



Scholars Research Library

Annals of Biological Research, 2014, 5 (4):27-31
(<http://scholarsresearchlibrary.com/archive.html>)



Breeding ecology of water birds in Echatt (Numidia, north-eastern Algeria)

Farah Chettibi^{a*}, Meriem Aberkane^a, Khalil Draïdi^a, Badis Bakhouché^a, Lamine Guerguebe,
^bZihad Bouslama^a and Moussa Houhamdi^{ab}

^aFaculté des Sciences, Laboratoire EcoSTAQ: Ecologie des Systèmes terrestres et aquatiques, Département de Biologie, Université Badji Mokhtar, Annaba, Algérie

^bFaculté SNV-STU, Département des Sciences de la Nature et de la Vie, Université 8 Mai 1945, Guelma, Algérie

ABSTRACT

During the breeding season (2012), Echatt marsh sheltered the nesting of at least 162 couples of *Ardea ibis*, 56 couples of *Ardea purpurea*, 36 couples of *Egretta garzetta*, 4 couples of *Ixobrychus minutus*, 14 couples of *Fulica atra*, 10 couples of *Gallinula chloropus* and 1 couple of *Porphyrio porphyrio*, *Aythya nyroca*, *Anas platyrhynchos*, and *Tachybaptus ruficollis*. The laying period in Echatt marsh lasts approximately 85 days. The clutch success is very high for all the species, it exceeds the 70%.

Keywords: birds, breeding, Purple Heron, Echatt, Algeria.

INTRODUCTION

Reedbeds are important habitats for the reproduction of colonial herons such as the Purple Heron *Ardea purpurea*, Grey Heron *Ardeacinerea*, Cattle Egret *Ardea ibis*, Little Egret *Egretta garzetta*, Squacco Heron *Ardeolaralloides*, and Black-crowned Night Heron *Nycticorax nycticorax* and Glossy Ibis *Plegadis falcinellus* [1], in Algeria, as elsewhere in the Mediterranean area, they are also sanctuaries for other vulnerable species like Purple Swamphen *Porphyrio porphyrio* and Great Bittern *Botaurus stellaris* [2], some Anatidae, Podicipedidae and Rallidae. Echatt marsh shelters the nesting of many species of birds at the breeding season as: Purple Heron *Ardea purpurea*, Cattle Egret *Ardea ibis*, Brush Garzette *Egretta garzetta*, Little Grebe *Tachybaptus ruficollis*, Little Bittern *Ixobrychus minutus*, Mallard *Anas platyrhynchos*, Ferruginous Duck *Aythya nyroca*, Purple Swamphen *Porphyrio porphyrio*, Common Moorhen *Gallinula chloropus* and Common Coot *Fulica atra*, some among of these latter are threatened species in extinction and their manpower is more and more in regression because of the degradation of their reproduction sites by the commercial exploitation of the reeds, the disappearance and the modification of their habitats due to the draining of wetlands and eutrophication. To know how the characteristics of habitat affect the success of the reproduction is essential for the conservation [3]. In this study we focused to widen our knowledge on the reproduction biology of the various species nesting in Echatt marsh to guide the conservations efforts.

STUDY SITE

Echatt marsh (36°49' 49" NR, 7°54' 41" E) located at the North-East of Algeria, administratively it belongs to the commune of Ben Mhidi, wilaya of El-Taref, it is to 3 Kilometer west of the mouth of Mafraghe, extends on a surface of 2ha, the average depth is about 1.5 m, the center of the marsh is deeper (2 m) and released from any kind of emergent vegetation, this part is reserved for Ferruginous Duck *Aythya nyroca* and the Mallard *Anas platyrhynchos*. Its vegetable cover is very dense and made up mainly of willow *Salix atrocinerea*, common reed *Phragmites australis* bulrush *Scirpus lacustris*, lesser reedmace *Typha angustifolia* and yellow flag *Iris pseudoacorus*. The wetland shelters the nesting of many species classified in the red list like *Ardea purpurea* [4], *Porphyrio porphyrio*, *Aythya nyroca* and *Ixobrychus minutus*. This marsh is situated between two urban centres Sidi Me Berek and Echatt where waste water flows.

