BREEDING BIOLOGY OF SPUR-WINGED LAPWING (*Vanellus spinosus* L.) AT BOĞAZKENT, ANTALYA/ TURKEY 2009-2011

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This paper was presented at the VI. International Symposium on Ecology and Environmental Problems, November 17-20, 2011, Antalya, Turkey

ABSTRACT

The breeding biology of Spur-winged lapwing (*Vanellus spinosus* L.) was studied in Boğazkent/Antalya between 2009 and 2011. Population density, nest number, clutch size, hatchling number and habitat selection was determined. Besides birds were trapped and banded with metal and color rings and some morphological parameters as wing-, bill- and spur length were collected. Egg size was measured (width, length and weight). On the other hand, predation factors and their feeding preference were determined. Population consisted of 52 individuals in 2009, 60 individuals in 2010 and 72 in 2011. Nest numbers were 17 in 2009, 27 in 2010 and 38 in 2011. Incubation period was 23 days and the mean of clutch size was 3.6, total hatchling number was 23 juveniles in 2010 and 27 juveniles in 2011. Their nest preferences were mostly fields, grasslands and sand areas. 13 adults were banded in 2010 and 25 adults also in 2011. The predators of eggs and juveniles were mainly Hooded crow, dogs and fox. Their nourishment was generally crustacean and insect species, which live in the mud on the near surface.

KEYWORDS: Boğazkent, Breeding, Ecology, Spur-winged lapwing, *Vanellus spinosus*.

1 INTRODUCTION

Spur-winged Lapwing (*Vanellus spinosus* L.) is a Charadridae species. It distributes in most part of the continent Africa, only in east part of the Mediterranean (Turkey and Greece) and in the Middle East (Israel, Lebanon, Iraq, Syria etc.). Turkey is a very important area on the migration road, because of the situation on Palearctic region. Birds fly and stopover Turkey for resting and breeding. Turkey has a huge biodiversity og bird species, which are migrants, winter visitors, summer visitors and residents. Spur-winged Lapwing is one of the summer visitors and breeds in Turkey. The Greece (Evros Delta) and Middle East population of this species is also a summer visitor [1]. Spur-winged lapwing was observed in Iran only as a winter visitor in recent years. However, in early May 2004, it was observed with evidence of breeding [2]. The other populations are resident in their breeding areas. This species is common in different regions as Çamaltı (İzmir), Göksu Delta (Silifke/Mersin), Sultan Sazlığı (Kayseri), Akyatan Lagoon (Adana), Burdur lake (Burdur), Meriç Delta (Edirne), Güllük Delta (Muğla) and Boğazkent (Antalya) in Turkey [3]. There morphological characteristics are: black cap, from chin to the breast narrow black stripes, spurs on both wings. There is a difference between male and female on body size. Generally males are bigger and heavier than females. Boğazkent is one of the important breeding areas of this species in Turkey, and here population size is rather well in comparison with other breeding regions in Turkey [4]. We aimed to determine and understand the breeding biology of this species and its breeding success at Boğazkent.

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2 MATERIALS AND METHODS

Observations started at the beginning of March twice or three times a week to determine the migration phenology. We also continued to observe the breeding behavior in April and May. We determined incubation period, clutch size and hatchling numbers. Birds were caught with a trap. We measured wing, tail, body, tarsometatarsus length to the nearest 0.5 mm and bill, middle toe and nail, and both right and left spurs length to the nearest 0.1 mm, and weighed to the nearest 1 g after [5]. Egg's width and length measured to the nearest 0.1 mm and weighed to the nearest 0.1 g. We banded totally 38 individuals with metal and color rings in three years.

3 RESULTS

Spur-winged lapwing nested sand, grassland and field areas. Between 2009 and 2011, 196 birds (98 pairs) counted. 52 birds (26 pairs), 60 birds (30 pairs) and 72 birds (36

pairs) were counted in 2009, 2010 and 2011 respectively and individual distribution per months was given on Figure 1. Besides, 17 nests, 27 nests and 35 nests were found in 2009, 2010 and 2011 respectively (Figure 2).

