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The common coot *Fulica Atra* in the Northeast of Algeria (National park of El Kala): study of the breeding biology

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ABSTRACT

This field work was done during the breeding season 2011/2013, in six wetlands of the national park of El Kala (Lac Tonga, Lac Oubeira, Lac Mellah, Lac des oiseaux, marais de Bourredim and marais de la Mekhada), to study the breeding biology of the common coot Fulica atra. The enumeration of this water-bird revealed two different populations, the first one allochthonous and the second is local population (sedentary). All the nests explored in this study were used only one time during all the breeding season. The eggs size measured were similar to the semi-arid Hauts Plateux coot population.

Key words: common coot, *Fulica atra*, northeast of Algeria, Breeding biology, national park of El Kala, Eggs size.

INTRODUCTION

The common coot is the cosmopolite water-birds which frequent all the aquatic ecosystem, this species is characterized by a gregarious behavior during the winter season and very territorial during the breeding period [1]. In Algeria, this bird was common and widely distributed but relatively little known of their reproductivity biology in North Africa [2-3]. The study of the breeding of this bird is very important biological marker to establish the structure and the performance of the hydro-systems [4].

This study is focused on the breeding biology of the common coot *Fulica atra* in the national park of El Kala during the season 2011/2012, and six wetlands of this park were chosen (Lac Tonga, Lac Oubeira, Lac Mellah, Marais Bourredim, Lac des Oiseaux and Marais de la Mekhada).

Study area:
The national park of El Kala (PNEK) is situated in the North-east of Algeria [5], in the region called oriental Numidia [6]. This park is surrounded by the Mediterranean Sea in the north; the Medjedra mounts in the south, Tunisia in the east and the Annaba's alluvial hill in the west [7].

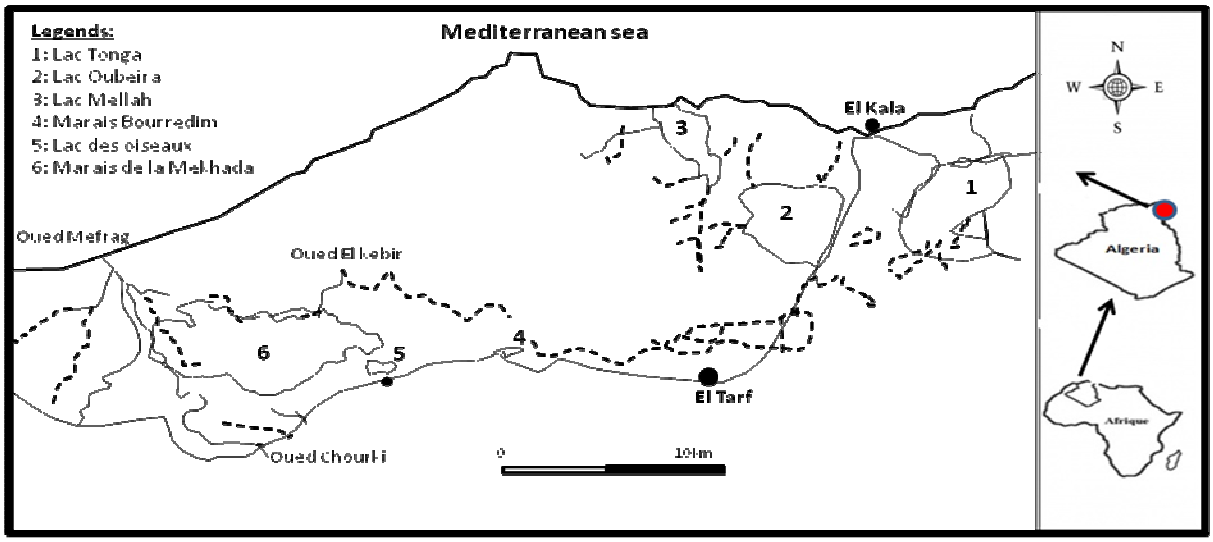

Figure 1: Geo-localization of the study area.

The national park of El Kala cover an area of 78 000 ha [8] and formed by a various lake and pond. Six sites are selected in order to establish this study (table 1).

Table1: Geographical characteristics of the wetlands of the national park of El Kala.