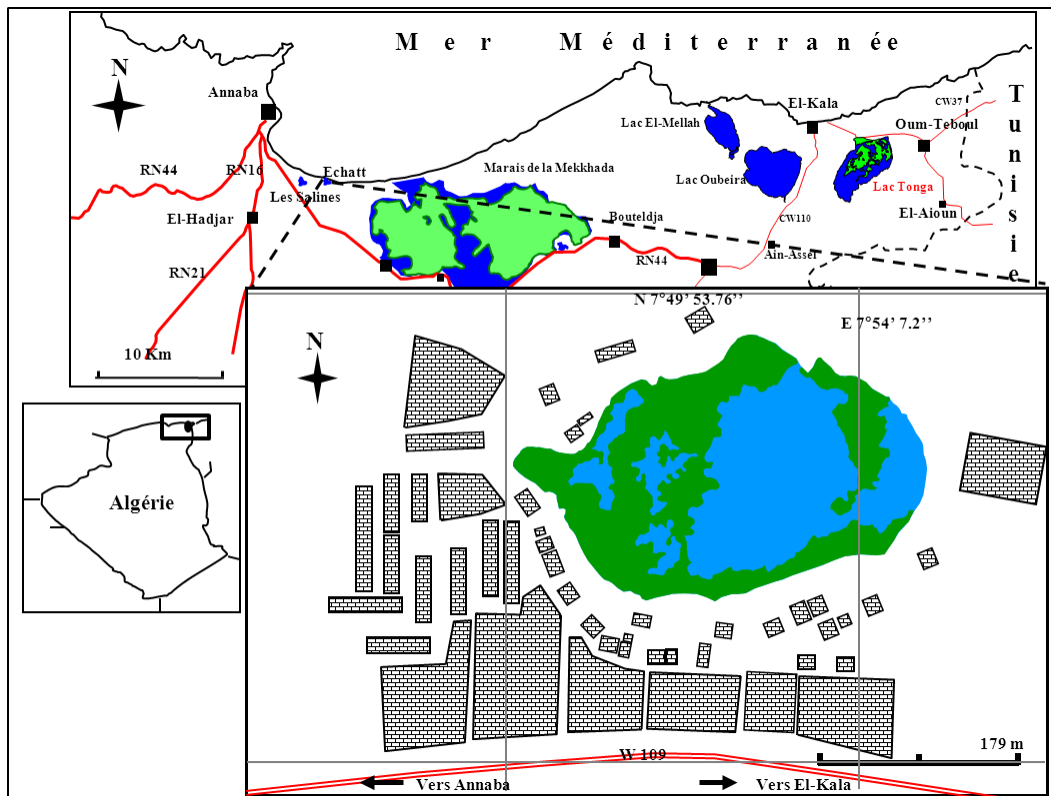


Figure 1: Location of Echatt marsh

MATERIALS AND METHODS

The breeding ecology of Birds was investigated in 2012 at Echatt marsh. Nests contents were checked minimum twice a week from early March to early August. Every nest and egg were given a number, parameters related to nests (internal and external diameters, depth, height from the water surface and vegetal support), eggs (length(L), breadth(B), and weight) was measured in the site (for lengths and breadths were measured to the nearest 0.1 mm using verniercalipers and for weight we using a balance with an accuracy of 0.1 g. Egg volumewas calculated using Harris's (1964)[5] equation: $0.476.L.B^2/1000$. Distances between nest-nest and nest-edges were estimated. Nest positions were recorded using a Global Positioning System (GPS). A nest was considered depredated if one egg or the entire contents of the nest showed signs of predation. A nest was deemed depredated by locals if it was emptied between two consecutive inspections.

