Siberian Crane

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The Siberian crane (Leucogeranus leucogeranus) is one of the rarest species of Azerbaijani ornithofauna. With a population estimated between 3.500 and 4.000 individuals, the species is classified as “critically endangered” (Birdlife International 2023). Its breeding range is scattered across Russian Siberia, historically encompassing three wintering grounds: the middle Yangtze River in China (East Asian population), India (extinct since 2003), and Iran (West Asian population) (Archibald et al. 2020). Ninety-nine percent of the birds belong to the Eastern population that winters in Pyong Lake in China (Birdlife International 2023). However, the birds recorded in Azerbaijan belong to the small West Asian population and have dwindled to one male, by the name Omid, since the early 2000s and are considered to be very rare migrant species for Azerbaijan (Patrikeev 2004). The absence of his arrival at the wintering grounds in 2023 raises concerns about the survival of the species and the prospects for future conservation efforts.

Historical presence in Azerbaijan

The species was historically observed in Azerbaijan during migration and wintertime. Unfortunately, the amount of reliable information about its presence in the country is minimal. In the 19th century, traveler Gustav Radde documented an observation of a flock of *white cranes* near Astara, close to the Iranian border, on 4/16th March 1880 (Radde 1884). Similarly, early 20th-century observations are scarce, and Satunin (1907) notes that despite not personally observing any wild specimens, he is aware of hunted specimens from the Absheron Peninsula. A small flock of Siberian Cranes were observed by Russian students in February 1914 in artifical lakes near Salyan district (Stanchinsky 1914). Later in 1925, four birds were observed in Vel village, south of Lenkeran

(Богачев 1951). According to these observations, there were two flyways through Azerbaijan: the first along the Caspian shore (eastern flyway) and another in the western part of the country.

In 1996, a male crane that was satellite-tagged after being captured in Iran revealed crucial information about the population's migratory patterns. It was determined that the population migrates along the Caspian shore, making a stop for resting in Shirvan National Park on 10 March (Kanai et al., 2002). Subsequently, in 2003, a birder from Great Britain observed a family of three individuals over Shirvan National Park (Султанов Э., Т.А. Керимов 2008).

According to reports from rangers and local residents, between 2001 and 2006, approximately 2 to 6 individuals were observed during migration in Kizilagach Nature Reserve (now a national park) and Lenkeran city (Султанов Э., Т.А. Керимов 2008). Notably, in the winter of 2010, specifically on 29 January, an adult crane named Omid was observed in Kizilagach NR, marking the first known wintering occurrence in this century (Rozenfeld 2012). Since 2005, Omid has consistently utilized the eastern flyway during migration. In 2020, a group of birdwatchers spotted Omid resting in Shirvan National Park on 1 March, aligning with his typical migration pattern.

Despite the Caspian shore traditionally serving as the primary migration route and wintering ground for Siberian cranes in Iran over centuries, there have been a limited number of observations in the western parts of Azerbaijan, hinting at the possibility of an alternative migration route for the species. Notable instances include the sighting of a pair of Siberian cranes among common cranes (Grus grus) in the Samukh district on October 20, 2005 (Султанов Э., Т.А. Керимов 2008), and the observation of two individuals in Julfa near the Iranian border in November of 2008 (Sorokin 2012).

Conservation issues

Unfortunately, species decline is occurring rapidly, making it challenging to pinpoint the main cause. According to Birdlife International (2023), the primary threats to the Siberian Crane include hunting and habitat destruction. Regrettably, Omid, the last survivor from the Western Asian population, has not been observed at his usual wintering grounds in Iran in autumn of 2023, raising concerns about his survival. The latest available information dates back to 5 March 2023, when he departed from his wintering ground at Feruydunkenar wetlands in the company of a female named Roya. Roya, released in Iran on the last day of January 2023 with the hope of joining Omid in migration, was later found alone on 11 March in Tonekaban, a location 150 km north along the Caspian shore from Feruydunkenar. So, in short, in 2022/23 winter, Omid spent 130 days in Iran while Roya joined him for only 34 days.

