black-necked Cranes discovered in China since 2017

Wu Heqi¹, Yang Xi², Hou Xinlei³, Dai Hongyang⁴, Li Zehui⁵, Li Zhijun⁵, Zhuoma Jie⁶

1 Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650201

2 Daxiangling Nature Reserve Management Center, Yingjing County, Sichuan 625200

3 Dali University, Yunnan 671003

4 Huize Black-necked Crane National Nature Reserve, Huize, Yunnan 654200

5 Yunnan Jianhu Wetland Provincial Nature Reserve, Jianchuan, Yunnan 671300

6 Ruoergai Wetland National Nature Reserve, Ruoergai, Sichuan 624500

Recently, thanks to conservation efforts by the Chinese government and the development of citizen science, the natural, social and cultural environment for the conservation of Black-necked Cranes has improved significantly. Based on the significant increase in the records of Black-necked Crane banding and the expansion of its range, we have compiled new distribution records of Black-necked Cranes in China since 2017. By sorting out the banding records and newly discovered locations of Black-necked Cranes, a total of 16 relevant records were collected. These records are analyzed as follows in order to promote the monitoring and protection of the Black-necked Crane population (Figure 1, see original Chinese version above).

Among all the data, there were 7 records related to the recovery of banding, found from the three migratory population routes of the Black-necked Crane. Of the 7 records, 4 were from the eastern wintering population, 2 from the central wintering population and 1 from the western wintering population. The recovery records of these banded individuals did not show movement across different wintering populations. These records have also improved our understanding of the lifespan of the Black-necked Crane. For example, one individual banded in 2005 in Guizhou's Caohai (resighted in Mashu of Qiaojia, Yunnan in 2023) has lived in the wild for at least 18 years, moving between different wintering areas at Caohai of Guizhou and Mashu of Yunnan. An individual banded in Napahai was repeatedly sighted at the original banding site and has survived in the wild for at least 14 years.

Five records were related to the discovery of new locations on the migration route of this species, expanding our understanding of the stopover sites during migration. Among them, Jianhu Wetland in Jianchuan county of

Dali (photographed by a bird photographer on December 13, 2020), Zhudi Haizi wetlands at Lugu Lake at the foot of Gemu Goddess Mountain in Ninglang county of Yunnan (Yang Binma, deputy director of the Lugu Lake Luoshui Village Committee) were all recorded for the first time in the past 30 years. The other locations were all newly discovered stopover sites on the migration routes.

One record was a new breeding site. In July 2023, a family of three birds was recorded in the Hulu River wetland in the middle and lower reaches of the Shule River at Anxi Arid Desert National Nature Reserve in Gansu Province. The reserve staff filmed a pair of Black-necked Crane raising a chick. The altitude of this site was 1,300 meters, the lowest known breeding ground for Black-necked Cranes.

Three records were related to the expansion of the distribution area of Black-necked Cranes. The new sites were Xima Town, Yingjiang County during the wintering season (photographed in early February 2017 by Wu Biheng, a staff member of Xima Town Government, Yingjiang County of Yunnan), the Yellow River Wetland in Mingshanao Township, Tumote Right Banner, Baotou City, Inner Mongolia (March 7, 2023; Zhao Wei et al., 2023), and Ejina Banner, Inner Mongolia during the breeding season (July 15, 2022, by a staff member of the Wetland Protection Unit of the Comprehensive Administrative Law Enforcement Brigade of Agriculture and Animal Husbandry in Ejina Banner, Inner Mongolia).

The discovery of these new wintering, breeding, and summering sites may indicate that some Black-necked Cranes have expanded to surrounding areas in the context of the overall population growth. Currently, in the context of a nationwide coordinated survey of wintering cranes, we basically know about the wintering distribution area of the Black-necked Crane, while know little of the breeding population and its distribution. In the future, strengthening population surveys and monitoring in the breeding areas and expanding monitoring work in key areas related to migration routes will play an important role in the protection and management of the Black-necked Cranes.

Literature cited Omitted.

甘肃盐池湾国际重要湿地黑颈鹤数量创历史新高

色拥军¹ 杨巨才¹ 潘政伍² 郭玉民²

1 甘肃盐池湾国家级自然保护区管护中心, 甘肃肃北 736300

2 北京林业大学, 北京 100083

2024年9月上旬, 甘肃盐池湾国家级自然保护区管护中心与北京林业大学鹤类研究团队, 在盐池湾国际重要湿地联合开展了黑颈鹤种群数量监测工作, 旨在统计盐池湾湿地内黑颈鹤的总数量与基本年龄组成, 为黑颈鹤保护工作提供科学依据。

此次监测以管护中心日常巡护监测路线为主, 并结合多年积累的黑颈鹤分布数据, 于2024年9月2日至5日, 在西北方向扎子沟检查站至东南方向南宁郭勒村的区域内开展调查。调查采用样线法(图1), 借助单筒、双筒望远镜和无人机等监测工具, 使用直接计数法对黑颈鹤种群数量进行统计。

此次种群数量监测工作共记录到黑颈鹤281只, 包括成鸟104只、幼鸟44只和亚成体133只。与去年相比, 黑颈鹤数量增加了43只, 创下盐池湾湿地黑颈鹤数量的历史新高。其中幼鸟数量占该区域黑颈鹤种群总数的15.66%。44只幼鸟分别来自15个育有2

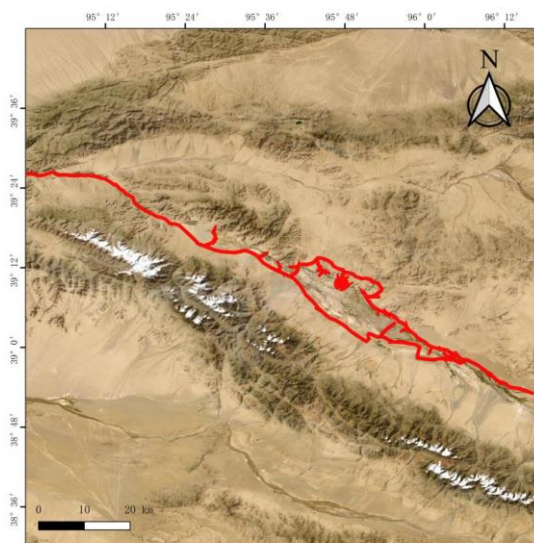


图1. 党河湿地内黑颈鹤监测线路
Figure 1. Routes of Monitoring Black-necked Cranes in Danghe

只幼鸟的家庭和 14 个育有 1 只幼鸟的家庭，表明该区域内的黑颈鹤种群结构相对健康。亚成体数量占 47.33%，是盐池湾湿地黑颈鹤种群数量增长的主要驱动力。在盐池湾乡附近记录到亚成体 75 只，另有由 44 个个体组成的亚成体群活动于黑山脚附近的党河河谷，其余的亚成体则零星分布在党河的其他区域（图 2、图 3）。

盐池湾湿地作为黑颈鹤的重要繁殖地之一，明晰其黑颈鹤种群数量和基本年龄组成，有助于更好地掌握该区域黑颈鹤种群健康状况和未来发展趋势，并为未来的保护措施制定提供数据支撑。



图 2. 黑颈鹤群
Figure 2. Flock of Black-necked Cranes at Yanchiwan
色拥军摄
Photo by Se Yongjun



图 3. 黑颈鹤一家
Figure 2. A family of Black-necked Cranes at Yanchiwan
色拥军摄
Photo by Se Yongjun

Population of Black-necked Cranes in Gansu's Yanchiwan Reaches a Historic High

Se Yongjun¹, Yang Jucui¹, Pan Zhengwu², Guo Yumin²

¹ Management Center of Gansu Yanchiwan National Nature Reserve, Gansu 736300

² Beijing Forestry University, Beijing 100083

In early September 2024, Management Center of Yanchiwan National Nature Reserve, in collaboration with a crane research team from Beijing Forestry University, conducted a survey of Black-necked Cranes at Yanchiwan National Nature Reserve. The objective of the survey was to assess the total number and basic age composition of Black-necked Cranes in the Yanchiwan wetland, providing scientific data to support the conservation efforts for this species.

The survey primarily followed regular patrol routes by the management center and visited other sites determined based on long-term data on Black-necked Crane distribution. From September 2 to 5, 2024, the survey team conducted the survey in the area between the Zhazi Valley Checkpoint in the northwest and Nanning Guole Village in the southeast. The survey employed the line transect method, utilizing spotting scopes, binoculars, and drones to directly count the cranes.

A total of 281 Black-necked Cranes were recorded during the survey, including 104 adults, 44 juveniles, and 133 subadults. Compared to last year, their number increased by 43 individuals, reaching a historical high for the Black-necked Crane population in the Yanchiwan wetland. Juveniles accounted for 15.66% of the total population, with 44 juveniles distributed across 15 families with two juveniles each and 14 families with one juvenile each, indicating a relatively healthy population structure. Subadults made up 47.33% of the population and were the main driver of population growth. 75 subadults were recorded near Yanchiwan Township, while a group of 44 subadults was observed in the Danghe River Valley near the foothills of Heishan Mountain. The remaining subadults were scattered in other areas along the Danghe River.

Yanchiwan is an important breeding ground for Black-necked Cranes. Documenting the population size and basic age composition of the cranes in the Yanchiwan wetland helps to better understand the health status and future development trends of the crane population in this area, providing data support for the formulation of future conservation measures.

[Translation of this article by Pan Zhengwu]

若尔盖湿地春季黑颈鹤的数量

卓玛姐

四川若尔盖湿地国家级自然保护区管理局，四川若尔盖 624599

黑颈鹤作为国家一级保护野生动物，其数量波动状况及分布情况直接体现着生态环境的变化。为及时掌握若尔盖黑颈鹤繁殖期的种群数量和主要分布范围变化，2024 年 4 月底，四川若尔盖湿地国家级自然保护区联合中国科学院昆明动物研究所开展为期 4 天的黑颈鹤种群数量调查。

本次调查以若尔盖湿地国家级保护区黑颈鹤重要分布范围的 4 条样线 90 个固定点位展开，以单、双筒望远镜观测并记录可视范围所有黑颈鹤数量。

经实地调查，四条样线分别记录到东线 54 只、南线 55 只、中线 52 只、西线 95 只，其中领域鹤 189 只，群鹤 67 只，共计 256 只。另外，样线就近的保护区以外也观测到黑颈鹤 102 只。因此，此次在若尔盖县境内的黑颈鹤总计 358 只。



图 1. 在若尔盖湿地活动的黑颈鹤群
Figure 1. A flock of Black-necked Cranes at Ruorgai Marsh. Photo by Namojiu



图 2. 调查人员在若尔盖花湖湿地观察计数
Figure 2. Reserve staff counting cranes at Ruorgai Marsh. Photo by Zhuomajie

The number of Black-necked Cranes in the spring of Ruorgai Wetland

Zhuoma Jie

Ruorgai Wetland National Nature Reserve, Sichuan, Ruorgai 624599

The number and distribution of Black-necked Cranes, a Class I species of state protection, directly reflect the changes in the ecological environment. In order to monitor timely the population changes and their habitats of Black-necked Cranes at Ruorgai National Nature Reserve during the breeding period, at the end of April 2024, the reserve, working with the Kunming Institute of Zoology of the Chinese Academy of Sciences conducted a four-day population survey of Black-necked Cranes.

This survey was carried out at 90 fixed points along four transects in the reserve, and all Black-necked Cranes in the sample area were observed and recorded with spotting scopes and binoculars.

The survey recorded 54 cranes on the east transect, 55 on the south transect, 52 on the middle transect, and 95 on the west transect, with a total of 256 birds, including 189 territorial birds and 67 juvenile flock birds. In addition, 102 Black-necked Cranes were observed outside the protected area near the transects, so a total of 358 Black-necked Cranes were observed in the wetlands within Ruorgai County.

通过功能连通性网络揭示黑颈鹤(*Grus nigricollis*)的保护空缺

潘政伍 王颖君 郭玉民
北京林业大学, 北京 100083

功能连通性描述了景观结构和元素如何促进或阻碍生物在资源斑块之间的移动, 其侧重于通过生物的行为对栖息地进行量化评估。通过研究物种的功能连通性网络, 我们能够更加深入、直观地了解其运动模式, 有助于识别关键栖息地, 弥补其他栖息地评估方法的不足, 并为制定保护政策提供科学依据。

黑颈鹤(*Grus nigricollis*)作为国家一级保护野生动物, 近年来其种群数量虽有所增长, 但依然面临诸如电线、网围栏及栖息地丧失等多重威胁。这些威胁广泛存在于黑颈鹤的各类栖息地中, 作为候鸟, 任何一个停歇地的丧失都可能破坏其迁徙网络的完整性, 进而引发种群数量的下降。然而, 现有关于黑颈鹤的研究通常忽视了功能连通性网络在栖息地评估中的作用, 缺乏从网络交互的角度对栖息地进行结构化的评估, 导致黑颈鹤的部分重要栖息地未能得到充分的识别和保护。

基于 2015 年 1 月至 2022 年 8 月间对 206 只黑颈鹤的跟踪数据, 我们使用 DBSCAN 聚类算法识别出了 28 个黑颈鹤栖息地。在构建功能连通性网络时, 依据图论中有向图的概念, 以这 28 个栖息地作为节点, 黑颈鹤在栖息地间的飞行作为有向边, 使用 R 包 ‘igraph’ 生成功能连通性网络, 并计算每个栖息地的中介中间值、度(一个节点连接其它节点的有向边数量)和紧密度等网络参数。由于中介中间值被视为一个节点对网络中其它节点间连接贡献程度的衡量指标, 我们将其作为评估栖息地重要性的主要依据。

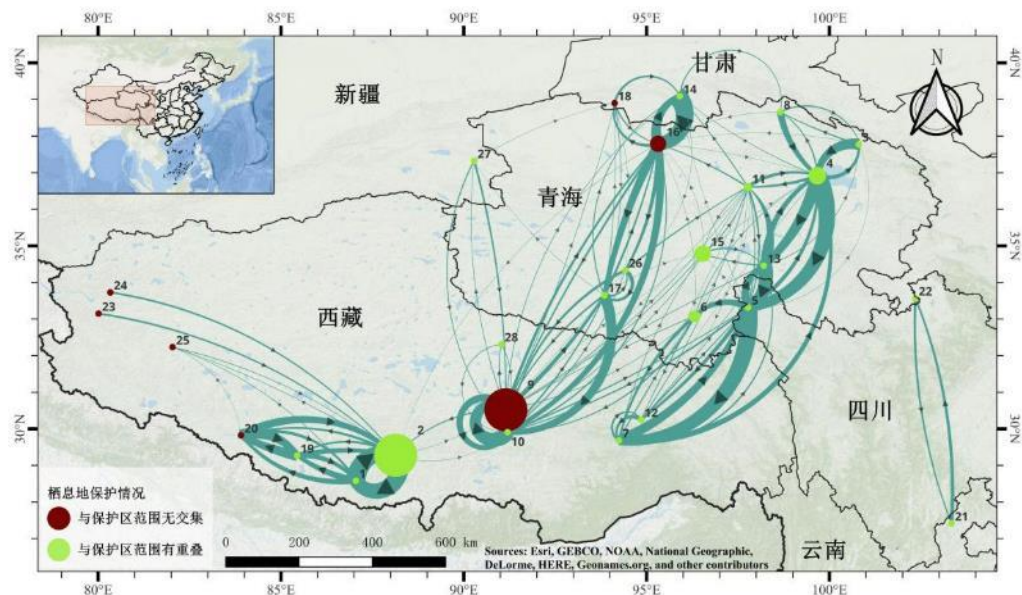


图 1 功能连通性网络概况以及栖息地保护情况, 图中节点的大小与其中介中间值有关

Figure 1 Overview of Functional Connectivity Network and Protection Status of Habitats of Black-necked Cranes. The size of the nodes in the figure corresponds to their betweenness.

结果表明, 有两个栖息地的中介中间值显著高于其他栖息地。其中, 位于西藏自治区当雄县的栖息地拥有最高的中介中间值(227)和度(21), 另一个位于日喀则市附近雅鲁藏布江河谷的栖息地不仅中介中间值较高(198), 还包含最多的跟踪位点数量(228,585)。然而, 将栖息地范围和目前保护区范围重叠分析时发现, 有 25% 的栖息地节点完全没有位于保护地内, 其中包括网络中最重要当雄县栖息地。基于上述结论, 我们建议加强对西藏当雄县、青海大柴旦等此类高中介中间值且未被保护区覆盖的栖息地的保护, 并在保护区规划中纳入栖息地对整体网络贡献的考量, 使用功能连通性网络作为结构化工具来综合评估栖息地的重要性。

表 1 网络中栖息地节点的参数和保护状况，加粗并带有星号的中介中间值表示重要节点
 Table 1 The metrics and protection status of nodes of habitats of Black-necked Cranes in the network. The rows with bold and asterisks betweenness value indicate important nodes in the networks.

栖息地序号 No.	中介中间值 Betweenness	跟踪位点数 Numbers of tracking points	度 Degree	紧密度 x 10 ⁻⁸ Closeness x 10 ⁻⁸	是否受到保护? Protected? Y/N
1	2	215,041	7	4.20	Y
2	198*	228,585	14	4.64	Y
3	0	66,488	7	4.31	Y
4	80	172,596	16	4.82	Y
5	31	33,004	16	5.64	Y
6	53	7,885	11	5.50	Y
7	10	168,162	10	3.96	Y
8	11	27,837	6	4.48	Y
9	227*	15,686	21	5.81	N
10	16	227,875	16	5.42	Y
11	39	42,947	19	5.54	Y
12	6	23,681	9	3.88	Y
13	16	14,226	12	5.54	Y
14	5	136,184	10	4.49	Y
15	75	7,526	11	5.78	Y
16	74	70,200	18	4.96	N
17	31	12,862	13	6.27	Y
18	11	10,064	8	4.36	N
19	0	11,107	6	3.78	Y
20	2	72,136	7	3.35	N
21	0	18,859	2	145	Y
22	0	36,762	2	145	Y
23	0	8,117	1	2.34	N
24	0	8,564	1	2.33	N
25	0	6,376	4	2.86	N
26	1	6,850	9	5.79	Y
27	0	18,236	5	3.98	Y
28	0	18,762	3	4.63	Y

(本研究目前处于投稿阶段)

Revealing Conservation Gaps of the Black-necked Crane (*Grus nigricollis*) through Functional Connectivity Network

Pan Zhengwu, Wang Yingjun, Guo Yumin
 Beijing Forestry University Beijing 100083

Functional connectivity describes how landscape structures and elements facilitate or impede the movement of organisms between resource patches, focusing on quantifying habitats based on organism behavior. By studying the functional connectivity network of a species, we can gain a deeper and more intuitive understanding of its movement patterns, which helps to identify critical habitats, fill gaps left by other habitat assessment methods, and provide a scientific basis for conservation policy development.

As a national first-class protected animal, Black-necked Crane (*Grus nigricollis*) has been seen with some population growth in recent years but still faces multiple threats such as power lines, fencing, and habitat loss. These threats are widespread across the various habitats of the Black-necked Crane. As a migratory bird, the loss of any stopover site could disrupt the integrity of its migration network, leading to a decline in population numbers. However, studies on Black-necked Cranes have often overlooked the role of functional connectivity networks in habitat evaluation. The lack of structured evaluation from a network interaction perspective has resulted in some critical habitats not being sufficiently identified or protected.

Based on tracking data from 206 Black-necked Cranes collected between January 2015 and August 2022,

we used the DBSCAN clustering algorithm to identify 28 Black-necked Crane habitats. In constructing the functional connectivity network, we used the concept of a directed graph in graph theory, treating these 28 habitats as nodes, and the flights of Black-necked Cranes between habitats as directed edges. Using the R package ‘igraph,’ we generated a functional connectivity network and calculated network metrics such as betweenness, degree (the number of directed edges connected to a node), and closeness for each habitat. Since betweenness is regarded as a measure of a node’s contribution to connections between other nodes in the network, we used it as the primary metric for assessing habitat importance.

The results indicate that two habitats had significantly higher betweenness than others. The habitat in Damxung County, Tibet Autonomous Region, had the highest betweenness value (227) and degree (21). Another habitat located in the Yarlung Zangbo River Valley near Shigatse had a high betweenness value (198) and also contained the most tracking points (228,585). However, when overlapping the habitat ranges with current protected areas, we found that 25% of the habitat nodes were completely unprotected, including the most important Damxung County habitat. Based on these findings, we recommend prioritizing the protection of habitats that are both characterized by high betweenness values and currently lacking protection, such as Damxung County, Tibet, and Dachaidan, Qinghai. Additionally, the contribution of habitats to the overall network should be considered in conservation planning, utilizing functional connectivity networks as a structured tool to assess habitat importance comprehensively.

(This study is currently under manuscript submission)
[Translation of this article by Pan Zhengwu]

草海保护区越冬期黑颈鹤数量创历史新高

马思怡、刘懿、李钥、陈颜明、张平、蔡玖、林科钱、王汝斌
贵州草海国家级自然保护区管理委员会 贵州威宁 553100

贵州草海国家级自然保护区（简称草海保护区）位于贵州省威宁彝族回族苗族自治县城南侧，地处云贵高原乌蒙山区腹地。地理坐标介于 26°47'35"N~26°52'10"N,104°9'23"E~104°20'10"E 之间。保护区总面积 12,000hm²，是贵州省最大的高原天然淡水湖泊。保护区属于亚热带高原季风气候区，具有日照丰富、冬暖夏凉、冬干夏湿的气候特征。草海保护区常年水域面积 25Km²，是高原鹤类——黑颈鹤 (*Grus nigricollis*) 的主要越冬地之一。近年来，到草海越冬的黑颈鹤数量在 2000 只以上。在 2023-2024 年越冬期，草海保护区开展了 4 次黑颈鹤同步调查，每次调查连续进行两天。2023-2024 越冬期日常监测到黑颈鹤数量最多的为 2024 年 1 月 18 日的调查结果，数量为 2,597 只（表 1）。这是自草海保护区有监测史以来，记录到越冬黑颈鹤种群数量最多的一次。

表 1 2023-2024 年越冬期贵州草海国家级自然保护区黑颈鹤数量
Table 1. Numbers of Black-necked Cranes recorded from 8 counts during winter of 2.23/2024 at Cao Hai NNR

地点 Site	调查日期 (年.月.日) Survey Date (yy.mm.dd)							
	2023.11.25	2023.11.26	2024.01.04	2024.01.05	2024.01.17	2024.01.18	2024.03.09	2024.3.10
刘家巷	262	268	308	316	316	316	306	305
吴家岩头	93	90	84	87	75	79		
阳关山	91	105	235	205	317	340	50	52
温家屯	568	529	730	810	819	754	162	154
胡叶林	600	713	272	273	260	276	80	80
朱家湾	91	41	193	226	242	268	113	139
王家院子	281	273	338	319	317	321	83	75
锁黄仓湿地			284	254	176	170	108	86
杨湾桥水库			72	72	72	73		
合计	1986	2019	2516	2562	2594	2597	902	891

The number of Black-necked Cranes wintering at Caohai has reached a record high

Ma Siyi, Liu Yi, Li Yao, Chen Yanming, Zhang Ping, Cai Jiu, Lin Keqian, Wang Rubin
Guizhou Caohai National Nature Reserve, Guizhou 553100

Guizhou Caohai National Nature Reserve is located in the south of Weining town, Weining County, Guizhou Province, in the center of the Wumeng Mountains on the Yunnan-Guizhou Plateau. The geographical coordinates of the reserve are between 26°47'35"N~26°52'10"N, 104°9'23"E~104°20'10"E. The total area of the reserve is 12,000 ha, and it is the largest plateau natural freshwater lake in Guizhou Province. The reserve has an open water of 25 km² and is one of the main wintering sites for Black-necked Crane. In recent years, the number of wintering Black-necked Cranes at Caohai has exceeded 2,000. During 2023/2024 winter, the reserve conducted four coordinated surveys of Black-necked Cranes, each of which lasted for two consecutive days. The largest number of Black-necked Cranes from these counts was 2,597 on January 18, 2024 (see Table 1 in the original Chinese article above). This is the largest number of wintering Black-necked Cranes recorded ever since the establishment of the Caohai National Nature Reserve.

Role of Exchange Visits Between Range Countries in Furthering Cause of Black-necked Crane Conservation

Pankaj Chandan and Ms. Nisa Khatoon
Himalayan Foundation for Conservation Leadership, India

1. Introduction

Exchange visits by both scientific teams and community groups play a crucial role in the conservation of migratory birds, particularly species like Black-necked Crane, which rely on diverse ecosystems across different countries for breeding and wintering. These visits foster collaborations, knowledge sharing and strengthen conservation efforts from local to regional level. Scientific teams from different regions can share data on bird populations, migration patterns, threats, and habitat requirements. By comparing findings, teams can gain a holistic understanding of the species conservation needs across its migratory range, leading to more effective protection measures. These exchange visits have immense value as they help harmonise conservation strategies across borders. Exchange visits also forge partnerships between various organizations, researchers, and communities. These collaborations create a network of conservationists working towards shared goals, enhancing capacity to protect migratory species. Visits by educational teams to schools or conservation centres allow for the exchange of ideas on engaging youth and local stakeholders in conservation efforts. This also results in building future conservation leadership at landscape and regional level. Overall, exchange visits are instrumental in fostering international cooperation, sharing best practices, and strengthening both scientific research and community-based conservation efforts. These collaborations are essential for safeguarding migratory birds like Black-necked Crane, whose survival depends on effective conservation across multiple regions.

2. Recent Exchange Visit from Bhutan to India for Black-necked Cranes

The recent visit of a delegation from Bhutan to Ladakh in India in the month of August 2024, marked a significant step in the ongoing collaboration between India and Bhutan in the field of wildlife conservation. The primary focus of this trip was to study and understand the various conservation initiatives aimed at protecting the breeding population of the Black-necked Crane in Ladakh. This majestic bird, which winters in Bhutan, stands as a powerful symbol of the deep-rooted ties and mutual cooperation between the two nations. The Black-necked Crane not only represents the shared ecological heritage of India and Bhutan but also serves as a beacon of peace and harmony in the region. The insights gained during this visit are expected to enhance conservation efforts, fostering stronger cross-border collaboration in safeguarding this iconic species.



Photo 1. A pair of Black-necked Crane along with a Grey Heron feeding at a wetland in Ladakh in October 2024

图 1. 一对黑颈鹤与一个苍鹭在拉达克的一个湿地上活动



Photo 2. BNC Conservation Group from RSPN Bhutan receiving a warm welcome in Ladakh in India

图 2. 不丹皇家自然保护协会人员在拉达克受到热烈欢迎

3. Building Transnational Partnerships

This visit of a delegation from RSPN Bhutan to Ladakh marked a significant step towards enhancing transboundary conservation efforts for the Black-necked Crane, a species revered in both regions. The Black-necked Crane, which breeds in the high-altitude wetlands of Ladakh and winters in Bhutan, serves as a powerful symbol of the shared ecological heritage and mutual cooperation between India and Bhutan. This visit aimed to study the various conservation initiatives in Ladakh, focusing on the breeding population of this iconic species. The collaboration between the two countries, centred around the conservation of the Black-necked Crane, not only strengthens the bond between India and Bhutan but also promotes peace and harmony across the region.

4. Strengthening Conservation Education

During this visit the team from RSPN Bhutan also visited the Mahabodhi International School at Leh and interacted with the students. For learning from the visiting scientists, a special workshop on Black-necked Cranes was also organised at the school campus. In this special students' workshop, the young minds of Mahabodhi International School in Leh came together to showcase their artistic talents in a heartwarming gesture of friendship between India and Bhutan. Through vibrant and evocative paintings, the students depicted the Black-necked Crane, a revered symbol of harmony and unity between the two nations. These paintings, created with deep compassion and respect for nature, were not just artistic expressions but also powerful symbols of the shared commitment of India and Bhutan towards the conservation of these majestic birds and their sacred habitats. The workshop emphasized the role of youth in environmental stewardship and highlighted how art can transcend borders, bringing communities together in the shared mission of protecting our natural heritage. The presentation of these paintings to all the visiting delegates from Bhutan was a beautiful reflection of the students' understanding of the ecological and cultural significance of the Black-necked Crane, as well as their desire to strengthen the bonds of friendship between the people of India and Bhutan. Their efforts were a testament to the power of compassion in securing a sustainable future for both the cranes and the communities that revere them.

5. Community Engagement and Cultural Exchange

During their visit to Ladakh, officials from the Royal Society for Protection of Nature (RSPN), Bhutan, also visited a high-altitude wetland site and had a meaningful interaction with the nomadic community of Changthang, who are renowned for rearing the Pashmina goat and are the primary producers of raw Pashmina wool. This interaction was a key highlight of the visit, as it provided the RSPN officials with a deeper understanding of the local community's lifestyle, challenges, and their intrinsic connection to the natural environment specially with Black-necked Cranes. The nomads of Changthang, who live in one of the most remote and harsh environments in the world, shared their profound love, regard, and respect for the Black-necked Cranes, a species that is also culturally significant in Bhutan. They conveyed that the presence of these majestic birds is considered an omen of good fortune and prosperity, and their arrival each year is eagerly awaited by the community.

The Changthang people emphasized that their way of life is deeply intertwined with nature, and they consider themselves custodians of the land and its wildlife. They expressed pride in coexisting peacefully with the Black-necked Cranes, ensuring that their rearing practices of Pashmina goats do not disturb the cranes' habitats. This harmonious relationship between the nomads and the cranes is a testament to the community's commitment to conservation and their understanding of the delicate balance between human activity and wildlife preservation. The RSPN officials appreciated the insights shared by the Changthang nomads and recognized the importance of incorporating traditional knowledge and practices into modern conservation strategies. The interaction

underscored the significance of engaging local communities in conservation efforts, as their active participation and respect for wildlife are crucial for the success of any conservation project. This exchange of knowledge and experiences between the RSPN officials and the Changthang community will undoubtedly contribute to strengthening the conservation initiatives for the Black-necked Cranes in both Bhutan and India.



Photo 3. Bhutan BNC Team During a Meeting With a Local Religious Leader in Ladakh

图 3. 不丹皇家自然保护协会的人员与拉达克宗教人员合影



Photo 4. Mr Jigme Tshering from RSPN Bhutan Sharing His Stories on Crane Conservation from Bhutan with Local Nomadic Community in Ladakh in India

图 4. 来自不丹皇家自然保护协会的 Jigme Tshering 先生与拉达克的游牧民分享黑颈鹤故事

6. Harmonizing Conservation Efforts

The recent knowledge exchange tour of the RSPN team from Bhutan to Ladakh in India has been a significant step in strengthening cross-border conservation efforts for the Black-necked Crane. This collaboration has provided both Bhutan and India with valuable insights into each other's conservation strategies, challenges, and successes. The shared experiences and collective learning during the visit will undoubtedly foster more robust and coordinated initiatives for the protection of this iconic species in the trans-Himalayan region. By building on this foundation of mutual understanding and cooperation, both countries are well-positioned to implement more effective conservation practices, ensuring a brighter future for the Black-necked Crane across its range. Since, Black-necked Crane is a species found in Bhutan, China and India, so in future such exchange programmes also need to be organised between China and India as well as between Bhutan and China. This will set an excellent example of scientific collaboration between the range countries for the conservation of migratory species of birds.

两国交流访问在推动黑颈鹤保护事业中的作用

Pankaj Chandan Nisa Khatoon
喜马拉雅自然保护能力建设基金会

1 前言

科研和社区团体的交流访问在候鸟自然保护中发挥着至关重要的作用。对像黑颈鹤这样的物种尤其如此，因为它们依赖不同国家的多样化生态系统进行繁殖和越冬。这些访问促进了合作、知识共享，并加强了从地方到地区水平上的保护工作。来自不同地区的科学团队可以分享有关鸟类种群、迁徙模式、威胁和栖息地需求的数据。通过比较研究结果，这些团队可以全面了解物种在其整个分布区的保护需求，从而采取更有效的保护措施。这些交流访问具有巨大的价值，因为它们有助于协调跨境保护战略。交流访问还建立了各种组织、研究人员和社区之间的伙伴关系。这些合作建立了一个致力于共同目标的自然保护人员网络，增强了保护候鸟的能力。环境教育团队对学校或保护中心的访问，能让青年人和当地利益相关者参与保护工作并交换想法，这也有助于在景观和区域层面培养未来的自然保护骨干。总体而言，交流访问有助于促进国际合作、分享最佳实践，并加强科学研究和社区保护工作。这些合作对于保护黑颈鹤等候鸟至关重要，它们的生存取决于多个地区的有效保护。

2 不丹近期对印度进行了黑颈鹤交流访问

不丹代表团最近于 2024 年 8 月访问了拉达克，这标志着印度和不丹在野生动物保护领域持续合作迈出了重要一步。此次访问的主要重点是研究和了解旨在保护拉达克黑颈鹤繁殖种群的各种举措。不

丹是黑颈鹤的越冬地；黑颈鹤把印度和不丹两国紧密地联系在一起，是相互合作的有力象征。黑颈鹤不仅代表了印度和不丹共同的生态遗产，也是该地区和平与和谐标志。此次访问取得的成果有望加强保护工作，促进更强有力的跨境合作，以保护这一旗舰物种。

3 建立跨国伙伴关系

黑颈鹤是不丹和印度两国都享有盛誉的物种。不丹皇家自然保护协会（RSPN）的代表团此次访问拉达克，标志着黑颈鹤跨境保护工作迈出了重要一步。黑颈鹤在拉达克高海拔湿地繁殖，在不丹过冬，是印度和不丹共享生态遗产和相互合作的有力象征。此次访问旨在研究拉达克的各种保护举措，重点关注这一标志性物种的繁殖种群。两国围绕黑颈鹤保护展开的合作不仅加强了印度和不丹之间的联系，也促进了整个地区的和平与和谐。

4 加强自然保护教育

在此次访问期间，RSPN 团队还参观了列城摩诃菩提国际学校并与学生进行了互动。为了向来访的科学家学习，学校还专门组织了一场关于黑颈鹤的研讨会。在研讨会上，列城摩诃菩提国际学校的年轻人齐聚一堂，充分展示他们的艺术才华，以温馨的方式表达印度和不丹之间的友谊。通过生动活泼的绘画，学生们描绘了象征两国和谐与团结的黑颈鹤。这些绘画充满了对自然的深切呵护和尊重，不仅是艺术展现，也表达了印度和不丹共同致力于这个神鸟及其栖息地的承诺。研讨会着眼于青年在环境管理中的作用，强调了艺术如何超越国界，并将社区团结在一起，共同完成保护我们自然遗产的使命。列城学生向不丹客人展示这些绘画，完美地体现了学生们对黑颈鹤生态和文化意义的理解，以及他们加强印度和不丹人民友谊纽带的愿望。这些行动证明了他们对自然保护的承诺，以确保鹤类以及与其共生的人类社区拥有可持续的未来。

5 社区参与和文化交流

在访问拉达克期间，RSPN 人员还参观了一个高海拔湿地，并与北部高原游牧社区进行了有意义的互动。北部高原游牧社区以饲养帕什米纳山羊而闻名，是帕什米纳羊毛的主要生产者。这次互动是此次访问的一大亮点，因为它让 RSPN 官员更深入地了解了当地社区的生活方式、所面临的挑战以及他们与自然环境的关系，尤其是与黑颈鹤的密切联系。北部高原游牧民生活在世界上最偏远和严酷的地域，他们对黑颈鹤有深厚的热爱、尊重和敬意，黑颈鹤也是不丹具有重要文化意义的物种。这些游牧民表示，当地有这些魅力无穷的鸟类是好运和繁荣的征兆，他们每年都热切期待它们的到来。

北部游牧民强调，他们的生活方式与自然息息相关，他们认为自己是这片土地及其野生动物的守护者。他们为与黑颈鹤和谐相处而感到自豪，并确保帕什米纳山羊放牧活动不会干扰黑颈鹤的栖息。游牧民与黑颈鹤之间的这种和谐关系证明了社区对自然保护的承诺以及他们对人类活动与野生动物保护之间生态平衡的理解。RSPN 人员很高兴北部高原游牧民所做的知识和经验分享，并认识到将传统知识和做法融入现代保护战略的重要性。此次与当地社区的互动体现了社区参与保护工作的重要性，因为当地的积极参与和对野生动物的尊重对于任何保护项目的成功都至关重要。RSPN 人员与北部高原游牧社区之间的知识和经验交流无疑将有助于加强不丹和印度的黑颈鹤保护工作。

6 协调保护工作

RSP 人员这次对拉达克进行知识交流之旅，是加强跨境黑颈鹤保护工作的重要一步。此次合作为不丹和印度提供了宝贵的交流机会，让双方了解彼此的保护策略、挑战和成功经验。此次访问期间分享的经验将知识将进一步促进相互协调和保护行动，以确保喜马拉雅山脉地区这一标志性物种的有效保护。通过建立相互理解和合作的基础，两国都能够实施更有力的保护措施，确保黑颈鹤在其整个分布区拥有更光明的未来。由于黑颈鹤是一种在不丹、中国和印度都有分布的物种。因此，未来印度与中国以及不丹与中国之间也需要组织此类交流项目，这将为分布国之间在候鸟保护方面的科学合作树立一个极好的榜样。

Flight of Hope: Collaborative Conservation of Black-necked Cranes in India

Pankaj Chandan & Tsewang Rigzin
Himalayan Foundation for Conservation Leadership, India

1. Introduction

Nestled in the high-altitude wetlands of Ladakh, and at few valleys in the northeast India, the Black-necked Crane (*Grus nigricollis*) reigns as a symbol of grace and resilience. Known for its striking appearance—a slender black neck contrasted by pearly gray wings and a red crown—this bird is one of the most enigmatic species found in the Himalayas. The Black-necked Crane is not just a marvel to behold but a key indicator of the health of its ecosystem, acting as a sentinel for the fragile environment in which it resides. Conservation of this species has become a significant focus for India, especially as climate change and unplanned and unregulated human activities threaten its habitat.