RESULTS

Nest Site Utilization and Nest Characteristics

The heron colonies of Numidia are characterized of other areas colonies by their aquatic habitat and are plurispecific colonies. In Echatt marsh the Purple Heron nest in mixed colonies with the Cattle Egret, the Little Egret and the Little Bittern, in general the Purple Herons occupy the parts of the marsh where the depth is more important (mean depth is 70.46 ± 12.62 cm) and the vegetation is higher, their nests are built on tufts of Reeds *australis*, *Scirpus lacustris* and *Iris pseudacorus*, their nests are large compared to the others herons nesting in this marsh and their vital space is more important (approximately 2 m). The Cattle egret, Little Egret and Little Bittern generally use dry tufts of *Typha angustifolia* and *Phragmite australis*, their nests are very near and we found even some nests which were almost stuck. The Purple Heron, Cattle egret and the Little Egret put at the center of their nests small brushwood of Tamarix trees which surround the marsh.

For the Mallard, Ferruginous Duck, Purple Swamphen and Little Grebe their nests are built in the Northern part of the marsh, far from the Houses (this part gives on agricultural land); their nests are well hidden in tufts of *Typha angustifolia* and have a direct access to open water.

For the nests of Common moorhen and the Eurasian Coot are distributed on the totality of the marsh. Table 1 summarizes all available information on nests characteristics.



Figure 3: The Cattle Egret's nest containing three eggs, (Chettibi, 2012)



Figure 4: Chicks of the Purple Heron after hatching, (Chettibi, 2012)

Table 1: Nests characteristics of birds nesting at Echatt marsh

	External diameter	Internal diameter	Nest depth	Nest height	Number de Nids
<i>Ardea purpurea</i>	51.86±9.07	29.73±4.68	8.38±1.98	68.83±17.78	56
<i>Ardea ibis</i>	31.9±8.04	20±3.24	7.6±1.34	26±3.67	162
<i>Egretta garzetta</i>	44.5±9.09	26.5±6.6	5.5±4.94	33±8.72	36
<i>Ixobrychus minutus</i>	19.5±1.83	14.3±2.65	1.5±0.6	42.5±7.56	4
<i>Anas platyrhynchos</i>	42	23	12	0	1
<i>Aythya nyroca</i>	25	14	5	18	1
<i>Porphyrio porphyrio</i>	42	22	11	21	1
<i>Gallinula chloropus</i>	22.75±1.78	13.5±1.12	6.37±0.96	19±12.72	10
<i>Fulica atra</i>	34±9.86	18.83±1.34	6±0.81	5±2.72	14
<i>Tachybaptus ruficollis</i>	25	11	2.5	0	1

Laying Period

At the beginning of March herons start to install their nests in Echatt marsh, the first laying of the Purple Heron was recorded on March 28th. For Cattle Egret and Little Egret the first laying was noted on April 5th, for the Eurasian laying period started on early March. Coot for all the other species the laying started at the end of April.

Clutch Size

For the Cattle Egret, Little Egret and the Little Bittern the majority of the nests shelter 3eggs, with clutches ranging from one to five. The Clutch size of Purple Heron is of 4.15±1.66 egg, the nests of the Eurasian Coot and the

Common Moorhen have a clutch size respectively of 6.2 ± 1.04 egg and 7.58 ± 0.93 egg. The nest of Ferruginous Duck shelters 6 eggs, Purple Swamphen 4 eggs, Mallard 7eggs and Little Grebe 3eggs.

Egg size

Data on egg dimensions found at Echatt marsh are summarized in Table 2.

Table 2: Eggs characteristics of birds nesting at Echatt marsh

	Egg weight (g)	Egg length (mm)	Egg breadth (mm)	Egg volume (mm ³)	Number of Egg measured
<i>Ardea purpurea</i>	42.54±3.96	54.29±3.75	39.52±5.1	43.67±8.15	72
<i>Ardea ibis</i>	25.26±2.22	44.95±2.1	33.88±1.98	26.42±3.96	113
<i>Egretta garzetta</i>	22.75±0.82	44.27±1.31	33.7±0.54	25.61±1.48	19
<i>Ixobrychus minitus</i>	9.83±1.94	34.22±0.79	25.21±0.40	11.07±0.35	9
<i>Anas platyrhynchos</i>	46.91±0.37	57.26±1.42	41.57±0.97	47.09±0.82	7
<i>Aythya nyroca</i>	45.66±0.69	52.15±1.18	38.9±1.04	37.56±0.47	6
<i>Porphyrio porphyrio</i>	33.8±1.91	55.25±1.5	38.62±1.1	39.24±2.03	4
<i>Gallinula chloropus</i>	21.25±1.28	42.01±1.46	30.96±0.96	14.16±1.24	26
<i>Fulica atra</i>	36.2±2.97	52.52±1.74	35.66±0.7	31.9±1.67	42
<i>Tachybaptus ruficollis</i>	13.97±0.9	42.08±1.36	28.1±1.54	15.81±0.7	3

