

Does Black-Winged Kite *Elanus caeruleus* (Desfontaines, 1789) Have an Expansion in its Range in Turkey?

Recep Karakaş

Dicle University, Science Faculty, Department of Biology, 21280 Diyarbakır, Turkey; E-mail: rkarakas@dicle.edu.tr

Abstract: The status and distribution of Black-winged kite *Elanus caeruleus* (Desfontaines, 1789), which has an expansion in its range, were analysed in Turkey. The long-term records were analyzed as breeding and non-breeding season and main areas were mapped by GIS (Geographical Information System) programme together with habitat data's for determination of distribution in Turkey. For showing the expansion, regression analysis has been used for showing the increase of species observations for three time periods. The results indicated two regions, mainly after 1990s; Mediterranean and South-eastern Anatolia where this expansion was evident. Comparison of the historic and recent distribution of Black-winged kite records in Turkey shows a change in their distribution. It was concluded that there is a little increase in its expansion in southern part of country; mainly in South-eastern Anatolia region, related to breeding population in Iraq and Iran. Species has showed an expansion on its range, and probably this will be continuing in future. Further investigations and observations are needed.

Key words: Black-winged kite, *Elanus caeruleus*, distribution, ecological changes, expansion, status, Turkey

Introduction

The Black-winged kite, *Elanus caeruleus* (Desfontaines, 1789) is a small diurnal raptor bird species typical for open areas. It is classified as being in the Least Concern category by IUCN (IUCN 2009) while in the SPEC 3 category as a vulnerable species in Europe (TUCKER & HEATH 1994). The nominate form *E. caeruleus caeruleus* shows distribution most of Africa (mainly sub-Saharan), south-west of Europe, south Asia and south-west of Arabian Peninsula (DEL HOYO *et al.* 1994, CRAMP 1998, FERGUSON-LEES & CHRISTIE 2001). In Mediterranean region, it is revealed as native in Morocco, Tunisia, Egypt and Algeria. In south-western Europe species is native in Spain and Portugal, and extended its distribution to south-western France after 1990s (MEBS & SCHMIDT 2006). Species has been showing an expansion in some parts of its range, mainly from its

original range in Africa to the northwards (del HOYO *et al.* 1994, MEBS & SCHMIDT 2006), and reported from some west Palaearctic countries as vagrant. The probable cause of expansion in some countries reported is formation of suitable feeding and breeding areas by deforestation together with increase in voles and mice population (MAÑOSA *et al.* 2005, MEBS & SCHMIDT 2006). Also, this situation may have been consequence of changing feeding preferences or trying to use food resource in unoccupied areas. Although species has a range expansion, loss of suitable habitats and some pesticides were reported as a threat for species in some countries (MEBS & SCHMIDT 2006).

Although, it is revealed as vagrant in Turkey, our information on status and distribution of species is unclear (BEAMAN 1986, MARTINS 1989, KIRWAN

et al. 2003). Most of the earlier general studies revealed the species as vagrant for Turkey based on records given mainly from the western half of the country (KASPAREK & BILGIN 1996). The occurrence of species in eastern half of country was confirmed during the last decade (KARAKAS 2005). Interestingly, the last records are concentrated in South-eastern Anatolia where it is reported after 1998 as a result of supposed expansion. The ecological changes that happen in this part of Turkey (WELCH 2004) may be in favour of species. It is known that the occurrence of most of species is often related to the availability of suitable habitat including food. There is no any study on the status and distribution of Black-winged kite in Turkey and this is the first preliminary study. It was aimed to make a contribution to the understanding current status, distribution and expansion of Black-winged kite which is relatively poorly known species in Turkey, associated with habitat types based on observations and recent literature.

Material and methods

All of the available records of Black-winged kite between 1876-2009 were evaluated for determine the distribution of species in Turkey. Records were obtained from all published studies on distribution of birds in Turkey, including Turkey Bird Reports and personal observations. All of the records were evaluated and they were mapped by GIS (Geographical Information System) programme – Arcmap 9.2 version – together with habitat data's for determination of distribution in Turkey. For showing the expansion, regression analysis has been used for showing increase comparing three periods: 1875-1925, 1925-1975 and 1975-2009.