Clutch size was generally 4, but also 2, 3 or 5 eggs (only 2 nests) and mean 3.6. Egg dimensions were compared between 2010 and 2011. According to data, there is no any statistical differences on length (n_{2010}= 93, n_{2011}= 130, $p_{0.05}$= 0.06) and weight (n_{2010}= 93, n_{2011}= 130, $p_{0.05}$= 0.035), but there is difference between two years (n_{2010}= 93, n_{2011}= 130, $p_{0.05}$= 0.02) about egg width. Eggs width was narrower in 2011 ($mean_{2010}$= 29.006, $mean_{2011}$= 28.790). Some data about egg dimensions were given in Table 1.

We banded 13 adults in 2010, 25 adults in 2011. After two sample T-Test results between males and females, there is positive correlation on body mass ($p_{0.05}$=0.01),

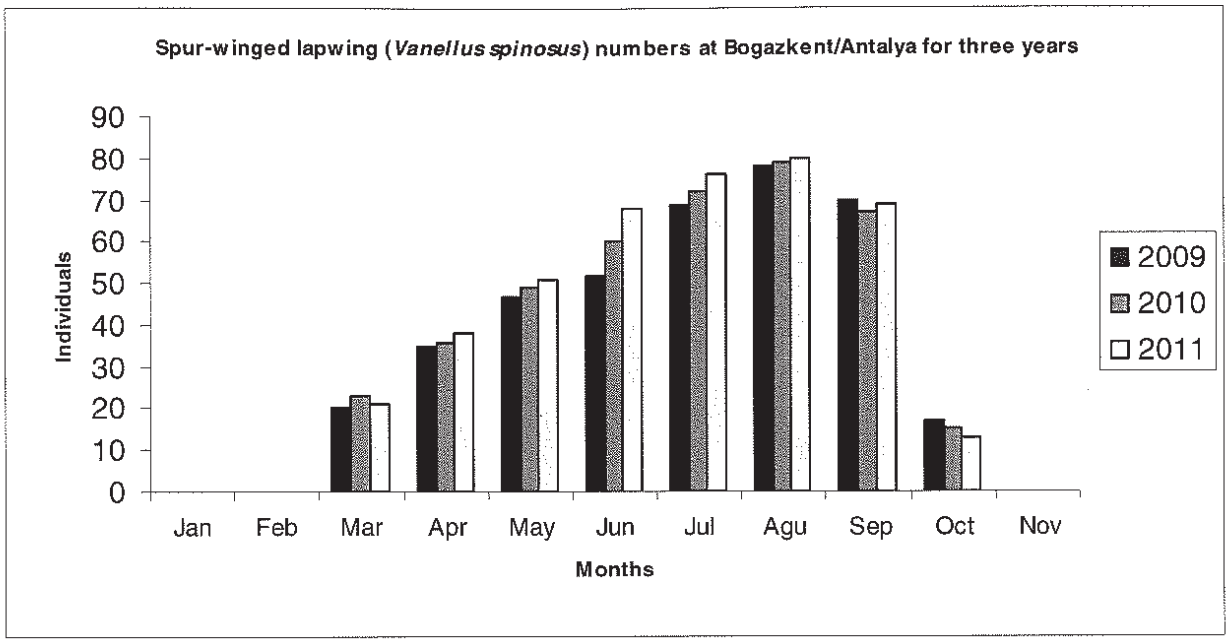


FIGURE 1 - Individual distribution of Spur-winged lapwing (*Vanellus spinosus*)

