Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2016; 4(4): 342-345

Received: 21-05-2016
Accepted: 22-06-2016

Soumaya Talai-Harbi
Département de Biologie, Université of Annaba, Algeria

Meriem Rouaiguia
Laboratoire Biologie, Eau et Environnement (LBEE), Faculté SNV-STU, Université 8 Mai 1945, Guelma, Algeria.

Mouslim Bara
(1). Laboratoire Biologie, Eau et Environnement (LBEE), Faculté SNV-STU, Université 8 Mai 1945, Guelma, Algeria.
(2). Département de Biologie, University of Bouira, Algeria.

Hana Saker
Département de Biologie, Université of Annaba, Algeria

Moussa Houhamdi
Laboratoire Biologie, Eau et Environnement (LBEE), Faculté SNV-STU, Université 8 Mai 1945, Guelma, Algeria.

Correspondence
Moussa Houhamdi
Laboratoire Biologie, Eau et Environnement (LBEE), Faculté SNV-STU, Université 8 Mai 1945, Guelma, Algeria.

Ecology of the Eurasian Teal *Anas crecca* at the Mekhada marsh (northeast of Algeria)

Soumaya Talai-Harbi, Meriem Rouaiguia, Mouslim Bara, Hana Saker and Moussa Houhamdi

Abstract
Ecology and behavior of the Eurasian teal *Anas crecca* was studied in one of the northeast wetlands of Algeria. Knowing that its status, population dynamic and phenology has been few studied. This work aims to explain the diurnal behavior and the distribution pattern in one of marshes situeted in northeast of Algeria (marais de la Mekhada,). The wintering population of this duck reached the maximum effective in second decade of January 298 and 354 individual respectively, without significant difference in number between wintering seasons. The dominant activity in diurnal time budget of this water bird was the feeding (54% and 51% respectively) this result was probably due to availability of foods in the Mekhada march (mainly the abundance of *Chironomidae*). Overall, there was not marked seasonal change in the diurnal time budget of this species.

Keywords: Eurasian teal, wintering population, food availability, the Mekhada marsh, diurnal time budget.

1. Introduction
Butterflies The ecological importance of Algerian wetland complexes lies primarily in the role they fill for migrating birds during the winter quarter [1]. The importance of the complex of wetlands around El Kala in northeast Algeria has long been recognized [2].
The Eurasian teal (*Anas crecca crecca*) is common duck at the Algerian wetlands, during the wintering period this water bird show a characterized gregarious behavior missed in other ducks [3]. In the south bank of Mediterranean basin, the Eurasian teal was few studied and less preoccupied by scientist compared to the threatened species the marbled duck *Marmaronetta angustirostris* which was be studied in Morocco [4-9], in Algeria [10-14, 16, 17] and in Tunisia [15]. In this topic we studied some aspects of ecology and behavior of the Eurasian teal *Anas crecca crecca*, mainly the abundance, phenology and diurnal time budget in the Mekhada pond situated in north east of Algeria.

2. Study area
The Mekhada marsh is a wetland of 10 000 ha [18], it is characterized by a salt concentration of 4, 6 g/l and mean depth of 1 m [19]. This site is dominated by *Scirpus lacustris* and *Scirpus maritimus, Phragmites australis, Typha angustifolia, Myriophyllum spicatum, Nitella sp, Alisma plantago aquatiqua, Zanichellia sp, Lemna minor, Ranunculus baudotii. Cynodon dactylon, Paspalum distichum, Bellis annua* and *Bellis repens* [20].

3. Material and methods
This study was done during the two consecutive wintering pariod 2012/2013 and 2013/2014 in the Mekhada in order to evaluate the strategy of the wintering and the phenology of the Eurasian teal. First we have counted the size of the population by the estimated method [21, 22], then we have studied the diurnal time budget of this bird by the scan method [23]. The data were assembled then analyzed with a non-parametric tests if the normal distribution was not respected. The Mann Whitney test was used to compare between the number of this duck in 2012/2013 and 2013/2014.

4. Results and discussion
4.1 Abundance
The Eurasian teal was observed in the Mekhada during all wintering season (from November

to March). The evolution of the number of individuals fellowed a bell shape with a maximum number recorded during January in 2012/2013 (298 duck) and in 2013/2014 (354 duck) (Figure 1). These effectives were not significantly different between the wintering periods 2012/2013 and 2013/2014 (U = 43, P = 0,617).

