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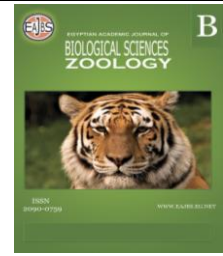


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First Record of Crab Plover (*Dromas ardeola*) Nesting in Egypt

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ABSTRACT

The present work aimed to investigate the status of Crab Plover (*Dromas ardeola*) population in Egypt, especially the nesting area. During the period from 2011 to 2019, several trips over the Egyptian Red Sea coast and islands for recording the crab plover population and searching for their nests were performed. The results showed that the estimated numbers of *D. ardeola* population in Egypt fluctuated from 130 individuals in 2019 to 1200 individuals in 2018. Fifty nests were observed for the first time in Elba National Park in June 2016. The numbers of nests increased in the next two years then declined to 50 nests in 2019.

INTRODUCTION

The Crab Plovers breed in colonies, from April to August, and lay a single, large egg in a self-excavated burrow in a flat sandbank (Morris, 1992; Hockey, 1995; Rands, 1996). The nests of Crab Plovers were discovered to be underground (Von Heuglin, 1861, 1867, 1873). Tayefeh *et al.* (2013) illustrated that in the Arabian Gulf, Crab Plovers breed on offshore islands along the northern coast of the Arabian Peninsula including the United Arab Emirates with 1,400-1,500 pairs (Javed *et al.*, 2012), Masirah Island in Oman, and Kuwait, and also on islands in the northern part of the Arabian Gulf in the south of Iran (Cramp *et al.*, 1983; Scott, 2007; Behrouzi-Rad and Behrouzi-Rad, 2010; Tayefeh *et al.*, 2011).

Almalki *et al.* (2014) illustrated that Crab Plover breeding sites are restricted to islands around the Arabian Peninsula, although it probably also breeds in Western India, in the Laccadive Islands and the Maldives (Delany *et al.*, 2009). Jennings (2010) reported about 4000 pairs of Crab Plover breeding in approximately 20 colonies around the Arabian Peninsula, mostly in Kuwait, the United Arab Emirates, Oman, Yemen and Saudi Arabia. In recent years, 30 Crab Plover colonies have been discovered in Eritrea (De Marchi *et al.*, 2006). In addition, four colonies of Crab Plover were reported from Iran (Tayefeh, *et al.*, 2011). Breeding has also been recorded in Sudan and on islets off Northern Somalia (Shobrak, *et al.*, 2002; Delany *et al.*, 2009).

Although Elba Protectorate is a northeast afrotropical region in Egypt (Abdelhafz *et al.*, 2016) there has been an increase in observations of Crab Plovers in the Egyptian Red Sea, while there are no confirmed breeding records in Egypt (Baha El Din *et al.*, 2003). Baha El

Din (2000) concluded that Crab Plover is likely to be breeding in Hamata Archipelago, but this is not confirmed yet. Therefore, the present work aimed to investigate the status of Crab Plover (*Dromas ardeola*) population in Egypt, especially the nesting area. During the period from 2011 to 2019. The primary results of this study were published in 2019 as a poster. The present study aimed to confirm the probability of being Crab Plover as a breeding species in Egypt.

MATERIALS AND METHODS

The Red Sea coastline and islands of Egypt were divided into five sectors (Fig. 1). During the period from 2011 to 2019, several trips were performed to survey the Crab Plover population in these sectors. Investigation of birds was done throughout six months, from April to September. Binocular (Nikon 10×50), Telescope (Poshnel 43X), and Camera (Nikon 5300, Lens 70-300 Tamron) were used to investigate and photograph the Crab Plover population and nests. Microsoft Excel (Office 2010) was used to summarize and present the recorded data.

