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The first reproductive attempt of the Glossy Ibis *Plegadis falcinellus* in western Algeria

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Abstract. The Glossy Ibis, *Plegadis falcinellus,* is one of the important waterbirds in the study of environmental changes. In Algeria, it nests in a certain area in the northeast of the Numidia complex wetlands. On June 15, 2023, we spotted one couple of the Glossy Ibis next to its nest with one egg in a mixed colony where there are several species of herons (*Ardea cinerea*, *Nycticorax nycticorax*, *Ardeola ralloides*, and *Egretta garzetta*). This breeding is considered the first attempt in western Algeria at Bougara Wetland, Tissemsilt.

Keywords: *Plegadis falcinellus,* Glossy Ibis, breeding, wetland, Algeria.

There are thirty species of ibis in the family Threskiornithidae, found on most continents of the world (Gill et al. 2023). The Glossy Ibis (*Plegadis falcinellus*) has a cosmopolitan distribution and inhabits Africa, Eurasia, Australia, and North, Central, and South America. In the Palearctic, it has a discontinuous geographical distribution area (Cramp & Simmons 1977). Known as a trans-Saharan migrant capable of long-distance flights, its dispersal remains poorly known (Samraoui et al. 2023). In Algeria, we have two species: the Northern Bald Ibis *Geronticus eremita*, which is extremely rare; the last sighting was in the 1980s, and the Glossy Ibis *Plegadis falcinellus*, which is very frequent during migrations, especially in the east and, in small numbers, in the north and desert regions (Ledant et al. 1981, Isenmann & Moali 2000). The last cases of nesting were reported in Algeria in 1858 and 1860 at Lake Halloula in the Mitidja and at Lake Fetzara near Annaba. Since 1999, 2000, and until today, several successful reproductions have been recorded in many wetlands of the Numidia complex (northeast of Algeria) (Samraoui & Samraoui 2008, Belhadj et al. 2007, Boucheker et al. 2009, Samraoui et al. 2011, Touati et al. 2015, Boudraa et al. 2015, Nedjah et al. 2019).

Bougara Dam is an artificial permanent wetland in the northeast of Algeria, located south of Tissemsilt. It is one of the most diverse wetlands in the region; its creation dates from 1989 (35°34'11.03"N; 1°54'3.57"E), spread over an area of more than 500 ha and fed mainly by the waters of the wadis (Nahr Ouassel and Boukaala) (Chedad, pers. obs.). The water depth in the wetland reaches up to 2.5 m. The dominant aquatic plant species include *Phragmites communis*, *Typha angustifolia*, *Tamarix gallica,* and other important spontaneous plants such as *Galactites tomentosa*, *Cirsium vulgare*, *Lobularia mantor*, *Silène fuscata*, *Brassica nigra*, *Melilotus officinalis*, etc. (Meziane et al. 2022).

In this wetland, *Plegadis falcinellus* frequents marshy areas and lives in a mixed colony with the Grey Heron, *Ardea cinerea*, the Black-crowned Night Heron, *Nycticorax nycticorax*, the Grey Heron, *Ardea cinerea*, and the Little Egret, *Egretta garzetta*. We also have several species protected according to the IUCN red list, such as Red-crested Pochard *Netta rufina*; Marbled Duck *Marmaronetta angustirostris*; Ferruginous Duck *Aythya nyroca*; and other species protected by Algerian fiat in relation to executive Fiat 12-235 of May 24, 2012, establishing the list of protected non-domestic animal species like Ruddy Shelduck *Tadorna ferruginea*; Western Swamphen *Porphyrio porphyrio*; White Stork *Ciconia ciconia*, etc. (Figure 1, 2). This site is considered important for nesting, wintering, and essential stopovers, where Meziane et al. (2022) have spotted 62 species distributed over 17 families.