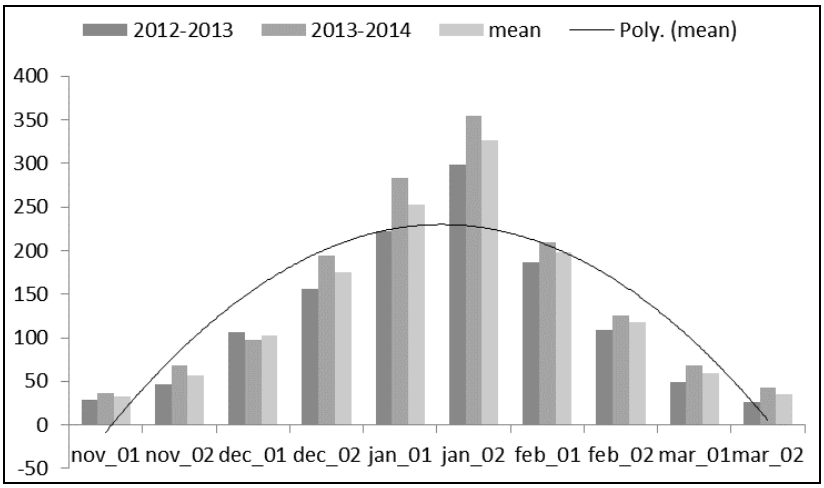


Fig 1: Evolution of the number of the Eurasian teal in Mekhada.

4.2 Diurnal time budget

In the wintering period the diurnal time budget shows a small difference between the two years that is can be neglected. The dominant activity was the feeding accounting for 54 % and 51% of the diurnal time budget in 2012/2013 and 2013/2014 respectively. Then followed by the sleeping (20% in 2012/2013 and 19% in 2013/2014) and the swimming which takes 17% in the two years respectively. The preening and the flying take a small proportion in the diurnal time budget of this duck (Figure 2).

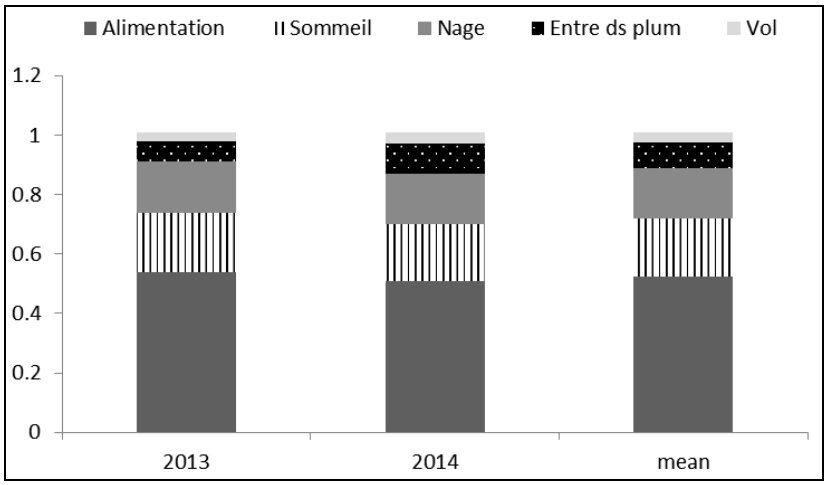
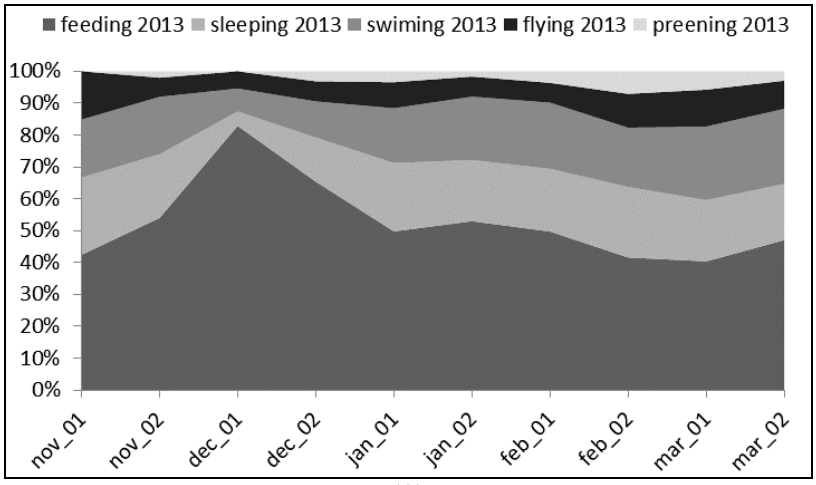
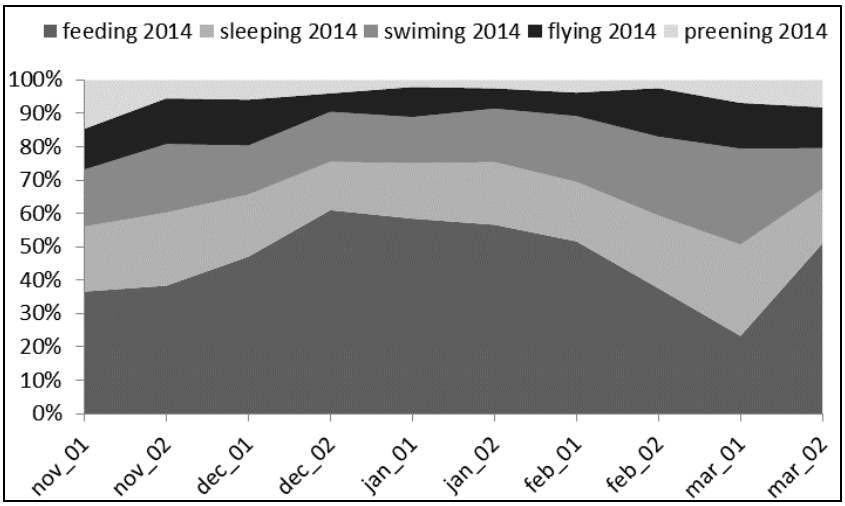