Results

All of the available records of Black-winged kite from Turkey (Table 1) were evaluated and main areas were mapped for determine the distribution of species in the country together with habitat data (Fig. 1). Habitat characteristics of the areas where species was recorded have differences, at least macro level. In total, 19 individuals were reported; 15 during the breeding season (from March to August) and four during the non-breeding season from Turkey for the period 1876-2009. Results suggest that most of the Turkish breeding season records reported from

Mediterranean and Marmara regions followed by South-eastern and Central Anatolia regions. Non-breeding season records were reported from two regions; Mediterranean (January 1876, Table 1) and Marmara regions (October 1931, Table 1). In addition, the species was not reported from Black Sea, Aegean and East Anatolia regions during the last century. On the other hand, although the earlier records reflect distribution of the species in Marmara region, the recent records indicate two other regions: Mediterranean and South-eastern Anatolia regions, mainly after 1990s.

Mediterranean Region: There are four records from this region one of which is non-breeding season (January) while three of them belong to breeding season without evidence of breeding.

South-eastern Anatolia: There are four records from this region between 1998-2009 years and all of them belong to the breeding season but without evidence of breeding. Before 1998, the species were not reported from this region. KIRWAN *et al.* (2003) stated that species has apparently colonised large parts of Iraq and mentioned my own record with reflection of the same expansion. The following years this hypothesis was supported by records that showed expansion of the species in that part of the country. The habitats where the species was recorded in this region meet the requirements described for it associated with the presence of dry cereal crops. On the other hand, the expansion of species may have been supported by climatic and agricultural regime changes due to GAP (South-eastern Anatolia Project) which is a comprehensive development project contain a number of huge dams and irrigation canals with their applications in this region (WELCH 2004). The recent expansion of species may have been reflection of new conditions arisen from ecological or climatically changes that happen in the region which enable the species to use new areas.

Comparing the proportion of records between 1876-1990 and 1990-2009, it was found that there is an increase in the frequency of records and the presence rate significantly increased between 1990 and 2009 years may be related to reflection of expansion in Turkey (Table 2). Regression analyses according to per fifty years support the mentioned increase, too (Fig. 2). Also, comparison of the historic and recent distribution of Black-winged kite records in Turkey shows a change in their distribution.

Table 1. All records of Black-winged kite in Turkey between 1876-2009.

Region	Location	Dates	Individual Number	Source / Observer
Mediterranean	İçel	January 1876	2	DANFORD (1878)
	Adana	11 April 1935	2	BIRD (1937)
	Antalya Yamansız	12 Apr 1998	2	ERDOĞAN <i>et al.</i> (2002)
	Göksu Delta	24-25 Apr 2006	1	BALMER & BETTON (2006)
C Anatolia	20 km East of Niğde	1 Aug 1984	1	MARTINS (1989)
SE Anatolia	50th km of Diyarbakır-Bingöl way	*28 Mar 1998	1	R. KARAKAS, KIRWAN <i>et al.</i> (2003)
	15 km East of Diyarbakır	7 Apr 2004	1	KARAKAŞ (2005)
	40th km of Diyarbakır-Bingöl way	18 Apr 2009	1	R. KARAKAS
	Silvan-Bismil way	13 May 2009	1	R.MUNGAN
Marmara	Bosporus	14 Oct 1931	1	KUMERLOEVE (1958), KIRWAN <i>et al.</i> (2008b)
	Bosporus	21 Oct 1931	1	KUMERLOEVE (1958), KIRWAN <i>et al.</i> (2008b)
	Bosporus	March 1933	1	KUMERLOEVE (1958), KIRWAN <i>et al.</i> (2008b)
	Bosporus	6 April 1933	1	KUMERLOEVE (1958), KIRWAN <i>et al.</i> (2008b)
	Bosporus	17 April 1953	2	KUMERLOEVE (1958), KIRWAN <i>et al.</i> (2008b)
	Uluabat Gölü	17 April 1968	1	OST (1972).

