



First record of the Marbled Godwit (*Limosa fedoa*) in the Potosino-Zacatecano Plateau, Mexico

Primer registro del Picopando Canelo (*Limosa fedoa*) en el Altiplano Potosino-Zacatecano, México

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Abstract

The Marbled Godwit (*Limosa fedoa*) is generally distributed in coastal areas of Mexico during its migration. However, we recorded the presence of an individual of the Marbled Godwit at Salinas (Santa María) Lagoon, in Salinas, San Luis Potosí, Mexico, on 27 August 2023. The observation was made when we carried out bird surveys, walking around the lagoon. In addition, we searched for occurrence records of the species in the literature and eBird and iNaturalistMX databases. We compiled a total of 39 records of the Marbled Godwit in mainland Mexico, with no previous records of the species in San Luis Potosí. Our report therefore represents the first record of the threatened Marbled Godwit for the biogeographical sub-province of the Potosino-Zacatecano Plateau. This is of relevance considering that the species' typical winter distribution is along the coasts of United States, Mexico and Central America. Our findings highlight the importance for migratory and aquatic birds of naturally occurring wetlands in Mexican arid and semiarid zones.

Keywords: arid regions, migratory birds, San Luis Potosí, shorebirds, wetlands, winter distribution.

Resumen

El Picopando Canelo (*Limosa fedoa*) se distribuye generalmente en las áreas costeras de México durante su migración. Sin embargo, registramos la presencia de un individuo de Picopando Canelo en la Laguna de Salinas (Santa María), en Salinas, San Luis Potosí, México, el 27 de agosto de 2023. La observación se hizo cuando llevamos a cabo muestreos de aves en Salinas, caminando alrededor de la laguna. Además, buscamos registros de ocurrencia de la especie en literatura y en las bases de datos eBird y iNaturalistMX. Recopilamos un total de 39 registros del Picopando Canelo en el interior de México, sin registros previos de la especie para San Luis Potosí. Por lo tanto, nuestro reporte representa el primer registro del amenazado Picopando Canelo en la subprovincia biogeográfica del Altiplano Potosino-Zacatecano. Esto es de relevancia considerando que la distribución invernal habitual de la especie es a lo largo de las costas de Estados Unidos, México y Centroamérica. Nuestros hallazgos subrayan la importancia de los humedales naturales de las

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zonas áridas y semiáridas de México para las aves migratorias y acuáticas.

Palabras clave: aves migratorias, aves playeras, distribución de invierno, humedales, San Luis Potosí, zonas áridas.

Introduction

Wetlands play a key role for wildlife and function as habitats for numerous endemic, resident, or migratory species (Serrano et al. 2013). On a global scale, they are considered one of the ecosystems with greatest biological diversity (Valiente et al. 2015). In particular, the coastal and continental wetlands in arid zones of Mexico are important stop-over and wintering sites for migratory birds, such as the Marbled Godwit (*Limosa fedoa*).

The Marbled Godwit breeds in northern USA and southern Canada, migrating to the coasts of USA and Mexico (Shaffer et al. 2019), but has also been recorded as far south as Chile (Martínez-Piña & González-Cifuentes 2004). In Mexico, the Marbled Godwit is considered a threatened migratory species (SEMARNAT 2010), with a distribution mainly constrained to the Atlantic and Pacific coasts (Ramírez-Bastida & Navarro-Sigüenza 2013). The species is a shorebird that is frequently sighted in marine areas (eBird 2024). However, the Marbled

Godwit has also been recorded in mainland Mexico, in the states of Chihuahua, Coahuila, Durango, Guanajuato, Jalisco, Michoacán, Querétaro, State of Mexico and Mexico City (eBird 2024; iNaturalistMX 2024). For San Luis Potosí, the easternmost tip of the state shows up as a potential area for presence of this species (Ramírez-Bastida & Navarro-Sigüenza 2013).

