

# Notes on the breeding biology of the Kentish Plover in the Nile Delta

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## INTRODUCTION

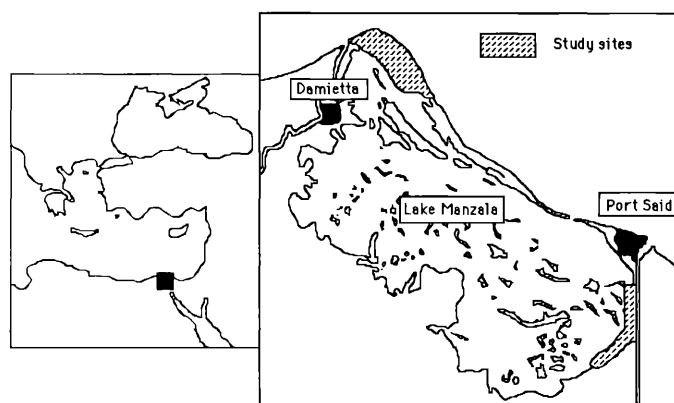
In winter 1989/90 and spring 1990, an extensive ornithological project was carried out to assess the carrying capacity of Egyptian wetlands (Meininger *et al.* 1991; Meininger & Atta in prep.). As a side activity during the surveys of Lake Manzala in spring 1990, data were collected on breeding Kentish Plovers *haradrius alexandrinus*. Northern Egypt is an important breeding area for Kentish Plovers, with probably over 1,000 pairs in the Nile Delta lakes (Meininger *et al.* 1986) (the largest concentrations in Lake Manzala) and about 1,900 pairs in Lake Bardawil (Dunnet *et al.* 1986). In the areas of Lake Manzala studied in 1990 approximately 100 pairs were breeding. Because little information is available on the breeding biology of the Kentish Plover for the Mediterranean region (Bannerman & Bannerman 1971, 1983; Brosset 1961; Lessells 1984), and especially for the south-eastern corner, these observations may increase the knowledge of this species. They are also a contribution to the Wader Study Group Kentish Plover Project (Jönsson *et al.* 1990).

## STUDY SITES

Data were collected along Lake Manzala (c. 31°15' N, 32°00' E), in the north-eastern part of the Nile Delta, Egypt. The first site is on the eastern shore of the lake, along the road from Ismailiya to Port Said. Kentish Plovers bred in disused salt pans converted into fish farms. The second site, the most important for Kentish Plovers on the northern shore of the lake, is in a complex of ancient lagoons and salt pans bordering the Mediterranean, east of the Damietta lighthouse. The latter site was a military area with restricted access.

## METHODS

Observations were made on 23 April, from 30 April to 11 May and from 18 to 25 May. Systematic nest searches were not made because they were too time



Study area

consuming, and when nests were found the incubation stage of the eggs was not checked. In contrast, adults were systematically watched to determine whether and how many chicks they accompanied. Where possible, at least one chick from any brood was captured, measured (tarsus with calipers in mm), weighed (with a spring balance to the nearest g) and ringed. Weight can be used to make an accurate estimate of chick age (Pineau in prep.). If no chicks were caught, the age of broods was estimated from their plumage development (Lessells 1984). Laying dates were then estimated assuming a 30-day egg laying/incubation period (Cramp & Simmons 1983).

## RESULTS AND DISCUSSION

### Hatching dates

Fifty-one Kentish Plover broods were found between 23 April and 25 May and at least one chick caught from 43 of these broods. The estimated hatching dates of these broods are shown in Figure 1. The earliest estimated



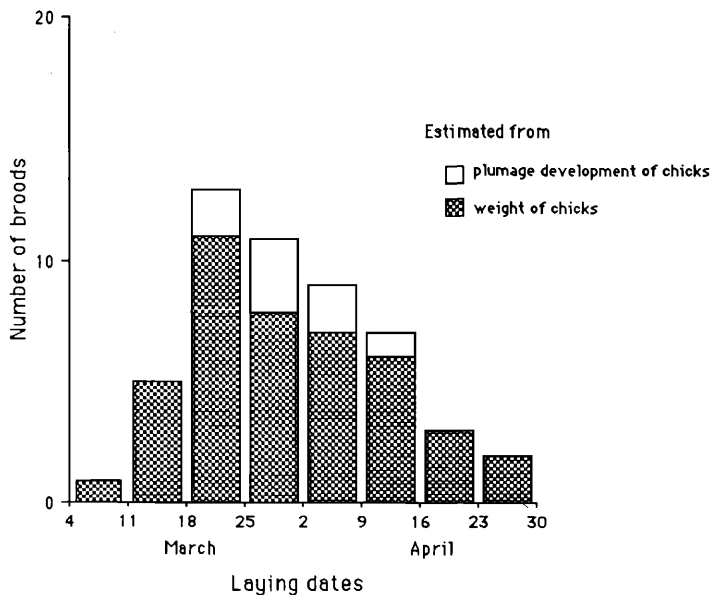


Figure 1. Hatching dates of Kentish Plover chicks found in the Nile Delta, Egypt, between 23 April and 23 May 1990.