The existence of Black-necked crane in Changthang region was known to the Changpa nomads since a long time. However, the first scientific record of the species was by Ludlow (1920) who saw three cranes in Tsokar on June 2, 1919, and shot one for identification. Afterwards, several workers have studied different aspects of the Black-necked crane in India. In 2000, the WWF-India started a long-term programme of yearly survey of the Black-necked crane, which continued until 2018. More recently through support from International Crane Foundation (ICF) a focused research and conservation project on Black-necked Crane has been initiated in September 2024.

2. The Black-necked Crane: A Global and Regional Treasure

The Black-necked Crane's journey is as majestic as its flight. It breeds in the wetlands of the Tibetan Plateau, including areas in Ladakh, and winters in the valleys of Bhutan and parts of Tibet. The crane has deep cultural significance, especially in the Buddhist regions where it is revered as a sacred bird. Despite this cultural veneration, the species faces various threats—ranging from direct threats from free ranging dogs, habitat degradation and climate change to human disturbances—placing it on the International Union for Conservation of Nature (IUCN)'s "Near Threatened" list.

India plays a vital role in the conservation of the Black-necked Crane, as Ladakh serves as one of its critical breeding grounds. Efforts to protect this species are spearheaded by various governmental and non-governmental organizations, with collaborative initiatives extending beyond India's borders into Bhutan and China, acknowledging the crane's transboundary habitat. Currently the Department of Wildlife Protection of Ladakh is the lead agency for the conservation of Black-necked Crane.

3. Conservation Challenges for Black-necked Crane in India

The most critical threat to the breeding population of Black-necked Crane in India is from feral and free ranging dogs. Also, the high-altitude wetlands of Ladakh, where these cranes breed, and wintering areas in the northeast India are extremely fragile ecosystems. Climate change has emerged as one of the most significant threats, leading to unpredictable weather patterns, shrinking wetlands, and altered hydrological regimes, all of which impact the wetlands which are critical for the survival of the species. Human encroachment, excessive livestock grazing, and infrastructure development further contribute to habitat degradation. Additionally, disturbance from tourists visiting the high-altitude wetlands adds further pressure to these sensitive environments.

A recent concern has been the growing pressures on water resources in the region. Wetland areas, like Hanle, which are important nesting sites for the cranes, have experienced significant changes due to water extraction for human use and irrigation. Such habitat alteration can have severe consequences for the survival of this species in the region.

4. India's Efforts to Protect the Black-necked Crane

Recognizing the critical need to safeguard this iconic species, India has initiated various conservation measures. Local government wildlife conservation and forest agencies have been at the forefront of these efforts, with support from various non-governmental organizations and local communities.

(1) Wetland Protection and Restoration: The focus has been on protecting the key breeding habitats in Changthang through wetland conservation initiatives. Efforts to regulate tourism, restrict livestock grazing, and promote sustainable water usage have been implemented in select areas. Conservation plans for high-altitude wetlands, along with regular monitoring and surveys, have been prioritized to ensure the cranes' breeding

grounds are protected from further degradation. Two wetlands in Ladakh: Tsomoriri and Tsokar Wetland Complex, having breeding population of Black-necked Cranes have also been declared as Ramsar Sites.

(2) Community Involvement: Ladakh's local communities, particularly the nomadic Changpa herders, are pivotal in conservation efforts. Their traditional knowledge of the landscape is invaluable for monitoring crane populations and their habitats. Local awareness programs and educational initiatives have been undertaken to encourage harmonious coexistence with wildlife. Conservation agencies are also working to create livelihood opportunities that reduce dependency on fragile wetland ecosystems, thereby minimizing human-wildlife conflict.

(3) Transboundary Cooperation: Since the Black-necked Crane migrates between India, Bhutan, and China, international cooperation is essential. India's collaboration with Bhutan, particularly through initiatives like the **Black-necked Crane Festival** in Bhutan's Phobjikha Valley, serves as an example of how cultural engagement can support conservation. Plans are also underway to organize a similar festival in Ladakh, fostering cross-border dialogue and conservation action for the cranes.

(4) Research and Monitoring: Systematic research is critical to understanding the behavior, migration patterns, and population dynamics of the Black-necked Crane. Through the very recently initiated project with support from ICF, surveys have been initiated and a long-term migration study is also proposed. These efforts will guide the development of adaptive conservation strategies to ensure the long-term survival of the species in India.

(5) Role of Indian Army: border army and police forces are also playing a very important role in conservation of Black-necked cranes. They are supporting this conservation initiative by directly protecting the high-altitude wetlands in their areas and also by controlling the menace of solid waste. In some areas they are also maintaining the records about the number of breeding pairs at a specific wetland.

5. Cultural Significance of Black-necked Crane in India

In many areas across its range in India, the Black-necked crane holds cultural as well as spiritual significance and this makes it a holy creature of the high mountain regions. In Tibetan religious scriptures they are also considered as symbols of purity that directly connect with pure and selfless human heart. The Black-necked crane is a spiritual creature for the local people. Most of the people living in Ladakh are Buddhists and in many local Buddhist scriptures, the bird has been perceived as a spiritual creature. All forms of life are respected and killing or damaging any is against the basic philosophy of Buddhism. Several local monasteries in Ladakh have paintings of Black-necked cranes amid gods and goddesses. One such painting is in a monastery at Phyang called Tashi Chosang, at a distance of 17 km from Leh. It is famous for the protective deity of the monastery, Abchi Choski Dolma. There is a separate room for Abchi in the monastery. A crane painting along with Abchi hangs on the wall of the room. In fact, wherever there is a painting of Abchi, it is with a crane, which serves as an ornament of the Abchi. In the monastery, there is a stuffed specimen of Black-necked crane, reported to be brought from a pond near Spituk 160 years ago.

The Black-necked crane also appears on *Thankas*, religious paintings that hang on the walls of monasteries. In Changthang region of Ladakh – the breeding habitat of the Black-necked crane - people live in harmony with the species and regard it as holy bird. Sighting of the species is regarded as a sign of good luck. In Hanle and Chuchul, local people consider the arrival of the Black-necked crane as a sign of prosperity. The Black-necked crane also holds a special place in the hearts of Changpas, the local pastoralist community in Ladakh. They never chase them away from their fields or pastures but instead consider them as an indicator of healthy crops and good pastures.

6. A Bright Future for Black-necked Cranes

Conservation of the Black-necked Crane in India is an ongoing challenge that requires persistent efforts and broad collaboration. The species' future depends not only on governmental policies and international agreements but also on the continued commitment of local communities and the integration of traditional wisdom into modern conservation practices. Publication of the Book on the conservation of Black-necked Crane by WWF-India in 2023 added another dimension to Black-necked Crane conservation in India. India's role as a guardian of the Black-necked Crane highlights the interconnectedness of ecosystems across national borders. The country's commitment to preserving this magnificent bird is a testament to the broader goal of sustaining the delicate balance of life in the Himalayas. With sustained efforts and cooperation from all stakeholders, there is hope that the Black-necked Crane will continue to soar through the skies of Ladakh, gracing the high-altitude wetlands in summers and in the agricultural mountain landscapes the Northeast India in winters for generations to come.



Photo 1. BNC juveniles with an adult feeding near Tsomoriri in Ladakh in India in October 2024

图 2. 2024 年 10 月，在拉达克措莫日日湿地取食的一个黑颈鹤与其两只幼鸟



Photo 1. A Monk Discussing BNC Conservation in Ladakh with Students

图 2 在拉达克，一个和尚与学生们讨论黑颈鹤的保护



Photo 1. Distributing Black-necked Crane Literature to Teachers in a School near a breeding site of a wetland at Hanle in Ladakh

图 3. 给在拉达克湿地旁边的一所学校老师分发黑颈鹤读物



Photo 1. Honouring army officers in India for their role in Black-necked Crane conservation

图 4. 给鹤类保护做贡献的军队颁发荣誉证书

让希望翱翔：印度黑颈鹤合作保护

Pankaj Chandan、Tsewang Rigzin
喜马拉雅自然保护能力建设基金会

黑颈鹤 *Grus nigricollis* 栖息在拉达克的高海拔湿地和印度东北部的几个山谷中，是优雅和坚韧的象征。这种鸟以其引人注目的外表特征而闻名——细长、黑色的颈部与灰白色的翅膀和红色的顶冠形成鲜明对比——是喜马拉雅山脉最为神奇的物种之一。黑颈鹤不仅是人人崇尚的精灵，而且是其栖息的生态系统的守护者及其健康状况的关键指标。在全球气候变化的大环境背景下，加上黑颈鹤栖息地受到来自无序的人类活动威胁之下，这一物种已成为印度社会各界关注的焦点。

印度北部高原地区黑颈鹤的存在早已为这里的游牧民族所知。然而，该物种的首次科学记录是由 Ludlow (1920) 于 1919 年 6 月 2 日在措卡尔 (Tsokar) 看到三只鹤，并射杀了其中一只进行鉴定。此后，几名研究人员对印度的黑颈鹤进行了各种研究。2000 年，世界自然基金会印度分会启动了一项长期的黑颈鹤年度调查项目，该项目一直持续到 2018 年。最近，在国际鹤类基金会 (ICF) 的支持下，一项针对黑颈鹤的重点研究和保护项目已于 2024 年 9 月在印度启动。

1. 黑颈鹤：全球和地区的瑰宝

黑颈鹤的一生像它有力而优雅的飞行一样富有魅力。它在青藏高原的湿地中繁殖，另在拉达克的高原湿地也有一小的繁殖种群，在不丹和西藏部分地区的山谷中过冬。鹤类具有深厚的文化意义，尤其是在佛教地区，它被尊为神鸟。尽管黑颈鹤的文化地位很高，但该物种面临着各种威胁如从野狗捕食、栖息地退化、气候变化、人类干扰，已将其列入国际自然保护联盟 (IUCN) 的“近危”名单。

拉达克是黑颈鹤重要的繁殖地，在黑颈鹤的保护中发挥着至关重要的作用。这一物种的保护工作由政府和非政府组织多机构开展。考虑到黑颈鹤是一个跨境物种，它的保护需要与其它分布国不丹和中国协调。目前，拉达克的野生动物保护部是黑颈鹤保护工作的牵头机构。

2. 印度黑颈鹤保护面临的挑战

印度黑颈鹤繁殖种群面临的重大威胁来自野狗和散养狗。此外，黑颈鹤繁殖地拉达克的高海拔湿地以及印度东北部的越冬地都是极其脆弱的生态系统。气候变化已成为最重大的威胁之一，导致天气模式不可预测、湿地萎缩和水文状况改变，所有这些都影响了对黑颈鹤生存至关重要的湿地。湿地开垦、过度放牧和基础设施建设进一步加剧了栖息地的退化。此外，高海拔湿地旅游业的发展也给这十分敏感的环境带来了进一步的压力。

最近令人担忧的是这个高海拔地区水资源压力越来越大。拉达克的汉勒等湿地是黑颈鹤的重要筑巢地。由于人类抽水用于灌溉，这些湿地发生了重大变化。这种栖息地的改变可能对该物种在该地区生存产生严重后果。

3. 印度保护黑颈鹤的努力

认识到保护这一标志性物种的迫切需要，印度已采取各种保护措施。印度有关政府的野生动物保护和林业部门一直走在这些努力的前列，并得到了相关非政府组织和当地社区的支持。

(1) 湿地保护与恢复。启动湿地保护项目，重点是保护北部高原地区黑颈鹤的主要繁殖栖息地。在项目地区，实施了规范旅游业、限制牲畜放牧和促进可持续用水的工作。高海拔湿地的保护项目以及定期监测和调查已被列为优先事项，以确保鹤类的繁殖地不会进一步退化。拉达克的措莫日日 (Tsomoriri) 和措卡尔 (Tsokar) 两处湿地拥有黑颈鹤的繁殖种群，也被列入拉姆萨尔湿地。

(2) 社区参与：拉达克当地社区，尤其是游牧牧民，在保护工作中发挥着关键作用，他们对当地景观的认知对于黑颈鹤及其栖息地的保护意义重大。当地已开展提高环境意识和教育活动，以倡导与野生动物和谐共存。保护机构也在努力创造生计机会，减少对脆弱湿地生态系统的依赖，从而最大限度地减少人与野生动物之间的冲突。

(3) 跨境合作：由于黑颈鹤在印度、不丹和中国之间迁徙，国际合作至关重要。印度与不丹的合作，特别是通过不丹普布吉卡 (Phobjikha) 山谷举办的黑颈鹤节等活动，是文化交流促进自然保护的典范。目前还计划在拉达克举办类似的节日，以推动跨境交流和鹤类保护行动。

(4) 研究与监测：系统研究对于了解黑颈鹤的行为、迁徙模式和种群动态至关重要。通过最近 ICF 支持项目的启动，野外调查业已开始，并提出了一项长期迁徙研究方案。这些工作将指导制订适应性保护策略，以确保该物种在印度的长期生存。

(5) 印度军方和警察的作用：边境军方和警察部队也在黑颈鹤的保护中发挥着非常重要的作用。他们对其所在地区的高海拔湿地的保护以及固体废物危害的控制有助于黑颈鹤及其湿地的保护。在某些地点，他们还记录了湿地黑颈鹤的繁殖情况。

4. 黑颈鹤在印度的文化意义

在印度的许多地区，黑颈鹤都具有文化和精神意义，这使它成为高原地区的神鸟。在佛教经文中，它们也被视为圣洁的象征，与人类纯洁无私的心灵相映照。拉达克的大多数人都是佛教徒，在许多当地佛教经文中，黑颈鹤被视为神鸟。所有形式的生命都受到尊重，杀死或伤害任何生命都违反佛教的基本教义。拉达克的几座当地寺院都有黑颈鹤与神灵和女神的绘画。其中一幅画作位于距离列城 17 公里一个寺院，这个寺院以保护神阿布奇而闻名。寺院一个的房间墙上挂着一幅阿布奇的画，上有黑颈鹤。事实上，只要有阿布奇的画，画中就会有一只鹤，作为阿布奇的饰物。寺院里有一个黑颈鹤标本，据说是 160 年前从斯皮图克附近的一个小湖沼里运来的。

黑颈鹤也出现在唐卡上。在拉达克，人们与黑颈鹤和谐相处，并视其为神鸟，看到黑颈鹤被视为好运的象征。在汉勒和楚楚尔，当地人认为黑颈鹤的到来是繁荣的象征。黑颈鹤在拉达克游牧牧民心中也占有特殊的地位。他们从不将黑颈鹤从田地或牧场赶走，而是将其视为庄稼丰收和牧场良好的标志。

5. 为黑颈鹤创造美好未来

印度黑颈鹤的保护是一项持续的挑战，需要持续努力和广泛合作。该物种的未来不仅取决于政府政策和国际协议，还取决于当地社区的持续承诺以及将传统智慧融入现代保护实践。世界自然基金会印度分会于 2023 年出版了关于黑颈鹤保护的一本书籍，为印度黑颈鹤的保护增添了新篇章。印度作

为黑颈鹤守护者的角色凸显了跨越国界的生态系统的相互联系。该国致力于保护这一魅力无穷的鸟类，力图维持喜马拉雅山脉生物多样性和生态平衡的更广泛目标。通过所有利益相关方的持续努力和合作，我们希望黑颈鹤能世代继续在拉达克的天空翱翔，在夏季为高海拔湿地增添光彩，在冬季为其所栖息的农业山区增添光彩。

云南会泽黑颈鹤国家级自然保护区记录到 6 种鹤类

伍和启¹ 代红炆² 袁嵘² 张建军²

1 中国科学院昆明动物研究所 昆明 650201

2 会泽黑颈鹤国家级自然保护区 云南会泽 654200

云南会泽黑颈鹤国家级自然保护区（简称会泽保护区）位于云南东北的曲靖市会泽县，是以国家 I 级重点保护物种黑颈鹤（*Grus nigricollis*）及其越冬栖息地为主要保护对象的保护区。保护区地处长江上游，金沙江一级支流牛栏江流域，是云贵高原东北部地区黑颈鹤及水禽的重要越冬地。该保护区建立于 1990 年，为县级单位，1994 年晋为省级，2006 年晋为国家级。2023 年，云南会泽念湖湿地被列入国际重要湿地。会泽念湖国际重要湿地位于会泽保护区内，是东亚—澳大利西亚、中亚—印度候鸟迁飞通道上的重要越冬地和中途停歇地，也是高原鹤类黑颈鹤在云贵高原上的固定越冬地之一，每年有超过 2 万只水禽在此越冬和停歇。

会泽保护区是鹤类重要的越冬地。通过对保护区历年的鸟类调查结果梳理，会泽保护区目前记录到 6 种鹤类，分别是黑颈鹤、灰鹤（*Grus grus*）、蓑羽鹤（*Anthropoides virgo*）、白鹤（*Grus leucogeranus*）、白头鹤（*Grus monacha*）和沙丘鹤（*Grus canadensis*），成为中国西部地区乃至全国记录到鹤类种类最多的保护区之一。做好湿地保护、修复、监测、巡护、科研以及科普宣教等工作，会为相关鹤类和栖息地保护提供重要支撑。

下面为相关鹤类物种的发现记录：

黑颈鹤和灰鹤是保护区的常见物种，最早的文献记录是吕宗宝（1986）于 1983 年在会泽的者海（原文中为地嘎海，推测可能为者海）记录到。

蓑羽鹤：发现时间 1998 年 11 月 8 日，发现人：王高祥。发现地点：会泽大桥黑颈鹤自然保护区越冬栖息地。

白鹤：发现时间 2012 年 12 月 17 日，发现人：罗伟雄、代红炆。发现地点：大桥片区观鹤大坝东侧。

白头鹤：发现时间 2024 年 1 月 8 日，发现人：付庭进。发现地点：长海子保护片区水库东南侧山坡。

沙丘鹤：发现时间 2024 年 1 月 10 日，发现人：刘俊、代红炆、汤锦淘，发现地点：大桥片区李家湾好望角区域。

参考文献：

吕宗宝. 1986. 黑颈鹤的生态研究. 动物世界 3(1): 37-51.

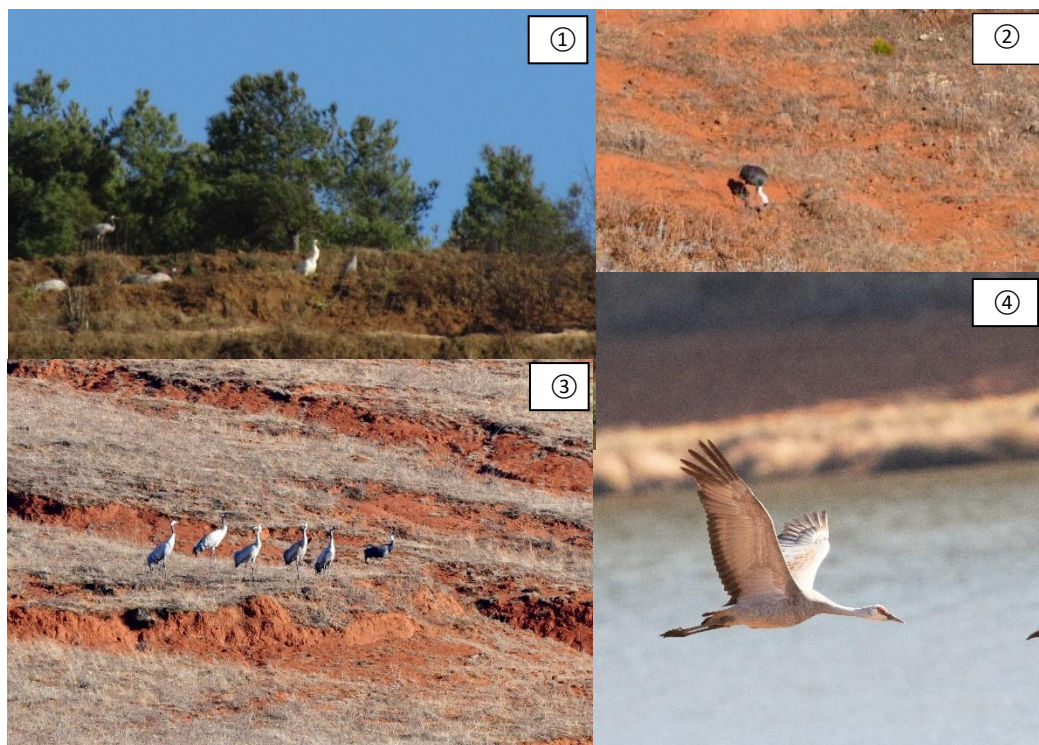


图 1. 在云南会泽新发现的鹤类部分物种时拍摄的照片。①白鹤，②白头鹤，③白头鹤和一群灰鹤，④沙丘鹤
会泽保护区供图

Figure 1. Photos of some crane species discovered at Huize Black-necked Crane NNR. ① Siberian Crane, ② Hooded Crane and ③ A Hooded Crane with a flock of Eurasian Cranes, ④ Sandhill Crane

Photos provided by Huize NNR

Six crane species recorded at Huize Reserve in Yunnan Province

Wu Heqi¹, Dai Hongyang², Yuan Rong², Zhang Jianjun²

1 Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming 650201

2 Huize Black-necked Crane National Nature Reserve, Huize, Yunnan 654200

The Huize Black-necked Crane National Nature Reserve, located in Huize County in northeastern Yunnan, is a reserve mainly protecting the Black-necked Crane *Grus nigricollis*, a national first-class protected species, and its wintering habitat. The reserve is an important wintering place for Black-necked Cranes and waterbirds in the northeastern Yunnan-Guizhou Plateau. The reserve was established originally in 1990, and promoted to a provincial level in 1994, and then upgraded to a national level in 2006. In 2023, Nianhu wetland within the reserve was listed as an internationally important wetland. The reserve is an important wintering place and stopover site along the East Asia-Australasia and the Central Asia-India Migratory Bird flyways. It is also one of the wintering places for the plateau crane Black-necked Crane on the Yunnan-Guizhou Plateau. More than 20,000 waterbirds winter and stop here every year.

Huize reserve is an important wintering place for cranes. Six crane species have been recorded in the reserve, including Black-necked Crane, Eurasian Crane (*Grus grus*), demoiselle Crane (*Anthropoides virgo*), Siberian Crane (*Grus leucogeranus*), Hooded Crane (*Grus monacha*) and Sandhill Crane (*Grus canadensis*), making it one of the reserves with the most crane species in western China and even in the country. Sound reserve management in wetland protection, restoration, monitoring, patrol, scientific research, and popular science education has provided important support for the protection of these cranes and their habitats.

The following are the records of the discovery of related crane species:

Black-necked Crane and Eurasian Crane are common species in the reserve. The earliest documented record was recorded by Lü Zongbao (1986) in 1983 in Zhehai (the original text is Digahai, it is speculated that it may be Zhehai) in Huize.

Demoiselle Crane: November 8, 1998, discovered by Wang Gaoxiang at Daqiao.

Siberian Crane: discovered on December 17, 2012 by Luo Weixiong and Dai Hongyang at the east side of Guanhe Dike.

Hooded Crane: discovered on January 8, 2024 by Fu Tingjin on the southeast hillside of the reservoir at Changhaizi.

Sandhill Crane: January 10, 2024 by Liu Jun, Dai Hongyang, and Tang Jintao at Lijiawan of Daqiao.

Literature cited Omitted.

西藏昌都地区发现繁殖黑颈鹤*

刘红^{1,2} 肖琳娜³ 刘强^{1,2}

¹ 西南林业大学云南省高原湿地保护修复与生态服务重点实验室, 昆明 650224

² 西南林业大学国家高原湿地研究中心/湿地学院, 昆明 650224

³ 北京师范大学生物多样性与生态工程教育部重点实验室, 北京 100875

2023 年 7 月 23 日在西藏自治区昌都地区八宿县郭庆乡日吾错湿地(北纬 30°39'50"~30°45'18", 东经 96°38'57"~96°44'33", 海拔 4443 m)记录到 17 只黑颈鹤 (*Grus nigricollis*), 其中有 3 个家庭鹤的组成确认为 2 只成鹤 1 只幼鹤。调查时使用单筒望远镜 (Carl Zeiss25-45×85) 观察并使用长焦相机拍摄黑颈鹤及其生境 (图 1)。经查阅《西藏鸟类志》(郑建新等, 1983)、《黑颈鹤研究》(李筑眉, 李凤山, 2005)、《中国鸟类特有种》(雷富民, 卢汰春, 2006) 和《中国鸟类分类与分布名录》(郑光美, 2023) 等文献, 确定此前西藏自治区昌都地区尚无黑颈鹤的繁殖记录。黑颈鹤为高原特有鸟类, 繁殖于海拔 2,600~5,000 m 的青藏高原地区, 包括西藏、青海、甘肃、四川、新疆等省、自治区 (李筑眉, 李凤山, 2005; 雷富民, 卢汰春, 2006)。此次发现地距离已报道的黑颈鹤繁殖地青海隆宝滩湿地约 270 km, 距四川稻城海子山湿地约 370 km, 距西藏最近的繁殖地纳木错约为 540 km (图 2)。该处繁殖地由沟谷沼泽以及少量湖滨沼泽构成, 其中沼泽面积约 2,695.17 hm²。附近分布有光伏电厂以及大量输电线, 有可能造成黑颈鹤撞击电线的事故发生。

* 注: 本文原文发表在《四川动物》2024 年第 43 卷第 3 期

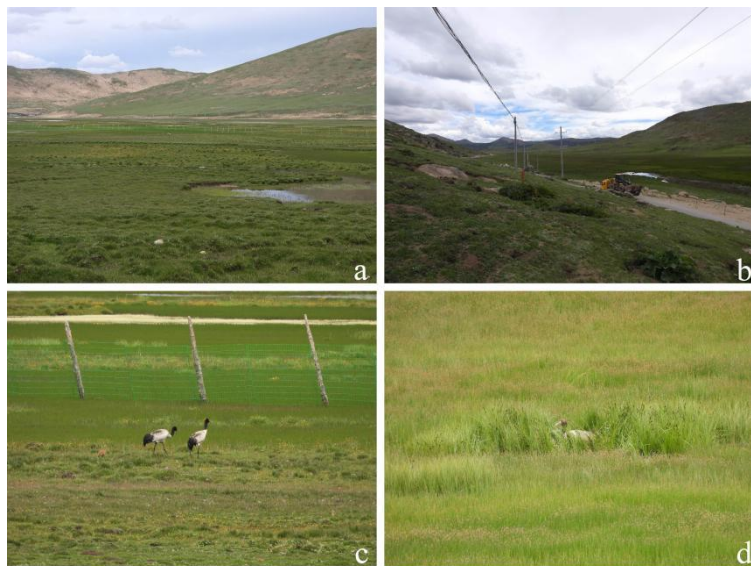


图 1 日吾错湿地繁殖黑颈鹤 *Grus nigricollis* 及其生境 (刘强 摄)

注: a. 沟谷沼泽; b. 繁殖地旁边的输电线; c. 黑颈鹤家庭群 (2 只成鹤 1 只幼鹤); d. 正在卧巢孵卵的黑颈鹤。
 Figure 1. Black-necked Cranes and their habitats in Riwucuo wetland at Qamdo, Tibet. a-river valley marsh, b-powerlines near the breeding site, c-a pair of cranes with their chick, d—a Black-necked Crane sitting on nest. Photo by Liu Qiang.

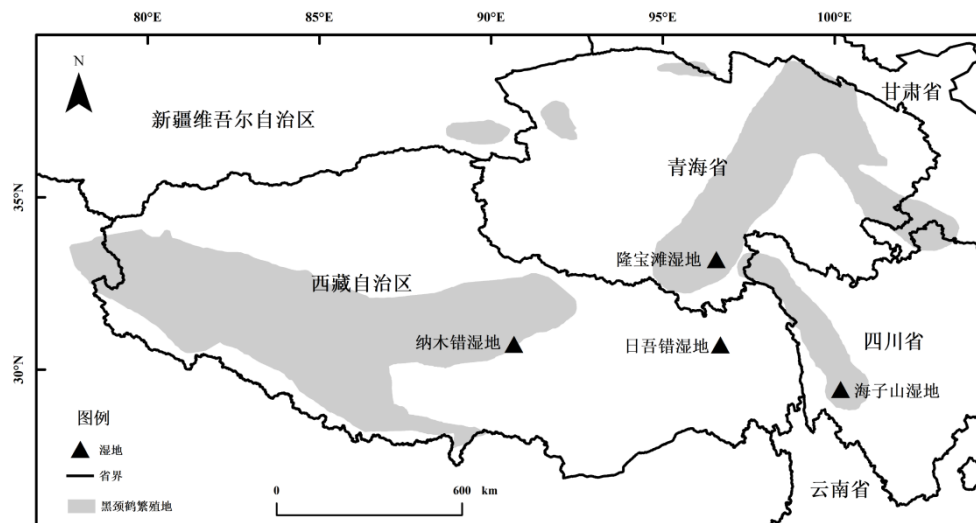


图 2 日吾错湿地位置 (引自李筑眉, 李凤山, 2005; Liu *et al.*, 2012)

Figure 2. Location of Riwucuo wetland in Qamdo

参考文献:

雷富民, 卢汰春. 2006. 中国鸟类特有种[M]. 北京: 科学出版社.
 李筑眉, 李凤山. 2005. 黑颈鹤研究[M]. 上海: 上海科技教育出版社.
 Liu Q, Li F S, Buzzard P, et al. 2012. Migration routes and new breeding areas of Black-necked Cranes[J]. *The Wilson Journal of Ornithology*, 124(4): 704-712.
 郑光美. 2023. 中国鸟类分类与分布名录[M]. 4 版. 北京: 科学出版社.
 郑作新, 李德浩, 王祖祥, 等. 1983. 西藏鸟类志[M]. 北京: 科学出版社.

Black-necked Cranes found Breeding in Qamdo, Tibet

Liu Hong^{1,2}, Xiao Linna³, Liu Qiang^{1,2}

1 Key Laboratory of Yunnan Plateau Wetland Protection, Restoration and Ecological Services, Southwest Forestry University, Kunming 650224

2 National Plateau Wetland Research Center/Wetland College, Southwest Forestry University, Kunming 650224

3 Key Laboratory of Biodiversity and Ecological Engineering, Ministry of Education, Beijing Normal University, Beijing 100875

On July 23, 2023, 17 Black-necked Cranes (*Grus nigricollis*) were recorded at Riwucuo wetland, Guoqing Xiang, Basu County, Qamdo Prefecture, Tibet Autonomous Region (30°39'50"~30°45'18"N, 96°38'57"~96°44'33"E, 4443m asl). Among them were three crane families which all had a chick each. Black-necked Cranes previously have never been recorded in Qamdo. Black-necked cranes are endemic to the plateau and breed in the Qinghai-Tibet Plateau at an altitude of 2600~5000 m, including Tibet, Qinghai, Gansu, Sichuan, Xinjiang and other provinces and autonomous regions (Li Zhumei, Li Fengshan, 2005; Lei Fumin, Lu Taichun, 2006). This new site in Qamdo is about 270 km away from Longbaotan, a breeding site of Black-necked Cranes in Qinghai, about 370 km away from Haizishan wetland, a breeding site in Daocheng of Sichuan, and about 540 km away from the nearest breeding site in Tibet, Nam Co (Figure 2, see Chinese paper above). Riwucuo wetland consists of river valley marsh and scattered lake shore marshes, with a wetland area of 2695.17 ha. There are solar panels and a large number of powerlines nearby, which may post threats to Black-necked Cranes with power line collision.

Literature cited Omitted.

【保护 管理 宣教】

【Conservation, Management and Education】

中蒙俄达乌尔国际保护区的三十年

刘松涛

内蒙古呼伦湖国家级自然保护区管理局, 内蒙古海拉尔 021008

1992 年夏季, 俄罗斯联邦赤塔州(现为后贝加尔边疆区)、国际鹤类基金会和中国、俄罗斯、蒙古国环境保护部门的工作人员及专家聚集一堂, 召开了一个对世界生物多样性保护具有历史意义的会议——讨论中蒙俄三国交界地区鹤类及水鸟保护的“三国四方”会议。会议认为:“俄罗斯的托列湖盆地、蒙古的乌拉扎河谷及中国的达赉湖(呼伦湖)三个地区(见附件 1), 对于世界上仅存的多种自然结构及濒危动植物种类的保护有着极为重要的意义”。由此, 会议向中蒙俄三国政府提出在三国交界地区联合建立自然保护区的建议, 以推动该地区生物多样性的跨界保护。1994 年 3 月 29 日, 中蒙俄三国环境保护部(局)在蒙古国乌兰巴托签署了《关于中蒙俄建立共同保护区的协议》, 该协议确定中国“达赉湖”国家级自然保护区(注: 现更名为呼伦湖保护区)、蒙古国“蒙古达乌尔”自然保护区、俄罗斯联邦“达乌里斯基”自然保护区共同组成国际保护区。由此, 第一个由三个国家共同建立的跨界生物多样性联合保护机构——中国、蒙古国、俄罗斯“达乌尔”国际保护区(CMR—“Dauria” International Protected Area, 简称 DIPA)*正式建立了。



图 1. 1993 年 4 月 12~15 日中俄蒙三国政府代表在蒙古国首都乌兰巴托市签署关于建立共同保护区的备忘录, 1994 年 3 月 29 日, 签订《关于建立共同自然保护区的协定》。右侧的图案为国际保护区标志。

Figure 1. From April 12 to 15, 1993, representatives of governments of China, Russia and Mongolia signed a memorandum on the establishment of an international protected area in Ulaanbaatar, Mongolia. The Agreement on the Establishment of An International Protected Area was signed by the three countries on March 29, 1994. On the right is the logo of the international protected area.