Nevertheless, there is an absence of records of the species in the Potosino-Zacatecano Plateau (iNaturalistMX 2024). Studies of aquatic birds are scarce in this region and tend to present isolated records, highlighting the need to carry out detailed studies over longer temporal and spatial scales (Sigala-Meza et al. 2022). Here, we present a record of the Marbled Godwit in the Potosino-Zacatecano Plateau, in San Luis Potosí, and review existing records in mainland Mexico to update information on the species' distribution.

Methods

Study site

Our observations were conducted in Salinas Lagoon, also known as Santa María Lagoon, adjacent to the urban area of Salinas de Hidalgo, San Luis Potosí, Mexico (Figure 1). This area occurs within the biogeographical sub-province of the Potosino-

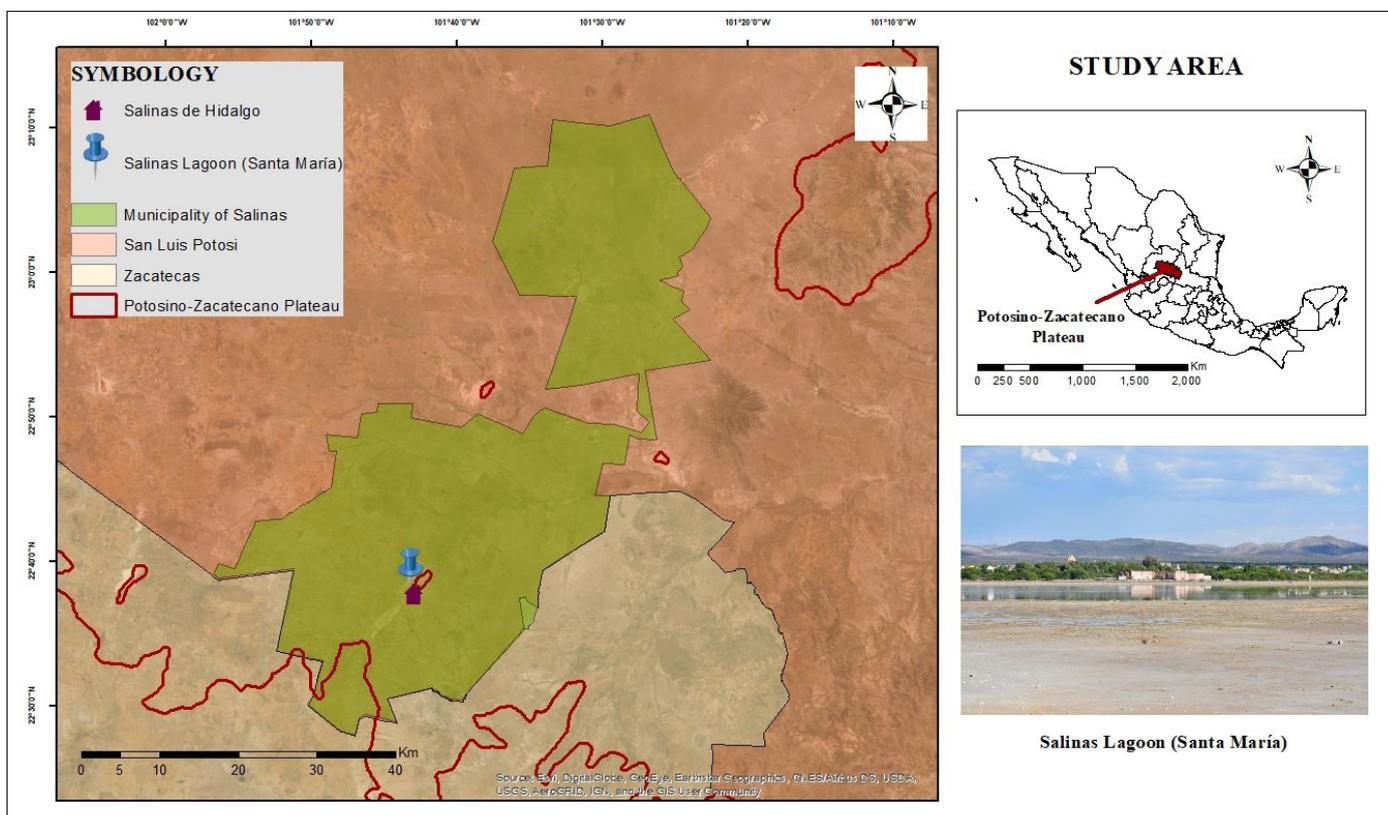


Figure 1. Location of the study area (municipality of Salinas).

