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SHORT REPORT

New record of Chilean flamingos nesting at Laguna Las Tunas in south-eastern Córdoba province, Argentina

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Abstract

In July 2018, we observed a nesting colony of more than 4,000 Chilean flamingo (*Phoenicopterus chilensis*) nests from that year's breeding season at Laguna Las Tunas, a saline lake in central Argentina. This is the first record of a nesting colony at this site in 65 years. Nesting occurred after three El Niño years, characterized by high annual precipitation leading to high water levels, greater flooded surface area, and lower salinity. Our finding confirms the importance of Laguna Las Tunas for flamingo conservation in the context of the shifting mosaic of flamingo habitat availability at a regional scale.

Resumen

En julio de 2018, observamos una colonia de nidificación de más de 4.000 nidos de flamenco austral (*Phoenicopterus chilensis*) de la temporada de reproducción de ese año en Laguna Las Tunas, un lago salino en el centro de Argentina. Este es el primer registro de una colonia de nidificación en este sitio en 65 años. La anidación ocurrió después de tres años de El Niño, caracterizada por una alta precipitación anual que conduce a altos niveles de agua, mayor área de superficie inundada y menor salinidad. Nuestra observación confirma la importancia de Laguna Las Tunas para la conservación de flamencos en el contexto del mosaico cambiante de disponibilidad de hábitat para flamencos a escala regional.

Résumé

En juillet 2018, nous avons observé une colonie de reproduction de plus de 4 000 nids de flamants du Chili (*Phoenicopterus chilensis*) datant de la saison de reproduction de l'année à

Laguna Las Tunas, un lac salin du centre de l'Argentine. Il s'agit de la première mention d'une colonie de nidification sur ce site en 65 ans. La nidification a eu lieu après trois années d'El Niño, caractérisées par de fortes précipitations annuelles entraînant des niveaux d'eau élevés, une plus grande surface inondée et une salinité moindre. Notre découverte confirme l'importance de la lagune de Las Tunas pour la conservation des flamants roses dans le contexte d'une mosaïque changeante de la disponibilité de l'habitat des flamants roses à l'échelle régionale.

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Introduction

The western Pampas region of Argentina, extending across south eastern Córdoba province and southwestern Santa Fe province, is a large plain dotted with numerous brackish wetlands that are high biodiversity areas immersed within an agricultural matrix (Bilenca & Miñarro 2004, Romano & Brandolin 2017). Many of these wetlands are known for their high bird abundance and diversity, and for their importance for Andean (*Phoenicoparrus andinus*) and Chilean flamingo conservation (Di Giacomo 2005, Romano et al. 2008, 2009, Brandolin et al. 2011, Romano & Brandolin 2017). There are wide variations in habitat and landscape conditions among these wetlands (Romano et al. 2008, Brandolin & Blendinger 2016), and some of them are affected by artificial drainage channels (Brandolin et al. 2013). There are also large annual variations in the water level due to the effects of the El Niño Southern Oscillation (ENSO) (Romano et al. 2005, 2009).

Laguna Las Tunas, located in south eastern Córdoba province (33° 43'S, 62° 32'W, 112 m a.s.l., Figure 1), is a large saline, shallow wetland surrounded by saltmarshes and shrublands that supports a high bird diversity and is a wintering site for flamingos (Fundación Vida Silvestre 1992, Romano et al. 2008, 2009, 2011, Brandolin & Ávalos 2010, Bilenca & Miñarro 2004, Brandolin et al. 2016a, b). Chilean flamingos are common and have been recorded throughout the year at this lowland wetland, whereas Andean flamingos are rarely recorded (Fundación Vida Silvestre 1992, Romano et al. 2008, 2009, 2011, Brandolin & Ávalos 2010). At present, Laguna Las Tunas forms part of the Pampa de las Lagunas wetland complex, which is within the Network of Wetlands of Importance for Flamingo Conservation (Marconi & Sureda 2008) and is a private protected area (Reserva Natural Las Tunas; Crespo Guerrero & Peyroti 2016).

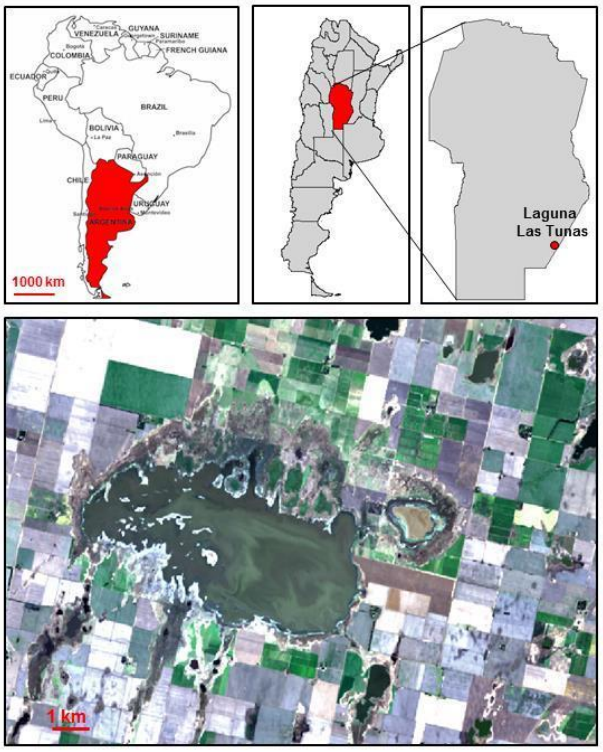

Figure 1: Location of Laguna Las Tunas in central Argentina in the southeast of Córdoba province

