



Figure 1. Breeding colony of the Greater Flamingo at Odiel Marshes, July 2008 (A. Garrido)

References

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Two new Greater Flamingo (*Phoenicopterus roseus*) breeding sites in Italy

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The steady increase and expansion of the Mediterranean Greater Flamingo population over the last two decades has implied the regular establishment of new colonies (Johnson and Cézilly 2007). However, the number of sites that have hosted successful breeding events is still relatively low in comparison to other colonial waterbirds (24 sites, not all regularly occupied: Johnson and Cézilly 2007, Boulkhsaïm *et al.* 2006, Azafaf *et al.* 2007). Breeding attempts, or 'false-breeding' (Johnson and Cézilly 2007), has occurred at a much larger number of sites.

The first Italian Greater Flamingo chicks were hatched in Sardinia in 1993, and very shortly thereafter the birds established new colonies in central and southern Italy (Orbetello, Tuscany in 1994 and Margherita di Savoia, Apulia in 1996: Johnson and Cézilly 2007, and references therein). In 2000 a new colony at Comacchio salt pans, on the edge of the present-day Po Delta in northern Italy, began producing young. Some of the initial breeding birds were individually marked birds that apparently relocated from the colonies at Orbetello and the Diaccia Botrona marshes 44 km to the north of Orbetello, following several years of breeding failures. Following an eight-year hiatus, two new colonies were established in 2008.

Lagoon of Venice, in north-eastern Italy, is one of the largest coastal lagoons of the Mediterranean (>50,000 ha), and one of the very few in the region to be affected by remarkable tidal movements (Smart and Vinals 2004). In the past, approximately 9,000 ha were dammed and traditionally have been managed as large fishponds and/or private hunting areas ('valli'). In the northernmost of them (Valle Dragojesolo, 1,200 ha), Greater Flamingos attempted breeding and laid eggs in spring 2007, but they abandoned the site following shooting and disturbance allegedly aimed at cormorant scaring.

A colony was again reported in May 2008, on an islet within a remote part of Valle Dogà (1,980 ha, the largest of all the Venetian valli). The new site (45.34°N, 12.33°E) was about five kilometres from the 2007 colony. The local property owners and managers allowed some mild form of monitoring and eventually even ringing. Two newly-hatched chicks and at least three eggs were observed from a distance on 30 April, among 50-60 apparently breeding adults. The estimated onset of egg-laying, 31 March, would therefore precisely match observations at the nearest large colony (Comacchio, G. Arveda pers. comm.).

On 27 May, about 45 nest mounds were counted on an islet of about 80 m² (area actually covered by nests: 50 m²), while a small crèche of 22 young chicks was present nearby. On 7 July, a new count of the empty nest mounds showed they had increased to 173 (Figure 1). On 17 July a team attempted to ring the chicks, but were successful in ringing only seven, as the remainder were already capable of flying. All 22 chicks fledged, but it is not known how many survived after a strong hailstorm that hit this area on the night of 24-25 August. This caused at least 100 casualties, within a flock that by then had increased to about 2,000 individuals and included several marked juveniles coming from other colonies. Among adults observed on the Venice colony site during April, May and June we recorded nine individuals ringed as chicks at Comacchio, three from the Camargue and just one from Sardinia, all aged two to five years (mean 3.4).



Figure 1. Nest mounds of Valle Dogà colony on 7 July 2008 (Photo D. Cester).

Diaccia Botrona, in central Italy (42.46°N, 10.55' E) is a natural coastal wetland of c. 800 ha. It has been a Ramsar site since 1991. A steady lowering of the groundwater level and continuous release of saline water from nearby fish farm pumps has turned this site from a reed bed into an open salt marsh. Here Greater Flamingos have repeatedly attempted to breed, especially in the years 1997-1999, but always failed due to regular drying up of the marshes in May or June. The colonies were never closely monitored and it is not known whether laying ever occurred.

Extraordinary rains between 13 May and 17 June 2008 (more than twice the average of the last decade for both May and June) prompted us to visit the area on 23 May, after 80 mm of rain had fallen in five days. A total of 800 Greater Flamingos were counted, of which about 200 were densely packed on two distinct breeding spots 60 m apart. A closer approach was only possible on 1 August, when two groups of 70 and 10 empty nests were counted. Only two chicks, about 40 days old, were present. Their apparent age suggested a laying date around 20 May, *i.e.* 6 weeks after laying had started at the nearest colony (Comacchio, see above) and just one week after heavy rains had begun. Quite remarkably, not all nests were placed on islets or emergent soil, although these were available. Many had been built directly on the lagoon bottom in the shallows (Figure 2), on a deep and sticky layer of mud which had probably prevented wild boars from raiding the colony. No monitoring of marked breeders was possible, despite additional visits on 4, 9 and 12 August. Both chicks were observed again on these dates.

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Figure 2. One of the two groups of nests at Diaccia Botrona, with nest mounds directly emerging from the lagoon bottom as a possible anti-predatory adaptation (Photo L. Puglisi).

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