Fig 2: Activities of the Eurasian teal wintering in Mekhada during 2013 and 2014.

The monthly evolution of the activities is mentioned in the Figure 3. All activities of the time budget are observed during all the wintering period without significant difference between years (Figure 3).



(A)



(B)

Fig 3: Monthly evolution of duck activities in Mekhada. (A) During 2013 and (B) during 2014.

5 Discussion

This study is carried to expose de diurnal time budget of Eurasian teal Anas crecca in Mekhada march, the number of this species was differnet to which was reported on previous studies when the maximum number reach 3500 individual [17], This abrupt drop of number in Mekhada marsh is due to low annual level of precipitations in this area which describe the biological preferences of this species in the colonization of a wetlands in addition the environmental heterogeneity [24, 28, 6].

The diurnal time budget of the Eurasian teal is mainly dominant by the feeding in 2012/2013 and 2013/2014 in the Mekhada marsh, the Mekhada population show a different diurnal behavior than the Camargue population [3]. The dominant activity noted in this topic contradicted the hypothesis that reported "a nocturnal feeding of the teal has been done in the Mekhada march" [17].

The species is known to be a nocturnal forager during the wintering season [3], in Mekhada marsh this species has modify its behavior and spent the majority of diurnal period foraging (54% in 2012/2013 and 51% in 2013/2014). This variation of diurnal behavior might be explained by the availability of the Chironomids beside the plants which constitute the mainly diet of the marbled duck [24, 3]. Gauthier-Clerc *et al* (1998) reported that the ducks (Eurasian teal) exhibits a sleeping vigilance behavior during winter and feeding behavior decrease subsequently during the day, the duck facing important energy requirement in winter during the nocturnal period.

The diurnal feeding observed in the time budget of this water bird contradicted the previous hypothesis which say : "many species of waterfowl feed at night due to avoidance of diurnal predators, food availability and the need to visually select food, thermoregulation" [25, 26].

The feeding activity is observed during all wintering period, this behavior is fundamental for the thermoregulation of the species in the cold temperature and the unfavorable abiotic condition. In addition the success of the reproduction in influenced by the energetic stock of the ducks (especially the Eurasian teal) during the wintering period [27].

In order to conserve this species it's necessary to elaborate a strategy to survey the Algerian population of the Eurasian teal and compare its requirement in different climatic area (humid sites, high plains and Sahara). In addition monitoring the breeding period of this bird in Mekhada march to discover a nesting evidences and use of puta tive functional unit" may further understood.