1995 年, 在俄罗斯赤塔州召开的国际保护区联合委员会第一次会议上, 成立了国际保护区的协调机构——联合委员会。这是国家层面上的协调机构, 其成员由三个国家环境保护部门、地方政府及保护机构、保护区管理机构的代表和专家组成。国际保护区联合委员会每隔几年举行一次会议, 会议主要讨论

* CMR—达乌尔国际保护区名称中三个大写的英文字母“C、M、R”分别来自中蒙俄三国英文简称(China、Mongolia、Russia)的第一个字母。三个保护区均处于自然环境十分相似的蒙古高原东北部, 在植被分区上属于欧亚草原区亚洲中亚区蒙古高原草原省, 又称达乌尔草原省, 因此把该国际自然保护区命名为“达乌尔”。

国际保护区合作中的重大事项、研究确定国际保护区发展规划、听取国际保护区工作组的工作报告等事宜。联合委员会自成立至 2020 年 2024 年 10 月，共举行了七次会议（表 1）。

表 1. 中蒙俄国际共同自然保护区联合委员会历届会议简况

Table 1. List of meetings by China-Mongolia-Russia Joint Committee on Dauria International Protected Area

名称	举办年份	举办地点	会议简况
第 1 次会议	1995 年 10 月 25~26 日	俄罗斯赤塔	会议提出了国际保护区的名称、区徽设计方案，拟定了《执行〈关于建立共同自然保护区的协定〉的联合委员会章程》和《国际自然保护区暂行条例》，提交了国际保护区组成联委会的人员名单。
第 2 次会议	1996 年 10 月 8~13 日	蒙古国东方省乔巴山	会议确定国际保护区名称（“CMR—达乌尔国际保护区”）、区徽，通过了《执行〈关于建立共同自然保护区的协定〉的联合委员会章程》和《达乌尔国际保护区暂行条例》，确定了国际保护区组成联委会的人员名单。会议就国际保护区作为一个整体争取加入 UNESCO 人与生物圈保护区网络项目达成一致意见。
第 3 次会议	2000 年 7 月 5~7 日	中国内蒙古满洲里	三方讨论了联合委员会执行《中蒙俄三国建立共同自然保护区协定》的情况，三方就国际自然保护区今后合作的有关事项、所采取的措施及行动计划的问题进行了讨论并达成共识。
第 4 次会议	2006 年 4 月	俄罗斯联邦赤塔市	会议上讨论了中蒙俄达乌尔国际保护区联合委员会章程建议的修改部分，并为中蒙俄达乌尔保护区 2006~2010 年制定合作规划。
第 5 次会议	2010 年 7 月 26~27 日	蒙古国东方省乔巴山	会议讨论了国际保护区章程和联合委员会章程修改草案。
第 6 次会议	2015 年 12 月 1~4 日	中国呼伦贝尔市	讨论并确认了 2016~2020 年中蒙俄达乌尔国际保护区合作的规划，确定了未来 5 年内保护区的基本任务和工作方向。
第 7 次会议	2019 年 10 月 9 日~11 日	俄罗斯赤塔	会议详细研究讨论并签署了中蒙俄达乌尔国际保护区 2020~2024 合作规划、联合委员会第七次会议纪要及 2020 年合作计划。



图 2. 达乌尔国际保护区联合委员会第六次会议（2019 年 12 月 中国 呼伦贝尔）

Figure 2. Group photo of the 6th Joint Committee of DIPA in December 2019 at Hulunbuir, China.

联合委员会会议的执行机构——达乌尔国际保护区 (Dauria International Protected Area, DIPA) 工作组由三个成员保护区组成。DIPA 工作组每年至少召开一次工作会议，主要议题是：总结上一个年度工作、讨论本年度联合开展工作计划、学术交流，在会议周期内组织具体的联合工作，在联合委员会会议上向国际保护区联合委员会汇报工作。1995 年 4 月 3 日国际保护区工作组第一次会议至 2024 年 10 月，DIPA 工作小组会议共召开了 43 次工作组会议或工作会晤。



图 3. 1995 年 5 月在蒙古国乔巴山召开的 DIPA 工作组第一次会议 (左) 和在 2019 年 4 月在中国满洲里召开的 DIPA 工作组会议 (右)

Figure 3. Meetings of DIPA Working Groups. The first meeting in May 1995 in Choibalsan, Mongolia (left), and a meeting in April 2019 in Manzhouli, China (right).

联合科研监测是 DIPA 重要工作之一。针对保护区的生态环境现状, DIPA 的科研监测工作主要以水鸟为主的鸟类长期监测为主。自 1995 年以来, 根据工作计划, 国际保护区成员联合 (三方或两方) 开展了三十五次的联合监测工作, 主要包括以水鸟类为主的鸟类监测、以蒙原羚、蝙蝠类为主的哺乳类联合调查、鸿雁专题调查、鹤类专题调查、额尔古纳河中游及中蒙俄陆路边界联合调查、呼伦湖流域水环境联合调查、迁徙鸟类卫星跟踪研究、以草原植被为主的植物监测等。调查监测区域涵盖三个保护区及周边地区, 考察监测成果多次在国际、国内刊物上联合发表文章。成果之一是一只被救助的蓑羽鹤放飞迁徙。这只蓑羽鹤放飞后, 当年秋季和一同救护的一只灰鹤随同灰鹤迁徙群飞到了鄱阳湖越冬, 在第二年的春季从鄱阳湖直接飞到新疆北部, 然后又转向飞到蒙古国东部。在第二年秋季从蒙古国东部向西南飞跃喜马拉雅山脉到达尼泊尔。



图 4. 蒙原羚和水鸟联合调查 (2008 年 蒙古国 东方省)

Figure 4. The joint survey team working on Mongolia gazelles and waterbirds at Eastern Province, Mongolia in 2008.



图 5. 野外考察队讨论考察路线 (2008 年 7 月 蒙古国 东方省)

Figure 5. Field research team discussing the survey route in July 2008, Eastern Province, Mongolia.



图 6. 哺乳类联合调查 (2014 年 7 月 中国呼伦湖保护区)
Figure 6. Joint mammal survey in July 2014 at Hulun Lake Nature Reserve, China.



图 7. 呼伦湖流域水环境联合调查 (2019 年 哈拉哈河、贝尔湖、克鲁伦河、呼伦湖)
Figure 7. Joint survey of waters sampling in the Hulun Lake Basin in 2019.

技术交流活动一直贯穿 DIPA 的活动中, 通过学术研讨、技术培训、经验交流不断提高 DIPA 工作人员的技术水平, 推广生物多样性跨界保护的观念和 DIPA 的成功经验。

由国际鸟盟组织, 由俄罗斯联邦达乌里斯基国家级自然保护区承办的“大鸨保护国际研讨会”于 1997 年 9 月 11~14 日, 在俄罗斯联邦赤塔州鄂嫩区下察苏切伊镇召开。本次研讨会。国际保护区三方成员参加了会议, 在会议上就大鸨在达乌尔地区的数量分布及面临的威胁展开讨论, 会议形成了《亚洲大鸨保护行动计划 (草案)》。

1997 年 9 月 16~19 日, DIPA 三方成员在蒙古国乌兰巴托举办的“蒙古国及东北亚湿地保护国际研讨会”上向来自众多国际组织专家和官员们介绍了中蒙俄达乌尔国际保护区概况和近几年三方联合开展的工作情况, 得到了与会全体代表们的赞扬。

1999 年 4 月 29 日-5 月 10 日和 2000 年 7 月 14-21 日, 由湿地国际—大洋洲办事处主办、UNDP/GEF—蒙古项目协办的第一期, 国家环保总局和湿地国际—中国项目办事处主办的第二期“迁徙水鸟保护培训班暨国际涉禽调查培训班”分别在蒙古国乔巴山和中国满洲里举办。DIPA 科研人员与来自 6 个国家和地区的 40 多名科研人员相互学习、交流经验, 提高了在涉禽野外识别、监测技术技能。

公众教育是 DIPA 成立以来一直坚持的常规性工作。三方联合出版制作宣传材料, 广泛开展宣传教育工作, 提高 CMR 达乌尔国际保护区的知名度。达乌尔国际保护区三方成员之间的合作非常积极和诚恳, 通过合作了解对方国家的有关自然保护区方面的法规和政策, 管理措施和科研监测手段, 互相学习, 取长补短, 不断地提高各自的管理和科研监测水平, 对保护好达乌尔草原生态系统起了重要作用。

国际儿童绘画比赛活动从 2000 年开始举办, 已举办 24 年。每年国际保护区三方成员按照事先确定的主题在保护区及其周边地区的中小学校收集绘画



图 8. 大鸨国际研讨会 (2007 年 俄罗斯 下察苏切伊)
Figure 8. International Symposium on Great Bustard held at Nizhny Tsasucei of Russia in 2007,



图 9. 涉禽及迁徙水鸟培训班成员在野外实习 (1999 年 蒙古国 东方省)
Figure 9. Members of Wader and Migratory Waterbird Training doing field practice in Eastern Province of Mongolia in 1999.

作品。绘画比赛每年都有不同的主题，如：“黑龙江之友”、“描绘你心中的自然”、“神圣的世界”、“春天快乐的鸟”、“人与自然的和谐”、“我心中的自然保护区”、“我祖国的动物象征”、“能够标志我的家乡野生动物”、“保护‘达乌尔’草原”、“用儿童的眼睛看珍稀濒危野生动物”等，作品的收集和巡展一般在三个保护区周边学校、社区举办。



图 10. DIPA 论文集、宣传折页和儿童绘画获奖作品集

Figure 10. Collection of scientific papers, education brochures and award-winning children's paintings from DIPA participating reserves.

夏令营是获奖儿童最喜欢的野外活动形式，也是 DIPA 重要的公众教育方法。国际保护区成立 30 年来，保护区三方成员经常组织夏令营活动，其中一些是以儿童绘画比赛获奖作者为主体的夏令营。这些夏令营或两国、三国联合举办，或单独举办，联合举办的地点在举办国之间轮换。2008 年，DIPA 与相关组织合作举办了三国大学生主题夏令营，由三国大学生自主选题，在夏令营期间介绍各自的调研成果。



图 11. 中蒙俄国际中小學生夏令營（2018 年 8 月 中国 呼伦湖保护区）

Figure 11. International Summer Camp for primary and middle school students organized by CMR DIPA in August 2018 at Hulun Lake National Nature Reserve, China

中蒙俄-达乌尔国际保护区成立 30 年来,三方在科研监测、宣传教育、交流培训等方面积极开展合作,取得了丰硕的成果,为进一步保护达乌尔草原地区的生态环境和生物多样性做出了突出贡献。作为有国家间协议、组织机构、章程及管理办法、持续的联合工作规划和计划的三国合作机制,在 30 年持续的联合工作中,不仅有效的促进了三国交界地区生物多样性保护工作,也为国家间开展跨界生物多样性保护提供成熟的经验,更为绿色“一带一路”理念的实施和推广提供了真实案例。

附件 1. 中蒙俄达乌尔三国保护区简介

中国呼伦湖国家级自然保护区 位于内蒙古自治区东北部,呼伦贝尔市西部,处于中蒙俄三国交界处,是内蒙古自治区最早成立的自然保护区之一,总面积为 7,400km²。范围包括呼伦湖、贝尔湖(中国部分)、乌兰诺尔、新达赉湖、乌尔逊河、克鲁伦河入湖口等大面积湿地及周边草原,其中草原面积 408,300km²,湿地面积 3,253km²,是天然的鸟类和鱼类的栖息繁殖地,每年都有大量的鸟类在此栖息。保护区内已记录有高等植物 486 种、哺乳类 38 种、鸟类 346 种、爬行类 3 种、两栖类 2 种、鱼类 47 种。有丹顶鹤、大鸨、金雕、雪鸮等国家一级重点保护鸟类 25 种、国家二级重点保护鸟类 60 种,国家一级重点保护哺乳动物 1 种、国家二级重点保护哺乳动物 4 种,在我国分布的 9 种鹤类中,有 6 种在保护区内分布。特定的地理位置、良好的自然环境决定了呼伦湖保护区是东亚-澳大利西亚水鸟迁徙的重要通道和驿站,也是水禽的重要繁殖地。2002 年呼伦湖保护区列入国际重要湿地名录和联合国教科文组织生物圈保护区网络,管理机构隶属呼伦贝尔市。



呼伦湖保护区的乌兰诺尔
Ulan Nur in Hulun Lake Nature Reserve

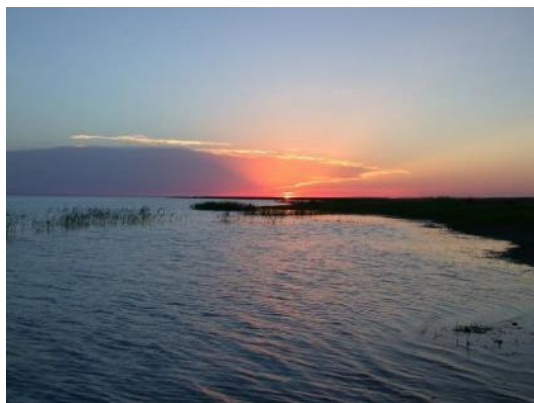
蒙古国“蒙古达乌尔”保护区 建于 1992 年 4 月,位于东方省额仁查布苏木(县)境内蒙俄边界处。1998 年 2 月 2 日成为国



蒙古国境内的克鲁伦河中游
The middle reaches of the Kherlen River in Mongolia

际重要湿地。该保护区总面积为 1,060 km²。境内的湖泊、沼泽湿地,为各种水禽创造了得天独厚的繁殖栖息场所。保护区内植被类型为典型草原、森林草原、低地湿草甸和沼泽植被。保护区生物物种比较丰富,且数量也很大,鸟类有 270 种,主要珍禽为白鹤、白枕鹤、大鸨、白头鹤、灰鹤、金雕、草原雕、黑鹳等。大型兽类有黑熊、狍子、鹿、蒙原羚。蒙原羚数量特别大,经常能见到数以千计的大群。管理机构为蒙古国东方省自然保护区行署,隶属蒙古国环境部。

俄罗斯达乌尔斯基国家生物圈保护区 1987 年 12 月建立, 位于俄罗斯联邦外贝加尔边疆区的鄂嫩区和博尔贾区。总面积为 448km²。外围有 720km² 的警戒区(相当于我国保护区之缓冲区)。保护区以保护托列湖湿地及周边草原、野生动植物为主。现查明的鸟类 314 种、哺乳类 48 种, 有遗鸥、白鹤、白头鹤、大鸨等 25 种鸟被列入《国际鸟类红皮书》。该保护区于 1994 年 8 月成为“国际重要湿地”, 1997 年 7 月加入联合国教科文组织生物圈保护区网络。管理机构隶属俄罗斯联邦环境部。



俄罗斯达乌尔斯基保护区的托列伊湖
Lake Torey in Daurisky Nature Reserve, Russia

30-year Experiences of China- Mongolia-Russia Dauria International Protected Area

Liu Songtao

Inner Mongolia Hulun Lake National Nature Reserve, Hailar, Inner Mongolia 021008

In summer of 1992, a "three-country four-party meeting" was held in Chita Oblast, Russia, attended by environmental protection experts from China, Russia and Mongolia and representatives of International Crane Foundation. The meeting concluded that a region formed by three sites of Russia's Tore Lake Basin, Mongolia's Uraza River Valley and China's Dalai Lake was of great significance for the protection of the world's only remaining natural structures and endangered species of wildlife (see Attachment 1). On 29th of March 1994, governmental nature conservation delegations of the three countries held a meeting in Ulaanbaatar of Mongolia. The meeting discussed the "Agreement among the Governments of China, Mongolia and the Russian Federation on the Establishment of an International Nature Reserve", and signed the "Agreement on the Establishment of an International Protected Area", which jointly established the China-Mongolia-Russia Dauria International Dauria Protected Area (DIPA) by China's Dalai Lake National Nature Reserve (Note: Dalai Lake is now renamed Hulun Lake), Mongolia's Dauria Nature Reserve, and Russia's Daurisky Nature Reserve.

The China-Mongolia-Russia Joint Committee on the International Protected Area was formally established at the Chita Conference in 1995. It is a coordination organization at the national level. Its members are representatives and experts from the three national environmental protection departments, local environmental protection agencies, local governments, and protected area management agencies. The joint committee holds a meeting every few years to discuss major issues in international protected area cooperation, study and determine international protected area development plans, and listen to the progress reports by the working group members. Since its establishment until 2020, the joint committee has held a total of seven meetings (Table 1).

The joint committee supervises a working group that holds a working meeting once a year. The working group is a permanent executive body for the international reserve, responsible for the daily work of the international reserve. The main tasks of the working group are: to implement the work plans and programs designated by the joint committee meetings, to organize joint scientific research monitoring, public education, technical exchanges and other work for the international reserve, to summarize the work of the previous year at regular meetings, to discuss and determine the specific implementation plan for the joint workplan, and to report work to the joint committee. From the first meeting of DIPA Working Group on April 3, 1995 to October 2024, the DIPA Working Group held a total of 43 meetings.

Joint research and monitoring. This has been one of the important tasks of DIPA, mainly focusing on long-term monitoring of waterbirds. Since 1995, participating members of DIPA have jointly (either all three or two of the three parties) carried out 35 monitoring activities on waterbirds, mammals (mainly Mongolian gazelles and bats), special surveys of swan geese and cranes, surveys of the middle reaches of the Ergun River and the China-Mongolia-Russia land border, water survey in the Hulun Lake Basin, satellite tracking of migratory birds, and plant monitoring mainly of grassland vegetation. Many papers/articles have been published in international

and domestic journals. One of the research results is about migration of the release of a rescued Demoiselle Crane. After the Demoiselle Crane was tagged and released, the bird and a Eurasian Crane rescued together joined a flock of wild Eurasian Crane in the fall migration and flew to Poyang Lake for the winter. In the spring of the following year, it flew directly from Poyang Lake to northern Xinjiang, and then turned to fly to eastern Mongolia. In the fall of the same year, it flew southwest from eastern Mongolia over the Himalayas to Nepal.

Technical exchange. The exchange has always been carried out throughout DIPA's routine activities. Through academic seminars, technical training, and experience exchanges, the technical level of DIPA staff has been continuously improved, and the concept of cross-border biodiversity protection and DIPA's successful experience have been promoted.

From September 11 to 14, 1997, the "International Workshop on the Conservation of Great Bustards" was held in Chita of Russia. The workshop was organized by BirdLife International and hosted by Daurisky National Nature Reserve of Russia. The three members of the CMR Dauria International Protected Area attended the meeting, at which they discussed the distribution of Great Bustards in the Daurian region and the threats they faced. The meeting developed the "Action Plan for the Conservation of Great Bustards in Asia".

From September 16 to 19, 1997, "International Workshop on Wetland Conservation in Mongolia and Northeast Asia" was held by the international nature reserve, with participants from many countries. The overview of the CMR Dauria International Nature Reserve and its activities in recent years were introduced to participants, which was praised by all the delegates attending the meeting.

In May 1999 and July 2000, a series of migratory waterbird conservation and counting workshops were organized by Wetlands International-Oceania Office, UNDP/GEF-Mongolia Project, State Environmental Protection Administration, and Wetlands International-China Project Office in Mongolia and China. During the workshop, 22 researchers from 6 countries and regions received training in Dauria Nature Reserve of Mongolia, and more than 20 days of training and field practice were conducted.

Public environmental education. The education has been conducted by DIPA regularly. The three parties have jointly produced publicity materials, carried out extensive publicity and education work, and promoted branding of CMR Dauria International Protected Area. Through cooperation, we have understood the laws and policies, management measures and scientific research monitoring methods of each other's countries on nature reserves, learnt from each other, and continuously improved their management and scientific research monitoring skills. All these tasks have played an important role in protecting the Dauria grassland ecosystem.

The China-Mongolia-Russia Dauria International Reserve Children's Drawing Competition was initiated by the Russian side as a publicity and education activity for children on the nature reserves. The art work competition has been held since 2000 and has been held for 20 years. Every year, the three members of the international reserve collect art works from primary and secondary schools in the nature reserve and its surrounding areas according to a predetermined theme.

Summer camps are the favorite outdoor activities of the award-winning children and are also an important public education method of DIPA. In the 30 years since the establishment of DIPA, the three members have often organized summer camps, some of which are summer camps for the award winners of children's art competitions. These summer camps are either jointly held by two or three countries, or held separately, and the joint venues are rotated among the host countries. In 2008, DIPA cooperated with relevant organizations to hold a three-country college student themed summer camp, where college students from the three countries independently selected topics and introduced their respective research results during the summer camp.

Over the past 30 years since the establishment of DIPA, the three parties have actively carried out cooperation in scientific research and monitoring, publicity and education, exchanges and training, and made great achievements, with outstanding contributions to further protecting the ecological environment and biodiversity in the Daur grassland area. As a trilateral cooperation mechanism with inter-state agreements, organizational structures, operation methods, etc., it has not only effectively promoted the biodiversity conservation in the border areas of the three countries, but also provided experience for the countries to carry out cross-border biodiversity conservation, and at the same time provided real cases for the implementation and promotion of the green concept for "Belt and Road Initiative".

Attachment 1.

Hulun Lake National Nature Reserve. The reserve was established as a county-level reserve in 1986, promoted to a provincial level in 1990, and to a national level in 1992. It is a comprehensive nature reserve that mainly protects rare birds and lakes, grasslands, wetlands and other ecosystems.

Hulun Lake Nature Reserve is one of the earliest nature reserves established in Inner Mongolia, with a total area of 7,400km². It covers a large area of wetlands and surrounding grasslands, including Hulun Lake, Beier

Lake (Chinese part), Ulan Nur, Xindalai Lake, Wuexun River, and the estuary of Kerulen River. The grassland area is 4,083 km² and the wetland area is 3,253 km². 486 species of higher plants, 38 species of mammals, 345 species of birds, 3 species of reptiles, 2 species of amphibians, and 47 species of fish have been recorded in the reserve. Among the birds, there are 25 species of State Class I Protection birds such as Red-crowned cranes, Great Bustards, and Golden Eagles, 60 species of State Class II Protection birds, 1 species of State Class I Protection mammal, and 4 species of State Class II Protection mammals. Among 9 species of cranes distributed in China, 6 are recorded in the reserve. Hulun Lake Nature Reserve is an important site on the Northeast Asia-Australasia Flyway, and is also an important breeding ground for many waterbirds.

Mongolian Daur Nature Reserve. The Mongolian Dauria National Nature Reserve was established in April 1992. It became an internationally important wetland on February 2, 1998. The total area of the reserve is 106,000 ha. The reserve has two rivers running through, Imalahu and Uraza Rivers. The two rivers and their many small tributaries have formed many lakes and marsh wetlands in the reserve, creating a unique breeding habitat for various waterfowl. The vegetation types in the reserve are typical grassland, forest steppe, low-lying meadow and marsh vegetation. There are 270 bird species, including Siberian Crane, White-Naped Crane, Great Bustard, Hooded Crane, Eurasian Crane, Golden Eagle, Steppe Eagle, Black Stork, etc. Large mammals include black bears, roe deer, and Mongolian gazelles. The number of Mongolian gazelles is particularly large, with thousands of them often. The reserve and its surrounding areas are sparsely populated, and mineral resources have not been mined. There is no pollution from industrial and mining enterprises. Animal husbandry is the main industry in the region.

Russia Daursky State Biosphere Reserve. The Daursky reserve was established in December 1987. The total area of the reserve is 44,800 ha. There is a 72,000 ha warning zone on the periphery, which plays a regulatory and monitoring role and restricts various production operations (the warning zone equivalent to the buffer zone of China's protected areas). The reserve is mainly responsible for protecting the Tore Lake wetland and the surrounding grasslands, wild animal and plant resources. There are 314 species of birds and 48 species of mammals, including 25 species of birds such as the Relict Gull, Siberian Crane, Hooded Crane, and Great Bustard. The reserve became an "internationally important wetland" in August 1994 and joined the International Biosphere Reserve Network in July 1997.

江西省南昌市积极营建国际湿地城市

汪凌峰 刘小锋 谢凤俊 钱建鑫
南昌市林业局, 南昌 330039

湿地是“地球之肾”，与森林、海洋并称为三大生态系统，其不仅是生物多样性最丰富的生态系统，而且与城市的发展建设息息相关。国际湿地城市认证是《拉姆萨尔公约》的一项湿地保护举措，旨在以创促建，提升各级政府和社会各界湿地保护意识，倡导城市与湿地和谐共生理念，将城市发展与湿地保护深度融合。

南昌市是江西的省会城市，位于长江中游，鄱阳湖西南岸，赣江、抚河下游冲积平原。襟三江而带五湖，控蛮荆而引瓠越，形象地描述了南昌湿地资源特色。中国第一大淡水湖鄱阳湖、赣江及抚河形成了南昌湿地的“核心”和“骨架”，河网纵横交错，湖泊星罗棋布，江河湖泊复合生态系统及复杂的水文节律过程，让这里成为全球候鸟迁徙网络的重要栖息地。辖区天然水域及湿地面积 12.6 万 hm²，天然水域及湿地率达 17.5%，湿地保护率达 56%。辖区内有 2 处湿地类型国家级自然保护区，均为国际重要湿地，5 处省级湿地公园和 1 处县级湿地保护区。历经三年努力，2022 年 11 月 11 日，在瑞士日内瓦《湿地公约》第十四届缔约方大会上南昌市获颁“国际湿地城市”。

1. 整体谋划，高位推动落实。南昌市委、市政府高度重视国际湿地城市建设工作，成立创建国际湿地城市工作领导小组，负责统筹协调全市湿地保护与修复以及国际湿地城市创建工作。创建成功后，组织召开了南昌市湿地、野生动植物资源保护联席会议，形成了湿地保护的工作机制，合力推进湿地保护与修复以及国际湿地城市建设工作。将湿地候鸟保护工作纳入全市高质量发展综合目标考核的重要内容，相继出台《南昌市城市湖泊保护条例》《南昌市湿地保护管理办法》等法规，形成“一河一策、一湖一法”的保护管理模式。

2. 政府与民间共管模式，打造人与鸟类友好和谐家园。2017 年志愿者发起“留住白鹤行动”，在政

府大力支持下，成立了五星白鹤保护小区，保护白鹤等候鸟越冬栖息地。2020 年，政府聘请专业团队运营管理，将五星白鹤保护小区的范围由 300 亩扩大到 1,050 亩，通过莲藕、荸荠、苦草等近自然种植，为 3,000 余只白鹤和数以万计的小天鹅等其他珍稀濒危水鸟提供了安全的越冬栖息地。在这里人们可以近距离地观赏候鸟在湿地自由栖息觅食，被誉为“全世界离白鹤最近的地方”，连续三届成为江西省鄱阳湖国际观鸟季（周）主要观鸟点。

3. 管理部门与社区共管模式，实现湿地候鸟保护与社区发展良性互动。长期以来，鄱阳湖区域社区居民高度依赖湿地资源生存与发展，尤其以南矶山为甚。禁渔前，湖区渔民在这些碟形湖中采取人放天养的方式养殖，并采用闸口排水取鱼的方式捕捞。这种“壑秋湖”作业方式贯穿整个秋冬，逐渐降低的水位，为水鸟持续提供适宜生境和充沛食物。因此，碟形湖在事实上成为了越冬水鸟极为重要的栖息地和觅食地。经调查统计，南矶湿地有 7 成以上的水鸟在这些季节性的子湖泊栖息和觅食。为缓解渔业生产与湿地候鸟保护的矛盾，2013 年南矶湿地保护区开展了“鸟越多、奖越多”的社区共管“生态补偿”活动，引导渔民采取兼顾水鸟保护的渔业方式，缓和护鸟与捕鱼之间的矛盾。活动的开展，既提升了原住渔民的湿地候鸟保护意识，也维护了他们的经济利益，保护区也实现了湿地候鸟保护目标，最多时监测到 24 万余只水鸟在南矶湿地越冬栖息。

4. 湿地科普宣教有声有色，全社会支持参与湿地生态保护氛围日益浓厚。2023 年，组织编制完成了《南昌市湿地科普宣教体系建设规划（2023-2027 年）》。通过规划的实施，构筑相对完备的南昌市湿地科普宣教体系，主要包括湿地科普宣教设施体系、活动体系、师资体系、管理运营体系四大板块，以满足新时期生活水平日益提高的广大民众对湿地科普教育的多样化需求，助推南昌市经济绿色高质量发展。2019 年至今，建设了南昌湿地科普馆，并在瑶湖、象湖、北潦河、五星白鹤保护小区、省林科院小微湿地、马兰圩湿地公园、渔洲湾湿地公园等地建设湿地科普宣教设施。

近年来，大力推进湿地生态科普教育工作，不断增强国际湿地城市影响力。举办了自然教育讲师培训营和自然教育体验营、自然研学活动，共培训湿地自然教育讲师 80 余名。成功举办了“秀丽江西 大美湿地”摄影大赛、动物摄影大赛、野生植物摄影大赛和南昌“最美湿地”短视频大赛，充分挖掘并展示南昌良好的生态环境和湿地景观。并将优秀摄影作品在瑶湖省级湿地公园、江西省博物馆、江西省图书馆、市直机关等地巡展。打造“南昌国际湿地城市”形象品牌。公开征集评选出南昌国际湿地城市吉祥物“湿小鹤”卡通形象，积极研发制作系列文创产品及系列动画，编制出版“湿小鹤”系列湿地科普读物，全面宣传展示“南昌国际湿地城市”形象，传播具有南昌特色的生态文明理念，讲好南昌湿地生态保护故事，进一步营造全社会关心、支持、参与湿地生态保护的良好氛围。

5. 探索湿地资源运营机制，破解城市湿地保护与经济发展的矛盾。自 2021 年 8 月江西首批试点“湿地资源运营中心”以来，南昌依托进贤县湿地资源运营中心平台运营，帮助解决了玛雅乐园、华能七里、前坊光伏、梧岗-南昌东牵引站、南昌大学二附医院扩建等 40 余个项目的湿地资源运营交易，有力支持城市建设发展，取得了生态效益和经济效益“双赢”。

6. 推动城市和湿地融合发展，实现湿地生态红利社会共享。在保护中求发展，在发展中求保护，推动城市建设和湿地保护融合发展。近年南昌大力实施赣抚尾间等河湖水系连通治理工程，通过兴建改建水闸、疏浚河道、水底清淤等，提高河湖湿地水体流动性，改善湿地环境质量。建设了瑶湖、青岚湖、北潦河、象湖、澄碧湖、鱼尾洲、艾溪湖、九龙湖等一大批湿地类型城市公园，着力推进赣江岸线生态治理工程，充分利用沿江滩涂、防洪堤等改造成滨水生态公园，形成集旅游休闲、生态文化于一体的“公园式自然走廊”。赣江市民公园、朝阳江滩公园、赣江东岸公园、渔舟湾湿地公园等多个依托岸线特点和历史文化建起来的湿地生态景观串点成链，让赣江东西两岸从南到北形成独具特色的滨湖湿地生态景观带。对赣江袁家洲和老官洲及沿线进行湿地生态修复，使之与秋水广场、滕王阁、扬子洲等景点连成片，提升“一江两岸”城市景观。不断加强环湖滨水绿道建设，打造出“滨湖绿道”特色品牌。

在城市发展与湿地保护之间，南昌走出了一条适合自己的道路。通过湿地保护和修复，城市湿地生态系统得到进一步优化，功能得到良好发挥，城市生态轮廓更加灵动，实现了湿地生态红利市民共享。下一步，我们将切实加强湿地保护、修复、利用和管理，持续巩固深化拓展建设成果，努力将南昌打造成为国际湿地城市的标杆城市。

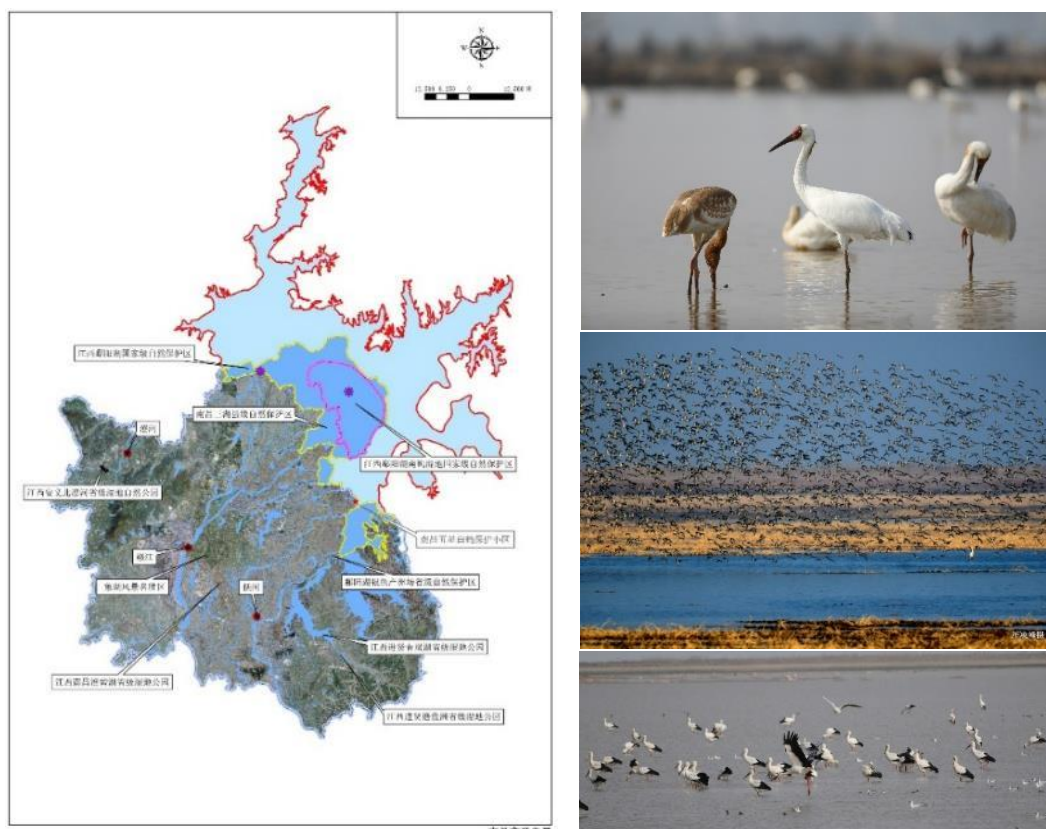


图 1.南昌市天然水域及湿地图（左）以及水鸟照片。在五星白鹤小区活动的白鹤一家三口（右上）；候鸟云集（右中）；鄱阳湖南深湖的东方白鹤群（右下）。地图制作和照片摄影/汪凌峰

Figure 1. Map of natural open waters and wetlands and photos of waterbirds at Nanchang City. Wetland map (above). A family of Siberian Cranes at Wuxing Farm (upper right), flock of waterbirds (middle right), and a flock of Oriental Storks at Nanshen Hu (lower right). Map and photos by Wang Lingfeng.