*This record reported as 6 May 1999 by mistake by KIRWAN *et al.* (2003).

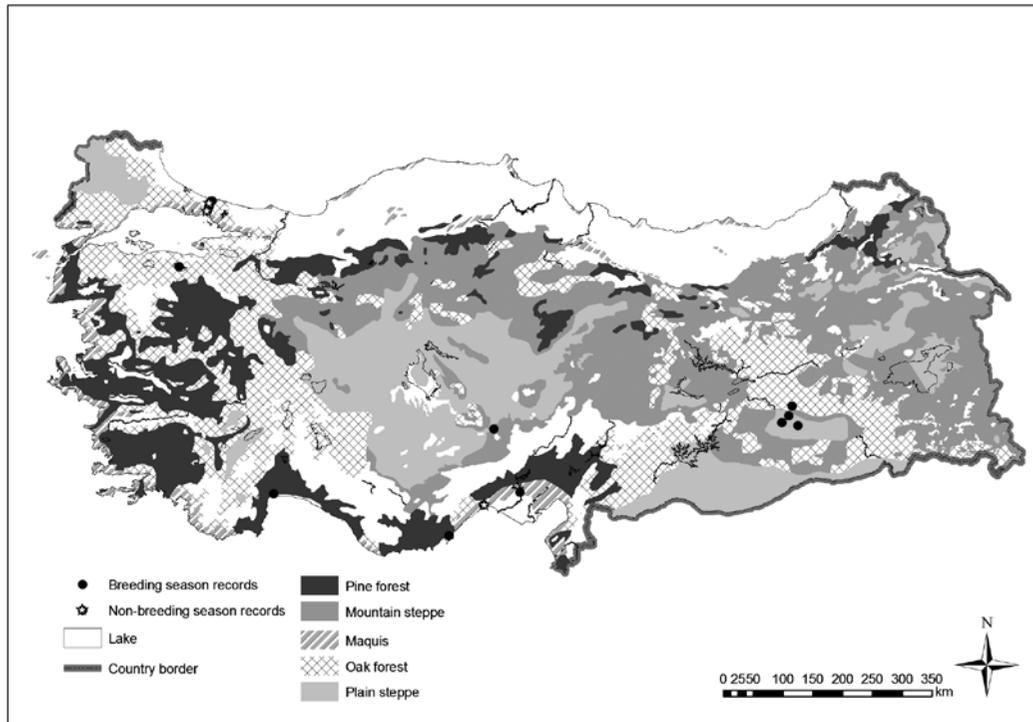
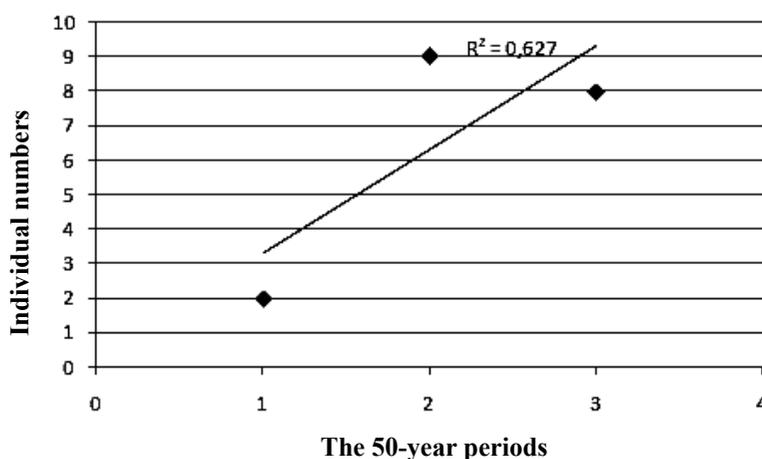


Fig. 1. Distribution of breeding and non-breeding season records across different habitat (dots are indicating breeding season; stars are indicating non-breeding season records).