Evaluation

In July 2018, we visited Laguna Las Tunas during a systematic winter survey for flamingos carried out at the Pampa de Las Lagunas wetland complex by the *Grupo de Conservación Flamencos Altoandinos-GCFA* (High Andes Flamingo Conservation Group), and recorded 3,251 Chilean flamingos and 20 waterbird species, including ducks, coots, grebes, swans, and herons, among others. Given the large size of the wetland, we counted from four observation points. At the farthest point to the west, we observed a

large group of juvenile Chilean flamingos and many shapes that resembled flamingo nests on islands in the distance. We approached the islets with kayaks and confirmed the presence of Chilean flamingo nests from the previous breeding season (February-March 2018). In three islets we counted more than 4,000 nests (Figure 2). Nearby we observed groups of juvenile flamingos that were not disturbed by our presence (Figure 3). In a previous visit during the summer (March 2018), we had estimated 8,000 Chilean flamingo adults at this site (M. Romano, pers. obs.).

Figure 2: Panoramic views of nesting colony in one of the islets at Laguna Las Tunas (Córdoba province, Argentina).

Figure 3: Juvenile Chilean flamingos near the nesting colony in one of the islets at Laguna Las Tunas (Córdoba province, Argentina).

We interviewed the owners of the land where Laguna Las Tunas is located, who told us there were no records of flamingo nesting at the site for the past 65 years. The owners did recall

observing flamingo nests when they were young, in the 1950s. Several factors determine the establishment of flamingo nesting colonies, including availability of food resources; appropriate water levels that create islets that allow the nests to be isolated from terrestrial predators; low human disturbance; as well as the number of individuals. Flamingos breed opportunistically in response to local favourable conditions (McCulloch et al. 2003, Childress et al. 2004, Amat et al. 2005, Johnson & Cézilly 2007), and it appears that conditions were met last summer at Laguna Las Tunas.

Our finding confirms that Laguna Las Tunas is important for flamingo conservation in the context of the shifting mosaic of flamingo habitat availability at a regional scale. The Pampa de las Lagunas wetland complex had been affected by El Niño events for three consecutive

years (2016-2018), characterized by high annual precipitation leading to high water levels and greater flooded surface area, and lower salinity.

In contrast to other sites where flamingo abundance has been reduced (Romano et al. 2017), flamingo abundance at Laguna Las Tunas was higher during the last three winters compared to previous years (Table 1). These differences in flamingo abundance between lakes of the Pampa de las Lagunas wetland complex could be associated with the reduction in water salinity which changed Lagunas Las Tunas from a saline to a brackish lake and may have generated better conditions to sustain a greater abundance of individuals. Additionally, the change in weather affected the configuration of the landscape, with the appearance of isolated islands that could be used as nesting sites. The availability of mudflats and reduced salinity was also found to positively influence flamingo nesting in Mar Chiquita, a large wetland in central Córdoba province (Bucher et al. 2000)

Table 1: Abundance of Chilean Flamingos recorded at Lagunas Las Tunas from 2009 to 2018.

Winter Abundance

2009.	1
2010.	313
2011.	611
2012.	45
2013.	1261
2014.	256
2015.	432
2016.	4000
2017.	7500
2018.	3251

fluctuations (Romano et al. 2009). The importance of conserving a network of wetlands becomes especially important in the context of global climate change which will induce variations in the occurrence, structure, pattern, process, and function of wetlands (Junk et al. 2013). Persistence of flamingo populations in the western Pampas of Argentina will depend on ensuring a spatially and temporally dynamic wetland complex that provides the necessary resources for flamingos throughout their life cycle.

Conclusions

A wide range of animal populations respond to seasonal variations in habitat and large- scale climatic fluctuations such as those linked to the ENSO, NAO (North Atlantic Oscillation), and PDO (Pacific Decadal Oscillation) (Schmidt et al. 2014), including flamingos (Bechet & Johnson 2007). Flamingos move from one wetland to another and use the different available sites in an alternative and complementary way in response to habitat fluctuations (Romano et al. 2009). The importance of conserving a network of wetlands becomes especially important in the context of global climate change which will induce variations in the occurrence, structure, pattern, process, and function of wetlands (Junk et al. 2013). Persistence of flamingo populations in the western Pampas of Argentina will depend on

ensuring a spatially and temporally dynamic wetland complex that provides the necessary resources for flamingos throughout their life cycle.

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