Zacatecano Plateau, which is found in the central and western part of the state. There is a scarcity of water in the state, and waterbodies are scattered and temporal, as they depend on precipitation from the previous year (Luévano et al. 2010), and may totally evaporate during severe drought episodes. Salinas Lagoon is a salty water lagoon that is one of the most prominent waterbodies in the municipality, and bears water for most of the year.

However, in the summer of 2023, precipitation in June-September was 19% of the mean rainfall values for these months during the 1976-2023 period (SMN 2024), resulting in a severe drought during which the lagoon dried out. Conversely, when the rainy season arrives, precipitation is typically intense, so many waterbodies form, which are crucial for several taxonomic groups, such as amphibians, reptiles, birds, and mammals. Within the avian group, it is noteworthy that such temporal lagoons can attract multiple aquatic or semiaquatic birds. In total, 62 bird species were spotted in Salinas Lagoon during our surveys, among which the Black-necked Stilt (*Himantopus mexicanus*), American Avocet (*Recurvirostra americana*), Northern Shoveler (*Spatula clypeata*) and the Killdeer (*Charadrius vociferus*) stand out. This highlights the importance of this lagoon, which functions as an oasis in the middle of a semidesert.



Figure 2. Marbled Godwit (*Limosa fedoa*) photographed in Salinas (Santa María) Lagoon, San Luis Potosí. Photograph taken by Jesús Lenin Lara-Galván on 27 August 2023.

Data collection

We conducted a series of field trips between February 2023 and February 2024 to record birds in a variety of habitats within the municipality. This included three visits around Salinas Lagoon, one each in February, August, and October 2023. We conducted bird surveys around the lagoon from 06:30 to 15:00 h, on average. Surveys were performed by three people, walking around the lagoon, and with the aid of cameras and binoculars.

Following our observation of an individual of the Marbled Godwit, we utilised eBird (2024) and iNaturalistMX (2024) platforms to compile other presence records of the species in the Mexican mainland. We considered only records that contained photographs and that occurred more than 100 km from the coast. We eliminated duplicated and imprecise records, i.e. those with a doubtful taxonomic determination.

Results

On 27 August 2023 at 06:59 h, we observed a single individual of the Marbled Godwit at a distance of approximately 50 m, in Salinas Lagoon (Figure 2), at a latitude of 22.6334682597, a longitude of -101.7200359087 and an altitude of 2069 m a.s.l. The species was distinguished by its large size and long bill, with a pinkish base that got darker and slightly upwardly curved at the tip (eBird 2024). The individual had predominantly brown feathers and considerably long legs. The photograph of this individual was registered in the digital ornithological collection of the Museum Alfonso L. Herrera, at the Universidad Nacional Autónoma de México, in Mexico City, under the voucher number FV-04220. The individual was observed resting in this semi-permanent, salty lagoon (Figure 2), and was present with other species, such as the Black-necked Stilt (*Himantopus mexicanus*) and the American Avocet (*Recurvirostra americana*).

Using the eBird (2024) and iNaturalistMX (2024) electronic databases, we compiled a total of 39 continental records of the Marbled Godwit in 10 Mexican states for the 2014-2024 period. These continental records were restricted to the centre-north of the country, with Mexico City and the State of Mexico having the southernmost mainland records (Figure 3). Similarly, of the 39 records, 25 occurred in the months of October to February (64.1%), and 14 from March to September



Figure 3. Presence records of the Marbled Godwit (*Limosa fedoa*) in mainland Mexico for the 2014-2024 period. Data retrieved from eBird (2024) and iNaturalistMX (2024).

