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A new breeding site for the Greater Flamingo *Phoenicopterus roseus* in Algeria

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Abstract

After two failed nesting attempts in 2007 and 2008, the Greater Flamingo managed to breed successfully at El Goléa in March-April, 2009, in the heart of the Algerian Sahara. A total of 70 pairs nested and 23 chicks fledged. This is the second Algerian site to host a Greater Flamingo breeding colony after the first recorded reproduction at Ezzemoul in 2005. Two of the breeding birds at El Goléa were ringed at Ezzemoul in 2006, suggesting that the establishment of the new colony may owe much to the successful reproduction of the older and larger colony located in the Algerian Hauts Plateaux. Eight chicks were banded as part of a study focused on factors influencing dispersal and recruitment of flamingos in the region.

Résumé

Après deux tentatives infructueuses de nidification en 2007 et 2008, le Flamant rose a réussi à se reproduire à El Goléa, au cœur du Sahara algérien. Un total de 70 couples a niché et 23 poussins ont réussi leur envol. El Goléa est le deuxième site algérien de reproduction du Flamant rose et sa découverte est le prolongement de la première reproduction documentée à Ezzemoul en 2005. Deux flamants roses nicheurs à El Goléa provenaient de la colonie d'Ezzemoul où ils ont été

bagués en 2006. Ce lien suggère un rôle potentiel de la colonie des Hauts Plateaux, plus importante en effectif et beaucoup plus ancienne, dans l'édification de nouvelles colonies, d'effectifs plus réduits, dans la région. Huit poussins ont été bagués dans le cadre de l'étude de la métapopulation régionale de flamants roses.

Introduction

Following several decades of successful breeding in the Camargue, France and at Fuente de Piedra in Spain, the Greater Flamingo, *Phoenicopterus roseus*, successfully expanded its range in southern Europe with new colonies in Spain, Italy and Turkey (Johnson and Cézilly 2007, Baccetti *et al.* 2008). Although exchanges between southern Europe and North Africa have long been known, suggesting the existence of a Greater Flamingo metapopulation in the western Mediterranean, much less is known about the role of North African breeding colonies. North African wetlands were previously believed to play a dual role as wintering quarters and act as a "kindergarten" for all European colonies (Smart *et al.* 2009). The study of North African colonies is expected to shed a new light on the dynamics of the Greater Flamingo western Mediterranean metapopulation (Balkiz *et al.* 2007).

Study area

The El Goléa salt lake (30°31.778'N, 2°56.201'E) is sandwiched between the Grand Erg Oriental in the east and the Grand Erg Occidental in the west. The site is made up of two parts: 1. An upper basin with brackish water mixed with sewage and irrigation waters from the oasis of El Goléa. The vegetation is dominated by *Phragmites australis*, *Typha angustifolia*, *Juncus acutus* and *Limoniastrum guyogonium* on the dunes surrounding the basin. 2. A lower basin with saline water and devoid of vegetation. Islets dot the salt lake supporting scattered salt-cedar trees *Tamarix* sp.

Methods

Since 2002, an ornithological survey of Algerian wetlands has been carried out to monitor breeding colonies (Samraoui and Samraoui, 2008). Recorded colonies are closely monitored to prevent disturbance and guarded to prevent vandalism, especially egg pilfering. Once hatching is under way, Darvic leg bands are read using a mobile hide (Boulkhsaim *et al.* 2006).

Results

In the second half of February 2009, a flock of 200 Greater Flamingos gathered and started displaying close to a sandy islet. They soon started nest building and egg-laying apparently started in early March, as the first chick aged 2-3 days was recorded on 8 April. The colony split into two distinct nuclei within the same islet (Figure 1). Although the display continued and the birds were seen incubating, no chicks hatched within the second nucleus. At least two nests were recorded containing two eggs and on one occasion two chicks hatched in the same nest. A good supply of the large branchiopod *Artemia salina* and dipteran larvae allowed the birds to feed mainly *in situ* with very few departing and incoming flights.



Figure 1. A view of the El Goléa colony (nucleus 1).

In May, the water level started to decline markedly and by the end of the month the area between the islet and the shore was dry. Three jackals *Canus aureus* took advantage of the land bridge and reached the colony at night. Following this raid, the flamingos deserted the islet and 40 eggs were left behind. An inspection of the colony revealed 70 nests and two corpses of chicks aged less than 5 days. A total of 23 chicks managed to flee to an area which was still holding water (Figure 2). Two Greater Flamingos banded as chicks at Ezzemoul in 2006 were recorded breeding for the first time at El Goléa in 2009. One was recorded with a chick not far from the colony whereas the second one was last seen incubating an egg.



Figure 2. Adults with chicks after they took refuge in the deeper part of the sebkha.

On 17 June, 30 volunteers herded the small crèche towards a corral. The crèche broke into two groups which made the task of steering the chicks in the right direction a difficult one. To our surprise, two of the chicks were able to fly a short distance. We managed to capture and band eight chicks. Care was taken to avoid injuries and all chicks were safely released. We monitored the crèche which quickly regrouped once the banding operation was over.

Discussion

El Goléa is the second confirmed Greater Flamingo breeding site in Algeria (Samraoui *et al.* 2009) and the successful outcome in the Sahara is due in no small part to the protective measures taken to ensure breeding sanctuaries for the Greater Flamingo in the region (Samraoui *et al.* 2009). Disturbance, whether by man or natural predators, remains the major obstacle to reproduction of the species in North Africa.

The Greater Flamingo has long been known to be present in the Sahara (Laferrère 1966), and the successful establishment of a Greater Flamingo breeding site in the Sahara (Bouzid *et al.* 2009) might lend support to the hypothesis of a link between West African and Mediterranean populations via a direct Saharan route. A record of a Greater Flamingo in Mali, 900 km inland from the Atlantic coast (Johnson and Cézilly 2007) might be an important clue to an undocumented flyway. Another hypothecated flamingo flyway is along the Saharan Atlas, at the edge of the Sahara, with movements from the Atlantic coast in southern Morocco to the eastern Algerian and Tunisian salt lakes (Johnson and Cézilly 2007).

The record of two breeding birds at El Goléa banded as chicks in 2006 in the Algerian Hauts Plateaux and the absence of a similar finding at Ezzemoul in 2009 supports the idea of newly sexually mature birds finding it easier to breed at newly established colonies, thus avoiding mature and more assertive individuals in older, larger colonies. This despotic pattern of breeding birds has been shown to be adopted by the Greater Flamingo (Rendon *et al.* 2001). Likewise, the finding highlights the role of Ezzemoul acting as a source in the establishment of new colonies in the region.

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