

鄱阳湖流域越冬白枕鹤种群数量和空间分布格局

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摘要:【目的】研究鄱阳湖流域白枕鹤种群在越冬期的种群数量变化及其空间分布格局,推测其种群动态变化的原因,为后续鄱阳湖流域白枕鹤物种保护提供基础数据。【方法】基于鄱阳湖流域越冬水鸟同步调查的数据,对 2001-2024 年白枕鹤种群数量进行线性回归分析,观察白枕鹤种群数量的实际增长波动。统计 2020、2022、2023 和 2024 年鄱阳湖同步调查中白枕鹤个体在不同观察点位的数量、频次、占比及所属保护区判断其主要空间分布格局,并利用四年的调查点位绘制示意图,分析白枕鹤种群的空间分布的短期变化。【结果】1) 2001-2024 年鄱阳湖流域白枕鹤种群数量呈现明显的线性下降趋势 ($P<0.001$)。鄱阳湖流域越冬白枕鹤种群数量分别在 2003 年、2010 年与 2015 年出现几次剧烈变化,种群数量急剧增加后在下一年恢复至较低水平,与鄱阳湖几次严重干旱具有一定相关性。2) 在 2020、2022、2023 和 2024 年所观察到白枕鹤个体分布湖泊较为固定且集中,大部分集中在鄱阳湖国家级保护区,四年在鄱阳湖保护区记录到的白枕鹤数量占总数的 54.9%,都昌保护区总记录数量占比为 10.6%,南矶湿地所记录占比为 3%。人工记录的区域大部分均为湖泊及周边浅滩,还有较多记录点的生境为水稻田或农田,反映了白枕鹤种群的食性特点。3) 2020 和 2022 年白枕鹤大量分布于鄱阳湖保护区附近但基本未重叠,且有几个较高密度的离散点,2023 年白枕鹤从鄱阳湖保护区向外形成较多数量均衡的离散点,而在 2024 年白枕鹤分布区域大量集中在鄱阳湖保护区及其附近。【结论】1) 鄱阳湖湿地的越冬白枕鹤种群在 2001-2024 年种群数量年间波动幅度将大,且种群数量呈线性下降趋势。2) 白枕鹤在鄱阳湖越冬地主要集中在鄱阳湖国家级自然保护区且分布区域较为固定,有少数在周边较小的湖泊有分布。鄱阳湖流域越冬白枕鹤种群其每年的分布地基本位于鄱阳湖保护区的蚌湖、大汉湖、朱市湖和大湖池、共青城的南湖和鄱阳县的企湖。

关键词: 种群数量; 空间分布; 白枕鹤种群; 鄱阳湖流域

Population Size and Spatial Distribution Patterns of Wintering White-naped Cranes in Poyang Lake

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Abstract: 【Objective】 To study the changes in population size and spatial distribution pattern of the White-naped Crane in Poyang Lake during the overwintering period, and to speculate the reasons for the changes in population dynamics, so as to provide basic data for the subsequent conservation of the White-naped Crane in Poyang Lake. 【Method】 Based on the data from the synchronous survey of wintering waterbirds in Poyang Lake, a linear regression analysis of the population size of the White-naped Crane was carried out from 2001 to 2024 to observe the fluctuation of the actual growth of the population size of the White-naped Crane. The number, frequency and percentage of individual White-naped Cranes at different observation points and the protected areas they belonged to in the synchronous survey of Poyang Lake in 2020, 2022, 2023 and 2024 were counted to determine the main spatial distribution pattern of White-naped Cranes, and a schematic diagram was drawn using the survey points in the four years to analyse the short-term changes in the spatial distribution of White-naped Crane populations. 【Result】 (1) The population size of White-naped Cranes in Poyang Lake showed a significant linear downward trend ($P<0.001$) from 2001 to 2024. The wintering population of White-naped Cranes in Poyang Lake showed several drastic changes in 2003, 2010 and 2015, and the population increased sharply and then recovered

to a lower level in the following year, which was correlated with several severe droughts in Poyang Lake. 2) The distribution of White-naped Cranes observed in 2020, 2022, 2023 and 2024 was relatively fixed and concentrated in the lakes, and most of them were concentrated in the Poyang Lake National Reserve, and the distribution of White-naped Cranes in Poyang Lake National Reserve in the four years was also concentrated in Poyang Lake National Reserve. Most of them were concentrated in Poyang Lake National Reserve, and the number of White-naped Cranes recorded in Poyang Lake Reserve accounted for 54.9% of the total number of White-naped Cranes in these four years, while the total number of White-naped Cranes in Duchang Reserve accounted for 10.6%, and 3% was recorded in Nanji Wetland. Most of the manually recorded areas were lakes and surrounding shallows, and the habitats of more recorded points were rice fields or farmlands, reflecting the feeding characteristics of the white-naped crane population. 3) In 2020 and 2022, the White-naped Crane were distributed in the vicinity of Poyang Lake Reserve, but basically did not overlap with each other, and there were a few discrete points of higher density, and in 2023, the White-naped Crane formed a more balanced number of discrete points outward from Poyang Lake Reserve, while in 2024, the number of White-naped Cranes was more balanced. In 2023, the White-naped Crane from Poyang Lake Reserve to the outside formed a more balanced number of discrete points, and in 2024, the White-naped Crane were concentrated in Poyang Lake Reserve and its vicinity. 【Conclusion】 (1) The wintering population of White-naped Crane in Poyang Lake wetland will fluctuate greatly from 2001 to 2024, and the population will show a linear decline. 2) The wintering area of White-naped Cranes in Poyang Lake is mainly concentrated in the National Nature Reserve of Poyang Lake and the distribution area is relatively fixed, with a few smaller lakes in the surrounding area. The wintering population of White-naped Crane in Poyang Lake Basin is basically located in Banghu, Dachahu, Zhushihu and Dahuchi in Poyang Lake Reserve, Nanhu in Gongqing city and Qihu in Poyang County.

Key words: Population dynamics; Spatial distribution; White-naped Crane; Poyang Lake