Nanchang of Jiangxi actively builds as an international wetland city

Wang Lingfeng, Liu Xiaofeng, Xie Fengjun and Qian Jianxin
Nanchang Forestry Bureau, Nanchang 330039

Wetlands are known as the three major ecosystems along with forests and oceans. The wetlands are not only the ecosystems with the richest biodiversity, but are also often closely related to the development of urban areas. The International Wetland City Certification is a wetland protection initiative of the Ramsar Convention, which aims to promote and enhance the awareness of wetland protection at all levels of government and all sectors of society, advocate the concept of harmonious coexistence between cities and wetlands, and deeply integrate urban development with wetland protection.

Nanchang is the capital city of Jiangxi Province. It is located in the middle reaches of the Yangtze River, on the southwest shore of Poyang Lake, and on the alluvial plain of the lower reaches of Ganjiang and Fuhe Rivers. Surrounded by three rivers and five lakes, with rich resources of wetland resources. Poyang Lake, the largest freshwater lake in China, Ganjiang River and Fuhe River form the "core" and "frame" of Nanchang Wetlands. The river network is crisscrossed, the lakes are dotted, and the river-lake complex ecosystem and the complex hydrological regime process make it an important habitat for the global migratory birds in Asia. The area of natural waters and wetlands in the geographic jurisdiction of Nanchang is 126,000 ha, accounting for 17.5% of Nanchang land area, and 56% of the wetland is under protection. There are 2 national nature reserves in the

jurisdiction, both of which are internationally important wetlands, 5 provincial wetland parks and 1 county-level wetland reserve. After three years of efforts, on November 11, 2022, Nanchang City was awarded the title of "International Wetland City" at the 14th Conference of the Parties to the Convention on Wetlands in Geneva, Switzerland.

1. Effective planning and implementation. The Nanchang Municipal Party Committee and Municipal Government paid very high attention to the establishment of an international wetland city and formed a leading group for the application of an international wetland city, which was responsible for coordinating the protection and restoration of wetlands throughout the city and the acceptance of an international wetland city. After the successful acceptance, a joint meeting on the protection of wetlands, wild animals and plants in Nanchang was organized to form a working protocol for wetland protection and jointly promote wetland protection and restoration as well as the construction of an international wetland city. The protection of migratory wetland birds has been included as an important part of the comprehensive assessment of the city's high-quality development goals. Regulations such as the "Nanchang Urban Lake Protection Regulations" and the "Nanchang Wetland Protection Management Measures" have been successively issued to form a protection and management model of "one river and one policy, one lake and one law".

2. The wetland co-management by the government and civil sectors creates a friendly and harmonious environment for people and birds. In 2017, volunteers launched the "Making Siberian Cranes Stay". With the strong support of the government, Wuxing Siberian Crane Protection Area was established to protect the wintering habitat of the cranes and other migratory birds. In 2020, the government hired a technical team to operate and manage the Wuxing Siberian Crane Protection Area, expanding the area from 300 mu to 1,050 mu. Through planting of lotus roots, water chestnuts, and *Vallisneria*, it provides a safe wintering habitat for more than 3,000 Siberian Cranes and tens of thousands of other waterbirds such as Tundra Swans. At this site, people can watch migratory birds freely foraging in the wetlands at close range. It is known as "the closest place to watch Siberian Cranes in the world" and has been the main bird watching spot for three consecutive years of Poyang Lake International Bird Watching Season (Week) in Jiangxi Province.

3. The wetland co-management between management agencies and local communities achieve a positive interaction between wetland migratory bird protection and community development. For a long time, local communities in the Poyang Lake area have been heavily dependent on wetland resources for survival and development, especially in Nanjishan. Before the fishing ban, fishermen in the lake area have adopted traditional fishing practice in sub lakes --- draining water from the sluice gates to catch fish during the low water season. This method runs through the entire autumn and winter. The water level at the sub lakes was gradually lowered to continue providing suitable habitats and abundant food for water birds. Therefore, the sub lake has in fact become an extremely important habitat and foraging area for wintering water birds. More than 70% of the waterbirds in Nanjishan wetlands live and forage in these seasonal sub-lakes. In order to reduce conflicts between fishery production and wetland migratory bird protection, in 2013, the Nanji Wetland National Nature Reserve launched a community co-management "ecological compensation" activity, called "the more birds, the more rewards", guiding fishermen to adopt a fishing method that takes into account for both waterbirds protection and fishing. The activities have not only enhanced the awareness of wetland migratory bird protection among local fishermen, but also safeguarded their economic interests. The reserve has also achieved the goal of wetland migratory bird protection. At most, more than 240,000 waterbirds were monitored wintering in the Nanji Wetland.

4. Wetland science education is effective, and has gained support and participation by the public in wetland protection. In 2023, the "Nanchang Wetland Popular Science and Education System Development Plan (2023-2027)" was compiled. Through the implementation of the plan, a relatively complete Nanchang wetland popular science and education system will be built, mainly including four major sections: wetland popular science and education infrastructure, project/activity, training/teaching, and management/operation to meet the diverse needs of the general public and promote the green development of Nanchang's economy. From 2019 to the present, the Nanchang Wetland Science Museum has been built, and wetland popular science and education centers have been built in Yaohu Lake, Xianghu Lake, Beilao River, Wuxing Siberian Crane Protection Area, Provincial Academy of Forestry Micro-wetland, Malanwei Wetland Park, Yuzhouwan Wetland Park and other places.

5. In recent years, the city has actively promoted the popular science education of wetland ecology and continuously enhanced the influence of the international wetland city. It has held a training camp for nature education lecturers, a nature education experience camp, and a nature study tour, training more than 80 wetland educators. It has successfully held a series of events such as promoting popular science and image of Nanchang international wetland city, and developed education and awareness materials.

6. Explore the wetland resource operation mechanism to resolve conflicts between urban wetland protection and economic development. Since the first batch of pilots "Wetland Resource Operation Center" in Jiangxi in August 2021, Nanchang has helped solve the wetland resource operation transactions of more than 40

projects such as Maya Paradise, Huaneng Qili, Qianfang Photovoltaic etc, which has strongly supported urban construction and development and achieved a "win-win" situation in ecological and economic benefits.

7. Promote the integrated development of cities and wetlands. In recent years, Nanchang has actively implemented the river and lake water system connection management projects, and improved the water free flow between rivers and lakes and the quality of wetland environment by building and renovating sluices, and dredging river channels etc. A large number of wetland-type urban parks have been renovated or established. Many wetland parks integrate the nature, leisure, and culture.

Nanchang has found a path that suits it, between urban development and wetland protection. Through wetland protection and restoration, the urban wetland ecosystem has been further improved, its functions have been well utilized, and the citizens have benefited from the wetland ecological conservation. In the next step, we will effectively strengthen wetland protection, restoration, development and management and strive to build Nanchang into a benchmark city for international wetland cities.

白鹤迁徙路线联袂保护区工作回顾

余定坤 徐志文

江西鄱阳湖国家级自然保护区管理局, 南昌 330038

2023 年 12 月 9 日, 第三季鄱阳湖国际观鸟季期间, 白鹤迁徙路线联袂保护区签约活动在“中国候鸟小镇”永修吴城举行。活动中江西鄱阳湖国家级自然保护区管理局、江西鄱阳湖南矶湿地国家级自然保护区管理局、吉林向海国家级自然保护区管理局、吉林莫莫格国家级自然保护区管理局、内蒙古科尔沁国家级自然保护区管理局 5 家保护区共同签订了白鹤迁徙路线联袂保护区合作协议。

2024 年 8 月 6 日至 7 日, 白鹤迁徙线路联袂保护区第二次会议在乌兰浩特召开。内蒙古科尔沁国家级自然保护区管理局、吉林向海国家级自然保护区管理局、吉林莫莫格国家级自然保护区管理局、江西鄱阳湖国家级自然保护区管理局、江西鄱阳湖南矶湿地国家级自然保护区管理局、内蒙古图牧吉国家级自然保护区管理局 6 家保护区再次携手。

会上, 鄱阳湖保护区主要负责同志和大家一起回顾总结过去一年以来开展的工作。各保护区积极分享了在白鹤等候鸟保护工作中的创新做法和有效策略。会议宣读了《白鹤联袂保护行动科尔沁宣言》, 并宣布了图牧吉保护区成为联袂保护区新成员, 共同肩负起保护白鹤迁徙线路的重任。

联袂保护区签订协议以来, 在科研监测与宣传教育两个方面取得了许多从无到有、首创破零的宝贵成果。

一是在科研监测上深入交流。联袂保护区建立了联袂保护区信息实时共享平台, 成员单位本着严谨、求真、及时的原则共享白鹤等珍稀候鸟的抵达时间、种群数量、生活影像等监测数据。联合开展了东方白鹤卫星追踪监测, 共享卫星追踪数据, 对鄱阳湖放飞东方白鹤开展联合监测, 实现了首次跨区域协同保护监测合作, 构建了“线上+线下”的保护监测合作模式; 共同探索科学保护国际合作, 联手举办了首次中俄小白额雁保护线上国际交流活动, 与俄罗斯、日本、比利时等多国鸟类专家共同围绕“小白额雁东部种群规模及未来联合研究”主题进行深入交流。

二是在宣传教育上积极联动。以世界候鸟日和国际生物多样性日为契机, 联袂保护区联合中国野生动物保护协会、ICF 等 13 家单位, 成功举办了“遇见候鸟, 保护生物多样性”主题宣传活动, 共吸引超过 500 余名学生参与了此次迁飞路线上的 9 场活动。转化应用监测共享成果, 2024 年鄱阳湖候鸟迁飞央视直播把联袂保护区的白鹤监测情况融入。联袂保护区在资源上也积极共享, 引荐公益项目与成员伙伴对接。

白鹤迁徙线路联袂保护区活动, 是学习贯彻习近平总书记考察江西重要讲话精神, 落实习近平总书记关于“保护 4 条途经中国的候鸟迁飞通道”要求的实际行动。四省白鹤保护的国家级保护区, 将以此契机, 深入交流、加强合作, 为进一步推动候鸟迁飞通道保护贡献更多智慧和力量!

Review of sister reserves along Siberian Cranes migration flyway

Yu Dingkun Xu Zhiwen

Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

On December 9, 2023, during the Third Poyang Lake International Bird Watching Season, the signing ceremony of signing a cooperation agreement establishing sister reserves along Siberian Crane migration flyway was held in Wucheng, Yongxiu of Jiangxi. During the event, five nature reserves, including Poyang Lake National Nature Reserve (Jiangxi), Nanji Wetland National Nature Reserve (Jiangxi), Xianghai National Nature Reserve (Jilin), Momoge National Nature Reserve (Jilin), and Keerqin National Nature Reserve (Inner Mongolia).

The second meeting of the sister nature reserve along the Siberian Crane migration flyway was held in Ulanhot from August 6 to 7, 2024. Six nature reserves participated in the network meeting, including Keerqin, Xianghai, Momoge, Poyang Lake, Nanji, and Tumuji (Inner Mongolia).

At the meeting, representatives from Poyang Lake Reserve reviewed and summarized the work carried out over the past year. Each nature reserve actively shared innovative practices and effective strategies for protecting Siberian Cranes and other migratory birds. The meeting read out the "Keerqin Declaration of Joint Protection Action for Siberian Cranes" and accepted Tumuji National Nature Reserve as a new member of the sister reserves.

Since the signing of the agreement, the sister reserves have made many achievements in scientific research monitoring and publicity and education.

First, in-depth exchanges on scientific research and monitoring. The sister nature reserves have established a real-time information sharing platform. The members share monitoring data such as the arrival time, population size, and sightings of migratory birds such as Siberian Cranes. Satellite tracking and monitoring of Oriental Storks were carried out, satellite tracking data was shared, and the release of captive storks into the wild was carried out, making the first cross-regional collaboration. The sister reserves explored international cooperation in scientific protection, held the first China-Russia Lesser White-fronted Goose Protection Online International Exchange, and conducted in-depth exchanges with bird experts from Russia, Japan, Belgium and other countries on the theme of "The Eastern Population of Lesser White-fronted Goose and Future Joint Research".

Second, we actively cooperate in publicity and education. Taking the World Migratory Bird Day and International Biodiversity Day as an opportunity, the sister reserves, together with 13 other organizations including the China Wildlife Conservation Association and ICF, successfully held a theme publicity event of "Meet Migratory Birds, Protect Biodiversity", attracting more than 500 students to participate in 9 activities along the migration flyway. These activities were aired or shared on many news media, such as CCTV.

The activities of the sister reserves along the migration flyway of Siberian Cranes are practical actions to learn and implement the spirit of General Secretary Xi Jinping's important speech during his inspection of Jiangxi and implement General Secretary Xi Jinping's requirements for "protecting four migratory bird migration corridors passing through China". The sister national-level Siberian Crane nature reserves in the participating four provinces will take this opportunity to deepen exchanges and strengthen cooperation, and contribute more wisdom and strength to further promote the protection of migratory bird migration corridors!

鄱阳湖象湖候鸟栖息地生境改善与修复

杨子力¹ 杨成¹ 于秀波¹ 黄锦波²

中国科学院地理科学与资源研究所, 北京 100101

江西鄱阳湖国家级自然保护区管理局, 南昌 330038

近年来受气候变化和长江上游大型水利工程（如三峡水利工程）的影响，鄱阳湖流域和长江的水文关系发生了改变，引起鄱阳湖水量平衡关系的变化。一些碟形湖如象湖表现为枯水期水位持续偏低、枯水期提前、汛后水位消退加速等干旱化现象。同时，极端水位出现频率增加，对鄱阳湖湿地生态系统产生严重的负面影响，给湖区生产生活带来巨大挑战，也引起了诸多的生态问题。主要表现为沉水植被衰退、低枯水位严重挤压了冬候鸟栖息生境，栖息地功能退化明显、水生生物生存空间压缩、人为干扰严重，水鸟缺乏庇护场所。

为了提升鄱阳湖保护区生态质量,恢复白鹤等关键物种栖息地,自 2023 年至今,以江西鄱阳湖国家级自然保护区管理局为建设单位,以中国科学院地理科学与资源研究所和湖北天越工程管理有限公司为施工单位,共同实施了鄱阳湖象湖候鸟栖息地生境改善与修复项目。本项目通过微地貌改造、生境改造、植物补植、水系疏通、隔离带构建等工程措施,有效改善恢复区内水文环境、植被分布状况、越冬候鸟栖息生境等湿地生态环境,提高水鸟栖息地的质量和功能,提升湿地生物多样性水平和生态系统结构和功能的完整性,增强恢复区越冬期的水鸟承载力与受损湿地的自我修复能力。同时,提高湖区群众对湿地保护及生态环境保护的意识,并推动区域旅游、教育、文化等产业的发展。

该项目的主要建设内容包括:(1)植被生态缓冲带。通过种植芦苇与南荻等高秆植物,为水鸟提供安全的生境,面积约 0.35 hm²。(2)植物条带。基于湖区原生植被群落,选择南荻、茭蒿、蚕茧蓼等 10 种植物,形成从岸边到湖心的植物条带,面积约 1hm²。(3)鸟类休憩区。通过微地貌改造,营造洲面、缓坡、浅水区、深水区等多样化生境,面积约 20hm²。(4)沉水植物恢复区。通过在鸟类休憩区周围水域种植轮叶黑藻、竹叶眼子菜、刺苦草,为水鸟提供食物资源,面积约 10.65hm²。(5)洲滩植被恢复区。通过基层修整、碾压、场地修整以及刈割等方式,保障鸟类食物,面积约 14hm²。(6)水系重塑。通过疏通排水渠的淤积泥沙和水闸,建设生态型河道,恢复象湖与赣江的水文连通,面积约 4 hm²。

象湖湿地恢复工程的实施显著提升了植物多样性和鸟类栖息环境,提升了湿地生态系统的稳定性和多样性,为珍稀濒危鸟类提供了丰富的栖息地和食物资源。项目区本底调查和跟踪监测结果表明,项目实施区内沉水植物密度增加 20%以上,越冬期适宜取食的苔草面积增加 10%以上,白额雁、东方白鹳、鸿雁和小天鹅等珍稀濒危物种在项目实施后数量提升约 4 倍。洲滩植被由最初的 4 种优势群落恢复至芦苇、南荻、茭蒿等 10 种优势植物群落,优势物种丰富度提升至 2.5 倍。同时,项目区刈割恢复 216.51 hm² 草洲面积,适宜栖息地面积提升约 15 倍。本项目的成功实施为典型碟形湖生态保护与修复治理提供成功示范案例,为湿地生态修复的科学保护与实践奠定了基础。

Habitat improvement and restoration in Xianghu at Poyang Lake

Yang Zili¹, Yang Cheng¹, Yu Xiubo¹, Huang Jinbo²

1 Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing 100101,

2 Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

In recent years, due to climate change and large-scale water conservancy projects in the upper reaches of the Yangtze River (such as the Three Gorges Water Project), the hydrological relationship between the Poyang Lake Basin and the Yangtze River has changed, causing changes in the water regime of Poyang Lake. Some sub-lakes, such as Xianghu Lake, have shown drying phenomena such as persistently low water in the dry season, the dry season coming early, and accelerated water level dropping after the flood season. At the same time, the frequency of extreme water levels has increased, which has had a serious negative impact on the Poyang Lake wetland ecosystem, brought huge challenges to production and life in the lake area, and caused many ecological problems. Consequences from these changes and issues are: the degradation of submerged vegetation, a decrease in the habitat of winter migratory birds due to low water, reduce in the habitat function, a decrease in the living space of aquatic organisms, an increase in human interferences, and lack of shelters for waterbirds.

In order to improve the ecological quality of Poyang Lake Nature Reserve and restore the habitats of key species such as Siberian Cranes, the Poyang Lake Xianghu Migratory Bird Habitat Improvement and Restoration Project has been jointly implemented since 2007, with Poyang Lake National Nature Reserve as the implementation organization, and Institute of Geographic Sciences and Natural Resources of Chinese Academy of Sciences and Hubei Tianyue Engineering Management Co., Ltd. as the execution organizations. This project has effectively improved the hydrological environment, vegetation distribution, wintering bird habitats and other wetland ecological environments in the project area through engineering measures such as micro-geomorphological transformation, habitat transformation, plant plantation, water channel dredging, and barrier belt construction, improved the quality and function of waterbird habitats, improved the level of wetland biodiversity and the integrity of the ecosystem structure and function, and enhanced the waterbird carrying capacity of the project area during the wintering period and the self-repair ability of damaged wetlands. At the same time, it has raised the awareness of the local people on wetland protection and ecological environment protection, and promoted the development of regional tourism, education, culture and other industries.

The project contains the following components: (1) Vegetation ecological buffer zone. By planting tall plants such as reeds and *Miscanthus*, a safe habitat of about 0.35ha has been created for waterbirds. (2) Plant strip. Using native plants in the lake area, 10 plants such as *Miscanthus*, *artemisia*, and *polygonum* were selected to plant, forming a plant strip from the shore to the center of the lake, with an area of about 1 ha. (3) Bird resting area. Through micro-topography transformation, a variety of habitats such as islands, slow slopes, shallow water areas, and deep water areas were created, with an area of about 20 ha. (4) Submerged plant restoration area. By planting food plants *hydrilla*, *Potamogeton*, and *Vallisneria* in the waters around the bird resting area, food resources were provided for waterbirds, with an area of about 10.65 ha. (5) Sedge Zone vegetation restoration area. By means of grass cutting, trampling, and site mowing, food for birds was guaranteed, with an area of about 14 ha. (6) Water system reconstruction. By dredging the silt and repairing sluice gates, an ecological river channel was constructed and the hydrological connection between Xianghu lake and Ganjiang River was restored, covering an area of about 4 ha.

The implementation of the Xianghu Wetland Restoration Project has significantly improved plant diversity and bird habitats, improved the stability and diversity of the wetland ecosystem, and provided rich habitats and food resources for rare and endangered birds. This project results show that the density of submerged plants in the project area has increased by more than 20%, the area of sedge suitable for feeding during the wintering period has increased by more than 10%, and the number of rare and endangered species such as White-fronted Geese, Oriental White Storks, Swan Geese and Tundra Swans has increased by about 4 times after the implementation of the project. The vegetation on the sedge zone has been restored from the original 4-plant species dominant communities to 10-species dominant communities, and the richness of dominant species has increased by 2.5 times. At the same time, the project area has restored 216.51 ha of sedge zone, and the area of suitable habitats has increased by about 15 times. The successful implementation of this project provides a successful demonstration for the ecological protection and restoration of typical sub lake, and lays a foundation for the scientific protection and practice of wetland ecological restoration.

“新”守护鄱阳湖 70 万只越冬候鸟*

侯雨琪¹ 刘芳菁¹ 钟南清²

江西鄱阳湖国家级自然保护区管理局, 南昌 330038
江西省林业局, 南昌 330038

江西省鄱阳湖, 作为中国第一大淡水湖、国际重要湿地, 每年吸引着 70 万只候鸟来此栖息越冬。

早在 20 世纪 80 年代, 中国科学院动物研究所周福璋先生、丁文宁先生带领的科考队在鄱阳湖大湖池发现了 100 余只白鹤, 轰动全球, 让这一濒临灭绝的物种重新走进了人们的视线。

江西鄱阳湖候鸟保护区(省级)应运而生, 1988 年晋升为国家级自然保护区, 肩负起以复兴白鹤为代表的珍稀候鸟种群、推动鄱阳湖生态繁荣的重大使命。

科技赋能, 打造湖区智慧管护新模式

在鄱阳湖大湖深处, 新兴技术与湿地保护的深度融合, 正悄然改变着湿地保护的方式。过去, 保护区工作人员巡护靠走、执法靠吼, 面临着巡护范围有限、监测误差大的难题。然而, 随着 AI 识别、无人机自动巡护、5G 网络的加入, 不断重塑着湿地候鸟保护格局, 推动着保护区建设迈向更加智能化、精准化的未来。

2023 年, 鄱阳湖迎来了一位“大管家”——智慧管理平台。它串联了前端探头、监测仪和无人机等设备, 整合有效资源, 实现智慧预警、智慧巡护、智慧监测、智慧分析、智慧推演五大功能。如今, 保护区的新成员周钰玲已经熟练掌握智慧管理平台的使用, 只需在电脑前轻点鼠标, 就能通过远程探头实时查看湖区动态。今年 3 月初, 周钰玲通过视频监控发现了一只幼年白鹤被困在大汉湖东洲头草洲上, 无法自由飞翔, 于是迅速启动基层站采取紧急救助措施, 最终这只白鹤得以成功脱险。

生境改造, 探索湿地生态修复新路径

保护区联合中国科学院地理科学与资源研究所、中国科学院南京地理与湖泊研究所等科研机构, 依

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据不同鸟类的习性和地形特点，通过挖掘沟塘、堆建坡滩、填平缺口、种植植被以及加强水系连通等一系列措施，设计了多样化的鸟类生境。

为解决候鸟食源、恢复湖区植被，2023 年 4 月，保护区与国际鹤类基金会、中国科学院南京地理与湖泊研究所、湖北秀湖植物园联合开展了鄱阳湖鹤类食源性水生植物种源培育及物种恢复工作。现场采样结果显示，刺苦草的冬芽数量已达到 850 颗/m²，相较于栽种初期的 9 颗/m²，扩大到 90 余倍，取得了可喜成果。

国际携手，达成候鸟迁飞通道保护新合作

每年，全球数以亿计的候鸟在相隔万里的繁殖地和越冬地之间往返迁徙。目前，全球共有 9 条主要的候鸟迁徙路线，东亚-澳大利西亚迁徙路线是其中最繁忙的一条。鄱阳湖，在 1,060 块东亚-澳大利西亚鸟类迁飞关键栖息地评估中，评分第一、贡献第一、重要性第一，承载着守护候鸟迁飞的重要使命。

在 2021 年第二届国际观鸟周活动中，鄱阳湖保护区与俄罗斯克塔雷克国家公园签订了战略合作协议，开启了双方在白鹤越冬地和繁殖地的首次跨国合作，进行了多次线上线下交流，收获了白鹤在西伯利亚冰冻苔原的生活史、小鹤野外孵化视频等珍贵研究材料。在 2023 年第三届鄱阳湖国际观鸟季期间，保护区在中俄候鸟保护合作的基础上，共同签署了中俄、中蒙保护区白鹤保护战略合作协议，发布了白鹤保护联合宣言。

此外，保护区还与吉林莫莫格、内蒙古科尔沁、吉林向海、南矾湿地等四个国家级自然保护区共同签订了《白鹤迁徙路线联袂保护区合作协议》，以扫除白鹤迁飞沿线保护协作“盲区”，实现了以“生态接力”打造白鹤保护的“万里走廊”。

添绿增金，绘就生态和谐新画卷

昔日，鄱阳湖畔的村民们依水而居，捕鱼为生。面对乡亲们的生计挑战，渔民出身的张海平决心带领大家走出一条新的致富道路。在 FAO-GEF 江西湿地项目的支持下，保护区助力张海平与 108 户村民联合成立裕农蓝莓专业合作社。其中，87 户村民每户在蓝莓基地拥有 7 棵蓝莓树，蓝莓的收成完全归他们所有。到了 2023 年，每户每年通过蓝莓种植增加了约 1,000 元的收入。此外，合作社成员在蓝莓基地打工，每天还能获得 120 至 150 元的额外收入。在保护区的推动下，裕农蓝莓专业合作社不仅关注经济效益，更致力于生态保护，积极开展湿地保护宣传和候鸟保护巡护工作。

张海平只是鄱阳湖畔众多转型渔民的一个缩影。在 FAO-GEF 江西湿地项目支持下，保护区依托沿湖 11 个基层站点，丰富湖区绿色经济业态，推动生态友好型经济发展。通过与庐山市沙湖山管理处共同在沙湖山实施生态旅游营地示范项目，打造露营度假基地，提供就业岗位 60 余个，惠及村民 60 余人，年人均收入增加 2 万余元。支持吴城镇丁山村、三角乡永丰村开展生态垂钓、草莓基地种植等特色项目，共解决就业岗位 100 余个，保障就业家庭 80 余户，带动农民增收近 200 万元。支持开展马影湖“摄影+农家乐”等特色产业，有效带动社会组织、爱心企业投入帮扶资金 50 余万元。通过聘请湖区禁捕退捕渔民加入巡护队伍，每年对他们进行签约、考评，扩充了渔民上岸后的就业岗位，保障再就业家庭达到 220 余户。

40 多年来，一代代保护区的守护者初心不改、坚守奉献，坚定不移走好绿色发展之路，白鹤从最初发现的 100 余只壮大到如今的 5000 余只，保护区鸟种记录由 310 种增长到 387 种，高等植物记录由 476 种增长到 602 种，实现了鄱阳湖生态环境持续向好向优的显著成绩。

"New Approaches" protects 700,000 wintering birds in Poyang Lake

Hou Yuqi¹, Liu Fangjing¹, Zhong Nanqing²

¹ Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

² Jiangxi Forestry Bureau, Nanchang 330038

Poyang Lake in Jiangxi Province, as China's largest freshwater lake and an internationally important wetland, attracts 700,000 migratory birds to winter here every year. As early as the 1980s, a scientific expedition team led by Mr. Zhou Fuzhang and Mr. Ding Wenning from the Institute of Zoology of Chinese Academy of Sciences, discovered more than 100 Siberian Cranes in Poyang Lake.

The Jiangxi Poyang Lake Migratory Bird Reserve (provincial level) was established and then was promoted to a national nature reserve in 1988. The reserve bears the important mission of reviving migratory bird populations represented by the Siberian Cranes and promoting the ecological prosperity of Poyang Lake.

1. Empowered by science and technology, a new model of smart management and protection of lake

areas is being created

In the depths of Poyang Lake, the close integration of emerging technologies and wetland protection is quietly changing the way of wetland protection. In the past, the staff of the reserve patrolled by walking and enforced the law by shouting, facing the problems of limited patrol range and big monitoring errors. With the addition of AI recognition, automatic drone patrols, and 5G networks, the pattern of wetland migratory bird protection is constantly being reshaped, pushing the development of the reserve towards a more intelligent and precise future.

In 2023, Poyang Lake installed a smart management platform. It connects front-end cameras, monitors, drones and other equipment, and realizes five major smart functions: early warning, patrol, monitoring, analysis, and deduction. Today, Zhou Yuling, a new member of the reserve, has mastered the use of the smart management platform. With just a click of the mouse in front of the computer, she can view the dynamics of the lake area in real time through the remote cameras. In early March of this year, Zhou Yuling discovered through video surveillance that a young Siberian Crane was stranded on the grass/sedge meadow of Dongzhoutou in Dachahu and could not fly freely, so she quickly connected a local station to take emergency rescue measures, and finally the Siberian Crane was successfully rescued.

2. Habitat transformation, exploring new paths for wetland ecological restoration

The reserve, in collaboration with the Institute of Geographic Sciences and Natural Resources Research of Chinese Academy of Sciences, Nanjing Institute of Geography and Limnology of Chinese Academy of Sciences, and other research institutions, has designed and created a variety of bird habitats based on the habits of birds and land terrain characteristics, through a series of measures such as digging ditches and ponds, building slopes and beaches, filling gaps, planting vegetation, and strengthening water system connectivity.

In order to solve the shortage in the food source for migratory birds and restore the vegetation in the lake area, in April 2023, the reserve, International Crane Foundation, Nanjing Institute of Geography and Limnology of Chinese Academy of Sciences, and Hubei Xiu Lake Botanical Garden jointly carried out the cultivation of aquatic plant seed sources and species restoration for cranes in Poyang Lake. The results of on-site sampling showed that the number of winter buds of *Vallisneria* has reached 850 buds/m², more than 90 times the number of 9 buds/m² at the beginning of planting, and has achieved successful results.

3. International cooperation to achieve new cooperation in protecting migratory bird flyways

Every year, hundreds of millions of migratory birds around the world migrate back and forth between their breeding grounds and wintering grounds. At present, there are 9 major migratory bird flyways in the world, and the East Asia-Australasian Flyway is the largest one. Poyang Lake is one of the most important sites along the East Asia-Australasian Flyway.

During the 2nd International Bird Watching Week in 2021, the Poyang Lake Nature Reserve signed a strategic cooperation agreement with the Russian Kytalyk National Park, opening up the first cross-border cooperation between the two countries, one in the wintering and the other in breeding grounds of Siberian Cranes. The two sides have conducted many exchanges (including online) and shared precious research materials such as the life history of Siberian Cranes in the frozen tundra of Siberia and videos of young cranes hatching in the wild. During the 3rd Poyang Lake International Bird Watching Season in 2023, the reserve signed a strategic cooperation agreement on Siberian Cranes protection between China, Russia and Mongolia, and issued a joint declaration on Siberian Crane conservation.

In addition, the reserve had signed the "Cooperation Agreement on Siberian Crane Conservation by Nature Reserves along the Flyway" with four national nature reserves, including Jilin Momoge, Inner Mongolia Keerqin, Jilin Xianghai and Jiangxi Nanji Wetland, to enforce protection of migration stopovers along the flyway of the Siberian Cranes.

4. Improve livelihood for local communities, paving a new path for co-management of the reserve

In the past, villagers along the shores of Poyang Lake lived by the water and made a living by fishing. Faced with the livelihood challenges of his fellow villagers, Zhang Haiping, who was born as a fisherman, was determined to lead everyone to a new path to prosperity. With the support of the FAO-GEF Jiangxi Wetland Conservation Project, the reserve helped Zhang Haiping and 108 households to jointly establish the Yunong Blueberry Cooperative. Among them, 87 households each have 7 blueberry plants in the blueberry base, and the blueberry harvest belongs entirely to them. By 2023, each household increased its annual income by about 1,000 yuan. In addition, cooperative members can earn an additional 120 to 150 yuan a day by working at the blueberry base. Driven by the reserve, the Yunong Blueberry Cooperative not only pays attention to economic benefits, but is also committed to ecological conservation. The members have actively carried out wetland protection publicity

and migratory bird protection patrol work.

Zhang Haiping is just one of the many fishermen who live by the lake and have transformed themselves. With the support of the FAO-GEF Jiangxi Wetland Conservation Project, the reserve has promoted the development of an eco-friendly economy by establishing 11 sites along the lake. These eco-friendly economic activities include: (1) eco-tourism camp demonstration project in Shahushan, ashore fishing, photography+household eco-tour, and hiring local community patrol guards etc.

Through 40 years of conservation efforts by the reserve, number of Siberian Cranes has increased from 100 in the beginning to about 4000 today, the bird species from 310 to 387, and the higher plant species have increased from 476 to 602.