(35.9%). More specifically, the month of November registered most of the mainland sightings ($n = 9$ sightings; 23.1%). Other months with a considerable number of sightings were February and July, with five each (12.8%), as well as August, September and December with four each (10.3%). Therefore, most of the mainland sightings were concentrated in late autumn-winter (November-February), as well as mid and late summer (July-September), which could coincide with the period in which the species migrates. The closest records to the present study were two records located in El Palote Dam, municipality of León, in the state of Guanajuato (iNaturalistMX 2024), 160 km southwards of the present record in straight line (Figure 3). Almost all mainland records of the species were associated with a natural body of water.

Discussion

Our observation represents the first record of a Marbled Godwit in the Potosino-Zacatecano

Plateau, San Luis Potosí, in the centre of mainland Mexico, and may be the result of early migration by some individuals. The potential winter distribution of the Marbled Godwit in Mexico occurs mainly on the Pacific coast, in the states of Baja California, Baja California Sur, Sonora, Sinaloa and Nayarit (Navarro-Sigüenza & Peterson 2007). As for the Gulf of Mexico, the coasts of Tamaulipas, Veracruz, and Tabasco have ecological suitability for the species (Olson 2011). This suitability increases in the Yucatán Peninsula, showing western Campeche and northern Yucatán and Quintana Roo states as potential areas of distribution (iNaturalistMX 2024). Moreover, even though the easternmost tip of San Luis Potosí state has potential for presence of this species (Ramírez-Bastida & Navarro-Sigüenza 2013), our record in the Potosino-Zacatecano Plateau is located at the opposite end of the state, where there are no records, and that is not considered within the potential distribution of the species (Ramírez-Bastida & Navarro-Sigüenza 2013).

Notably, our record of the Marbled Godwit in Salinas Lagoon occurred in the summer month of August, whereas the majority of records in the continental mainland were reported for the winter months. Mendoza & Carmona (2013) registered maximum number of individuals in October, although their focus was on the coastal state of Baja California Sur. Furthermore, the fact that the present, and other mainland records, were all associated with natural waterbodies demonstrates that this species, as with other birds of the Mexican highlands (Sigala-Meza et al. 2022), depends on waterbodies of natural origin. This underlines the relevance of mainland waterbodies in Mexican arid and semi-arid zones, since they facilitate the transit of avian species from one coast to the other (Palacio-Núñez et al. 2008). Indeed, these wetlands act as supply and resting areas that enhance genetic exchange among individuals of different populations. Therefore, the degradation or elimination of these habitats would reduce the survival opportunities of the species during migration (Bortels et al. 2011).

Unfortunately, the urbanisation process, the exploitation of aquifers and climate change bring about severe threats for these waterbodies, causing water quality reduction, or even the disappearance of these oasis of water in an arid landscape. In fact, a loss of water of around 1.44% has been reported in waterbodies in San Luis Potosí (CONABIO 2019), which puts at risk the survival of aquatic bird species. In our study area, the consequence of a shrinking Salinas Lagoon can be even more devastating for species that require water-bodies of high salinity. This is the case of the Snowy Plover (*Charadrius alexandrinus*), which has been reported to breed in Salinas Lagoon (Luévano et al. 2010).

Consequently, Salinas Lagoon has an evident relevance for the survival and migration of birds at different periods of the year. However, the site is not protected, and as a result waste water dumping and soil degradation occur in the area, which could put at risk the quality of water in this lagoon. Therefore, we propose establishing protection of the lagoon, initially at a municipal level, and encourage further studies to support a greater degree of protection in the future. Thus, the lagoon would act as a priority area exclusively used by wildlife, which could minimize anthropogenic activities, and promote the conservation of biodiversity in this small yet extremely valuable wetland.

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