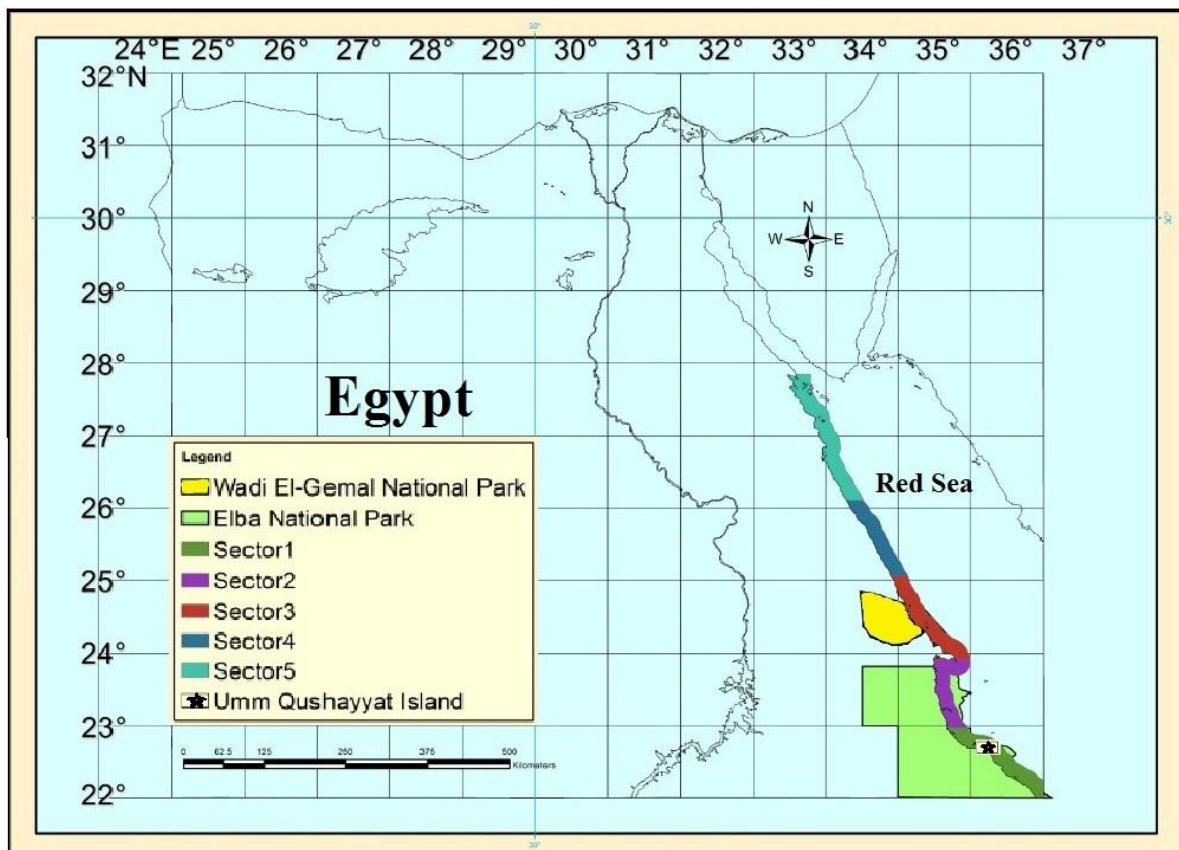


Fig. 1. Egypt map shows the investigated five sectors of investigation at the Red Sea coast and islands.

RESULTS

The present results indicated that the Egyptian population of Crab Plover *Dromas ardeola* annually fluctuated (Fig. 2). The estimated numbers of *D. ardeola* population in Egypt fluctuated from 130 individuals in 2019 to 1200 individuals in 2018. A colony of 50 nests was observed for the first time at Umm Qushayyat Island in Elba national park in June 2016 (Fig. 3). The numbers of nests increased in the next two years then declined to be 50

nests in 2019. The size of the colonies observed during the breeding seasons in 2016, 2017, 2018 and 2019 were 50, 100, 150 and 50 nests, respectively. It was observed that the bird frequently digs the new nests neighboring to the area used before (Fig. 2).