鄱阳湖国家级自然保护区 与鹤同行四十年*

林发荣

江西鄱阳湖国家级自然保护区管理局, 南昌 330038

赣江西滨, 修河东畔, 鹤鸣九皋, 声闻于野。1981 年 1 月, 中科院动物研究所周福璋先生、丁文宁先生带领的科考队在江西鄱阳湖大湖池湿地(现为江西鄱阳湖国家级自然保护区核心区)发现了 100 余只白鹤, 轰动全球, 让这一濒临灭绝的物种重新走进了人们的视线。为了抢救性地保护白鹤等珍稀鸟类及其栖息地, 1983 年 6 月, 江西鄱阳湖候鸟保护区(省级)应运而生, 1988 年 5 月, 晋升为国家级自然保护区。

成立至今的四十年间, 一代代鄱保人秉承艰苦奋斗、务实进取的建区精神, 弦歌不辍, 薪火相传, 在江西省林业局的领导下, 深入贯彻落实党和国家各个时期生态保护战略部署, 特别是党的十八大以来, 坚定不移贯彻落实习近平生态文明思想, 在建设有中国特色社会主义伟大进程中谱写了根植基层、护我河山的壮丽篇章。

四十年来, 鄱阳湖保护区牢牢守住资源管护这一基础阵地, 不断创新完善保护工作体制机制, 推动建立了“省、市、县、乡、村”五级联动的全湖湿地候鸟联保体系, 构筑了“天空地”一体化资源管护监测网络, 深化了守护候鸟迁徙通道国际国内、纵向横向交流合作, 白鹤数量由最初的 100 余只壮大到如今的近 4,000 余只, 保护区鸟种记录由 310 种增长到 387 种, 高等植物记录由 476 种增长至 602 种, 被评为“全国自然保护区示范单位”、“生物多样性 100+全球典型案例”。

四十年来, 鄱阳湖保护区持续强化科研监测这一发展支撑, 建立了统一规范的鸟类“逢八”监测体系和长江江豚“逢十三”监测制度, 掌握了碟形湖科学控水的成熟经验, 探索了湿地植被恢复、苦草快繁、苔草生长周期干预、湖区地形地貌改造等技术, 人才队伍壮大到本科学历 70 人, 研究生学历 15 人, 科研合作的“朋友圈”拓展到 30 多家, 发表科研论文 110 余篇, 出版科研监测年报 13 本, 获得“梁希科普奖”、“江西省科技进步一等奖”等荣誉, 将科研文章扎实地写在鄱阳湖上。

四十年来, 鄱阳湖保护区坚持创新宣传教育这一长远举措, 用心用情用力讲好“鄱湖故事”, 建立了“一站一品”自然教育场所, 形成“一站辐射一县”的宣教体系, 打造出鄱阳湖湿地候鸟宣教中心、白鹤学堂、鄱阳湖长江江豚科普展厅等精品宣教窗口, 培养了一支专业有爱的自然教育讲师队伍。近年来, 通过“走出去、引进来”相结合方式, 年均科普宣教人次约 4 万人次, 各项工作被人民日报、中央电视台等重量级媒体密集宣传报道, 被授予“学习强国”科普教育基地、国家生态文明教育基地、全国林草科普基地等荣誉, 湿地候鸟保护日益成为全民共识、全民行动。

四十年来, 鄱阳湖保护区全力驱动项目建设这一前进引擎, 顺利实施了保护区基础设施建设一期、二期工程和 GEF 江西省湿地保护区体系示范项目、中央财政湿地保护与修复等重大项目, 推进了江西省鄱阳湖北部湿地生态功能提升与生物多样性保护项目, 保护区管理、治理水平不断提升, 无人机、无人船、AI 识鸟、视频集成监控、红外声光报警等现代化手段, 彻底改变了巡护靠走、执法靠吼

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的艰难局面，亮化、美化、规范化改造工程显著改善了职工工作生活环境，智慧化、现代化保护区建设已初现成效。

四十年来，鄱阳湖保护区抓实做细社区共建这一惠民工程，始终与湖区群众保持血肉联系，通过开展“党建+帮扶”、社区志愿服务等行动切实帮助群众解决实际困难，通过实施生计替代类项目有效帮扶上岸渔民转产转业，通过全力唱响鄱阳湖国际观鸟品牌、国际旅游品牌，不断加深拓宽打通“两山”转换通道，推动地方生态旅游、观鸟经济持续升温。一批生态公益岗位、蓝莓基地、草莓基地、垂钓基地、房车营地、观鸟民宿、小微湿地等保护区惠民工程纷纷落地，通过一件件“点绿成金”的具体实践实实在在帮助群众增收致富。

四十年间，在全体鄱保人的共同努力下，生态保护的红旗插遍了整个鄱阳湖，发展成就令人瞩目，全国先进基层党组织、全国自然保护区示范单位、全球 A 级示范保护区、全球生物多样性保护 100+典型案例、梁希科普奖、江西省科技进步一等奖等荣誉的取得，以及北京奥运会火炬传递手、中国好人、江西好人、省道德模范、省五一劳动奖章、省最美环保人等先锋模范的获评，充分展现了新时代鄱阳湖保护区昂扬向上、奋发进取的精气神。

鄱阳湖保护区从筚路蓝缕到玉汝于成，是践行习近平新时代中国特色社会主义思想的结果，是落实党和国家生态文明宏伟战略部署的结果，是省林业局党组坚强领导的结果，是沿湖各地各部门和广大群众鼎力支持的结果，是一代代鄱保人艰苦奋斗的结果。

立足新时代，鄱阳湖保护区将矢志不渝、不忘初心、牢记使命，以更高站位、更严标准、更强担当、更实举措，深入贯彻落实习近平新时代中国特色社会主义思想，进一步擦亮“白鹤”、“江豚”两大名片，全力推进保护区各项事业高质量跨越式发展，为建设人与自然和谐共生的中国式现代化贡献新的智慧和力量。

Poyang Lake National Nature Reserve: Working on Cranes for Forty Years

Lin Farong

Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

In January 1981, a scientific expedition team led by Mr. Zhou Fuzhang and Mr. Ding Wenning from the Institute of Zoology of Chinese Academy of Sciences, discovered more than 100 Siberian Cranes in Dahuchi at Poyang Lake of Jiangxi (now the core area of Jiangxi Poyang Lake National Nature Reserve, PLNR), a news shocking the world, and brought this endangered species back into people's sight. In order to protect this rare bird species and its habitats, the Jiangxi Poyang Lake Migratory Bird Reserve (provincial level) was established in June 1983, and was promoted to a national nature reserve in May 1988.

In the 40 years since its establishment, the reserve had made amazing achievements:

The reserve has firmly protected and managed its natural resources, continuously innovated and improved the protection system and mechanism. The number of Siberian Cranes has increased from 100 in the beginning to about 4000 today, the bird species from 310 to 387, and the higher plant species have increased from 476 to 602.

The reserve had strengthened its research and monitoring capacity and formed a sound technical team, including 70 staff members with bachelor's degrees and 15 with postgraduate degrees. The reserve has cooperated with more than 30 research institutions. Over 110 scientific research papers and 13 annual monitoring reports have been published.

The reserve has paid a lot of attention to environmental awareness and education, and established environmental education centers, among all most notably the Poyang Lake Wetland Migratory Birds Publicity and Education Center. We have trained a team of nature-loving educators, and reached about 40000 people for education activities.

The reserve has received and implemented all kinds of projects, from such as GEF, central and local governments in areas of reserve capacity building, wetland protection and restoration, and biodiversity conservation etc.

The reserve has worked hard to implement the community co-construction projects, including bird watching, fishing ashore bases, blueberry farms. Micro-wetland construction, and RV camps etc.

Over the past forty years, the reserve and its staff members have received many awards and honors, such as National Advanced Grassroots Party Organization, National Nature Reserve Demonstration Unit, Global A-level

Demonstration Reserve, Global Biodiversity Conservation 100+ Typical Cases, Liang Xi Science Popularization Award, and Jiangxi Science and Technology Progress First Place.

The Poyang Lake Nature Reserve has gone from being a hard journey to being successfully built. This is the result of practicing Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, implementing the Party and the country's grand strategic plan for ecological civilization, the strong leadership of the Provincial Forestry Bureau's Party Committee, the strong support of all departments and the general public around the lake, and the amazing work of generations of Poyang Lake people.

Based on the new era, the Poyang Lake Nature Reserve will remain committed and bear its mission in mind. It will thoroughly implement Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era with a higher and stricter standards, stronger responsibilities, and more practical measures, further brand Siberian Crane and Yangtze River dolphin, and contribute new wisdom and strength to the construction of Chinese-style modernization with harmonious coexistence of man and nature.

GEF 江西省湿地保护区体系示范项目“社区共管项目”总结

杨修翔 张宗华 伍旭东 周云南
江西鄱阳湖国家级自然保护区管理局，南昌 330038

2019 年，江西鄱阳湖国家级自然保护区管理局与江西全球环境基金（GEF）项目办签署《社区共管试点项目直接执行协议》。此后，鄱阳湖保护区依照直接执行文件的有关内容，以及“加强鄱阳湖湿地生态系统保护区的参与式管理能力”的产出要求，按年度计划分部实施，开展了包括社区共管委员会的构建、替代生计实施、社区巡护员和管理队伍建设、能力培训和宣传推广等一系列社区共管活动，取得了丰富的活动成效。现将鄱阳湖保护区社区共管活动开展情况报告如下：

1. 活动开展情况

1.1 社区共管组织的建立和运行

(1) 建立了社区共管小组。鄱阳湖保护区以 11 个保护站为核心，联合周边社区开展社区共管活动。活动涉及沿湖社区 20 个。

(2) 成立并运行了社区共管委员会。鄱阳湖保护区社区共管委员会于 2021 年 9 月正式成立，大会确立和签署了《鄱阳湖保护区社区共管委员会章程》，明确了委员会人员组成、职能、工作目标和运行方式等内容。此后，社区共管委员会会议共召开 5 次，为加强沿湖乡镇社区沟通、替代生计和生态旅游活动有效实施、以及社区共管工作能力提升发挥了重大作用。

1.2 替代生计和生态旅游试点活动实施情况

(1) 沙湖山生态旅游营地示范项目 - 该项目旨在更好的打造沙湖山社区生态旅游产业，推动当地乡村振兴工作，带动上岸渔民和闲散人员再就业，缓解保护压力，加强社区对保护区工作的支持。项目启动于 2022 年 10 月，共支持资金 39.7282 万元，在当地现有停车场和绿化空地上升级改造为汽车营地、房车营地以及帐篷营地三大功能板块。

(2) 三角乡永丰村草莓种植项目 - 项目旨在通过支持草莓种植示范户，探索新替代生计模式，拓展新的收入来源，减少村民生产活动对越冬鸟类外围栖息地（稻田）的影响，缓解候鸟保护与村民生产活动的矛盾，降低越冬栖息地的环境压力。共支持资金 5.98 万元，用于采购 13 亩草莓种植所需的有机肥和复合肥料。

(3) 吴城镇丁山村以养代捕和生态垂钓项目 - 项目通过帮扶上岸渔民以养代捕和生态垂钓，促进上岸渔民转产转业，同时为外来游客提供休闲垂钓的活动场所，缓解游客擅自下湖频繁带来的保护区管理风险，扩大湿地候鸟保护和鄱阳湖退捕禁捕工作的推进效果。共支持资金 15.62 万元，用于采购 200 亩鱼塘所需的 7,000 多公斤鱼苗以及 6 套生态垂钓台。

(4) 吴城镇同兴村有机蓝莓项目 - 项目旨在推动社区经济发展，帮扶上岸渔民转产转业，帮扶社区居民提高收益改善生计，扩大湿地候鸟保护和鄱阳湖退捕禁捕工作的推进效果。共投入项目资金 24.7654 万元，用于采购 170 亩蓝莓种植管理所需的有机肥料、防护网，以及设计采购蓝莓产品包装盒。

(5) 三角乡鄱湖村农村生活污水处理项目 - 项目旨在建设一套人工湿地污水处理系统, 用于改善农村人居环境和减少生活污水对鄱阳湖湿地保护的壓力, 助力乡村振兴, 并为周边社区处理生活污水提供参考方案。项目共投入资金 46.53 万元。

(6) 吴城镇同兴村葡萄和大板瓜子种植及小微湿地项目 - 项目旨在通过发展葡萄和大板瓜子种植, 在发展村集体经济的同时, 让更多上岸渔民从事农业种植, 达到转产转业的目的。通过在 8 亩葡萄园附近建设 2 亩小微湿地以缓解其面源污染, 形成降低沿湖农业生产对环境影响的案例; 项目共投入资金 45.5 万元, 用于支持葡萄大棚搭建、大板瓜子种苗采购和小微湿地建设。

(7) 沙湖山西江村稻鸭鱼项目 - 项目支持资金 22.598 万元, 启动了 100 亩稻鸭鱼共作示范项目, 旨在发展当地经济, 并探索适合当地资源禀赋的高效、生态友好和湿地友好的稻鸭鱼共生的绿色、可持续的生产模式, 缓解禁渔、湿地和候鸟保护对社区渔民和农户的生計冲击。

通过协商, 7 个试点项目涉及的社区承诺: 对该示范项目的后续运营实施管理, 接受鄱阳湖保护区社区共管委员会监督管理, 组织社区居民参与湖区巡护和社区宣传等共管活动, 并遵守湿地生态保护和湖区退捕禁捕政策。

1.3 社区巡护员巡护活动实施情况

2019 年至 2023 年期间, 鄱阳湖保护区在辖区周边的重点沿湖社区聘请社区巡护员开展支持保护站的湖区巡护活动, 最多时聘请社区巡护员 46 人。要求于 11 月至次年 3 月, 在规定的范围内开展每周不少于一次的湖区巡护工作, 以及工作中的宣传教育和信息报送, 加强了湿地和越冬候鸟的管护和保护的力度和范围。

1.4 培训和考察活动

(1) 组织开展了两次巡护员业务培训活动, 内容涵盖了社区共管介绍, 水鸟识别知识, 监测设备、轨迹软件的使用等巡护工作知识和保护、法律法规等。两年以来共培训社区巡护员 90 余人次。

(2) 组织和参与社区共管研讨会和社区共管培训。项目实施期间, 保护区共组织、参与了社区研讨会和社区共管培训活动 6 次, 培训人员 250 余人次。

(3) 开展外出考察活动。鄱阳湖保护区社区共管委员会代表 6 人, 赴重庆缙云山国家级自然保护区、重庆梁平双桂湖国家湿地公园、重庆开州区自然保护区管理中心等地开展交流学习, 深入了解相关保护区在湿地污水处理、湿地修复和恢复、小微湿地建设和科普宣教等工作经验。

1.5 社区宣教志愿者队伍建设

鄱阳湖保护区选择替代生計项目的部分受益社区代表以及其他村组的社区代表, 共同组建了一支 24 人的社区宣教志愿者队伍。开展了两次共 4 天的业务培训。此后宣教志愿队伍承担了部分游客教育和社区日常宣传的工作任务, 为劝阻游客下湖等不良行为、倡导文明观鸟, 以及完成社区宣传和信息收集发挥了一定的作用。

2. 取得成效

(1) 搭建了统一的组织协商平台

鄱阳湖保护区社区共管委员会自成立后, 在各项替代生計和生态旅游项目的落地、工作交流和推广活动方面发挥了重要作用, 通过召开了 5 次委员会会议和 3 次社区共管研讨会、培训班, 审议通过了 7 个替代生計(生态旅游)项目, 加强了各试点活动涉及乡镇、社区同保护区的沟通, 提升了项目参与者的能力。

(2) 签署了一系列社区共管协议

鄱阳湖保护区先后签订了 11 个指导社区巡护员开展工作和社区综合管理的社区共管协议, 以及 7 个管理社区试点替代生計活动所的社区共管协议。

(3) 引导和组织了民间力量

通过培训和日常管理, 社区巡护员和社区宣教志愿者的的工作能力和保护责任意识有所提升, 部分巡护员还向家人和周边邻居宣传巡护、发动他们协助工作; 将社区宣教志愿者的理念传递到社区, 通过他们自发的宣传造势, 营造社区和保护区齐宣传共保护的良好氛围。

(4) 促进了转产转业和生計改善

2019 年至 2023 年, 项目共投入 47.45 万元, 用于支付巡护员工资, 为巡护员提供每人每年 2,500 元的收入。此项受益农户超过 50 户。

项目还投入 198.1 万元开展社区替代生計活动。具体受益情况: 受益农户 262 户, 其中上岸渔民 89 户。直接受益人群为参与农户及其家庭成员, 受益人数为 863 人, 其中男性 482 人、女性 381 人, 困难人口 156 人。

(5) 改善了社区人居环境和湖区生态环境

通过实施鄱湖村农村生活污水处理项目、沙湖山生态营地项目，促进社区环境改善和周边卫生整治工作，实现了当地社区人居环境的美化和提升；通过支持丁山村以养代捕和生态垂钓项目，吸引游客和垂钓人员，降低了他们对湖区的干扰；通过技术指导，鼓励和引导各项目点的农业生产向环境友好型发展，如支持采购有机肥料开展草莓、蓝莓种植，支持采购大棚并建设小微湿地，为葡萄种植提供精细化管理并降解生产中的面源污染；在促进社区发展的同时，推进了社区受益再分配。

(6) 促进了湿地和水鸟保护

通过吸引民间力量参与，鄱阳湖保护区将湿地巡护范围延伸到保护区外的沿湖县、乡镇重点水域，巡护面积扩大到 381 Km²。

(7) 加强了宣传和推广

通过制定实施了生态保护村规民约，提升社区居民的生态保护意识；通过制作安装了保护区试点项目宣传牌 7 块，集中展示了各项目点的项目实施情况、相关知识；通过制作并发放了用于社区宣传的物品，向保护区周边社区传递社区共管的保护理念；通过编撰社区共管书籍为其他地区的社区共管活动的提供技术指导和经验推广；通过制定《社区共管工作指南》，为全省其它湿地类型保护地开展社区共管工作提供指引与借鉴。

(8) 促进了能力提升

通过定期召开社区共管委员会，提升了委员会审议社区试点活动的质量，充分发挥委员会协商机制，提升了成员间的沟通效率；通过组织 6 次社区共管研讨会、培训班和外出考察活动，提升了社区共管工作人员对项目的把握，促进了相互间的取长补短，促进了项目的整体推进；通过开展巡护员培训和宣教志愿者培训，提升了社区巡护员的业务能力和综合职业素养，为保护区开展社区共管共建活动培养群众基础。

Summary of Community Co-management Pilot Project of GEF Jiangxi Wetland Nature Reserve System Demonstration Project

Yang Xiuxiang, Zhang Zonghua, Wu Xudong, Zhou Yunnan
Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

In 2019, Jiangxi Poyang Lake National Nature Reserve (PLNR) and Jiangxi Global Environment Fund (GEF) Project Office signed the "Community Co-management Pilot Project Implementation Agreement". Since then, PLNR has implemented the project activities, along with output requirements by "Strengthening the participatory management capacity of Poyang Lake Wetland Ecosystem Reserves". The project has made remarkable achievements in organizing co-management committees, implementing livelihood activities, forming community patrolling guards, capacity building and raising environmental awareness.

1. Project implementation process

1.1. Establishment and operation of community co-management organizations

Community co-management groups were established. Taking advantage of 11 protection and monitoring stations established by PLNR in the lake basin, we have formed 20 community co-management groups with local surrounding communities.

A community co-management committee was established and operated. The Poyang Lake Nature Reserve Community Co-management Committee was officially established in September 2021. Guidelines of the Poyang Lake Nature Reserve Community Co-management Committee were drafted and passed, and members, their responsibilities, and goals and operation approaches were determined. The committee has held 5 meetings and played important a role in strengthening communication with local villages and townships, implementing livelihood and eco-tour activities, and building capacity for community co-management.

1.2. Implementation of pilot activities for alternative livelihoods and ecotourism

(1) Shahushan Ecotourism Camp Demonstration Project - The project aims to better build the ecotourism industry in the Shahushan community, promote local rural revitalization, assist in employment of fishermen after fishing ban and other non-employed people, ease nature protection pressure, and strengthen community support for the reserve. The project was launched in October 2022, with a total investment fund of 397,282 yuan, and upgraded the existing local parking lots and green spaces into three functional camps for cars, RVs, and tents respectively.

(2) Strawberry Planting Project in Yongfeng Village, Sanjiao Township - The project aims to explore new alternative livelihoods and expand new sources of income by supporting strawberry planting demonstration households, reduce reliance of local villagers on the surrounding habitats (rice fields) of wintering birds, reduce conflicts between migratory bird protection and farming activities, and alleviate the environmental pressure on wintering habitats. A total of 59,800 yuan of investment funds were provided to purchase organic fertilizers and compound fertilizers for 13 mu of strawberry planting.

(3) Wucheng Town Dingshan Village Ecological Fishing Project - The project promotes ashore fishing or fishing ecologically, while providing a place for tourists to fish for leisure, alleviating the management problems caused by tourists frequently going to the wetland/lake without permission, and strengthening positive impact on wetland and migratory bird protection from Poyang Lake fishing ban and wetland conservation measures. A total of 156,200 yuan of funds were provided to purchase more than 7,000 kilograms of fish fry and 6 sets of ecological fishing platforms required for 200 mu of fish ponds.

(4) Wucheng Town Tongxing Village Organic Blueberry Project - The project aims to promote community economic development, help fishermen on land to switch to other industries, help community residents increase their income and improve their livelihoods, and expand the promotion of wetland migratory bird protection and Poyang Lake fishing ban. A total of RMB 247,654 RMB was invested in the project to purchase organic fertilizers and protective nets required for 170 mu of blueberry planting and management, as well as design and purchase blueberry product packaging boxes.

(5) Rural Domestic Wastewater Treatment Project in Poyang Village, Sanjiao Township - The project aims to build an artificial wetland wastewater treatment system to improve the rural living environment and reduce domestic sewage pollution to Poyang Lake wetlands, help rural revitalization, and seek a solution for the treatment of domestic sewage for the surrounding communities. A total of 465,300 RMB were invested in the project.

(6) Grape and Big Melon Seed Planting and Micro-Wetland Project at Tongxing Village, Wucheng Town - The project aims to develop the village collective economy by developing grape and big melon seed planting, so that more fishermen who come ashore can engage in farming and make smooth transformation of living styles. By building 2 mu of micro-wetland near the 8 mu vineyard to reduce its non-point source pollution, it has become a good case of reducing the impact of agricultural production along the lake; the project has invested a total of 455,000 yuan to support the construction of grape greenhouses, the purchase of big melon seedlings and the construction of the micro-wetland.

(7) Xijiang Village Rice-Duck-Fish Project in Shahushan - With a project support of 225,980 RMB, a 100 mu rice-duck-fish demonstration project was initiated, aiming to develop the local economy and explore a green and sustainable production approach of rice-duck-fish co-exist that is efficient, eco-friendly and wetland-friendly and suitable for local resource, and to alleviate the impact of fishing bans, wetland and migratory bird protection on the livelihoods of local fishing and farming communities.

Through consultation, the communities involved in the seven pilot projects have promised to: implement management of the subsequent operations of the demonstration project, accept supervision and management by the Poyang Lake Nature Reserve Community Co-management Committee, organize local residents to participate in co-management activities such as lake patrols and community publicity, and abide by wetland ecological protection and lake fishing ban policies.

1.3. Community patrol guards

From 2019 to 2023, PLNNR had hired community patrolling guards in key lakeside communities to support the wetland protection, with a maximum of 46 community guards hired at the peak time. The community guards were required to patrol their responsible areas at least once a week from November to March during the winter season, and work on environmental protection publicity and education to local people. Their work has strengthened the management and protection of wetlands and wintering migratory birds in the reserve.

1.4. Organizing training and visits

There are three types of activities in this aspect.

First, two trainings for community patrol guards were organized, with topics covering the introduction of community co-management, knowledge of waterfowl identification, use of monitoring equipment and tracking software, and protection laws and regulations. Over the past two years, more than 90 community patrol guards have been trained.

Second, community co-management workshops and community co-management trainings were organized. During the implementation of the project, the reserve has organized 6 workshops and trainings, with more than 250 participants.

Third, field trips were organized. Six representatives of the Poyang Lake Protection Community Co-management Committee visited Chongqing Jinyun Mountain National Nature Reserve, Chongqing Liangping Shuanggui Lake National Wetland Park, Chongqing Kaizhou District Nature Reserve Management Center and other places for exchanges and learning in-depth of understanding of wetland sewage treatment, wetland restoration and restoration, micro wetland construction and popular science education.

1.5. Forming community education volunteers

PLNNR selected some beneficiary community representatives from alternative livelihood project villages and other villages and formed a 24-member community education volunteer team. Two technical training sessions totaling 4 days were conducted. After that, the community education volunteers undertook some tasks of tourist education and daily community publicity, including persuading tourists not entering wetlands and lakes, promoting good bird watching behaviors, and conducting community publicity education.

2. Achievements

(1) Established an organizational consultation and communication platform

Since its establishment, the Poyang Lake Nature Reserve Community Co-management Committee has played an important role in the implementation of various alternative livelihood and ecotourism projects. Through holding five committee meetings and three community co-management workshops and training courses, it has reviewed and approved seven alternative livelihood (ecotourism) projects, strengthened the communication between the townships and communities involved in the pilot activities and the nature reserve, and improved the capacity of project participants.

(2) Signed a series of community co-management agreements.

Poyang Lake Nature Reserve has signed 11 community co-management agreements to guide community patrol guards to carry out their work and community comprehensive management, as well as 7 community co-management agreements to manage community pilot alternative livelihood activities.

(3) Guiding and organizing non-governmental services

Through training and daily management, the working ability and protection responsibility awareness of community patrol guards and community education volunteers have been improved. Some guards have also promoted patrols to their families and neighbors and mobilized them to assist in the work; the concept of community education volunteers has been conveyed to the communities, and through their spontaneous publicity and promotion, a good environment of joint publicity and protection by the communities and the reserve has been created.

(4) Promoting alternative livelihood

From 2019 to 2023, the project invested a total of 474,500RMB to pay the salaries of guards and provide each guard with an annual income of 2,500RMB. More than 50 farmers have benefited from this project.

The project also invested RMB 1,981,000 RMB to conduct community alternative livelihood activities. Specific beneficiaries: 262 farmers have benefited, including 89 fishermen who have landed. The direct beneficiaries are the participating farmers and their family members, with a total of 863 beneficiaries, including 482 males, 381 females, and 156 people in need.

(5) Improved the living environment of local communities and the ecological environment

Through the implementation of the rural domestic sewage treatment project in Poyang Village and the Shahushan Ecological Camp Project, the community living environment and surrounding sanitation work were improved; through supporting the Dingshan Village's ashore fishing and ecological fishing projects, tourists and anglers were attracted, reducing their human disturbances to the wetland; through technical guidance, agricultural production in each project site was encouraged and guided to develop in an environmentally friendly way.

(6) Promoted the protection of wetlands and water birds

By attracting the participation of private sectors, the Poyang Reserve extended the wetland patrol scope to key waters outside the nature reserve, and the patrol area was expanded to 381km².

(7) Strengthened publicity and promotion

The ecological protection awareness of community residents was enhanced, by developing and implementing village rules and regulations for ecological protection; the project implementation status and relevant knowledge of each project site were displayed, by installing 7 publicity boards for the pilot projects in the reserve; the concept of community co-management protection was delivered to local communities around the reserve; technical guidance and experience dissemination were provided for community co-management activities in other regions, by compiling community co-management books; guidance and experiences were provided for other wetland type reserves in the province to carry out community co-management work, by developing the "Community Co-management Work Guide".

(8) Building capacity

By holding community co-management committees regularly, the quality of the committee's review of community pilot activities was improved, the committee's consultation mechanism was fully utilized, and the communication efficiency among members was improved; by organizing 6 community co-management workshops, training courses and field trips, the community co-management staff's management ability of the project was improved, and the overall advancement of the project was promoted; by carrying out patrol guard training and education volunteer training, their knowledge and understanding of wetlands and the nature reserve improved, which has laid a good foundation for the nature reserve to carry out community co-management and development activities.

吉林向海国家级自然保护区鹤类保护工作概述

李连山 夏占平 刘蕾 于海龙 王昊岩
吉林向海国家级自然保护区管理局, 吉林通榆 137215

在生态文明建设日益受到重视的今天, 鹤类作为湿地生态系统中的旗舰物种, 其保护工作显得尤为重要。吉林向海国家级自然保护区是鹤类珍禽的重要栖息地。我们对近期鹤类保护工作进行了全面总结, 与相关人士共享经验, 共谋发展。

一、鹤类种群情况概述

向海保护区分布有丹顶鹤、白鹤、白头鹤、白枕鹤、灰鹤。其中, 白鹤 2022 年共监测到 1,701 只、2023 年共监测到 1,503 只、2024 年春季共监测到 237 只; 白头鹤 2022 年共监测到 2,078 只、2023 年共监测到 1,020 只、2024 年春季共监测到 284 只; 丹顶鹤 2022 年共监测到 20 只、2023 年共监测到 28 只、2024 年春季共监测到 10 只, 秋季监测中目前暂发现 3 只。

二、科研监测体系建设

向海保护区高度重视科研监测工作, 建立了完善的科研监测体系。科研人员通过跟踪观测, 掌握了鹤类的集群位置、繁殖习性等重要资料, 为鹤类保护提供了科学依据, 实现了对鹤类种群数量、分布范围、迁徙路线等关键信息的监测和分析。在此基础上, 向海保护区还积极与其他保护区开展交流合作, 实现了信息数据的共享, 不仅在交流中提高了自身的水平, 还为全国鹤类保护事业贡献了宝贵的力量。

三、生境修复项目实施

向海保护区积极响应国家生态文明建设号召, 针对候鸟栖息地精确实施生境修复。通过科学规划、合理布局, 成功开展了退耕还林、退耕还湿和原生植被恢复的综合治理工作。通过生态移民、湿地补水等方式方法, 强化了植被掩蔽和扩充食源功能, 为鹤类等候鸟提供了更加适宜的栖息和繁衍生境。

回顾以上过去的工作, 向海保护区在鹤类保护方面取得了显著的成果。然而, 面对鹤类保护事业的长期性和复杂性, 我们深知任重道远。未来, 我们将进一步加强鹤类保护和科研工作的交流分享。同时, 我们也会积极探索新的保护模式和方法, 不断提升保护区的科研水平和保护能力。我们相信, 鹤类保护事业必将迎来更加美好的明天。

A Summary of Crane Conservation at Xianghai of Jilin

Li Lianshan, Xia Zhanping, Liu Lei, Yu Hailong, Wang Haoyan
Jilin Xianghai National Nature Reserve, Jilin 137215

Today, as ecological civilization construction is increasingly valued, cranes, as flagship species for wetland ecosystem conservation, are particularly important for people to protect. Jilin Xianghai National Nature Reserve is an important place for cranes. We have comprehensively summarized recent crane protection work, shared our experiences with relevant parties, and sought moving forward together.

1. Overview of Crane Populations at Xianghai

Red-crowned, Siberian, Hooded, White-naped, and Eurasian Cranes mainly stop over at Xianghai during migration. Among them, 1,701 Siberian Cranes were monitored in 2022, 1503 in 2023, and 237 in spring 2024.

A total of 2,078 Hooded Cranes were monitored in 2022, 1,020 in 2023, and 284 in spring 2024. A total of 20 Red-crowned Cranes were recorded in 2022, 28 in 2023, and 10 in spring 2024; in fall so far, there were three Red-crowned Cranes.

2. Construction of scientific research monitoring system

Xianghai Nature Reserve has paid great attention to scientific research monitoring and has established a complete scientific research monitoring system. Through tracking and observation, reserve technical staff have mastered important information such as the gathering location and breeding habits of cranes, providing a scientific basis for crane protection and having analyzed key information such as crane populations, distribution range, and migration routes. On this basis, Xianghai Reserve has actively carried out exchanges and cooperation with other nature reserves for data sharing, which has not only improved its own level in the reserve management, but also contributed valuable information to the national crane conservation cause.

3. Implementation of habitat restoration projects

Xianghai Nature Reserve has actively responded to the national call for ecological civilization construction and implemented habitat restoration for migratory bird habitats. Through scientific planning and layout, the reserve has successfully carried out comprehensive management of returning farmland to woodlands, returning farmland to wetlands, and restoring native vegetation. Through means such as relocating local people ecologically and wetland water replenishment, the vegetation coverage and food source expansion functions were strengthened, providing a more suitable habitat and breeding environment for cranes and other migratory birds.

In summary, Xianghai Reserve has made remarkable achievements in crane conservation. However, facing the complex nature of crane protection, however, we are well aware that there is still a long way to go. We will further strengthen the exchange and sharing of crane conservation and scientific research with colleagues. In the same time, we will actively explore new protection approaches to improve the scientific research and management capabilities of the reserve. We believe that crane protection will have a bright future.

“小鹤学堂”源泉厚植云南会泽的“绿水青山”沃土

张朝选 孙本双

云南会泽黑颈鹤国家级自然保护区管护局，云南会泽 654200

“问渠哪得清如许？为有源头活水来”。在会泽县教育局和体育局的支持下，云南会泽黑颈鹤国家级自然保护区（简称会泽保护区）管护局与国际鹤类基金会达成合作协议，今年以来，实施了首个国际合作项目——以黑颈鹤和湿地保护为特色的“小鹤学堂”环境教育基地，助力打造如下“四品牌”，厚植保护区“绿水青山”沃土。

一是打造环境教育品牌。“小鹤学堂”项目实施中，国际鹤类基金会支持会泽保护区加强能力建设，包括培训教师 10 名、建立课程体系 1 套、改造鹤元素特色教室 2 间、支持教学用材及教学资源若干。会泽保护区管护局协调县教育和体育局，在国际鹤类基金会的支持下，开发了有关黑颈鹤、湿地、植物、家乡历史、环境保护、人鸟和谐等特色课程 16 门，组织保护区所在地的大桥乡杨梅山小学和者海镇多发小学 4-5 年级学生，每学年开展室内环境教育 16 次，开展自然游戏、鹤类户外观测等形式多样的冬/夏令营活动 2 次。充分发挥自然保护区的社会功能，计划以“小鹤学堂”为平台，整合“会泽县中小学生生态文明和劳动教育实践基地”力量，促进“小鹤学堂”进校园、进机关、进社区，合力打造“小鹤学堂”环境教育品牌，扩大影响力。

二是打造文化传播品牌。“传播绿色文化，引领生态文明”是时代的要求，更是自然保护地的责任和担当。在县教育和体育局的支持下，会泽保护区与国际鹤类基金会建立长期合作关系，计划以“小鹤学堂”环境教育基地建设为契机，合理利用保护区良好的生态环境、悠久的历史文化和丰富的物种资源，突出贴近当地特色、贴近日常生活、贴近公众教育的“三贴近”特色，适时举办学生爱鹤护鹤征文、绘画、演讲、手抄报比赛和爱鹤护鹤知识竞赛，教师“小鹤学堂”教学竞赛，公众摄影、征文比赛等活动，激发公众创作热情，用好“鹤”资源、写好“鹤”文章、绘好“鹤”丹青、谱好“鹤”乐章、讲好“鹤”

故事，让“鹤鸣于九皋，声闻于天；鹤鸣于九皋，声闻于野”的意境经久不衰，全面推进“人鹤和谐示范区”建设，打造人与自然和谐共生的生态文化传播品牌。

三是打造合作交流品牌。黑颈鹤是一种终身生活在高原上的珍稀鸟类，约 95% 分布于中国境内，仅有近 5% 迁飞至不丹等周边国家越冬，鹤类的迁徙架起了不同国度、不同地域之间保护工作的联系沟通桥梁。“小鹤学堂”环境教育基地的建设，不仅畅通了中国鹤类迁飞通道上的保护地及社区之间的合作交流，也开启了会泽保护区国际合作交流的新篇章，以开放、合作、包容的姿态，加入鹤类迁飞路线上的环境教育工作联盟，打造国际国内生物多样性保护合作交流品牌，为更好地保护黑颈鹤等候鸟及其栖息生境保驾护航。

四是打造区地共建品牌。会泽保护区管护局坚持走保护优先、绿色发展的路子，依托“小鹤学堂”环境教育，逐步探索开展以“遇见湿地”为主题的自然教育活动。通过“小鹤学堂”室内教学和“遇见湿地”室外

自然教育相结合，进一步强化公众的生态环境保护意识，培育生态道德，规范行为准则，引导公众转变观念，倡导绿色发展。以社区共建黑颈鹤食物源基地为抓手，调整社区产业结构，推广生态种植优质高产的马铃薯 1 万亩，预计年产量可达 2.5 万吨，产值近 5,000 万元，

以绿色产业发展促进社区群众增收；培育“黑颈鹤栖息地”特色生态产品品牌，提高生态产品附加值；鼓励社区居民服务于自然教育工作，加强社区共管，扩大就业，让“绿水青山真正成为金山银山”，打造高水平保护与高质量发展的区地共建品牌。



图 1. 会泽保护区的生境、黑颈鹤、小鹤学堂上课和学生绘画作品
Figure 1. landscape, Black-necked Cranes, Crane School and art works at Huize. Photos by Huize NNR

Crane School enriches the rich land of Huize, Yunnan

Zhang Chaoxuan, Sun Benshuang
Huize Black-necked Crane National Nature Reserve, Huize, Yunnan 654200

“The river water is so clear, because it comes from a source of vital fresh water.” With the support of the Education and Sports Bureau of Huize County, a cooperation project was initiated by Huize Black-necked Crane National Nature Reserve (HBNR), in collaboration with International Crane Foundation (ICF). This project, aiming to create four brands and improve Huize’s environment by establishing a Crane School, which featured in conservation of wetlands and Black-necked Cranes. Here are the four brands:

(1) Environmental education. During the implementation of the Crane School project, ICF has helped the Huize Reserve in capacity building, including training 10 teachers, developing a school curriculum,

renovating 2 crane-themed classrooms, and assisting in teaching materials and teaching resources. The HBNR coordinating with the County Education and Sports Bureau, and with ICF's support, developed 16 lessons on Black-necked Cranes, wetlands, plants, hometown history, environmental protection, and human-bird harmony. The reserve has organized 4th-5th grade students from Yangmeishan Primary School (Daqiao Township) and Duofa Primary School (Zhejiang Town) to conduct environmental education in classrooms 16 times this school year, and carried out 2 winter/summer camps in nature games and outdoor crane observation. In order to have the reserve to have its role in our society, the reserve has planned to use the Crane School as a platform to integrate the strength of the "Huize County Primary and Secondary School Students' Ecological Civilization and Work Education Practice Base", and promote the Crane School activities to enter other schools, government agencies, and communities. And together, we work to create the Crane School environmental education brand and expand its influence.