6 References

1. Metallaoui S, Maazi MC, Saheb M, Houhamdi M, Barbreau C. A comparative study of the diurnal behaviour of the Northern Shoveller (Anas clypeata) during the wintering season at Garaet Hadj-Tahar (North-East Algeria) and Garaet Timerganine (Algerian highlands). Turkish journal of zoology. 2014; 38:158-167.
2. Skinner J, Smart M. The El Kala wetlands of Algeria and their use by waterfowl. wildfowl l. 1984; 35:106-118.
3. Tamisier A. signification du grégarisme diurne et de l'alimentation nocturne des sarcelles d'hiver *Anas crecca crecca* L. Revue d'écologie. 1970; 4:511-562.
4. Thévenot M, Vernon R, Bergier P. The birds of Morocco B.O.U. Tring, Uk. 2003, 594.
5. El-Agbani MA, Dakki M, Thévenot M, Beaubrun PC. Statut actuel au Maroc d'une espèce globalement menacée, la Sarcelle marbrée *Marmaronetta angustirostris* bull. inst. Sci. Rabat. 1969; 20:63-80.
6. Green AJ, El-Hamzaoui M. Diurnal behaviour and habitat use of non-breeding Marbled Teal *Marmaronetta angustirostris.* Can. J Zoo. 2000; 78:2112-2118.
7. Green AJ, El-Hamzaoui M. Interspecific associations in habitat use between Marbled Teal and other waterbirds wintering at Sidi Boughaba, Morocco. Ardeola, 2006; 53:99-106.
8. Green AJ, Figuerola J, Sanchez MI. Implications of waterbird ecology for the dispersal of aquatic organisms. Acta oecologica 2000; 23:177-189.
9. Harchrass A, Belghyti D, EL Kharrim K. Phénologie de la Sarcelle marbrée (*Marmaronetta angustirostris)* dans le lac Sidi Boughaba et propositions de conservation Kenitra, Maroc. world journal of biological research. 2010; 3:1-5.
10. Heim de Balsac H, Mayaud N. Les oiseaux du Nord et de l'Ouest de l'Afrique: distribution géographique, ecologie, migration, reproduction. le chevalier, Paris 1962 ; 486.
11. Dupuy M. Catalogue ornithologique du Sahara algérien. [Algerian Sahara ornithology book] " *L'Oiseau et R.F.O.* 1969; 39:140-160,225-241.
12. Le Berre M, Rostan JC. Inventaire de l'avifaune d'une zone de mise en valeur agricole dans le Constantinois. Bulletin de la Société d'Histoire Naturelle d'Afrique du Nord. 1966; 67:243-270.
13. Ledant JP, Jacob JP, Jacob P, Malher F, Ochando B, Roché J. Mise à jour de l'avifaune algerienne. le Gerfaut. 1981 ; 71:295-398.

14. Isenmann P, Moali A. Birds of Algeria Société d'étude Ornithologique de France. Paris, 2000, 336.
15. Isenmann P, Gaultier T, El Hili A, Azafzaf H, Dlensi H, Smart M. Birds of Tunisia Société d'étude Ornithologique de France. Paris. 2005, 432.
16. Maazi MC. Eco éthologie des anatidés hivernant au niveau de Garaet Timerganine Wilaya d'Oum el Bouaghi. PhD thesis, University Badji Mokhtar, Annaba, 2009.
17. Houhamdi M, Samraoui B. Diurnal time budget of wintering teal *Anas crecca* at Lac des Oiseaux, northeast Algeria. Wildfowl. 2001; 52:87-96.
18. Houhamdi M. Ecologie du peuplement avien du Lac des Oiseaux (Numidie orientale). PhD thesis, University Badji Mokhtar, Annaba, 2002.
19. Morgan NC. An ecological survey of standing waters in North-West Africa: II Site descriptions for Tunisia and Algeria. Biol. Cons. 1982; 24:83-113.
20. De Belair G, Bencheikh M. Composition et déterminisme de la végétation d'une plaine côtière marécageuse: La Mafragh (Annaba, Algérie). Bull. Ecol. 1987; 18:393-407.
21. Houhamdi M, Samraoui B. Diurnal and nocturnal behavior of the ferruginous duck *Aythya nyroca* at Lac des Oiseaux, northeast Algeria. Ardeola 2008; 55(1):51-62.
22. Bara M, Merzoug SE, Khelifa R, Bouslama Z, Houhamdi M. Aspects of breeding ecology of purple swamphen (*Porphyrio porphyria*) in the wetlands complex of Guerbes-Sanhadja (northeast of Algeria). Ostrich journal of ornithology. 2014; 85(2):185-191.
23. Altmann J. Observational Study of Behavior: Sampling Methods. Behaviour 1974; 49:227-266.
24. Owen M, Black J. waterfowl ecology. Blackie London, 1990.
25. Jorde DG, Owen RB. The need for nocturnal activity and energy budgets of waterfowl. In, M. W. Weller (Ed.): Waterfowl in winter, 1988, 169-180.
26. Neil MC, Drapeau RP, Goss-Custard JD. The occurrence and adaptive significance of nocturnal habits in waterfowl. Biological Review, 1992; 67:381-419.
27. Aissaoui R, Houhamdi M, Samraoui B. Eco-éthologie des Fuligules nyroca *Aythya nyroca* dans le lac Tonga (site Ramsar, Parc national d'El Kala, nord-est de l'Algérie). European journal of scientific research 2009; 28(1):47-59.
28. Johnson WP, Rohwer FC. Pairing chronology and agonistic behavior of wintering green-winged teal and mallards. Wilson bulletin. 1998; 110:311-315.
29. Gauthier-Clerc M, Tamisier A, Cezilly F. sleep vigilence trade of in green winged teal (*Anas crecca crecca*). Can. J zoo. 1998; 76:2214-2218.