As part of monitoring the reproduction of birds, especially waterbirds, on June 15, 2023, we spotted an individual of the Glossy Ibis next to its nest with one egg in a mixed colony where there are several species of herons (*Ardea cinerea*, *Nycticorax nycticorax*, *Ardea cinerea*, and *Egretta garzetta*). The nest is installed in clump reeds at a height above the water equal to 1 m; the depth of the water can reach 1.5 m, and the height of the vegetation is 3 m. According to Heim De Balzac & Mayaud (1962), the reproduction of the Glossy Ibis in North Africa occurred late, in June and July. Recent data, however, indicate that the first egg is laid in Algeria as early as April (Belhadj et al. 2007; Boucheker et al. 2009, Boudraa et al. 2015).

In Algeria, Glossy Ibis had not bred for nearly a century, and it was not until 1998 that the species started to breed again, first at Lake Tonga (Belhadj et al. 2007) and later at four sites at Lake Fetzara, Dakhla, Chatt, and Boussedra (Boucheker et al. 2009, Samraoui et al. 2012, Touati et al. 2015, Boudraa et al. 2015). However, the nesting did not occur in the Algerian West, the Sahara, or any other region than the one mentioned earlier. This breeding is considered the first attempt in western Algeria at Bougara wetland, Tissemsilt.

All of the current breeding sites are natural wetlands and are in the north-eastern part of Algeria (Numidian wetland complex) at an altitude between 0 and 12 m in a humid bioclimatic stage, except for our study area (Bougara Dam), which is in the north-western part (Tissemsilt) in a semi-arid bioclimatic stage at an altitude of 808 m (Table 1, Figure 1).