hatching date was 7 April. These chicks were already more than two weeks old at the start of the study period. Because broods of this age tend to be spread out, it is possible that families with older chicks were missed, and hence that laying started earlier than the beginning of March.

The claim of Urban *et al.* (1986) that the laying period of Kentish Plover in Egypt covers only March and April is surprising for a bird that regularly produces second and/or replacement clutches (Cramp & Simmons 1983). The decrease in the number of broods hatching during the second part of May in the present study site is more likely the result of a lack of time spent searching for chicks rather than the end of the breeding season. In Iraq (Marchant 1963) and Mediterranean areas such as southern France (Blondel & Isemann 1981), the Balearics (Bannerman & Bannerman 1983) and eastern Morocco (Brosset 1961), breeding continues until early July and August.

### Breeding success

Breeding success could only be estimated for the period post-hatching. An unknown proportion of pairs failed during incubation. However, egg collecting does not seem to be a common practice in this part of the Delta, in contrast to Lake Bardawil where it is said to be a widespread habit (Mullié 1989).

Brood size varied with both hatching date and chick age (Table 1).

Table 1. Size of Kentish Plover brood observed in the Nile Delta, Egypt, between 23 April and 25 May 1990 (Brood size in parentheses).

Hatching dates	Brood sizes			
	1 week old	2 weeks old	3 weeks old	4 weeks old
1-7 April				(1) x 1
8-14 April			(2) x 1	(1) x 1 (2) x 2 (3) x 1
15-21 April		(1) x 1 (2) x 2	(1) x 4 (2) x 4 (3) x 1 mean 1.66 n=9	(2) x 1
22-28 April	(1) x 3 (2) x 1 (3) x 2 mean 1.83 n=6	(1) x 2 (2) x 1 (3) x 1 mean 1.75 n=4		
29 April-5 May	(1) x 1 (2) x 2 (3) x 1 mean 2.0 n=4	(1) x 2 (2) x 2 (3) x 1 mean 1.8 n=5		
6-12 May	(2) x 4 (3) x 2 mean 2.33 n=6			
13-19 May	(2) x 1 (3) x 1			
20-23 May	(1) x 1 (3) x 1			
Total	mean: 2.10 s.d.: 0.78 n: 20	1.75 0.75 12	1.70 0.67 10	1.83 0.75 6

Because of the small sample size, statistical analysis is inconclusive, but two trends can be suggested:

- ◆ there is a slight increase in brood size with time of breeding;
- ◆ there is not a pronounced decrease in brood size with chicks age (Newman-Keuls,  $F=0.893$ ,  $p>0.05$ ), implying that chick mortality is low during this rearing period.

Brood size close to fledging (mean 1.83,  $n=6$ ) is similar to that observed elsewhere, at sites where there is much destruction and disturbance of nests and chicks by man (Southern France: mean 1.84,  $n=45$ , pers. obs.; California, USA: mean 1.64,  $n=21$ , Page *et al.* 1983; NW-Europe: mean 1.5-2.0, Rittinghaus 1975).



With little human disturbance (military area) and few natural predators (there are no corvids and few mammalian predators except Red Fox *Vulpes vulpes* and Swamp Cat *Felis chaus* (Maininger & Sørensen in prep.), only adverse weather could be responsible for this relatively low fledging success.

## CONCLUSION

The start of the Kentish Plover breeding season in northern Egypt has been determined but its length is not yet known. No information on success was obtained during the incubation period but fledging success is no better than elsewhere where chicks have to face additional hazards. Possible threats to this population include hunting (an estimated 1,750-1,850 Kentish Plovers are shot annually in Lake Manzala, Mullié 1989) especially if the breeding population is the main target, and habitat loss due to land claim (agriculture and fish-farming) (Meininger & Mullié 1981) and coastal erosion (Sestini 1991).

## ACKNOWLEDGEMENTS

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