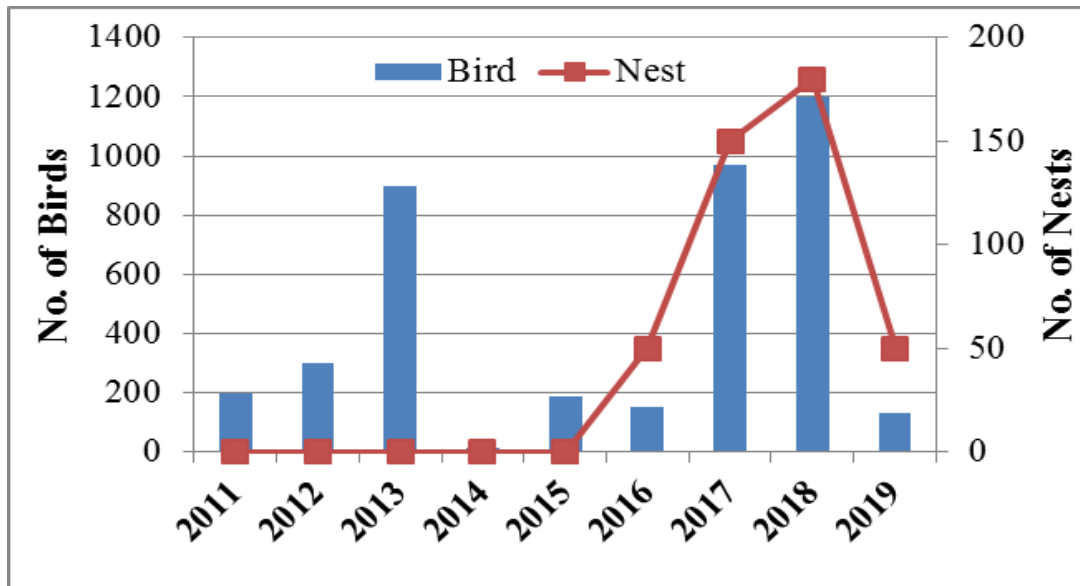


Fig.2. Annually fluctuations of *D. ardeola* estimating bird and nest numbers.

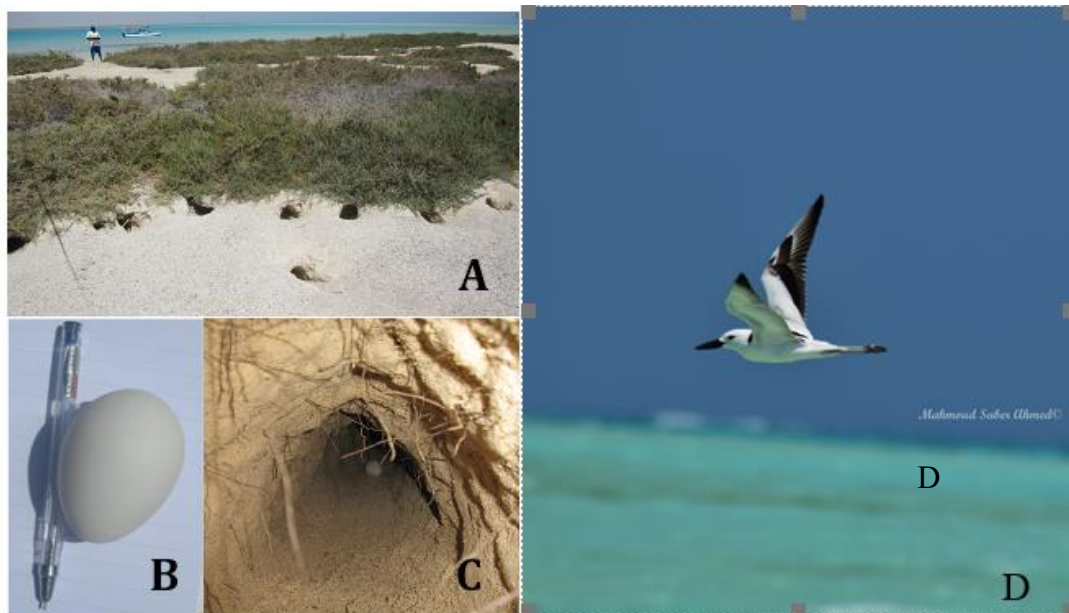


Fig.3. Photographs show crab plover *D. ardeola* (A) nesting colony, (B) egg , (C) amplified nest and (D) Crab plover during flying.

Figure (4) shows the monthly fluctuations of Crab Plover observation in Egypt during the period of study. Generally, from 2011 to 2015 the bird observations were declined from June to August then returned to increase. While from 2016 to 2019, the birds were observed through all investigated months and in relatively high numbers during July and August in comparison with previous years.