(2) Cultural communication. "Spreading green culture and leading ecological civilization" is the requirement of our time, and it is also the responsibility and commitment of nature reserves. With the support of the County Education and Sports Bureau, HBNR has established a long-term cooperative relationship with the International Crane Foundation. The reserve plans to take the Crane School as an opportunity to rationally utilize the ecological environment, long cultural history, and rich species resources of the reserve, highlight characteristics of local, daily life and public education, and hold competitions in crane essays, paintings, student newspapers, drawing, photographing, singing and crane knowledge, to inspire students' love and care for Black-necked Cranes.

(3) Cooperation and exchange. The Black-necked Crane is a rare bird that lives on the plateau for life. About 95% of them are distributed in China, and only nearly 5% migrate to neighboring countries such as Bhutan for wintering. The migration of the cranes has connected different countries and regions in nature conservation. The Crane School program at Huize not only facilitates the cooperation and exchange between protected areas and communities on the flyway of this species in China, but also opens a new chapter of international cooperation and exchange for the reserve. With an open, cooperative and inclusive attitude, the reserve would like to join conservation communities along the flyway, to make efforts for protection of Black-necked Cranes and their habitats.

(4) Co-management with local community. Through the Crane School, the HBNR will carry out more nature education activities, increase the public's environmental awareness, and change the public's attitude and behavior toward green development. The reserve will work with local communities to establish food bases for Black-necked Cranes, adjust industrial structure for local communities, and expand plantation of potatoes, a regular food source for local communities and winter food for the cranes. We expect to have 10,000 mu of high-quality and high-yield potatoes planted, with annual yield of 25,000 tons or cash value of 50 million yuan.

【其他水鸟消息】

【News on Other Waterbirds】

2024 年东方白鹳在黑龙江洪河繁殖情况的报告

朱宝光

黑龙江洪河国家级自然保护区，黑龙江建三江 156300

黑龙江洪河国家级自然保护区位于黑龙江省三江平原同江市与抚远市交界处，保护区总面积约 23,329 hm²，其中湿地面积约 20,005 hm²。

洪河保护区自 1993 年开展东方白鹳人工招引研究工作，截止 2024 年已经累计搭建东方白鹳人工招引巢 443 个，有 867 对东方白鹳在人工招引巢繁殖，繁殖雏鸟 2,400 只；有 71 对东方白鹳利用天然巢繁殖，繁殖雏鸟 223 只；有 16 对东方白鹳利用水泥电线杆筑巢繁殖，繁殖雏鸟 44 只，累计繁殖雏鸟 2,667 只。

2024 年经过对保护区全境东方白鹳繁殖调查，有 124 对东方白鹳营巢孵卵，共计孵卵 297 枚，平均每巢孵卵 2.395 枚。其中，有 115 对东方白鹳成功繁育幼鸟 266 只，平均每巢孵幼鸟 2.313 只，9 个招引巢未能成功繁育出幼鸟。

2024 年，保护区内分布的东方白鹳繁殖巢有铁质三脚架、木质三脚架、铁质单体、铁塔繁殖巢、输电线路水泥杆（半天然巢）和天然巢 6 种。其中有 83 个铁质三脚架人工招引巢、31 个木质三脚架人工招引巢、5 个铁质单体人工招引巢、1 个铁塔人工招引巢、2 个输电线路水泥杆（半天然巢）和 2 个天然巢被东方白鹳成功利用并参加繁殖。

表 1. 2024 年在洪河国家级自然保护区繁殖东方白鹳的巢及幼鸟

Table 1. Nests and chicks of Oriental Storks breeding at Honghe NNR

序号 No.	巢类型 Nest Type	人工或天然巢 Artificial/natural	巢数 Number of nests	孵卵数 Number of eggs	幼鸟数 Number of chicks
1	铁质三脚架人工招引巢	人工巢	83	192	162
2	木质三脚架人工招引巢	人工巢	31	81	81
3	铁质单体人工招引巢	人工巢	5	13	12
4	铁塔人工招引巢	人工巢	1	2	2
5	输电线路水泥杆巢	半天然巢	2	4	4
6	天然巢	天然巢	2	5	5
合计			124	297	266

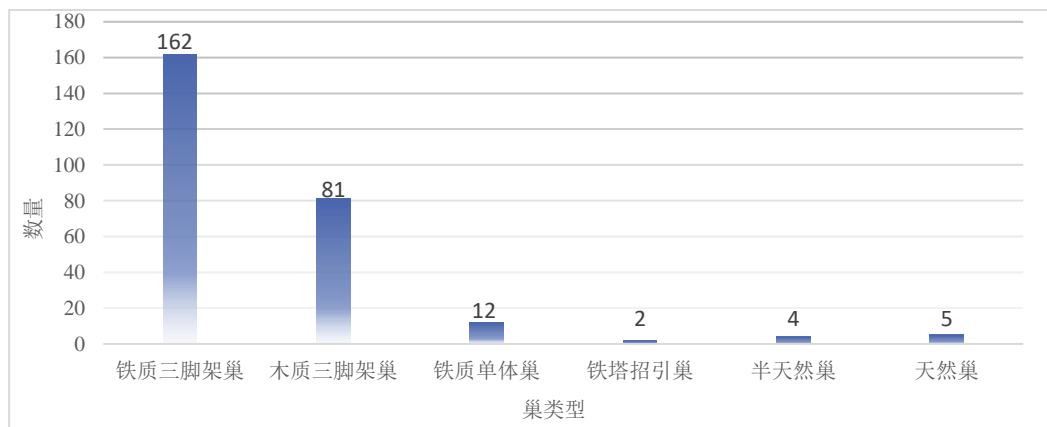


图 1. 2024 年东方白鹳不同类型繁殖巢幼鸟数量

Figure 1. Number of chicks of Oriental Storks using different nests at Honghe NNR



图 2. 铁质三脚架人工招引巢
Figure 2. Metal tripod nest



图 3. 木质三脚架人工招引巢
Figure 3. Wooden tripod nest



图 4. 孵出 4 只东方白鹤幼鸟的人工招引巢
Figure 4. Four chicks hatched on an artificial nest



图 5. 输电线路水泥杆巢（半天然巢）
Figure 5. A nest on a powerline pole (semi-natural nest)



图 6. 天然巢
Figure 6. Natural nest



图 7. 人工巢上的无精卵
Figure 7. Infertile eggs on an artificial nest

Report on the breeding of Oriental Storks in Honghe, Heilongjiang in 2024

Zhu Baoguang

Heilongjiang Honghe National Nature Reserve, Heilongjiang Jiansanjiang 156300

Heilongjiang Honghe National Nature Reserve is on the border area of Tongjiang City and Fuyuan City on the Sanjiang Plains of Heilongjiang Province. The total area of the reserve is 23,329 ha, of which the wetland area is 20,005 ha.

Honghe Nature Reserve has been conducting research on improving nesting success of Oriental Storks by human intervention since 1993. As of 2024, a total of 443 artificial nests for Oriental Storks have been built, 867 pairs of Oriental Storks have bred in these artificial nests, and 2,400 chicks have been hatched; 71 pairs of Oriental Storks have used natural nests to breed, and 223 chicks have been hatched; 16 pairs of Oriental Storks

have used concrete powerline poles to build nests for breeding, and 44 chicks have been hatched. In total, 2,667 chicks have hatched.

In 2024, after a breeding survey of Oriental Storks throughout the reserve, 124 pairs of Oriental Storks nested and laid a total of 297 eggs, with an average of 2.395 eggs per nest. 115 pairs of Oriental Storks successfully produced 266 chicks, with an average of 2.313 chicks per nest.

In 2024, there were 6 types of Oriental Stork breeding nests in the reserve: metal tripod, wooden tripods, metal pole, metal tower, powerline pole (semi-natural nest) and natural nest. Among them, 83 metal tripod nests, 31 wooden tripod nests, 5 metal pole nests, 1 metal tower nest, 2 powerline poles (semi-natural nests) and 2 natural nests were successfully used by Oriental Storks in breeding.

若尔盖湿地重点区域 2024 年春季迁徙季节的鸟类数量

卓玛姐 纳么玖

四川若尔盖湿地国家级自然保护区管理局, 若尔盖 624599

若尔盖湿地因其得天独厚的自然条件, 成为天赐的鸟类“中转疗养站”, 每年有成千上万的鸟类在此停歇、补充能量。它不仅是黑颈鹤等国家一级保护动物的重要繁殖地, 也是大天鹅等国家二级保护动物的越冬地, 还是其它众多的野生动植物的栖息地。

近年来, 我们始终坚持以保护优先、合理利用和科学修复的原则, 开展了系列生态保护措施, 使区域水源涵养得到有效提升、生物多样性得到有效保护。

为及时掌握若尔盖湿地保护区春季迁徙季鸟类主要分布情况和种群数量, 保护区于 3 月中旬, 通过在重点区域——花湖固定设置的点位进行鸟类调查, 重点观测水鸟等鸟类。调查以 8 倍双筒望远镜和 60 倍单筒望远镜观测, 结合无人机航拍画面, 记录可视范围内发现的所有水鸟等鸟类的种类、数量、及其栖息地等。

2024 年春季花湖区域, 共记录到鸟类 30 种 2, 376 只。监测到国家重点保护野生动物 6 种, 为黑颈鹤、白尾海雕、大鸕、毛脚鸕、白尾鹞、斑头秋沙鸭等。其他鸟类有中白鹭、苍鹭、灰雁、凤头鸕鹚、白骨顶、棕头鸥、绿翅鸭、绿头鸭、赤麻鸭、琵嘴鸭、针尾鸭、赤膀鸭、赤嘴潜鸭、凤头潜鸭、白眼潜鸭、红头潜鸭等。具体鸟类种类和数量如下表。

表 1. 2024 年 3 月中旬若尔盖湿地国家级自然保护区花湖鸟类种类及数量

Table 1. Species and their numbers of birds recorded in Huahu at Ruoergai NNR in mid-March 2024

序号和种类 Species	数量 Number	序号和种类 Species	数量 Number
1. 黑颈鹤	12	16. 琵嘴鸭	3
2. 白尾海雕	3	17. 针尾鸭	161
3. 大鸕	2	18. 赤膀鸭	242
4. 毛脚鸕	1	19. 赤嘴潜鸭	194
5. 白尾鹞	1	20. 凤头潜鸭	4
6. 斑头秋沙鸭	4	21. 白眼潜鸭	14
7. 中白鹭	37	22. 红头潜鸭	258
8. 苍鹭	8	23. 戴胜	3
9. 灰雁	145	24. 灰椋鸟	11
10. 凤头鸕鹚	4	25. 紫翅椋鸟	37
11. 白骨顶	405	26. 赤颈鸭	65
12. 棕头鸥	117	27. 红嘴山鸦	48
13. 绿翅鸭	249	28. 渔鸥	1
14. 绿头鸭	266	29. 普通秋沙鸭	3
15. 赤麻鸭	76	30. 普通鸕鹚	2
合计			2376

本次调查与 2023 年同期相比，监测到的鸟类种类增加 7 种，分别为琵嘴鸭、斑头秋沙鸭、凤头潜鸭、灰椋鸟、紫翅椋鸟、戴胜、白尾海雕。保护区鸟类种类明显增加，数量呈稳定状态，生态环境不断向好。



图 1. 调查人员在观察记录 如科 摄
Figure 1. Survey team working in the field. Photo by Ruke



图 2. 绿头鸭和灰雁 纳么玖 摄
Figure 2. Mallard and graylag Geese at Ruorgai Photo by Namojiu



图 3 黑颈鹤 纳么玖 摄
Figure 3. Black-necked Cranes at Ruorgai. Photo by Namojiu



图 4. 绿翅鸭 纳么玖 摄
Figure 4. Eurasian teal at Ruorgai. Photo by Namojiu

Number of Birds in key areas of Ruorgai during Spring Migration in 2024

Zhuoma Jie, Namojiu
Sichuan Ruorgai Wetland National Nature Reserve, Sichuan 624599

Due to its unique natural conditions, the Ruorgai wetland has become an important staging site for birds, where tens of thousands of birds stop and replenish their energy every year. It is not only an important breeding place for State Class I of Protection species such as Black-necked Crane, but also a wintering ground for Class II of Protection species such as Whooper Swan, and a habitat for tens of thousands of wild animals and plants.

In order to understand well major distribution and population of birds in the spring migration in the Ruorgai Wetland Nature Reserve, the reserve conducted a bird survey in mid-March at fixed points in the key area, Huahu Lake, focusing on observing waterbirds and other birds. The survey used 8x binoculars and 60x spotting scopes, combined with drone aerial footage, to record the species, number, and habitats of all water birds and other birds found within the area.

In the spring of 2024, a total of 2,376 birds of 30 species were recorded in the Huahu area, including six species of state key species of protection -- Black-necked Crane, White-tailed Sea Eagles, Upland Buzzard, Rough-legged Buzzard, Hen Harrier, and Smew. Other birds include Intermediate Egret, Grey Heron, Graylag Goose, Crested Grebe, Common Coot, Brown-headed Gull, Common Teal, Mallards, Ruddy Shelducks,

Northern Shoveler, Northern Pintail, Gadwall, Red-crested Pochard, Tufted Duck, Ferruginous Duck, and Common Pochard (see Table 1).

Compared with the same period in 2023, the number of bird species monitored in this survey increased by 7, including Northern Shoveler, Smew, Crested Duck, White-cheeked Starling, European Starling, Hoopoe, and White-tailed Sea Eagle. The number of bird species in the reserve has increased significantly, indicating the stable and improvement of the ecological environment in the reserve.

2024 年吉林向海国家级自然保护区东方白鹳繁殖情况分析报告

李连山 夏占平 刘蕾 于海龙 王昊岩
吉林向海国家级自然保护区管理局, 吉林通榆 137215

1. 研究背景

吉林向海国家级自然保护区是东方白鹳 (*Ciconia boyciana*) 等世界珍稀水禽的重要迁徙停歇地和繁殖地。1998 年洪水过后, 向海保护区连续十几年干旱少雨, 致使湿地面积锐减, 加之区内有近 2 万人从事农、林、牧、副、渔业生产活动, 导致东方白鹳的栖息地和适宜繁殖的乔木日益减少, 2003-2012 年没有再监测到东方白鹳筑巢繁殖。2017 年以来部分东方白鹳选择在电线杆筑巢繁殖, 2017-2018 年东方白鹳在电线杆上修筑了 3 个自然巢, 被电力部门拆除或被大风吹落, 这很大程度上影响了东方白鹳的繁殖成功率。为了进一步减少东方白鹳在电线杆的筑巢概率, 向海保护局根据东方白鹳历史栖息地及其繁殖特征, 合理选址, 2019 年再次搭建了 10 巢人工招引巢, 当年就成功招引了 5 对东方白鹳筑巢繁殖。向海保护区的东方白鹳繁殖研究较少, 本报告系统地分析了近年东方白鹳在向海保护区的繁殖情况, 探讨了向海保护区搭建人工招引巢的合理性, 为进一步开展东方白鹳种群保护和科研工作提供参考。

2. 结果与分析

(1) 东方白鹳繁殖区域分布

2024 年在向海保护区共发现东方白鹳 48 巢。自然巢 36 巢, 其中多使用柳树 (水库边枯死的柳树)、家榆 (部分树枝枯死的榆树, 易降落)、杨树 (树干与树枝呈明显三角支撑且树木不繁茂的杨树, 易降落) 等, 另外还有使用监控塔、灌溉设备、百鸟园边柱等, 筑巢数量共 28 巢; 使用电线杆筑巢 8 巢; 人工招引巢使用 12 巢, 具体如图 1 所示。

从图 1 中可以看出, 东方白鹳巢的主要分布区域分为三个, 第一区域位于东方白鹳核心区附近区域, 第二区域位于百鸟园西部附近区域, 第三分布区域位于长龙坨附近区域, 其余成散点分布。这些分布点位都有沙丘林带, 树木、人工巢、电线杆分布其中, 且临近觅食地湖泊、沼泽、河流, 可为东方白鹳繁殖提供充足的食物。

(2) 东方白鹳繁殖巢与巢材选择

调查发现东方白鹳自然巢巢材底层一般是拇指粗的树枝, 也有直径 3 cm 左右的干枝, 起支撑作用, 上一层是较细一些的细枝, 顶层窝内是柔软的草本细叶等, 自然巢直径为 1.6-2.0 m 不等, 巢深 60-80 cm 左右, 巢结构复杂、结实耐用。也有少量巢的巢材比较粗糙, 大部分使用草本的枯茎, 蒿类的干枝居多, 还有玉米杆, 也有少量木本巢材穿插, 偶见巢材中有铁丝。

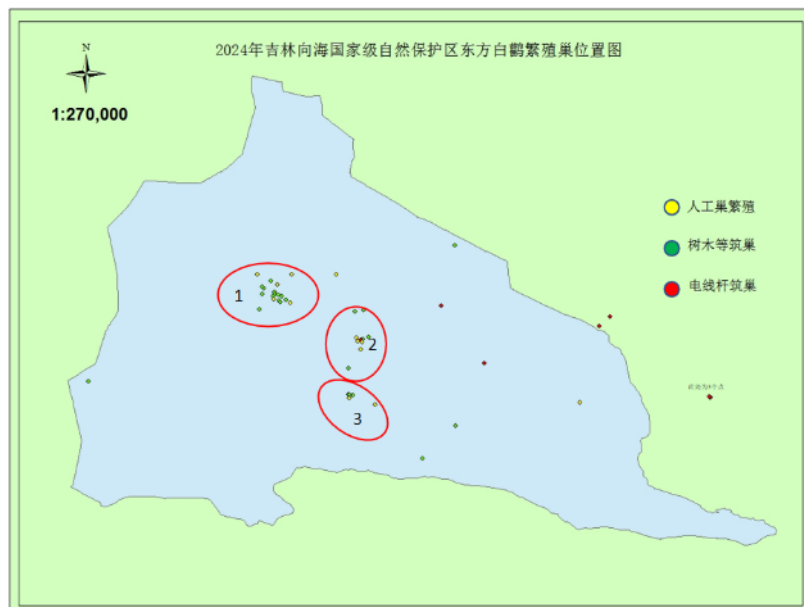


图 1 2024 年向海保护区东方白鹤巢址分布图
Figure 1. Nest locations of Oriental Storks breeding at Xianghai NNR in 2024

(3) 近年向海保护区东方白鹤繁殖趋势分析

为了更好地保护东方白鹤种群，向海保护局在 2013 年搭建了 4 个人工招引巢，2014 年成功招引了 1 对野生东方白鹤，并且繁殖成功。从图中 2 可以看出，自 2016 年开始东方白鹤繁殖对数量逐年增加。2023 年监测到东方白鹤 22 对筑巢繁殖，2023 年共繁育雏鸟 40 余只，2024 年繁殖对数量最多。

近年的综合治理、全区禁牧等严格的管护使向海湿地水鸟栖息地人为干扰、湿地破坏、非法捕猎等行为得到了有效控制，同时向海保护区合理规划、科学布局，开展了向海湿地保护与恢复、湿地引水等项目，2021 年建立了覆盖全区范围的监控点位 16 个，提升了对野生动植物资源以及湿地资源的监管能力，加之近几年天然降水量及上游霍林河、洮儿河补水都较为充沛，向海湿地和植被恢复了勃勃生机，适宜东方白鹤栖息觅食的湖泊、河流、沼泽面积恢复到 4 万多 hm^2 。

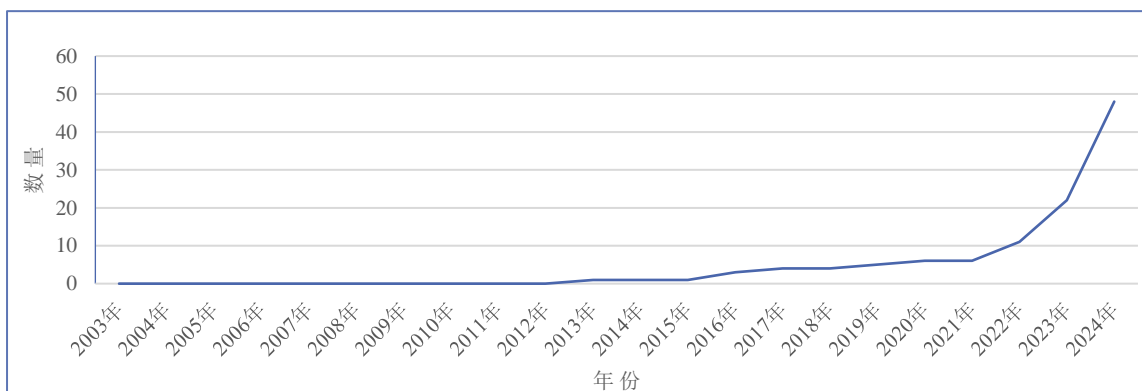


图 2 2003-2024 年东方白鹤繁殖对数量曲线
Figure 2. Pairs of Oriental Storks breeding at Xianghai NNR from 2003-2024

(4) 自然巢与人工巢繁育成功率比较

从表 1 中可以看出，2016 年以来，人工招引巢繁育成功率 (93.88%) 明显远高于自然巢 (66.67%)，说明人工招引巢的使用提高了东方白鹤繁殖成功的概率，人工招引巢可以减少大风吹落、猛兽攻击等干

扰，同时一定程度上减少了东方白鹤对电线杆的依赖性。

表 1. 2016-2024 年东方白鹤人工招引巢与自然巢繁殖成功总数对比

Table 1. Breeding success of Oriental Storks between using artificial and natural nests at Xianghai NNR from 2016-2024

筑巢形式 Nest Type	繁殖巢累计使用总数 Total Nests	繁殖成功巢数 量 Nests of Success	繁殖失败巢数 量 Nests of Unsuccess	成功率 Successful Rate
人工招引	49	46	3	93.88%
自然巢	63	42	21	66.67%

(5) 电线杆自然巢成功率分析

从表 2 中可以看出，2017 年以来电线杆自然巢筑巢数量为 16 巢，繁殖成功仅有 8 巢，成功概率低，仅有 50%，这其中还包括富国村 2 个电线杆繁殖巢，2024 年 6 月因影响供电被电力部门拆除，雏鸟被向海保护局工作人员带回人工饲养，待有飞行和生存能力后放归野外。

表 2. 2017-2024 年东方白鹤电线杆筑巢情况分析表

Table 2. Nesting success of Oriental Storks using powerline poles at Xianghai NNR from 2017-2024

年份 Year	营巢总数 Total Nest	巢址选择 Type of Nest	成功数量 Number of Success
2017	1	高压线杆	0
2018	3	高压线杆	1
2019	1	高压线杆	0
2022	1	高压线杆	0
2023	2	高压线杆	1
2024	8	高压线杆	6 (其中有 2 巢在雏鸟 20 日龄左右被拆除)

3. 东方白鹤电线杆筑巢保护对策

(1) 加强监测

加强东方白鹤繁殖种群的监测，如监测到电线杆上的东方白鹤巢要及时与电力部门沟通，双方确定东方白鹤所在位置，对所在点位设置指示标志和警示标牌等加以警示保护，评估后如不影响供电不予拆除或推迟拆除时间。

(2) 拆除问题

如出现供电问题必须尽早拆除，可研究提前在该处自然巢附近适当位置设立人工招引巢，将旧巢和雏鸟（或卵）放置于新巢址。

4. 东方白鹤的放归与跟踪

近年向海保护局与中国鸟类环志中心、吉林省野生动物救护中心合作为 12 只向海保护区东方白鹤佩戴跟踪器并放归野外，共同研究东方白鹤迁徙的路线，通过安装跟踪器了解其所在位置及迁徙路线，对开展东方白鹤保护与研究意义非常重大。

2024 年 6 月 4 日向海保护局救护了 6 只东方白鹤雏鸟，日龄约 30 天左右，经过 3 个月的人工饲养发育良好，身体健康，月龄都超过 4 个月，基本与成鹤体型相同，雏鹤在没有大鹤带领学习飞行的前提下，已经本能地在笼舍内低空飞翔。为了避免长期舍饲使东方白鹤雏鸟产生依赖性，向海保护局与中国科学院生态环境研究中心于 9 月 11 日为这 6 只鹤雏佩戴跟踪器并放归野外，截至目前已经有 3 只东方白鹤向南迁徙，分别飞到山东、河南、安徽，3 个月的人工饲养是否会影响东方白鹤野外生存和迁徙能力还有待于进一步跟踪调查。



图 3. 电线杆筑巢
Figure 3



图 4. 人工招引巢育雏
Figure 4. Chicks of Oriental Storks on an artificial nest



图 5. 人工招引巢
Figure 5. An artificial nest of Oriental Stork



图 6. 自然巢
Figure 6. A natural nest of Oriental Stork

Report on Breeding Situation of Oriental Storks at Xianghai in 2024

Li Lianshan, Xia Zhanping, Liu Lei, Yu Hailong, Wang Haoyan
Jilin Xianghai National Nature Reserve Administration, Tongyu, Jilin 137215

1. Introduction

Xianghai National Nature Reserve, Jilin Province is an important migratory stopover and breeding ground for many waterbirds such as Oriental Stork (*Ciconia boyciana*). After the big flood in 1998, Xianghai reserve experienced drought and little rain for more than ten consecutive years, resulting in a sharp reduction in wetland area. In addition, nearly 20,000 people in the reserve are engaged in agricultural, forestry, animal husbandry and fishery activities, which has led to a decrease in the habitat and number of trees suitable for breeding of Oriental Storks, and consequently, no Oriental Storks were seen nesting from 2003 to 2012. Since 2017, some Oriental Storks have used powerline poles to nest. From 2017 to 2018, Oriental Storks built three nests on powerline poles on their own, but were demolished by the powerline companies or blown down by strong winds. In order to further reduce the probability of Oriental Storks nesting on powerline poles, the reserve selected suitable sites based on the historical habitats and breeding characteristics of Oriental Storks, and built 10 artificial nests in 2019, successfully attracting 5 pairs of Oriental Storks to nest that year. This report systematically analyzes the reproduction of Oriental Storks in the reserve in recent years, explores the rationality of artificial nest building, and provides an insight for further protection and scientific research of Oriental Storks.

2. Results and Discussion

(1) Distribution of the breeding area of Oriental Stork

In 2024, a total of 48 Oriental Stork nests were found in the reserve. Of the 48 nests, 36 used existing natural trees such as willows, elms, poplars, or other structures, such as watch tower, irrigation structure, and powerline

poles, and 12 were nests totally built by the reserve for the storks (Figure 1).

As shown in Figure 1, there are three major areas for Oriental Stork nesting: (1) the core area of Oriental Stork, (2) west of the Bird Park, and (3) near Changlongtuo. These areas have sand dune forest belts, trees, artificial nests, and powerlines, and also are close to lakes, swamps, and rivers, ideal places for foraging for the breeding storks.

(2) Nests and nesting materials

The bottom layer of the natural nest of the storks was generally thumb-thick branches, and there were also dry branches with a diameter of about 3cm, which played a supporting role. The upper layer was thinner twigs, and the very top layer was soft herbaceous leaves. The diameter of the natural nest varied from 1.6 to 2.0m, and the depth was about 60 to 80cm. The structure of most natural nests was complex, strong and durable. There were also a few nests with rougher nest materials. Most of them used dead stems, such as dry branches of *Artemisia*, and corn stalks. There were also a few woody nest materials interspersed, occasionally iron wire found in the nest.

(3) Nesting of Oriental Storks in Xianghai Nature Reserve in recent years

Xianghai Nature Reserve constructed four artificial nests in 2013 and successfully attracted a pair of Oriental Storks to nest in 2014. The number of breeding pairs of Oriental Storks has been increasing gradually since 2016 (Figure 2). In 2023, 22 pairs of Oriental Storks were recording nesting, and more than 40 chicks were bred in 2023, the highest ever.

Through the comprehensive management of the Xianghai Nature Reserve in recent years, such as grazing ban in the entire region, human disturbances, wetland destruction, poaching have been effectively decreased. In the same time, Xianghai Nature Reserve has carried out projects effectively such as Wetland Protection and Restoration, and Wetland Water Diversion. In 2021, 16 monitoring sites covering the entire reserve were established, and the wildlife and wetland resources have been well monitored and managed. In addition, in recent years, natural precipitation and water replenishment from the upstream Huolin River and Taoer River have been relatively abundant, greatly helped restoring the vitality of the wetland and vegetation, lakes, rivers and swamps suitable for Oriental Storks, with foraging habitat of the storks recovered to more than 40,000 ha..

(4) Breeding success rate between natural and artificial nests

As can be seen from Table 1, Since 2016, the breeding success rate of artificial nests (93.88%) has been significantly higher than that of natural nests (66.67%) (Table 1), indicating that the use of artificial nests has increased the probability of successful breeding of Oriental Storks. Artificial nests are strong and can reduce damage from such as strong winds and attacks by predators. In the same time, artificial nests built by the reserve have most likely reduced the Oriental Storks' dependence on powerline poles to a certain extent.

(5) Use of powerline poles by the storks for nesting

Since 2017, 16 nests have built on the powerline poles, and only 8 of the nests have been successful, with a very low success rate of only 50%. Of the 16 powerline pole nests, 2 were demolished by the power company in June 2024 due to the impact on power supply. The chicks from the 2 nests were taken by the reserve staff for rearing, whom will be released into the wild after they can comfortably fly and survive.

3. Dealing with issue of Oriental Stork using powerlines to nests

(1) Strengthen monitoring

Breeding Oriental Storks should be closely monitored. If an Oriental Stork nest is detected on a powerline pole, contact the power company immediately. Both parties should determine the location of the Oriental Storks and set up warning signs at the location for the public. After evaluation, if it does not affect power supply, it will not be removed, or the removal time will be postponed.

(2) Removal issues

If power supply problems occur, the nest must be removed as soon as possible. It would be best to choose a place nearby to set up an artificial nest, to transfer eggs or chicks to the new nest.

4. Release and tracking of Oriental Storks

In recent years, the Xianghai reserve has cooperated with National Bird Banding Center and Jilin Wildlife Rescue Center to attach 12 Oriental Storks with trackers and released them into the wild.

On June 4, 2024, the Xianghai reserve rescued six Oriental Stork chicks, about 30 days old. After three months in captivity, these chicks developed well and were healthy. The chicks already flew instinctively in the cage without the guidance of adult storks. On September 11, 2024, these chicks were fitted with trackers by the Xianghai reserve and the Eco-Environmental Research Center of Chinese Academy of Sciences and released them into the wild. So far, three Oriental Storks have migrated south to Shandong, Henan, and Anhui.

江西鄱阳湖国家级自然保护区鸟类新纪录——短尾贼鸥

高翔 马武义 邵国瑶

江西鄱阳湖国家级自然保护区管理局, 南昌 330038

2024 年 7 月 13 日, 江西鄱阳湖国家级自然保护区管理局都昌保护监测站工作人员在江西鄱阳湖国家级自然保护区(下文简称鄱阳湖保护区)开展水上巡护时, 监测并拍摄到一只飞翔的稀有贼鸥, 经查阅《中国鸟类分类与分布名录》(郑光美, 2017)、《中国鸟类野外手册》(约翰·马敬能等, 2000)、《东亚鸟类野外手册》(马克·布拉齐尔等, 2020)、《中国鸟类志》(赵正阶, 2001)等资料并咨询省内外鸟类相关专家, 将其鉴定为短尾贼鸥(*Stercorarius parasiticus*)。短尾贼鸥的首次出现, 属鄱阳湖保护区乃至江西省的鸟类新纪录。

都昌位于江西省九江市(116°2′~116°36′E, 28°50′~29°38′N), 北依武山, 南濒鄱阳湖。地貌以丘陵和滨湖平原为主, 水域宽阔, 滨湖草洲、泥滩众多, 生物多样性十分丰富, 每年越冬期吸引大量候鸟在此越冬。

本次观察到的短尾贼鸥飞翔于老爷庙长江江豚省级自然保护区渚溪河口水域上空, 其头顶黑色, 上体黑褐色, 下体白色, 初级羽羽具较明显白斑, 末端尖形的中央尾羽尤为明显。该鸟单独行动, 周边未见相同个体, 飞行时姿态轻盈敏捷。

短尾贼鸥繁殖在北极地区, 冬季南迁至南方海域, 在国内较为少见, 仅于东海及南海有越冬记录, 内陆曾有过零散记录。此次在鄱阳湖保护区发现短尾贼鸥, 为该鸟种的分布及迁徙路线研究提供了重要依据。

Arctic Skua, a New Bird Record in Poyang Lake National Nature Reserve

Gao Xiang Ma Wuyi Tai Guoyao

Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

On July 13, 2024, staff from Duchang Management and Monitoring Station of Jiangxi Poyang Lake National Nature Reserve sighted and photographed a rare flying Arctic Skua (*Stercorarius parasiticus*) while patrolling in the reserve. This is a new record of birds recorded in Poyang Lake National Nature Reserve and even in Jiangxi Province.

The Arctic Skua observed this time flew over the Zhuxi River Estuary in the Laoyemiao Yangtze River Porpoise Provincial Nature Reserve. It has a black head, dark brown upper body, white lower body, and obvious white spots on the primary flight feathers, especially the pointed central tail feathers at the end. The bird was seen alone, and no similar individuals were around it.

The Arctic Skua breeds in the Arctic region and migrates south to the southern waters in winter. It is relatively rare in China. There are only records of overwintering in the East China Sea and the South China Sea, and there have been scattered records inland. The discovery of the Arctic Skua in the Poyang Lake Nature Reserve provides important basis for the study of the distribution and migration routes of this bird species.