Sites	Name	Area	GPS
1	Marais de la Mékhada	10 000 ha	36° 48’ N et 08° 00 E
2	Lac des oiseaux	70 ha	36° 47’ N, 08° 7’ E
3	Lac Tonga	2400 ha	36° 53’ N, 08° 31’ E
4	Lac Oubeira	2600 ha	36° 35’ N, 08° 23’ E
5	Lac El mellah	873 ha	36° 53’ N, 80° 20’ E
6	Marais de Bourredim	25 ha	36° 47’N, 8° 13’ E

The region of El Kala shelter 850 vegetal species which presente 1/3 about the Algerian flora. The much diversified family are: the Poaceae (69 species), the Fabaceae (46 species) and the Asteracea (33 species) [9]. Secondly the six wetlands investigated during this study are dominated by *Phargimes australis*, *Scirpus maritimus*, *Typha angustifolia* and *Nymphea alba*.

MATERIALS AND METHODS

The study was started from September 2011 to august 2012, we count the number of the coot which frequent the 6 wetlands using a telescope (***KONUS***, 40 × 60), and we estimated this number [10].

During the breeding period, we searched the active nests of the common coot in the diverse wetlands of the national park of El Kala (Lac Tonga, Lac Oubeira, Lac Mellah, Marais Bourredim, Lac des oiseaux and Marais de la Mekhada), we marked those (GPS position) and we visit them biweekly to hatching. The nests were measured to determinate the environmental parameters (water depth, nests height, internal diameter of the nests and the external diameter). The eggs dimensions were measured using a vernier calllipes for the length and the breadth (nearest 0.1 mm) and/or a spring balance for the weight (nearest 1 g).

RESULTS AND DISCUSSION

Common coot population size:

During our study the maximum number of coot individuals was recorded during the wintering season (between October and March), the peak of number noted in Lac Tonga was 2600 individuals, in Lac Oubeira was 1800 individuals, in Lac Mellah was 250 individuals, in Lac des oiseaux was 1400 individuals, in Marais de Bourredim was 320 individuals and in Marais de la Mekhada was 3600 individuals. The maximum number of coot was recorded in Marais de la Mekhada and Lac Tonga due to the large area of these two wetlands and the minimum number of this Rallidea was noted in Marais de Bourredim which characterized by an area of 25 ha. The number of coots is significant difference between sites (Kruskal-Wallis test: K_{obs} = 52, 12 and P < 0, 0001).

The fluctuation of the coot's number in these wetlands between the breeding period and the wintering period, confirm the presence of two coot population (the first one autochthonous and the second population is migratory population), this suggestion corroborate with the results of Allouche (1988) and Baziz *et al* (2008).

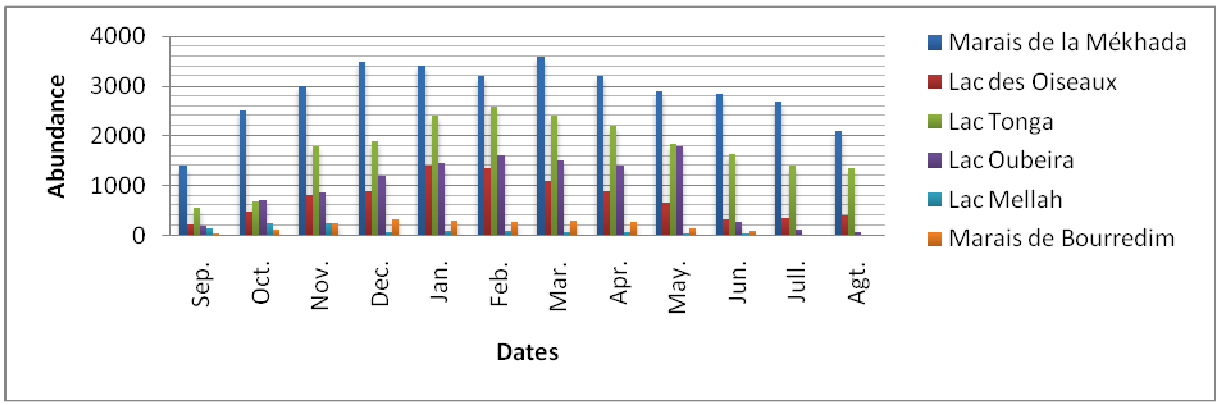

Figure 2: Temporary evolution of the common coot in the wetlands of the national park of El Kala.

Nests characteristics:

The majority of the coot's nests were installed in *Typha angustifolia*, *Phragmites australis*, *Carex divisa*, *Scirpus maritimus* and *Scirpus triqueter*. The data of nest site selection are similar as found by Samraoui and Samraoui (2007) and Nouri *et al* (2013). The construction of the nests in these strata is due to find easier the trophic resources [13].

Figure 3 present the coot's nests characteristics in the different wetlands during the study period. These parameters measured show that is no significant difference between sites.