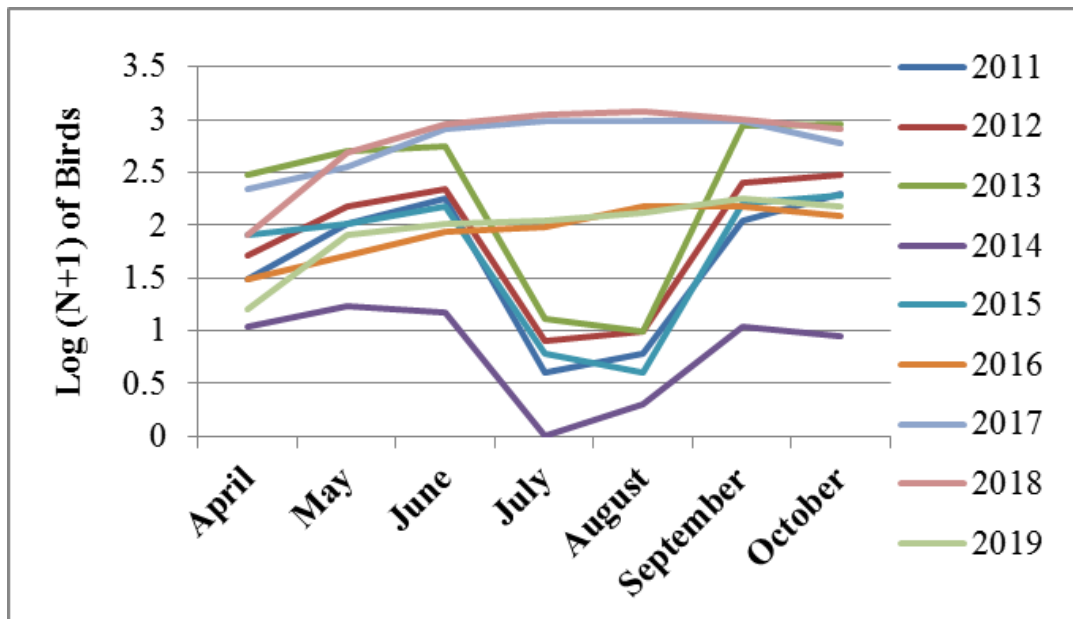


Fig. 4. Monthly fluctuations of crab plover *Dromas ardeola* population. Data represented as Log (N+1).

DISCUSSION

Baha El Din, (2000) illustrated that Crab Plover is a rare and localized migrant and a possible breeder bird in Egypt. He observed Crab Plover population at the intertidal flats surrounding the southern margin of the Hamata Mangrove, Wadi el-Gemal Island and around Shalateen. Also, he spotted the chicks of crab plover during summer in the regions. The current study recorded that Crab Plover nesting for the first time in Egypt in 2016 on the Island of (Umm Qushayyat).

The nesting area (Umm Qushayyat Island, Elba National park) was a suitable site for nesting since it is isolated from the Sea coast. This isolation prevents natural enemies such as dogs, rodent, foxes, and cats from reaching nests. Umm Qushayyat is a small Sandy Island characterized by salt plants and located in a mudflat area. Shallow mudflat areas are one of the best environments for crabs, which are considered the main food source of Crab Plover. Previous studies illustrated that mudflat area is a specific nesting habitat requirement for Crab Plover (Hockey and Aspinall, 1996, 1997, De Marchi *et al.*, 2006, 2015; Soni and Bhuva, 2007). This result confirms the importance of Elba National Park for sea birds nesting as they provide a suitable and protected breeding site for Crab Plover and other Species.

The recorded breeding colony of *D. ardeola* at Umm Qusayyat Island shows a number of tunnels more than crab plover couples. This may be related to that Crab Plover make new tunnels every new breeding season near old one and never using old tunnels (De Marchi *et al.*, 2006; Tayefeh *et al.*, 2013). The present result indicated that the population size of *D. ardeola* is relatively higher than the related recognized breeding colony. It may refer to another nesting area not discovered yet.

The present results show that the *D. ardeola* population and nests fluctuated annually in Egypt. Many reasons may interpret these fluctuations; such as flooding risk, eggs collection, risk of predation, solar incubation and competition on the feeding ground (Hockey and Aspinall, 1997; De Marchi *et al.*, 2015). The indirect effect of food competition of Crab Plover and other eating crab birds can be considered one of the main reasons for Crab Plover fluctuations.

In the present study, Crab Plover nests were not noted before 2016 during July and August. This result indicates that Crab Plover is a summer visitor as mentioned by Baha El Din (2000). After discovering the breeding colony, the population size of Crab Plover increased during the summer months. Summer breeding of Crab Plover is synchronized with the availability of food items, as hypothesized for this species by De Marchi *et al.* (2015).

Conclusion

Crab Plover was concerned as summer visitors till this study which confirmed for the first time that they are breeding at Umm Qushayyat Island, Elba National park. It may be there are other breeding areas in Egypt that need more studies.

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