This situation raises serious concerns about the potential extinction of Siberian Cranes in the Western Palearctic, including Iran, and contributes to the growing number of bird species lost in Azerbaijan. The fate of this population has been bleak, with their numbers plummeting from 11-14 individuals in 1977 to only 6 birds in the winter of 2000-2001.

Since January 2007, only Omid has been known to migrate to the historical wintering location in Feruydunkenar, Iran. Despite various attempts to release captive-bred individuals, none have been successful thus far. A total of 11 captive-bred Siberian Cranes were released in wintering grounds in Iran, but unfortunately, three of them died, and eight birds started migrating with other wild birds and cranes. Regrettably, none of them reached the wintering grounds in the following years (source: CMS Siberian Crane Reintroduction). Similarly, between 1999 and 2013, a total of 37 juvenile Siberian Cranes released in the Volga delta from Oka Crane Breeding Center (OCBC), but again, unfortunately, none of them managed to join Omid and reach Iran!

The literature highlights the specific habitat requirements of Siberian Cranes during their stopover sites. These habitats must allow for digging, and water levels should not be so high as to prevent access to the benthic zone for feeding. Siberian Cranes feed in water with aquatic plant roots within a depth range of 25 to 68 centimeters (Wu 2022). Given that this species is the most aquatic among cranes, the protection of these vital habitats is crucial for their conservation and potential future reintroduction in Azerbaijan and other range states.

In addition to hunting and habitat changes, climate change emerges as a significant issue for the global and local conservation of Siberian Cranes. Research suggests that the breeding success of Siberian Cranes in Siberia depends on the stability of climatic conditions. The success rate ranges between 4,3% and 83,3% based on varying weather conditions (Germogenov et al. 2013). According to another study, the West Asian population (Omid) faces the potential loss of 25% of its wintering area under the RCP8.5 climate change scenario by the year 2050 (RCP8.5 is a high-emission scenario used in climate models, assuming no significant efforts to reduce greenhouse gas emissions. For more information about climate change scenarios, refer to the Intergovernmental Panel on Climate Change (IPCC) reports) (Ansari 2023). This underscores the importance of addressing climate change as a key factor in ensuring the survival and reproductive success of the Siberian Crane population.

Efforts to conserve Siberian Cranes must consider the interconnected challenges of habitat preservation, protection from hunting, and mitigating the impacts of climate change to secure a sustainable future for this critically endangered species. In our context, changes in sea level of the Caspian and rivers can affect the survival of the species' migration and wintering success.

Revival of Siberian Cranes in Azerbaijan and other range

states

The concept of using slow-flying ultra-light aircraft to guide costume-reared Siberian Cranes during migration is an innovative approach to address the challenges faced by the functionally extinct Western Asian population. Juvenile cranes are raised by humans in costumes resembling the target species to prevent them from becoming too accustomed to humans, enhancing their chances of adapting successfully to the natural environment. This method, as described in the *Memorandum of Understanding concerning Conservation Measures for the Siberian Crane*, has been applied as a standard method for reintroducing birds.

The process involves flying with costume-reared individuals and teaching them the migration route. Given that inexperienced cranes often rely on the expertise of adults during migration, this intervention seeks to guide them and enhance their chances of survival. However, the success of this method is contingent upon strong political will and trans-boundary collaboration among the countries involved, namely Russia, Kazakhstan, Azerbaijan, and Iran.

Implementing such a strategy requires overcoming logistical and diplomatic challenges, as these captive-bred birds would need to traverse airspace and rest in multiple countries. The coordination and cooperation of these nations are essential for the success of such reintroduction efforts. Political commitment and collaboration are key factors in making this innovative approach a viable solution for the survival of the Siberian Crane population in the western flyway.

Ensuring the enduring success of Siberian Crane protection hinges on safeguarding vital habitats, notably Kizilagach and Shirvan National Parks. This involves implementing and reinforcing measures to manage these parks effectively and promptly addressing emerging threats through regular habitat monitoring. Active community engagement is crucial to instill

a sense of ownership and responsibility among local communities.

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