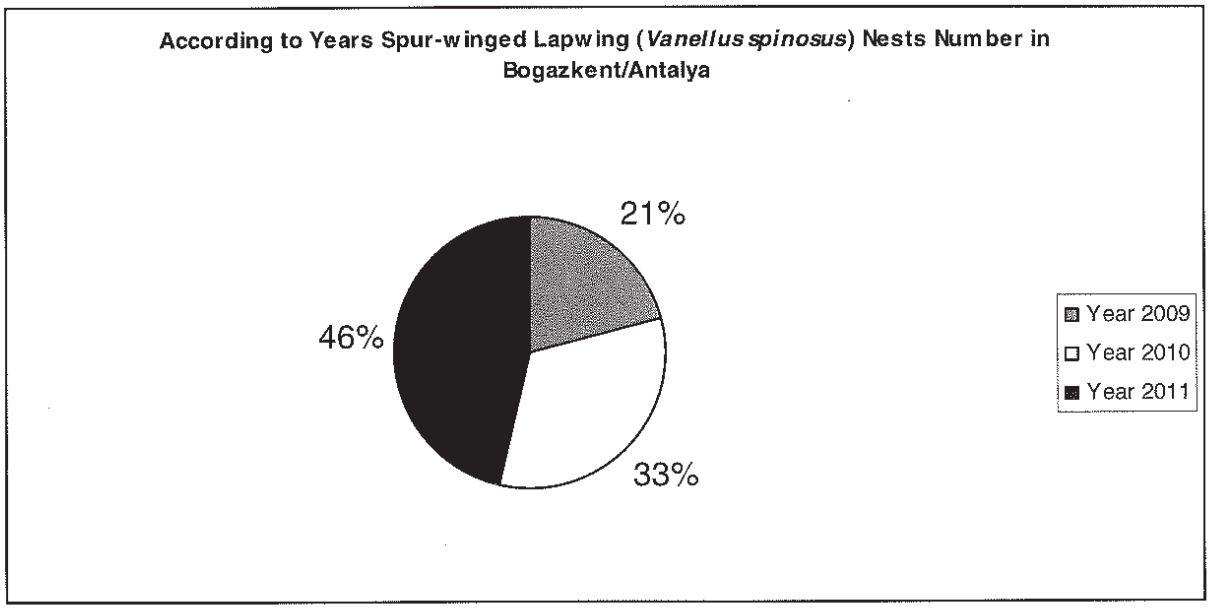


FIGURE 2 - Nest number percentages of Spur-winged lapwing (*Vanellus spinosus*) at Boğazkent in 2009-2011.

TABLE 1 - Egg weight, width, length, volume and index of Spur-winged lapwings in 2010-2011.

N_{2010}: 99 N_{2011}: 130	Weight (g)		Width(mm)		Length(mm)		Eggwolume(mm^3)		Egg index (%)	
	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011
Min	13.6	14.1	27.7	23.5	37.1	35.6	28466.5	19660.1	74.7	66.0
Max	19.4	19.4	32.5	30.0	50.5	44.4	53340.6	39960.	64.4	67.6
Mean±SE	16.8±0.14	16.9±0.10	29.0±0.08	28.7±0.07	40.8±0.22	40.3±0.13	34312.8	33194.7	71.1	71.2

TABLE 2 - Comparison of wing, spur, bill and body mass between females and males.

Sex	Wing (mm)	Spur (mm)	Bill (mm)	Body mass (g)
Female ± SE	217.38 ± 12.3	6.68 ± 0.26	30.36 ± 0.77	178.16 ± 3.94
Male ± SE	230.21± 13.9	7.5± 0.44	32.38 ± 0.75	192.05 ± 2.92
Total ± SE	217.15 ± 6.10	8.18 ± 0.30	31.92 ± 0.52	185 .01± 2.20

*n_{female}=11 **n_{male}= 11 *** n_{total}= 34

males heavier than females and tarsometatarsus length is longer than females ($p_{0.05}$=0.03). Some parameters are given Table 4. We observed 10 hatchlings in 2009, 23 hatchlings in 2010 and 18 hatchlings in 2011. Hatchling number was lower all three years, because predation factor was very high at Boğazkent. Predators were mostly Hooded crow, fox and dogs.

4 DISCUSSION AND CONCLUSION

The predation risk is very high during both breeding and post-breeding periods. Hooded crow, dogs and fox are most predators. Besides, human activities, especially plough of the agricultural fields, affect the breeding success owing to the destruction of the nests. After ploughing agricultural areas, bird pairs left the nests and most of them did not return to build an extra nest. This species is under threat and breeding areas of Spur-winged lapwing must be protected. To protect and to raise the breeding success, preventions must be executed against predators and also during ploughing people should be much more carefully.

ACKNOWLEDGEMENT

The authors grateful to Akdeniz University Scientific Search Projects Unit for support (2010.03.0121.014 project number).

The authors declare no conflict of interest

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Received: June 22, 2012
Accepted: August 03, 2012

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