We observed a differences between these nests characteristics and the data found by Nouri *et al* (2013), we supposed that is an influence of the weather on the nests characteristics but we could not tested this in our study.

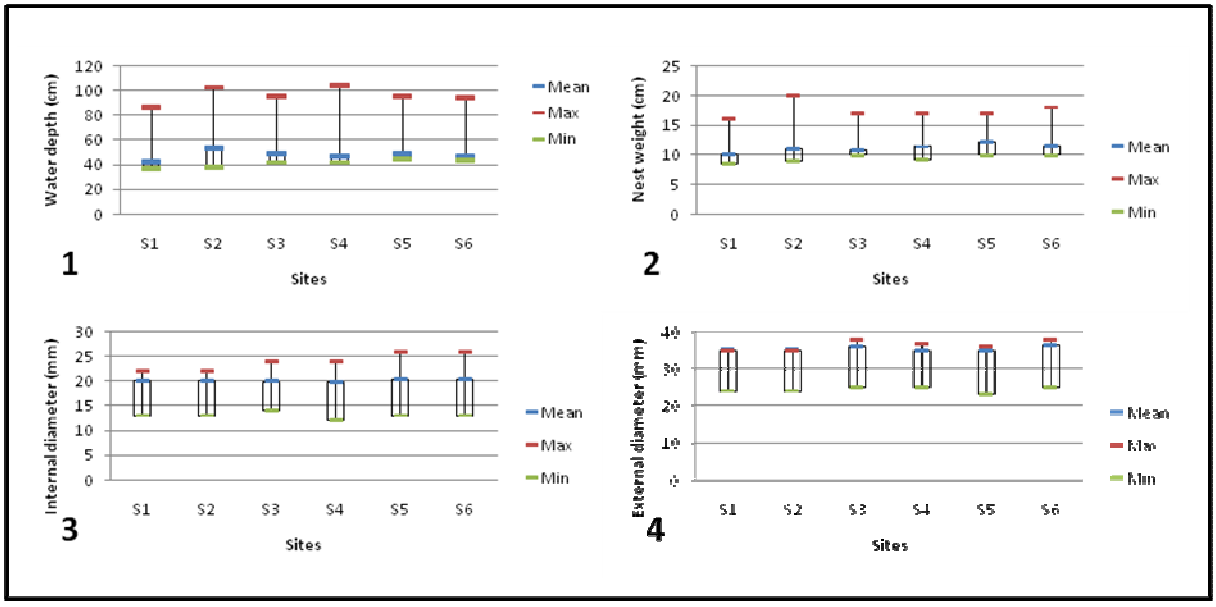

Figure 3: Nests characteristics of the common coot during the breading season (2011/2012). 1: Water depth (cm), 2: Nests height (cm), 3: Internal diameter (mm), 4: External diameter (mm).

We noted that was no nests reused by the common coot to laying eggs during the breeding season (2011/2012).

Eggs characteristics:

The eggs size were summarized in the Table 2, the mean eggs weight was 37,8 g (the maximum was recorded in Lac Mellah 38,17 g and the minimum was recorded in Marai de la Mekhada 37,22 g).

The mean eggs length noted was 53,85 mm and the mean eggs breadth was 36,72 mm. the maximum of the mean of eggs the length and breadth was recorded in Lac des oiseaux and Lac Mellah respectively.

Samraoui and Samraoui (2007) reported that no latitudinal gradient of eggs size, we support this suggestion because our data about the eggs size was similar to that stated by Samraoui and samraoui (2007).

Table 2: Eggs size, mean [max-min], of the common coot in the study sites during the breeding season 2011/2012.

Sites	Egg length (mm)	Egg breadth (mm)	Egg Weight (g)
Marai de la Mekhada	53,33 [57-46]	36,45 [42-33]	37,22 [47-36]
Lac des oiseaux	54,42 [58-42]	36,66 [43-32]	38,03 [45-35]
Lac Tonga	54,02 [59-44]	36,85 [45-33]	38,15 [48-36]
Lac Oubeira	53,66 [56-43]	37,02 [46-33]	37,68 [49-35]
Lac Mellah	54,03 [58-44]	38,01 [47-34]	38,17 [46-35]
Marais de Bourredim	53,67 [58-44]	35,36 [48-33]	37,59 [48-37]

CONCLUSION

The coot *Fulica atra* is the common species of the Algerian wetlands [2]. The breeding strategy of this water-bird is related to the density of the vegetation strata (*Phragmites australis*) [13]. Nouri *et al* (2013) suggested that the coot evaluated the level of the nest depredation before start to breeding. In addition the good nesting adaptatif strategy of this common bird is not influenced with the anthropic disturbance.

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