贵州草海鸟类新纪录——卷羽鹈鹕、蓑羽鹤、雪雁

刘懿 李钥 马思怡 陈颜明 张平 林科钱 蔡玖 王汝斌

贵州草海国家级自然保护区管理委员会 贵州威宁 553100

2023-2024 年鸟类越冬期, 在贵州草海国家级自然保护区(简称草海保护区)首次发现卷羽鹈鹕(*Pelecanus crispus*)、蓑羽鹤(*Anthropoides virgo*)和雪雁(*Anser caerulescens*)3种鸟类, 从此刷新了草海保护区鸟类记录, 从 246 种增加到 249 种。

卷羽鹈鹕属于鹈鹕目鹈鹕科, 是一种大型的白色水鸟, 体羽灰白, 眼浅黄, 喉囊桔黄或黄色, 颈背具卷曲的冠羽, 是生活在沼泽及浅水湖的一种鹈鹕, 列入国家一级野生动物保护名录。体长 160~180cm。嘴铅灰色, 长而粗, 上下嘴缘的后半段均为黄色, 前端有一个黄色爪状弯钩。全身灰白色。头上的冠羽

呈卷曲状，枕部羽毛延长卷曲。颊部和眼周裸露的皮肤均为乳黄色或肉色。夏季腰和尾下覆羽略沾粉红色。嘴宽大，直长而尖，铅灰色，上下嘴缘的后半段均为黄色，前端有一个黄色爪状弯钩。下颌上有一个橘黄色或淡黄色与嘴等长且能伸缩的大型皮囊。体羽主要为银白色，并有灰色。飞羽为黑色，有白色羽缘。头上的冠羽呈卷曲状。颊部和眼周裸露的皮肤均为乳黄色或肉色。颈部较长。翅膀宽大。尾羽短而宽。腿较短，脚为蓝灰色，四趾之间均有蹼。主要栖息于湖泊、江河、沿海和沼泽地带、荒芜的岛屿、泻湖，偶尔也光顾池塘和红树林，主要以鱼类为食，觅食时从高空直扎入水中。2023年11月7日在草海保护区朱家湾候鸟栖息地发现2只，首次在草海这样的高原淡水湖泊出现，实为罕见。



图1. 在贵州草海发现的卷羽鹈鹕 刘广慧 摄

Figure 1. Two Dalmatian Pelican found on Cao Hai lake. Photo by Liu Guanghui

蓑羽鹤，俗名为闺秀鹤，是鹤形目鹤科大型涉禽。列入国家二级野生动物保护名录。体长68-92cm，是鹤类中个体最小者。通体蓝灰色，眼先、头侧、喉和前颈黑色，眼后有一白色耳簇羽极为醒目。前颈黑色羽延长，悬垂于胸部。脚黑色，飞翔时翅尖黑色。为高原、草原、沼泽、半荒漠及寒冷荒漠栖息鸟种，分布至海拔5,000m。栖息于开阔平原草地、草甸沼泽、芦苇沼泽、苇塘、湖泊、河谷、半荒漠和高原湖泊草甸等各种环境中，有时也到农田地活动，特别是秋冬季节。除繁殖期成对活动外，多呈家族或小群活动，有时也见单只活动。性胆小而机警，善奔走，常远远地避开人类，也不愿与其他鹤类合群。杂食性，主要食物有植物的种子和小型动物以及昆虫。在中国种群数量较少，属罕见珍稀鸟类，主要分布于内蒙古、吉林、黑龙江等省区。2023年11月7日，在草海保护区胡叶林候鸟栖息地发现1只，首次在草海这样的高原淡水湖泊出现，实为罕见。



图2. 蓑羽鹤 刘广慧 摄

Figure 2. A Demoiselle Crane found at Cao Hai. Photo by Liu Guanghui

雪雁属于雁形目鸭科，是雁属中体形大、个体重的鸟类，列入国家三有动物保护名录。雪雁身长 66-84cm，翼展 135-170cm，嘴锋 49.5-58.4cm，雄雁体重 2700 g，雌雁体重 2,500g。寿命 25 年。双性同形同色，体羽纯白，头和颈不同程度的染有锈色，初级飞羽黑色，羽基淡黑色，初级覆羽灰色，翼翅尖黑色，腿和嘴粉红色，嘴裂黑色。亚成体头顶、颈背及上体近灰。有蓝色型个体出现，其头及上颈白色，其余体羽多为黑色，肩部有蓝色斑块。虹膜暗褐色。活动区域主要是苔原，越冬区一般选在沼泽地、沙洲、湿草甸、沿海的农作地及稻茬地。繁殖于北美极地的苔原冻土带，少量繁殖于西伯利亚的朗格尔（Wrangle）岛；越冬于北美洲的亚热带及温带地区，偶见于日本及中国东部。2024 年 1 月 9 日在草海保护区阳关山水域发现。



图 3.在贵州草海发现的雪雁，与一群斑头雁在一起（刘广慧 摄）

Figure 3. A Snow Goose with a flock of Bar-headed Geese at Cao Hai. Photo by Liu Guanghui

通过查询资料和咨询鸟类方面专家，在草海保护区首次发现的卷羽鹈鹕、蓑羽鹤和雪雁 3 种鸟类，均为贵州省新记录。

New Bird Records of birds at Caohai of Guizhou - Dalmatian Pelican, Demoiselle Crane, Snow Goose

Liu Yi, Li Yao, Ma Siyi, Chen Yanming, Zhang Ping, Lin Keqian, Cai Jiu, Wang Rubin
Guizhou Caohai National Nature Reserve, Guizhou 553100

During 2023/2024 winter, three bird species, including Dalmatian Pelican (*Pelecanus crispus*), Demoiselle Crane (*Anthropoides virgo*) and Snow Goose (*Anser caerulescens*), were discovered for the first time in Guizhou Caohai National Nature Reserve, increasing its number of bird species from 246 to 249.

The two Dalmatian Pelican were sighted in Zhujiawan on November 7, 2023, one Demoiselle Crane in Huyelin on November 7, 2023, and one Snow Goose was found in Yangguanshan on January 9, 2024 in the reserve. These three new species sighted in winter 2023/2024 were all new records for Guizhou Province.

吉林向海保护区 2024 年春季重要水鸟迁徙情况

李连山 夏占平 刘蕾 王昊岩 于海龙
吉林向海国家级自然保护区管理局，吉林通榆 137215

2024 年春季我们对吉林向海国家级自然保护区的春季水鸟迁徙情况进行调查，此次监测地点包括白山泡、超生屯南甸子、大肚泡、道老几泡、东闸门、福泰泡、付老文泡、黑山坝、黄鱼泡等 27 个重

要监测点，本次调查共统计到水鸟 56 种 47,921 只，多以雁鸭类、鹤类为主，国家二级保护鸟类 8 种，包括白额雁、白琵鹭、白腰杓鹬、斑头秋沙鸭、黑颈鸕鹚、鸿雁、花脸鸭、小天鹅，共 9,552 只，国家一级保护动物 6 种，包括丹顶鹤、白鹤、白头鹤、白枕鹤、东方白鹳、青头潜鸭，其中丹顶鹤 18 只、白鹤 173 只、白头鹤 285 只、白枕鹤 8 只、东方白鹳 211 只、青头潜鸭 27 只，共 722 只。在监测过程中发现一只雪雁，为向海保护区新鸟种，极大可能是迷鸟，在迁徙过程中跟随鸿雁、灰雁群飞到向海保护区境内，此次监测国家一级保护鸟类具体情况见表 1。

表 1 向海保护区国家一级保护动物具体情况

Table 1. Number of birds of State Protection Class I during spring migration in 2024 at Xianghai NNR

调查地点 Survey site	丹顶鹤 Red-crowned Crane	白鹤 Siberian Crane	白枕鹤 White- naped Crane	白头鹤 Hooded Crane	青头潜鸭 Baer's pochard	东方白鹳 Oriental Stork
白山泡						16
超生屯	5			8	5	6
道老几泡						4
东闸门					10	2
黑山坝					9	2
黄鱼泡		51		7		6
碱地泡					3	4
粮丰桥				116		
忙牛坝	3	3				
牧场屯北						26
青年坝	7					54
三合一屯		12				2
同发滚水坝	3	19				33
团结东甸子		6				
团结南甸子			2	6		
向海桥		72		117		
向海水库						2
向海西河						11
小塔甸子						7
新发苇点		8	2	8		2
一线坝		2	4	23		34
合计	18	173	8	285	27	211

Migration of important waterbirds in Xianghai of Jilin in spring 2024

Li Lianshan, Xia Zhanping, Liu Lei, Wang Haoyan, Yu Hailong
Jilin Xianghai National Nature Reserve, Jilin 137215

In the spring of 2024, we conducted a survey on the spring migration of waterbirds at Xianghai National Nature Reserve. Twenty-seven important monitoring sites were covered, including Baishanpao, Chaoshengtun Nandianzi, Dadupao, Daolaojipao, Dongzhamen, Futaipao, Fulaowenpao, Heishanba, and Huangyupao etc. A total of 56 species of waterbirds, 47,921 birds in total, were counted in this survey, mostly geese, ducks, and cranes. There were 8 species, with a total of 9,552, of State Class II of Protection, including Greater White-fronted Goose, Eurasian Spoonbill, Eurasian Curlew, Smew, Black-necked Grebe, Swan Goose, Baikal Teal, and Tundra Swan. There were 6 species (total 722 birds) of State Class I of Protection, including Red-crowned Crane (18), Siberian Crane (173), Hooded Crane (285), White-naped Crane (8), Oriental Stork (211), and Baer's Pochard (28) (Table 1). During the survey, a Snow Goose was sighted, a new record in Xianghai and is most likely a straggler.

江西鄱阳湖国家级自然保护区鸟类名录增加至 391 种

詹慧英 龚磊强

江西鄱阳湖国家级自然保护区管理局, 南昌 330038

基于丰富的鸟类研究文献资料以及详实的观鸟记录, 结合 2019 至 2023 年江西鄱阳湖国家级自然保护区持续开展的长期野外监测, 该保护区的鸟类记录实现了新突破, 从 2019 年以前的 381 种增加到了如今的 391 种。

新增的十种鸟种各具特色, 分别是鹰雕 (*Nisaetus nipalensis*)、斑姬啄木鸟 (*Picumnus innominatus*)、黄臀鹌 (*Pycnonotus xanthorrhous*)、白喉红臀鹌 (*Pycnonotus aurigaster*)、文须雀 (*Panurus biarmicus*)、栗耳凤鹛 (*Staphida castaniceps*)、杂色山雀 (*Sittiparus varius*)、纯色啄花鸟 (*Dicaeum concolor*)、白颊黑雁 (*Branta ruficollis*)、家麻雀 (*Passer domesticus*)。其中, 白颊黑雁于 2019 年 11 月 17 日, 由北京林业大学东亚—澳大利西亚迁徙研究中心的贾亦飞联合山水自然保护中心、复旦大学以及江西鸟友等 6 人, 在鄱阳湖保护区的大湖池被发现。家麻雀则是在 2019 年 11 月 24 日, 由鸟友蔡明汕在鄱阳湖保护区大湖池惊喜现身。斑姬啄木鸟、黄臀鹌、栗耳凤鹛是在 2019 年鄱阳湖国际观鸟周举办的第一届鄱阳湖国际观鸟赛中, 被参赛队伍慧眼识得。而鹰雕、文须雀、杂色山雀、纯色啄花鸟则在 2023 年第三届鄱阳湖国际观鸟周中举办的第三届鄱阳湖国际观鸟活动中, 被参赛队伍成功发现。

对保护区记录的这 391 种鸟类进行分类梳理, 依据国家林业和草原局、农业农村部公告的《国家重点保护野生动物名录》(2021 年第 3 号), 保护区内国家一级重点保护鸟类有 19 种, 国家二级重点保护鸟类达 74 种。按照《中国鸟类分类与分布名录 (第三版)》, 该保护区的鸟类分类系统可清晰地分为 18 目 65 科。鄱阳湖保护区以其丰富的鸟类资源和良好的生态环境, 为众多鸟类提供了栖息繁衍的理想家园。

Number of bird species recorded at Poyang Lake National Nature Reserve has increased to 391

Zhan Huiying, Gong Lei qiang

Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

Based on bird research literature and bird watching records, combined with the long-term field monitoring carried out by Poyang Lake National Nature Reserve from 2019 to 2023, bird species recorded in the reserve have increased from 381 before 2019 to 391 in 2024.

The ten newly added bird species are Mountain Hawk-eagle (*Nisaetus nipalensis*), Speckled Piculet (*Picumnus innominatus*), the Brown-breasted Bulbul (*Pycnonotus xanthorrhous*), the Sooty-headed Bulbul (*Pycnonotus aurigaster*), the bearded reedling (*Panurus biarmicus*), Striated Yuhina (*Staphida castaniceps*), the Variegated Tit (*Sittiparus varius*), the Solid Flowerpecker (*Dicaeum concolor*), the White-cheeked Barnacle Goose (*Branta ruficollis*), and the House Sparrow (*Passer domesticus*). The White-cheeked Barnacle Goose was recorded on November 17, 2019, in the Dahu Chi by a 6-member team led by Jia Yifei from Beijing Forestry University, Shanshui Nature Conservation Center, Fudan University etc. The House Sparrow was recorded by Cai Mingshan in Dahu Chi on November 24, 2019. The Speckled Piculet, Yellow-rumped Bulbul, and Striated Yuhina were spotted by participating bird watchers at the first Poyang Lake International Birdwatching Competition held in 2019. The Mountain Hawk-eagle, bearded reedling, Variegated Tit, and Pure Solid Flowerpecker were spotted by participating teams at the third Poyang Lake International Birdwatching Festival held in 2023.

Of the 391 bird species recorded in the reserve, 19 are state first-level protected birds and 74 second-level protected birds. These 391 bird species belong to 18 orders and 65 families. Poyang Lake National Nature Reserve, with its rich bird resources and good ecological environment, is an ideal home for birds to live, or stop over during migration.

【国外相关消息】

【News from Overseas】

Lessons from avian influenza outbreak among Eurasian Cranes in the Hula Valley, Israel, in winter 2021/2021*

Yoav Perlman, Nadav Israeli
BirdLife Israel / Society for the Protection of Nature in Israel

The Hula Valley is located along the Great Valley in northern Israel. The Valley once supported one of the largest freshwater wetlands in the Middle East. This wetland was drained in the 1950s for cotton cultivation, and only small part of the region was protected as the Hula Nature Reserve (Shanni et al 2012). Until the 1990s, Eurasian Cranes used this area as a migration stopover site between the breeding grounds in North-Eastern Europe, Belorussia, Ukraine, European Russia, and Western Kazakhstan and the wintering ground in Ethiopia and Sudan; only a few hundred stayed in the Hula Valley for the winter.

Since the 1990s, after the restoration of Lake Agamon and the replacement of cotton with corn, sunflower, peanuts and other crops, the Hula Valley became important for wintering cranes. Their numbers increased to 45,000 in the winter of 2017/2018 (Inbar Rubin, pers. comm.) due to improved conditions for foraging and roosting. Cranes arrive in the Hula Valley mainly in late October–November. Many stop over and migrate onward to Africa, while a varying amount stay for the winter in the Hula Valley.

The increase in the number of cranes wintering in the Hula Valley has led to strong pressure on agricultural fields, where they caused great damage in the 1990s and early 2000s: in December – January, a sowing campaign takes place in Hula and the cranes eat away the sown seeds almost completely.

To mitigate the damage caused by cranes, a management scheme was collaborated including the following activities: a) during autumn stopover period (October – November) cranes are allowed to forage freely on fields where there is no potential damage (fields with remains of peanuts and corn); b) during the early winter cranes are allowed to forage only in specifically designated areas and kept away from seeded fields; in addition the supplementary feeding station located within Agamon Hula park provides food on a limited scale; c) for the rest winter, due to insufficient natural food, low ground temperature and sensitive newly planted crops, massive daily feeding is carried out at the feeding station in order to prevent crop damage (Shanni et al 2012). Depending on crane numbers and weather conditions, 8–10 tons of corn are spread in the feeding station daily. Cranes are driven aggressively from sensitive crops fields using non-lethal methods. This intensive management has produced a significant reduction in agricultural damage and increased public awareness and crane-focused tourism.

In recent years the management of cranes in the Hula Valley was fairly successful in mitigating the conflict with farmers. However, there was a concern that excessive concentration in a very limited area could lead to epizootic outbreaks. Therefore, the outbreak of avian influenza (AI) in 2021 was not unexpected, but the surprise was that it caused such a mass death of cranes, which were previously considered resistant to AI virus.

Avian influenza outbreak in the Hula Valley

In Israel, the avian influenza started in October 2021 in poultry farms. On 30 November the first case was recorded in a wild bird: one infected Great White Pelican in the Heffer Valley. On 5 December the first case of a crane death was registered in the Hula Valley and on December 10, ten dead cranes were tested, and H5N1 virus confirmed. On December 22, the number of dead cranes was estimated at 5,000. The outbreak peaked on December 17–22, 2021 (Fig. 1, 2).

* Original article was published in MECCG Newsletter. 2023 (1), by Middle East Crane Conservation Group.



Figure 1. Sick and dead Eurasian Cranes on Lake Agamon during the peak of AI outbreak. Photo by Yuval Dax and Nadav Iseaeli

图 1 在禽流感疫情爆发的高峰期，呼拉谷地阿加蒙湖上生病和死亡的灰鹤。

摄影：Yuval Dax 和 Nadav Israeli

Figure 2. Sick and dead Eurasian Cranes on Lake Agamon during the peak of AI outbreak. Photo by Yuval Dax and Nadav Iseaeli

图 2 在禽流感疫情爆发的高峰期，呼拉谷地阿加蒙湖上生病和死亡的灰鹤。

摄影：Yuval Dax 和 Nadav Israeli

At the same time, AI continued to spread in poultry farms mainly in northern Israel, with over one million chickens and turkeys culled in an attempt to control the spread of the outbreak.

On December 23, 2021 the AI outbreak was declared as a national crisis, and control was taken over by National Security Council with the participation of relevant government environmental authorities, and the Jewish National Fund (KKL-JNF) who manage Agamon Hula Park, and non-governmental organizations. On December 26–27, 2021 removal of cranes carcasses started in Agamon Hula and adjacent areas. Special teams in protective suits began to collect dead cranes from the water body and surrounding fields. Thus, the necessary measures were taken only 10 days after the mass death began.

The mortality was estimated at 8,000 out of 25,000 Eurasian Cranes that were counted this winter. It should be noted that such a massive AI outbreak in cranes has been recorded for the first time in the world. The second mass mortality in cranes was registered in winter 2022/2023 at wintering grounds in Izumi in Japan (Haraguchi 2023).

In January 2022, numbers of AI cases in Hula Valley dropped dramatically, with very few or zero new cases. However, during January 2022, AI was identified in other parts of Israel in wild birds, mainly Great White Pelicans, of which several tens were confirmed with H5N1 (Fig. 3). Also a few cormorants, herons and other birds were confirmed with H5N1.

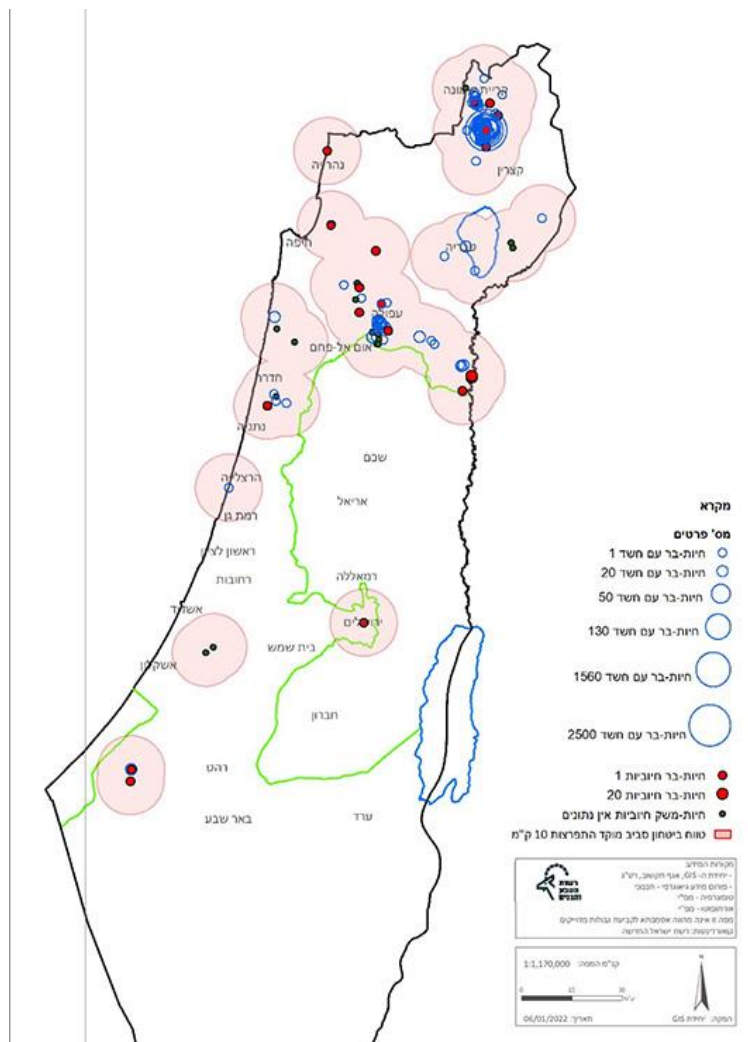


Fig. 3. Avian Influenza spreading in Israel (red circle – AI confirmed in wild birds, blue circle – AI suspected in wild birds, black circle – AI confirmed in poultry farms, rose polygon – 10 km safety zones around AI outbreak location). Prepared by Israel Nature and Parks Authority

图 3. 禽流感在以色列传播图。
 红圆 – 确认的野鸟禽流感地点
 蓝圆 – 疑似的野鸟禽流感地点
 黑圆 – 确认的禽流感疫情家禽饲养场
 玫瑰多边形 - 禽流感爆发地点周围 10 公里监视区)。
 绘图: 以色列自然和公园管理局

The virus can persist in water for several weeks. In the Agamon Park, cranes roost in the main water body. The virus is expected to remain in the lake for several months, so there was a risk of a new outbreak, especially during the coming spring migration, when the Hula Valley was used again as a stopover site by the cranes wintering in Africa. In addition to cranes, storks, pelicans, many other birds stopover and concentrate in the Hula Valley, often sharing the same foraging fields and roost sites with cranes. Luckily, no repeating AI outbreak was noted in wild birds in Israel in spring 2022 and in winter 2022/23.

Measures

These measures were taken to stop the spread of avian influenza in Israel:

- (1) Cleaning up Lake Agamon and the surrounding fields from corpses.
- (2) Lake Agamon is connected by channels with the Jordan River and the wetlands of the Hula Nature Reserve adjacent to the park. To prevent the spread of the disease, ducts were blocked.
- (3) Lake Agamon was flooded to increase water levels and discourage cranes roosting in infected water. Most cranes started to use for night resting a reservoir in the neighboring Hula Nature Reserve.
- (4) Supplementary feeding of cranes was continued during the outbreak, to avoid the spread of the disease throughout the country. However, the feeding technique was changed, spreading out feeding sites to avoid concentration.

In the long term, supplementary feeding of cranes and others birds sensitive to AI should be evaluated in

relation to risk of zoonotic disease outbreaks and mitigation of conflict with farmers. Management of large natural areas with rich natural food sources, and better sanitization of agricultural fields to reduce residual amounts of crops could reduce numbers wintering in Israel, and reduce pressure on agricultural lands.

References

- Haraguhi Y. 2023. The high pathogenic avian influenza outbreak among cranes at Izumi, Japan, during the winter of 2022/2023. *Newsletter of the Crane Working Group of Eurasia*, 17: 185–188
- Shanni I, Labinger Z, Alon D. 2012. A review of the crane-agriculture conflict, Hula Valley, Israel. *Cranes, Agriculture and Climate Change*. International Crane Foundation: Baraboo, Wisconsin, USA, p. 101–115.

2021/2022 年冬季以色列呼拉谷地灰鹤禽流感的暴发及其教训*

Yoav Perlman Nadav Israeli
鸟盟-以色列/以色列自然保护协会

呼拉谷地位于以色列北部的大谷地区，曾是中东最大的淡水湿地之一。为了发展棉花种植，这片湿地在 1950 年代被排水开垦，阿加蒙湖也因此消失，只有一小部分保留下来作为呼拉自然保护区 (Shanni et al, 2012)。在上个世纪九十年代以前，呼拉谷地是大群灰鹤的停歇地，来自欧洲东北部、白俄罗斯、乌克兰、欧陆俄罗斯和哈萨克斯坦西部繁殖的灰鹤在秋季汇聚于此，在此歇息和补充能量后，绝大多数灰鹤继续南迁至埃塞俄比亚和苏丹越冬，仅有几百只留在呼拉谷地过冬。

自 1990 年代以来，阿加蒙湖得以恢复，农作物由棉花而改种玉米、向日葵、花生和其他作物。湖面的恢复以及作物结构的变化，使得呼拉谷地对越冬的鹤类变得尤为有吸引力。在 2017/2018 年冬季，由于觅食和夜宿条件的改善，鹤类越冬数量已经达到 45,000 只 (Inbar Rubin, 个人通讯)。鹤类每年大多在 10 月下旬至 11 月到达呼拉谷地，其中很多鹤在此停歇后继续南迁到非洲，而一些留在呼拉谷地过冬；取决于各种因素，每年在此越冬的数量都有所不同。

在呼拉谷地越冬鹤类数量的增加给农田带来了空前压力。在 1990 年代至 2000 年代初，大量越冬的鹤类给农作物造成了巨大的破坏，它们几乎把 12 月至 1 月期间种植的大面积农作物种子吃得干干净净。

为了减轻鹤类对农作物造成的损害，有关部门合作采取了一系列管理措施，包括：(1) 在每年 10–11 月鸟类秋季迁徙停留期间，鹤类可以在收获后的农地上活动，觅食散落的花生和玉米残留物；(2) 到了初冬播种的时候，鹤类不能在播种农地及其周围活动，只能在专门划定的区域觅食。此外，在阿加蒙呼拉公园内设立投食点，为鹤类提供一定规模的食物；(3) 在冬季的其它时间，天然食物和散落谷物变得不足，天气更为寒冷，而刚播种后的作物又易受损害。为了防止农作物大面积受损，每天在投食点大量投食 (Shanni et al, 2012)。根据鹤类的数量和天气条件，每天在投食点投放 8–10 t 的玉米。在已经播种的农地，使用非致命方法把鹤类从敏感的农田中驱离。这些管理措施大大减少了农业损失，提高了公众意识，也促进了以鹤类为重点的旅游业。

*原文标题和来源: Lessons from avian influenza outbreak among Eurasian Cranes in the Hula Valley, Israel, in winter 2021/2021. *MECCG Newsletter*. 2023 (1), by Middle East Crane Conservation Group.



拖拉机在抛撒谷物，以维持在以色列呼拉谷地越冬的大群灰鹤。

摄影: Efi Naim

近年来，呼拉谷地在处理鹤类与农民的冲突方面相当成功。然而，人们一直担心大量鸟类集聚在这个面积相对小的地方，这可能导致动物流行病的暴发。因此，2021 年冬季在呼拉谷地的禽流感疫情的暴发并不十分意外。然而，此次疫情又非常令人震惊，因为它导致了大量的鹤类死亡，而鹤类在这之前被认为对禽流感病毒具有很好的抵抗性。

呼拉谷地禽流感疫情暴发过程

以色列于 2021 年 10 月在家禽饲养场出现禽流感首例病历。11 月 30 日，在赫弗谷地发现一只感染禽流感的大白鹈鹕，这是以色列野生鸟类中记录的首个病例。12 月 5 日，呼拉谷地出现了首例鹤死亡病例。12 月 10 日，对 10 只死鹤进行了检测，并确认有 H5N1 病毒。疫情暴发的高峰期为 12 月 17-22 日。截至 12 月 22 日，大约共有 5,000 只灰鹤死亡。（见英文原文图 1、2）。

与此同时，禽流感主要在以色列北部的家禽养殖场继续扩散。为控制疫情的蔓延，扑杀了 100 多万只家鸡和火鸡。

2021 年 12 月 23 日，以色列政府把禽流感疫情宣布为国家危机，由国家安全委员会统管，联合相关政府环境部门、犹太国家基金（注：该基金是管理阿加蒙呼拉公园的主体）以及非政府组织参与其中。

2021 年 12 月 26-27 日，在阿加蒙呼拉公园及其邻近地区开始清除鹤类尸体，身穿防护服的专业队伍从水体和周围的农地收集死鹤。因此，在大规模死亡开始后仅 10 天就采取了必要的措施。

据统计，2021/2022 年冬季有 25,000 只灰鹤越冬，其中 8,000 只灰鹤死于禽流感，这是迄今为止记录到的全球最大的鹤类禽流感疫情。在随后的 2022/2023 年冬季，日本出水市越冬地记录了第二次鹤类禽流感大规模死亡（Haraguchi 2023）。

2022 年 1 月，呼拉谷地的禽流感病例数量急剧下降，新增病例很少或为零。而在以色列的其它地区，同期仍有大白鹈鹕、鸬鹚、鹭类等野生鸟类确认感染 H5N1（见英文原文图 3），这其中大白鹈鹕最多，有几十只。

该禽流感病毒可以在水中存活数周。在阿加蒙公园，鹤类主要在水体过夜休息，这导致禽流感病毒会在湖水中存留数月，因此存在新爆发的风险，尤其是在即将到来的春季迁徙期间，呼拉谷地再次被用作在非洲越冬的鹤类北迁的中途停歇。除了鹤、鹈鹕、鸬鹚之外，还有许多其他鸟类在呼拉谷地停歇集聚，与鹤类等共用觅食和夜宿场所。幸运的是，在 2022 年春季和 2022/23 年冬季，以色列的野生鸟类没有出现禽流感疫情再次爆发。

采取的措施

相关机构采取了如下措施，以阻止禽流感在以色列的传播蔓延：

- (1) 清理阿加蒙湖和周围田野的鸟类死亡尸体。

(2) 阿加蒙湖通过河道与约旦河和阿加盟公园附近的呼拉自然保护区的湿地相连。为了防止疾病的传播，我们把河道加以截断。

(3) 提高阿加蒙湖的水位，以使得鹤类不能在受感染的水中栖息。由于湖水位的升高，大多数鹤开始在呼拉自然保护区附近的一个水库中过夜休息。

(4) 疫情暴发期间继续对鹤类进行补充喂养，以避免疫情在全国范围内传播。但是我们改变了投食策略，我们把投食点分散开来，避免了鹤类在一个或少数地方大规模集聚。

从长远来看，我们应全面考虑人畜共患疾病暴发的风险和缓解与农民的人鸟冲突等因素，系统地评估对禽流感敏感的鹤类和其他鸟类的人工投食。我们建议：加强对面积大、食物条件良好的自然生境管理，清理农田减少农作物的残留量，以便减少在以色列越冬的鹤类数量，并减轻鹤类损害农作物的压力。

Through the Decades: Evaluating 20 years of Whooping Crane Reintroduction in Wisconsin*

Alicia Ward, Stephanie M. Schmidt
International Crane Foundation

Since the reintroduction of Whooping Cranes (Figure 1) into the Eastern United States in 2001, researchers have carefully tracked the survival and success of the Eastern Migratory Population (EMP) population. Reintroductions are a powerful conservation tool but can be costly and require careful management. They are also very time-consuming, as we see with the EMP, whose growth over 20 years later still depends on continued releases of captive-reared chicks. As of August 2024, the estimated population size of the EMP is 68 individuals.



Figure 1. Resident Whooping Cranes Omega and Seurat show off their striking facial features, such as red heads, yellow eyes, black masks, and long beaks.

By Bryan VanZanten

图 1. 国际鹤类基金会总部圈养的美洲鹤欧米茄和修拉，它们头部特征尤为为注目，如红头顶、黄眼睛、黑面颊和长喙。

布莱恩·范赞滕摄

In 2022, researchers evaluated the status of the Whooping Crane reintroduction over the past 20 years to summarize the successes and struggles or threats the population faces across their range and look for long-term trends. Such summaries are important milestones in a reintroduction, connecting key information that will guide

* This article was published on September 4, 2024.

<https://savingcranes.org/2024/09/evaluating-20-years-whooping-crane-reintroduction-wisconsin/>

conservationists' efforts to secure the future of the EMP.

Reports such as these would also be impossible without long-term monitoring efforts and extensive knowledge of individuals in the population. All Whooping Cranes in the EMP are banded with a unique color combination, allowing us to identify and re-sight birds throughout their lives (Figures 2 and 3).



Figure 2. Crane conservation fellows Alicia and Markie use scopes to get a closer look at cranes. This allows our team to view unique leg bands and identify individual birds from a distance where we won't disturb them.

By Andy Gossens

图 2. 国际鹤类基金会工作人员艾丽西娅和玛姬用望远镜观察。这样远距离观鹤既不干扰鹤类活动，又可看清鹤腿上的环志，识别个体。

安迪·戈森斯 摄



Figure 3. An adult Whooping Crane role model interacts with a recently hatched chick under the surveillance of our aviculture team in a method known as “parent-rearing.”

图 3. 在我们养鹤团队的监督下，一只非常尽责的成年美洲鹤与一只孵化不久的小鹤互动，这种育雏方法被称为“亲鸟养育”，以与由人来育雏相区别。

This study found that over the past 20 years, the overall population trend has been positive. There has been a slight decrease in the population size since the mid-2010s due to changes in our release efforts, but we have also seen more wild chicks surviving to adulthood. While making sense of these trends, researchers also took stock of factors that impact population size over the years, including causes of mortality. Of the mortalities in the EMP where the cause of death could be determined, the most common cause was predation, which accounted for 54.1% of known mortalities. Other common causes were impact traumas (i.e., collisions with powerlines, vehicles, or aircraft), disease, and poaching (Figure 4).

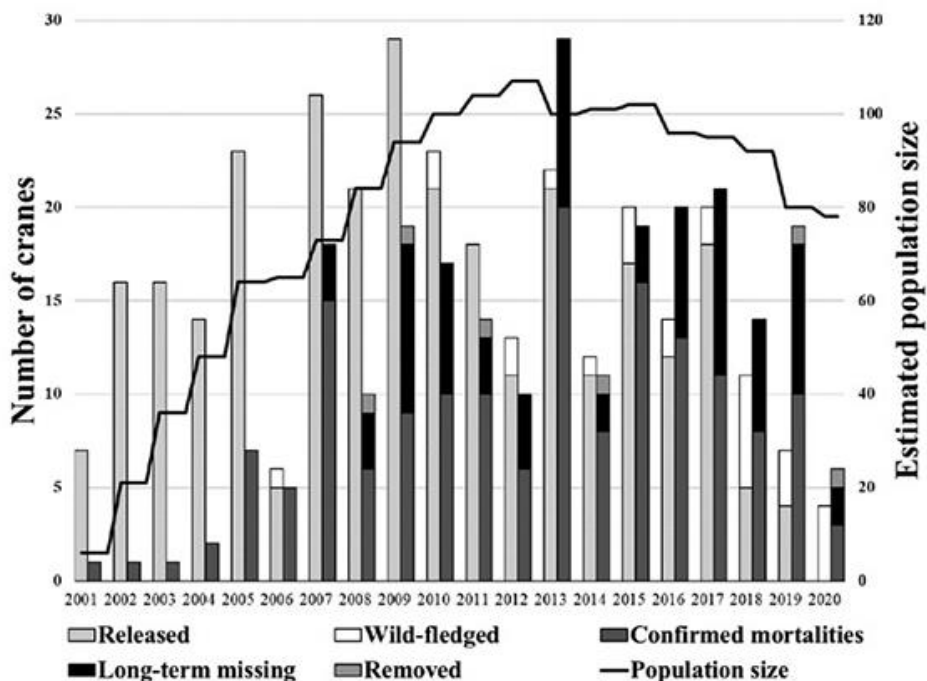


Figure 4. This graph depicts the number of Whooping Cranes added to the Eastern Migratory Population each year through releases and wild chicks fledging (when a chick develops the proper feathers and muscles to sustain flight). It also shows the number lost from mortalities and birds going missing. The black line plots the total estimated population size, numbered on the right-most axis. Thompson et al. 2020

图 4. 本图显示了每年通过人工放归以及野生幼鸟成活而新增到 EMP 种群的个体数量（野生幼鸟成活是以雏鸟发育出适当的羽毛和肌肉能维持飞行来衡量）。此图还显示了因死亡和失踪而损失的数量。黑色曲线为估计的总种群数量，对应着最右侧的纵轴数字。此图自汤普森等 2020 年的文献。

In addition to reporting the trends we are seeing, the International Crane Foundation has been learning from this information and adapting and improving our methods, including our rearing techniques, which have shifted towards more natural methods over the past 20 years. This includes prioritizing parent rearing (Figure 5), where a chick is raised in captivity and taught necessary behavior by a Whooping Crane role model under human supervision, over costume rearing, where an aviculturist in a Whooping Crane costume teaches chicks necessary behaviors for survival in the wild. Another change in the rearing program took place in 2016, when the ultralight program aimed to teach captive-reared Whooping Cranes to migrate to Florida for the winter by leading them with a piloted ultralight aircraft. Once this was achieved, the chicks released in the following years learned their migration routes from older cranes in the population.