Table 2. Statistic analysis of all records in Turkey (by Chi-square test, $P=0.007$, confidence interval 95%).

		Bird		Total
		Absence	Presence	
		0	1	
Between 1876 to 1990	Year number	103	12	115
	% within	89.6%	10.4%	100.0%
From 1990 to 2009	Year number	12	7	19
	% within	63.2%	36.8%	100.0%
Total (From 1876 to 2009)	Year number	115	19	134
	% within	85.8%	14.2%	100.0%

**Fig. 2.** Regression analyses for three periods (1876-1925, 1926-1975 and 1976 to 2009).

Discussion

Ornithological activities increased in the Turkey during last decades, in general, but presumably this is not the exact reason of increase in records of the species in country when we take into account ecological characteristics of species together with experiences in other countries. The available records indicate distribution of species is restricted to a few localities, mainly in Mediterranean and South-eastern part of Turkey, based on records after 1990s. Also, there is probability of breeding of species in some part of the South-eastern Anatolia, where suitable habitats both for feeding and breeding exist. The agricultural activities in this region may hold good feeding conditions for the species, if the negative effects of pesticides unconsidered. The pesticide applications may be limiting factors on this expansion in the future.

During the last years, Black-winged kite has a range expansion in Europe (MEBS & SCHMIDT 2006), in the Middle East with an apparent increase was re-

ported in Egypt (KIRWAN *et al.* 2008b). The birds recorded in Turkey and the Middle-east may have originated from north-east Africa, particularly from Egypt, where the species is native (BIRDLIFE 2009). Also, species revealed as vagrant in Israel, Lebanon and Syria mainly based on historical records (MURDOCH & BETTON 2008; RAMADAN-JARADI *et al.* 2008). The breeding was confirmed in Iraq and Iran during last decade (SALIM 2002, SCOTT & ADHAMI 2006).

Although species revealed as a vagrant in Turkey (KIRWAN *et al.* 2003, 2008a, 2008b), there is a little increase in its expansion in southern part of country; mainly in South-eastern Anatolia due to ecological changes were reported including climate changes because of large dam reservoirs in the region, mainly after 1990s (WELCH 2004). The increase in dams and irrigation canals may lead to an enormous increase in agricultural areas and resulted in a considerable extension of feeding areas for species. Related to the

correlation between land-use change and presence of species (BALBONTIN *et al.* 2008), agricultural regime changes together with other ecological components may have support this expansion in South-eastern part of Turkey. On the other hand, Black-winged kites are able to disperse over long distances and as the region is close to the Iraq and Iran that probably supported this expansion together with species mobility due to species response to food supply (FERGUSON-LEES & CHRISTIE 2001). The *Elanus* species are rodent specialists and their distribution, population sizes and movements are largely dependent on rodent abundance and availability (MENDELSON & JAKSIC 1989, BALBONTIN *et al.* 2008). Also, climate change should be considered another factor due to its different effects on many bird species by change of breeding or wintering ranges (CRICK 2004, CHAMBERS *et al.* 2005, HUNTLEY *et al.* 2006) together with potentially unknown factors that might affect bird distribution ranges.

Consequently, species range is showing an expansion in western Asia, at least in Iraq, Iran

(SALIM 2002, SCOTT & ADHAMI 2006) and some part of Turkey like in south-western Europe (BIRDLIFE 2009). Species can be considered as vagrant for Turkey now with probability of breeding in the South-eastern Anatolia region related to expansion of breeding population in Iraq and Iran (SALIM 2002, SCOTT & ADHAMI 2006), but frequency of records indicate the status of species will change in future. Although there is no quantitative data, expansion of this species in Turkey, probably, may be related to abundance of preferred food in previously unoccupied areas for it like as another some Mediterranean countries (MAÑOSA *et al.* 2005). More research is needed in order to understand the reasons for the recent range expansion. Furthermore, detailed information on habitat requirements, breeding numbers and population trends is required.

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