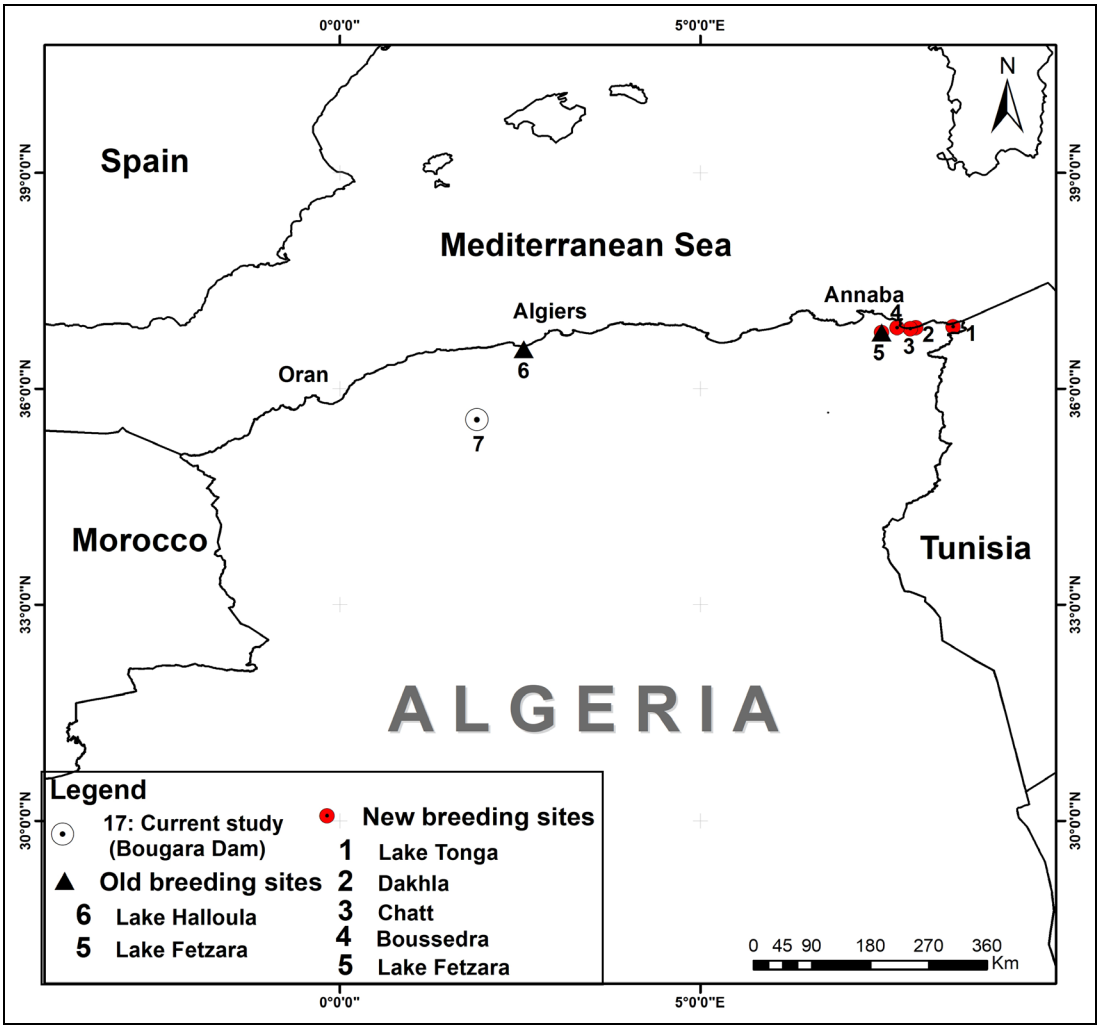

Figure 1. Distribution map of breeding sites of Glossy Ibis in Algeria

Figure 2. A: Glossy Ibis next to its nest, B: Glossy Ibis nest with one egg

A week after the discovery of this nesting, we noticed that the nest had been vandalized, probably by a raptor (Western Marsh Harrier, *Circus aeruginosus)*, which is considered a resident breeding raptor, as is the case of many nests of Heron species that have been vandalized in the same way in this area. In addition, anthropogenic stressors such as pollution, fire, illicit hunting, and egg theft threaten heron nests, as they do for many other water species (Samraoui et al. 2007, Aouadi et al. 2021, 2022, Chedad et al. 2022, Bouzid et al. 2023). Global warming is expected to

exacerbate this looming threat as drought becomes more frequent (Nedjah et al. 2019).

Finally, it should be noted that the Glossy Ibis is considered one of the most important metapopulation models in the Mediterranean (Santoro et al. 2013). The latest research shows that after the Maghreb's recolonization, its population in Algeria increased substantially and expanded rapidly across the country (Samraoui et al. 2023). Therefore, in future research, we should expand our study to determine the number of individuals that migrate through Algeria and spend the winter there, in addition to expanding research in other adjacent habitats to identify new nesting sites.

Table 1. Nesting sites of Glossy Ibis in Algeria ((*): disappeared site).

N°	Wetland	Geographic coordinates	Altitude (m)	Bioclimatic stage	Type	References
1 (*)	Lake Halloula	2°32'59.84"E 36°32'58.54"N	52	Humid	Natural	Isenmann & Moali 2000
2	Lake Tonga (El Tarf)	8°30'10.94"E 36°51'22.97"N	0	Humid	Natural	Belhadj et al. 2007 Samraoui & Samraoui 2008 Boucheker et al. 2009 Samraoui et al. 2011 Samraoui et al. 2012
3	Lake Fetzara (Annaba)	7°30'37.40"E 36°46'59.47"N	12	Humid	Natural	Isenmann & Moali 2000 Samraoui & Samraoui 2008 Boucheker et al. 2009 Samraoui et al. 2011 Samraoui et al. 2012 Touati et al. 2015
4	Dakhla (El Tarf)	7°59'15.02"E 36°50'40.03"N	4	Humid	Natural	Samraoui & Samraoui 2008 Boucheker et al. 2009 Samraoui et al. 2011 Samraoui et al. 2012
5	Chatt (El Tarf)	7°54'41.00"E 36°49'49.00"N	3	Humid	Natural	Samraoui & Samraoui 2008 Boucheker et al. 2009 Samraoui et al. 2011 Samraoui et al. 2012 Touati et al. 2015
6	Boussedra (Annaba)	7°43'38.28"E 36°50'42.36"N	6	Humid	Natural	Boudraa et al. 2015
7	Bougara Dam (Tissemsilt)	1°54'3.59"E 35°34'10.05"N	808	Semi-arid	Artificial	Current study

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