Our team has also needed to exhibit flexibility in a changing landscape over the past 20 years. This was necessary after our breeding partner, Patuxent Wildlife Research Center, ended their Whooping Crane program in 2017 and again in 2020 when the COVID-19 pandemic halted captive-rearing and release efforts. Luckily, the rearing and reintroduction team has also grown over the past 20 years, and they continue to provide high-quality care to Whooping Cranes to prepare them for release, backed by the most up-to-date science.



Figure 5. Whooping crane parents, 63-15 and 38-17, feed their chick, W2-23. They could be feeding them an insect, a small fish, plant matter, or many other items since Whooping Cranes are omnivorous and wetlands have abundant, diverse food.

By Lesley Haven

图 5. 编号分别为 63-15 和 38-17 的美洲鹤双亲正在喂它们的幼鸟 W2-23。美洲鹤亲鸟可能给小鹤喂昆虫、小鱼、植物或许多其他食物，因为美洲鹤是杂食性动物，湿地里有丰富多样的食物。

Management of the Eastern Migratory Population has also needed to adapt over the past 20 years as the range of the wild population has slowly shifted north. For many years, most Whooping Cranes in the EMP spent their winters in Florida, where the ultralight birds were taught to fly. However, today, the largest proportion of wintering Whooping Cranes in this population can be found in southern Indiana and northern Alabama. A few proposed explanations for this trend are warmer winter weather, the phasing out of the ultralight program, the availability of resources on northern agricultural lands, and younger cranes following older cranes to more northern wintering sites. It will be interesting to see if and how their range shifts in the next 20 years, but in the meantime, conservationists are reacting to this observation and working to secure critical habitats for Whooping Cranes across their entire flyway.

Looking back much has changed since Whooping Crane reintroductions began in the eastern United States in 2001. Over the past 20+ years, this population has been the focus of extensive monitoring, research, and management, and they have given us key insights into solving the puzzle of Whooping Crane conservation.

We thank the authors of the paper “*Twenty-year Status of the Eastern Migratory Whooping Crane Reintroduction*,” Hillary Thompson, Nicole Gordon, Darby Bolt, Jadine Lee, and Eva Szyszkoski, for permitting us to share their work. This paper was published in 2020 in the Proceedings of the North American Crane Workshop 15:34–52.

美国威斯康星州美洲鹤二十年再引入工作历程评估*

Alicia Ward Stephanie M. Schmidt
国际鹤类基金会，美国巴拉布 53913

自 2001 年将美洲鹤（见原文图 1）重新引入美国东部以来，研究人员一直在密切关注这个美洲鹤东部迁徙种群（Eastern Migratory Population，简称 EMP）的生存状况。再引入是一个强大的自然保护工程，成本昂贵，需谨慎运筹操作。正如我们在 EMP 恢复工作中所看到的，这项工作非常耗时——在 20 年后的 EMP 生长仍然取决于圈养雏鹤的持续释放。截至 2024 年 8 月，EMP 种群估计有 68 个个体。

2022 年，科研人员对过去 20 年来美洲鹤 EMP 再引入工作进行了系统的回顾，总结和评估了该种群在其分布范围内所经历的成功、困境，以及面临的威胁，并预测其长期变化趋势。这个研究报告阐述了再引入工作的重要成果及时间节点，分析了一些关键因素以及相关性和相关性，以为从事 EMP 种群恢复的人们提供指南，确保其种群的健康发展。研究报告由汤普森等完成，题目为“美洲鹤东部迁徙种群再引入二十年现状”，发表在《北美鹤类研讨会论文集》15 卷（Thompson, H.T., Gordon, N.M., Bolt, D.P., Lee, J.R., Szyszkoski, E.K. 2020. [Twenty-year Status of the Eastern Migratory Whooping Crane Reintroduction](#), Proceedings of the North American Crane Workshop 15:34–52）。

这个研究报告的完成是基于对 EMP 种群的长期监测以及对其每个个体的全面和深入了解。EMP 中的

* 原文标题和来源: Through the Decades: Evaluating 20 years of Whooping Crane Reintroduction in Wisconsin.
<https://savingcranes.org/2024/09/evaluating-20-years-whooping-crane-reintroduction-wisconsin/>

所有美洲鹤都戴有彩色环志，每个个体都有独特的颜色组合，使得我们在释放后能够在野外加以识别，并观察它们的行为（见原文图 2 和图 3）。

这项研究发现，在过去的 20 年里，这个迁徙种群呈上升趋势。自 2010 年代中期以来，由于幼鹤释放工作的调整，种群略呈下降状态，但同时野生雏鸟的存活率增加了。在分析 EMP 种群变化趋势时，研究人员评估了诸如死亡等影响种群大小的因素。在可以确定个体死亡的原因中，最常见的来自天敌捕食，占已知死亡率的 54.1%。其他常见原因包括碰撞（即与输电线路、车辆或飞机的碰撞）、疾病和偷猎（见原文图 4）。

在 EMP 种群再引入工作中，国际鹤类基金会一直在不断学习，并调整和改进工作方法，包括用于野外释放的美洲鹤的圈养技术。我们已经转向更自然的饲养方法，也就是在人工监督下，以鹤双亲育雏优先（见原文图 5），由负责任的鹤爸妈给小鹤传授野外生存的必要技能，而不是首先考虑用打扮成鹤的训鸟员。另一个变化是自 2016 年以来，我们不再使用超轻型飞机了。在这之前，一直是通过有人驾驶超轻型飞机，引领人工饲养的美洲鹤迁徙到佛罗里达州过冬，教授幼鸟如何迁徙。一旦实现了这个初期目标，接下来释放的幼鸟就从种群中的成年鹤那里学习了它们的迁徙路线。

在过去的 20 年里，EMP 再引入工作出现很多情况或事件，需要我们灵活应对。有两个主要情况值得在此一提：一个是我们的美洲鹤繁殖重要合作伙伴——帕塔克森野生动物研究中心于 2017 年终止了美洲鹤项目，另一个是新冠疫情暴发使得我们在 2020 年没有开展育雏和野外释放工作。幸运的是，在过去的 20 年里，饲养和放归团队也在不断壮大。有着最新科学的支持，我们能继续为饲养的美洲鹤提供高质量的护理，为它们的野外释放做好准备。

在过去的 20 年里，随着 EMP 野生种群的分布范围慢慢向北转移，其种群管理也需要调整。最初，在佛罗里达州过冬的 EMP 美洲鹤都是由超轻型飞机引领迁来的。过去很多年，大多数美洲鹤个体都在佛罗里达州过冬。可如今，在印第安纳州南部和阿拉巴马州北部越冬的 EMP 美洲鹤数量增长极快，数量比佛罗里达州都多。对这一趋势有不少说法，如冬季天气转暖、不再使用超轻型飞机引领、农田资源的可用性，以及幼鹤跟随成年鹤飞往偏北的越冬地。在未来 20 年，EMP 会如何变化？观察其变化对人们会是一件非常有趣的事情；与此同时，自然保护工作者正在认真地思索这个问题，探索如何应对不利因素，以确保美洲鹤在整个飞行路线上主要栖息地的安全。

回顾过去的 20 年，2001 年开始美洲鹤 EMP 再引入，这个种群经历了各种起伏，一直是人们普遍关注、高度研究、监测和管理的重点对象。对这个种群的回顾和评估也为我们解决美洲鹤保护难题提供了重要信息。

感谢“美洲鹤东部迁徙种群再引入二十年现状”的文章作者希拉里·汤普森、妮可·戈登、达尔比·博尔特、贾丁·李和伊娃·赛斯科斯基允许我们分享他们的工作。

【会议消息 书讯】

【News on Conference and Books】

国际鹤类基金会成立 50 周年纪念活动

50 多年前，康奈尔大学鸟类实验室两位年轻的研究生乔治·阿其博和让·索伊出于对全球鹤类濒危状态的担忧，决心创建一个专门从事鹤类研究和保护的基金会。索伊的父母十分支持他们的想法，将索伊家族位于威斯康星州巴拉布市郊的养马场以每年 1 美元的价格租给了他们。阿基博和索伊将养马场改造成鹤类繁殖中心，并于 1973 年在这里创办了国际鹤类基金会 (ICF)。

50 年来，ICF 已将工作拓展到全球 50 多个国家，通过保护示范、科学咨询、政策建议、人才培养、项目资助等多种方式推动以鹤类为代表的迁徙水鸟及栖息地保护。1979 年，ICF 联合中国科学院动物研究所的科学家共同寻找白鹤东部种群越冬地，并于 1980 年首次在鄱阳湖大湖池发现了 91 只越冬的白鹤群体，从此开始了与中国同仁的鹤类保护篇章。

为了感谢中国的伙伴们多年来的大力支持，2023 年 12 月 7 日，ICF 在北京举办“鹤类联结你我”——国际鹤类基金会成立 50 周年纪念活动。ICF 联合创始人乔治·阿其博博士、时任副总裁克劳福德·布兰泰斯博士、高级顾问克莱尔·米兰德博士，以及来自北京、内蒙古、黑龙江、吉林、辽宁、江西、云南、贵州等地的政府部门、保护区、科研机构以及非政府组织代表近 80 人出席了此次活动。

国家林草局对外合作交流中心常务副主任王春峰、中国野生动物保护协会秘书长武明录、中国野生动物保护协会鹤类联合委员会主任委员张正旺、江西省林业局副局长刘宾分别致辞，回顾了与 ICF 的合作历程，并向 ICF 成立 50 周年表示祝贺。乔治用风趣诙谐的语言和大量充满回忆的老照片，跟大家一起回顾了 ICF 是如何成立，如何与中国结缘，又是如何与中国的朋友们一起工作的。克劳福德从东亚鹤类迁飞通道的角度介绍了 ICF 在亚洲的主要工作，尤其是白鹤 GEF 项目和气候变化适应项目的经验。ICF 北京代表处首席代表于倩介绍了 2017 年北京代表处成立之后，ICF 在白鹤、白枕鹤、黑颈鹤保护方面取得的成绩，以及创新的环境教育模式“小鹤学堂”。

在老友分享环节，来自各地的老朋友们纷纷踊跃发言，充满感情地讲述着自己与 ICF 的故事。这些故事或十分幽默，或使人动容，它们像散落的珍珠被一颗颗捡起，串成 ICF 与伙伴们在中国鹤类保护发展历程中从创始到开拓、再到快速发展的奋斗足迹，也成为 ICF 与中国几代鹤类保护者共同的美好回忆和巨大激励。

于倩 供稿



Celebration of 50th Anniversary of International Crane Foundation

More than fifty years ago, two young graduate students from the Cornell Lab of Ornithology of Cornell University, George Archibald and Ron Sauey, were deeply concerned about the survival of cranes around the world and determined to establish a world's center dedicated to crane research and conservation. Sauey's parents supported their idea and leased their family's horse farm on the outskirts of Baraboo, Wisconsin to them for \$1 a year. Archibald and Sauey transformed the horse farm into a crane breeding center and in 1973 founded the International Crane Foundation (ICF) here.

Over the past 50 years, ICF has expanded its work to more than 50 countries around the world, with a mission of providing conservation demonstrations, scientific consultation, policy recommendations, leadership training, and project funding, etc. In 1979, ICF and scientists from the Institute of Zoology of Chinese Academy of Sciences jointly searched for the wintering grounds of Siberian Cranes in China, and in 1980, a flock of 91 wintering Siberian Cranes was discovered in Dahu Chi of Poyang Lake of Jiangxi for the first time, thus opening an ICF's chapter of crane conservation with Chinese colleagues.

To thank Chinese partners for their strong support over the years, ICF held an event "Cranes Unit Us"-- the 50th Anniversary Celebration of ICF in Beijing on December 7, 2023. Co-founder Dr. George Archibald, then Vice President Crawford Prentice, and Senior Consultant Claire Mirande of ICF, and about 80 representatives from government departments, nature reserves, scientific research institutions and non-governmental organizations from Beijing, Inner Mongolia, Heilongjiang, Jilin, Liaoning, Jiangxi, Yunnan, Guizhou and other places attended the event.

Wang Chunfeng, Executive Deputy Director of International Cooperation Center of State Forestry and Grassland Administration, Wu Minglu, Secretary General of China Wildlife Conservation Association, Zhang Zhengwang, Chairman of United Crane Conservation Committee of China Wildlife Conservation Association, and Liu Bin, Deputy Director of Jiangxi Provincial Forestry Bureau, delivered speeches respectively, reviewing the cooperation history with ICF and congratulating ICF on its 50th anniversary. George, with his great humors, showed many old photos full of memories, described how ICF was established, how it got connected with China, and how it worked with Chinese colleague friends. Crawford introduced ICF's conservation efforts in Asia, mainly from the perspective of the East Asian Crane Flyway, especially experiences of Siberian Crane-wetland UNEP/GEF Project and the Climate Change Adaptation Project that ICF implemented Since the beginning of this millennium. Yu Qian, Chief Representative of ICF Beijing Office, introduced achievements of ICF in the conservation of Siberian Cranes, White-naped Cranes, and Black-necked Cranes, as well as the innovative environmental education program "Crane School", after the establishment of ICF's Beijing Office in 2017.

In the story sharing session, old friends from China spoke enthusiastically and told their stories with ICF with great emotion. These stories were humorous and touching, and together, explained difficult and determined footprints of ICF and its partners in the cause of crane conservation in China from its initial survey work to its pioneering/exploration and then its rapid growth, becoming the beautiful memory and inspiration for ICF and many generations of peopling working on crane conservation in China.

Yu Qian (International Crane Foundation)

鄱阳湖保护区召开应对极端气候暨越冬期栖息地管理研讨会

余冬英 黄莎

江西鄱阳湖国家级自然保护区管理局，南昌 330038

2023 年 9 月 5 日，在 FAO-GEF 江西湿地项目支持下，鄱阳湖保护区组织相关职能部门和有关专家在南昌召开了保护区应对极端气候暨越冬期栖息地管理研讨会，分析研判今年鄱阳湖极端干旱气候对保护区湿地候鸟和长江江豚保护工作的影响，共同商讨切实可行的科学应对举措。省林业局副局长刘宾及相关业务处室等 40 余人出席会议，研讨会由鄱阳湖保护区管理局局长徐志文主持。

出席研讨会的专家有南昌大学葛刚副校长，省水利厅谭国良研究员，原省水文水资源检测中心王仕

刚二级调研员，中科院南京地理与湖泊研究所王晓龙研究员，江西农业大学野生动植物与自然保护地研究中心张微微主任，中科院地理科学与资源研究所夏少霞研究员，中科院水生生物研究所梅志刚研究员。

与会专家到湖区进行实地调研，听取了保护区气象、水位、卫星遥感和辖区内湿地候鸟、水生植被、长江江豚及鱼类等资源状况和保护措施的介绍并经交流研讨，最终形成如下几点建议。

一是加强重要生境碟形湖的科学管理对鄱阳湖保护区维护湿地的生态功能和生物多样性尤为重要。

二是要进一步加强对碟形湖管控设施进行修复与维护，加强保护区基础设施建设，提升碟形湖的控水保水能力，保护越冬候鸟及其生境。

三是要加强环鄱阳湖区越冬候鸟及其食物资源的监测，建立常态化监测体系。加强管控措施的科学性和精准性。

四是要启动白鹤等关键珍稀物种保护应急预案，强化湿地生态补偿措施，推进越冬候鸟应急保护行动。

五是要加强辖区内的长江江豚监测和巡护，关注可能出现江豚被困或搁浅的区域及事件，及时会同农业农村等部门采取水系连通、投食、转移等措施科学应对；加强与航运管理部门的沟通协调，对枯水期江豚活动密集水域，采取有力措施，严格管控，全力保护江豚栖息安全。

六是要建立鄱阳湖枯水预警机制，出台应对鄱阳湖极端气候事件的长效应对举措，做好生态保水和生态补水工作，维护鄱阳湖湿地生态系统健康。

Poyang Lake Nature Reserve Organized a Workshop on Coping with Extreme Climate and Wintering Habitat Management

Yu Dongying, Huang Sha

Jiangxi Poyang Lake National Nature Reserve, Nanchang 330038

On September 5, 2023, with the support of the FAO-GEF Jiangxi Wetland Project, Poyang Lake National Nature Reserve organized a workshop "Poyang Lake Nature Reserve Organized a Workshop on Coping with Extreme Climate and Wintering Habitat Management" in Nanchang to analyze and evaluate the impact of this year's extreme drought in Poyang Lake on the protection of migratory birds and Yangtze River porpoises in the reserve, and discuss practical and scientific response measures. Liu Bin, Deputy Director of Provincial Forestry Bureau, and more than 40 people from relevant sectors in the forestry bureau attended the meeting. The workshop was chaired by Xu Zhiwen, Director of Poyang Lake National Nature Reserve.

Experts attending the workshop included Vice Chancellor Ge Gang of Nanchang University, Scientist Tan Guoliang of Provincial Water Resources Department, Former Director Wang Shiguang of Provincial Hydrology and Water Resources Testing Center, Professor Wang Xiaolong of Nanjing Institute of Geography and Limnology of Chinese Academy of Sciences, Director Zhang Weiwei of Wildlife and Nature Reserve Research Center of Jiangxi Agricultural University, Professor Xia Shaoxia of Institute of Geographic Sciences and Natural Resources Research of Chinese Academy of Sciences, and Professor Mei Zhigang of Institute of Aquatic Biology of Chinese Academy of Sciences.

The participating experts at the meeting conducted field research in the lake area, listened to the introduction of the reserve's meteorology, water level, remote sensing, and the status and protection measures of wetland migratory birds, aquatic vegetation, Yangtze River porpoises and fish resources in the area. After exchanges and discussions, they made the following recommendations:

- (1) Strengthening the scientific management of the important sub-lake habitats, crucial to maintaining wetland ecological function and biodiversity of Poyang Lake Nature Reserve;
- (2) Further strengthening the repair and maintenance of the sub-lake water control facilities, strengthening the infrastructure construction of the reserve, improving the water control and water conservation capacity of the sub-lakes, and protecting wintering migratory birds and their habitats;
- (3) Strengthening the monitoring of wintering migratory birds and their food resources at Poyang Lake and establish a regular monitoring system, and ensuring the management and control measures sound;
- (4) Launching emergency plans for the protection of key species such as Siberian Crane, strengthening wetland ecological compensation measures, and promoting emergency protection actions for wintering migratory birds;
- (5) Strengthening the monitoring and patrol of Yangtze River finless porpoises within the jurisdiction, paying attention to areas and incidents where finless porpoises may be trapped or stranded, and

promptly cooperating with agricultural and rural departments to take scientific measures such as water system connection, feeding, and transfer; strengthening communication and coordination with shipping management departments, taking effective measures to strictly control waters where finless porpoises are common and active during the dry season, and making all efforts for the safety of finless porpoise habitats; and

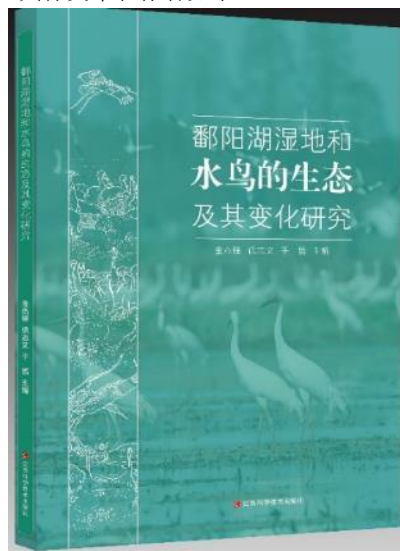
- (6) Establishing a low-water warning mechanism for Poyang Lake, developing long-term response measures to deal with extreme climate events in Poyang Lake, working hard on ecological water conservation and ecological water replenishment, and maintaining the health of the Poyang Lake wetland ecosystem.

《鄱阳湖湿地和水鸟的生态及其变化研究》

由金杰锋、徐志文、于倩等汇编的《鄱阳湖湿地和水鸟的生态及其变化研究》于 2024 年由江西科学技术出版社出版。自 1999 年以来，江西鄱阳湖国家级自然保护区和国际鹤类基金会合作，在鄱阳湖开展了二十多年的生态监测活动，收集了水鸟、水生植被、水位等其他湿地环境因子变量的数据。就这个监测活动，鄱阳湖国家级自然保护区和国际鹤类基金会于 2011 年对 1999-2009 年的监测成果进行总结，编写了《鄱阳湖湿地和水鸟生态研究》文集。此次出版的《鄱阳湖湿地和水鸟的生态及其变化研究》在前 10 年的基础上，继续整理和分析 2010 年以来的监测报告，并与 1999-2009 年的结果进行对比，探讨鄱阳湖湿地生态和水鸟的变化及其原因。

本书由国际鹤类基金会（美国）北京代表处首席代表于倩作序，共收集文章 19 篇，分为回顾与展望、植被监测、水鸟监测、水文和气象监测和保护管理等部分，具体文章和作者如下：

- (1) 鄱阳湖生态监测项目 20 年回顾及展望（李凤山、于倩）
- (2) 苦草植株监测（刘涛）
- (3) 苦草冬芽的监测（刘涛）
- (4) 越冬水鸟监测（余定坤）
- (5) 鹤类监测（余定坤）
- (6) 鸕与琵鹭类监测（余定坤）
- (7) 天鹅与雁类监测（余定坤）
- (8) 2010-2021 年鄱阳湖国家级自然保护区大型越冬水鸟监测（黄素芳、黄锦波）
- (9) 近十年鄱阳湖区大型越冬水鸟数量与分布（廖宝雄）
- (10) 鄱阳湖夏季水鸟监测（詹慧英）
- (11) 1955-2020 年间赣江和修河入湖口处的水位变化（罗浩）
- (12) 鄱阳湖水位变化（罗浩）
- (13) 鄱阳湖湖泊水位变化（祁红艳）
- (14) 鄱阳湖区气候因子的实测与变化趋势（詹慧英）
- (15) 鄱阳湖的过去、现在和未来（Jeb Barzen, James Burnham）
- (16) 鄱阳湖自然教育的实践与探索（李浙、刘涛）
- (17) 鄱阳湖越冬水鸟栖息地管理建议（金杰锋、罗浩）
- (18) 应用保护实践开放标准规划的鄱阳湖鹤类保护项目（金杰锋）
- (19) 附表：江西鄱阳湖国家级自然保护区鸟类名录（曾南京）



《鄱阳湖湿地和水鸟的生态及其变化研究》的出版会更好帮助人们研究和了解鄱阳湖的水鸟、水生植物以及野生动物和湖区人民赖以生存的湿地资源，也会有助于自然资源的管理者和决策者对维护和发挥鄱阳湖多种功能制订合理、有效的决策。

李凤山 供稿

Study of the Changing Ecology of Wetlands and Waterbirds at Poyang Lake

Study of the Changing Ecology of Wetlands and Waterbirds at Poyang Lake compiled by Jin Jiefeng, Xu Zhiwen, Yu Qian was published by Jiangxi Science and Technology Press in 2024. Since 1999, Poyang Lake National Nature Reserve and International Crane Foundation have cooperated to carry out more than 20 years of wetland monitoring activities in Poyang Lake, collecting data on waterbirds, aquatic vegetation, water level and other wetland environmental variables. Regarding this monitoring activity, two parties summarized the monitoring results from 1999 to 2009 and published *Ecological Study of Wetlands and Waterbirds at Poyang Lake* in 2011. *Study of the Changing Ecology of Wetlands and Waterbirds at Poyang Lake* published this year continued to organize and analyze the monitoring reports since 2010, and compared them with the results from 1999 to 2009, to document the changes in the ecology and waterbirds of Poyang Lake wetlands and their causes.

The book is prefaced by Yu Qian, Chief Representative of the International Crane Foundation Beijing Office. It contains 19 articles in total, divided into four chapters: Overview, Vegetation Monitoring, Waterbird Monitoring, Hydrological and Weather Monitoring, and Conservation and Management. The articles and their authors are as follows:

- (1) Poyang Lake Wetland Ecological Monitoring Program: Overview (Li Fengshan and Yu Qian)
- (2) Monitoring of *Vallisneria* (Liu Tao)
- (3) Monitoring of Winter Buds of *Vallisneria* (Liu Tao)
- (4) Monitoring of Waterbirds (Yu Dingkun)
- (5) Monitoring of Cranes (Yu Dingkun)
- (6) Monitoring of Storks and Spoonbills (Yu Dingkun)
- (7) Monitoring of Swans and Geese (Yu Dingkun)
- (8) Monitoring of Large Wintering Waterbirds from 2010-2021 at Poyang Lake National Nature Reserve (Huang Sufang and Huang Jinbo)
- (9) Number and Distribution of Large Wintering Waterbirds over 10 Years at Poyang Lake (Liao Baoxiong)
- (10) Monitoring of Waterbirds Summering at Poyang Lake over 10 Years (Zhan Huiying)
- (11) Monitoring of Water Levels at Estuaries of the Gan and Xiu Rivers from 1955 to 2020 (Luo Hao)
- (12) Water Levels of Poyang Lake at Xingzi Hydrological Station from 1953 to 2020 (Luo Hao)
- (13) Monitoring of Water Levels at Sub-lakes (Qi Hongyan)
- (14) Monitoring of Weather at Poyang Lake (Zhan Huiying)
- (15) The Past, Present and Future of Poyang Lake (Jeb Barzen and James Burnham)
- (16) Practice and Exploration of Nature Education at Poyang Lake (Li Zhe and Liu Tao)
- (17) Recommendations for Managing Wintering Waterbird Habitat at Poyang Lake (Jin Jiefeng and Luo Hao)
- (18) Developing Crane Conservation Strategy for Poyang Lake by Applying Open Standards for the Practice of Conservation (Jin Jiefeng)
- (19) Checklist of Birds Recorded at Jiangxi Poyang Lake National Nature Reserve (Zeng Nanjing)

The publication of *Study of the Changing Ecology of Wetlands and Waterbirds at Poyang Lake* will help people better study and understand the waterbirds, aquatic plants, wildlife and wetland resources on which the people in the lake area depend for survival. It will also help natural resource managers and policy makers to make reasonable and effective decisions on maintaining and utilizing the multiple functions of Poyang Lake.

Li Fengshan (International Crane Foundation)

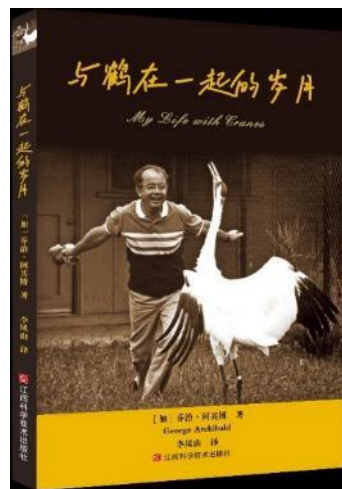
《与鹤在一起的岁月》

国际鹤类基金会联合创始人乔治·阿其博博士撰写、李凤山翻译的《与鹤在一起的岁月》中文版终于问世了，于 2023 年 12 月由江西科学技术出版社出版发行。

本书记录了乔治·阿其博一生与鹤结缘的传奇故事，从他幼年时代心灵上的禽鸟印记，到学生阶段对鹤类油然而生的喜爱和保护之心，再徐徐地展开一个个十分奇异而令人震撼的画面——国际鹤类基金会的创建、朝鲜半岛非军事区与朱鹮的奇遇、日本北海道丹顶鹤繁殖地的惊人发现、俄罗斯鹤类研究的巨人弗林特博士团队北极冻原地一次次的白鹤探险……本书专门有一章写了他在改革开放初期来到中国，与中国同行们探索解开关于白鹤和朱鹮在中国的存亡之谜，踏进他早已向往的丹顶鹤王国——扎龙沼泽，在中国最大淡水湖——鄱阳湖目睹震惊世界的大群白鹤，如同白色长城浮现在浩渺的湖面。整本书以故事为主，十分易读，很多地方险象环生又妙趣横生，还穿插了很多与鹤类相关的知识，有很多历史悠久的老照片，都是十分珍贵的历史资料。从某种意义上讲，这本书也是国际鹤类基金会创建后几十年工作的缩影。

北京师范大学教授、中国动物学会鸟类学分会主任委员、中国野生动物保护协会鹤类联合保护委员会主任委员张正旺先生为本书中文版作序。

李凤山 供稿



My Life with Cranes

My Life with Cranes, authored by Dr. George Archibald, co-founder of International Crane Foundation, was translated into Chinese by Li Fengshan, and published by Jiangxi Science and Technology Press in December 2023.

This book records the legendary story of Dr. George Archibald's lifelong relationship with cranes, from the bird imprint in his childhood to his love and care for cranes during his school years, and then slowly unfolds a series of amazing scenes - the establishment of International Crane Foundation, the adventure of the Crested Ibis in the demilitarized zone of the Korean Peninsula, the discovery of breeding ground of the Red-crowned Crane in Hokkaido, Japan, and the Siberian Crane expeditions to the Arctic tundra by Dr. Vladimir Flint, a well known Russian ornithologist..... There is a chapter in this book about his visit to China in the early days when China opened its door to the west, and his efforts with Chinese colleagues to solve the mystery of the survival of Siberian Cranes and Crested Ibis in China -- stepping into the Red-crowned Crane kingdom he had longed for - Zhalong Marsh, and witnessing the world-shocking large flock of Siberian Cranes in Poyang Lake, like a white Great Wall floating on the vast lake. The book is a collection of his essays, quite easy and pleasant to read. It contains basic biological knowledge of various crane species and many old photos of cranes and working in the fields. In a sense, this book is also a window showing amazing work by International Crane Foundation in the decades since its establishment.

Dr. Zhang Zhengwang, professor at Beijing Normal University, chairman of China Ornithology Society, and chairman of the United Crane Conservation Committee of China Wildlife Conservation Association, wrote the preface for the Chinese version of this book.

Li Fengshan (International Crane Foundation)

征稿启事

《中国鹤类通讯》是中国动物学会鸟类学分会和中国野生动物保护协会鹤类联合保护专业委员会联合主办的鹤类与水鸟信息交流的内部刊物，主要报道中国鹤类与水鸟的研究、保护、饲养、管理、宣传和教育工作动态和阶段成果，也报道国外鹤类研究动态及其它水鸟有关信息，欢迎同行及各界人士踊跃投稿。

来稿要求：(1) 仅接收电子稿件，传至电子邮箱：cranenews@163.com 注明联系电话、电子邮箱和“中国鹤类通讯稿件”字样。无电子版稿件恕不接收；(2) 字数以 500—1,000 字为宜，希勿超过 2000 字；(3) 内容简明扼要，报道的鹤类和水鸟新地点请给出经纬度；(4) 来稿文责自负。本刊对决定刊用的文稿可作文字修改、删节；凡涉及对作者原意的修改，则提请作者考虑；(5) 文末写明作者姓名、工作单位；(6) 来稿可只用中文，由本刊负责译成英文。

截稿日期为每年 4 月 20 日和 10 月 20 日。

《中国鹤类通讯》为彩色封面，欢迎提供鹤类及水鸟的高质量彩色照片。同时欢迎各自然保护区等单位提供介绍性稿件和照片（封 2—3）。

本刊为半年刊，每年的 6 月和 12 月出版。出版后上传至中国动物学会鸟类学分会网页（<http://www.chinabird.org>）供免费下载。

Instructions for Contributors

China Crane News is published by China Ornithological Society and United Crane Conservation Committee of China Wildlife Conservation Association. The newsletter specializes in the exchange of information on cranes and other large waterbirds, focusing on research, conservation, breeding, management, and education activities related to these species in China, and also reports relevant information abroad.

Submission guidelines:

- (1) The article should be submitted electronically to: cranenews@163.com.
- (2) The article should be no more than 1,000 words.
- (3) The article should be concise and include geographic coordinate information for new sighting sites of cranes and other waterbirds.
- (4) The author's name, organization, and address should be included at the end of the article.
- (5) The article can be submitted in Chinese or English, although both English and Chinese are preferred.
- (6) Deadlines for manuscripts are April 20 and October 20 each year.
- (7) The author takes full responsibility for the content of the article.

This newsletter is a semi-annual publication, published in June and December each year. The newsletter can be downloaded free at China Ornithological Society website: <http://www.chinabird.org>.

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江西鄱阳湖国家级自然保护区都昌保护监测站

都昌保护监测站是江西鄱阳湖国家级自然保护区管理局（以下简称鄱保局）在鄱阳湖区设置的 11 个站点之一，位于中国第一大淡水湖——鄱阳湖北岸。都昌保护监测站于 2011 年 10 月底成立，属正科级建制，办公楼坐落于江西省九江市都昌县芙蓉山工业园区。

2020 年 12 月，鄱保局正式增挂江西鄱阳湖水生动物保护区管理中心牌子，把鄱阳湖长江江豚保护区，4,900 hm²“都昌老爷庙区域”具体监管职责落到都昌保护监测站，这使得该站在中国自然保护地的监测和管理上独具特色。其主要工作职责为：湿地候鸟、长江江豚的巡护监测；湿地候鸟、长江江豚宣传保护；协同相关职能部门查处破坏侵占湿地，猎杀、贩卖野生动物和非法垂钓、捕捞等违法行为。在鄱阳湖国际观鸟季活动中，都昌保护监测站以其独特的自然和人文景观，成为观鸟季活动主要场地之一。



白鹤/Siberian Cranes



江豚/Finless porpoise



朱袍山/Zhupaoshan, one of several islands in Duchang



都昌站工作人员/Station Staff

高翔 文/图

Duchang Management and Monitoring Station at Poyang Lake

Duchang Management and Monitoring Station is one of 11 stations set up by Poyang Lake National Nature Reserve in the Poyang Lake basin. It is located on the northern Poyang Lake, China's largest freshwater lake. Duchang station was established in October 2011, and its headquarters are in Duchang County, Jiujiang City, Jiangxi Province.

In December 2020, Jiangxi Poyang Lake Aquatic Animal Reserve Management Center was officially affiliated to the Poyang Lake National Nature Reserve, and specifically, 4,900-hectare of Duchang Laoyemiao Area of Poyang Lake Yangtze River Porpoise Nature Reserve has been put under patrol by the Duchang station, making the station unique in the monitoring and management of China's nature reserves. Its main responsibilities of the station are: patrol and monitoring of wetland migratory birds and Yangtze River porpoises; publicity and protection of wetland migratory birds and porpoises; and coordinating with relevant government departments to investigate and punish illegal activities such as destruction of wetlands, hunting and trafficking of wild animals, and illegal fishing. During the celebration of the Poyang Lake International Bird Watching Festival, the Duchang Management and Monitoring Station, with its unique natural and cultural significance, became one of the main venues for the festival.

Text and photos by Gao Xiang