Breeding Success

If we take as criterion at least an egg hatched by nest, overall hatching success in Echatt during the breeding season 2012 is very important. For the Cattle Egret and the Little Egret the rate of hatching is higher 70%. For the Purple Heron, Common moorhen and the Eurasian Coot the rate of hatching exceeds the 80%. All the other nests of the Little Bittern, the Mallard, Ferruginous Duck, Purple Swamphen and Little Grebe hatched.

DISCUSSION

During the breeding season 2012, Echatt marsh sheltered the nesting of 286 couples at least, whose most important manpower is that of Ardeidae (258 nests). The Hérons colonies are built sometimes in full agglomeration, sometimes far from the dwellings but generally in the vicinity of natural or anthropized environments, rivers, temporary marshes and irrigated perimeters whose surfaces do nothing but increase these last years, in particular, in the semi-arid areas. This would offer a great availability of food resources fulfilling the ecological requirements of Herons for the period of nesting and breeding of young's [6]. The heron's colonies of Numidia are generally aquatic [7].

In Echatt marsh it is the Purple Heron which occupies the site of nesting in first, their nests attract the others heron colonies and more into more its nucleus transforms itself into huge plurispecific colony [4]. Fasola and Alieri 1962[8]; consider that the competition with the Grey Heron is the cause of displacement of the Purple Heron or to oblige it to reproduce in low Height, but in Numidia the Grey Heron is a rare breeder[9]. The hatching success of the Purple Heron, Cattle Egret, the Little Egret and the Little Bittern is important, exceeds the 70% that display that Herons are well adapted with this environment.

The eggs of the Eurasian Coot which one measured slightly smaller compared to those are measured in the wetlands of the Hauts-Plateaux[10]. At Echatt the laying period started early March such as the other northern coastal wetlands and stretched over three months is however longer than the egg laying season of two months and a half reported in Britain [11].

We found only one nest of Ferruginous Duck but it is supposed that there was more (we observed approximately 5 couples).

The objective of this preliminary study is to highlight the importance of Echatt marsh as a nesting site of many species.

REFERENCES

- [1] A.Bouchecker, R. Nedjah, F. Samraoui, R. Menai and B. Samraoui, *Waterbirds* **2009** 32: 345–351.
- [2] G.M.Tucker and M.F. Heath., Cambridge **1994**: *Birdlife International*.
- [3] F.Thomas, C. Deerenberg, M. Lepley and H.Hafner, *Revue d'Ecologie (La Terre et la Vie)* **1999** 54: 269–281.
- [4] R. Nedjah , A.Bouchecker , F. Samraoui , R. Menai , A. Alfathan, K. Al-Rasheid and B. Samraoui, **2010**. *Ostrich* 81 (3): 189–196.
- [5] M.P. Harris, **1964**. *Ibis* 10:432–456.

- [6] A. Si Bachir and R. Moulai, University Paul Sabatier Toulouse, 24 - 27 juin **2002**.
- [7] F. Samraoui Chenafi, **2009**.University. USTHB P : 178.
- [8] M. Fasola and R. Alieri.**1992**.*Colonial Waterbirds* 15: 185–191.
- [9] B. Samraoui and F.Samraoui .**2008**. *Wildfowl* 58: 71–98.
- [10] F. Samraoui, R. Menaiand B. Samraoui. **2007**, *Ostrich* 78: 481–487.
- [11] A.B. Gadsby, **1978**., University of Durham, Durham.