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OCCURRENCE AND WINTER DENSITY OF WIGEON (*ANAS PENELOPE*) AT VRBJE POND (LOWER SAVINJA VALLEY, SLOVENIA)

Milan Vogrin

Abstract

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On Vrbje pond (13.5 ha) (Lower Savinja valley, Central Slovenia), an artificial lake near Savinja river (UTM: WM 12), Eurasian Wigeons (*Anas penelope*) overwinter in a very high density compared to other wetlands of the region. During the winter months their maximum density is estimated at 25 individuals/10 ha. A calculated 9–20% of the entire Slovene wintering population of Eurasian Wigeon winter here. Their flock densities during the autumn migration are even much greater (up to 54 individuals/10 ha), greater than anywhere else in Slovenia. A statistically significant correlation was found between the numbers of Eurasian Wigeon and Coot during autumn and winter ($r = 0.93$, $P < 0.05$).

Key words: Eurasian Wigeon, *Anas penelope*, wintering population, Vrbje pond, Slovenia.

Author's address – a szerző címe:
Milan Vogrin Zg. Hajdina 83c, SI-2288 Hajdina, Slovenia, e-mail: milan.vogrin@guest.arnes.si

Introduction

A relatively large number of studies have been devoted to various Slovenian wetlands and their bird fauna but only few studies deal with individual waterfowl species (e.g. *Vogrin, 1989*; *Božič, 1994a, 1994b*; *Vogrin, 1996a, 1997a, 1998, 1999*). No specific study dealt with the status of Eurasian Wigeon (*Anas penelope*) in Slovenia so far. The wintering areas of Eurasian Wigeon in Europe are mainly in West- and Southwest Europe (*Kauppinen*, 1997). In Slovenia Wigeons are wintering visitors, although they are most numerous during migration (*Sovinc*, 1994; *pers. obs.*).

The aim of this paper was to present density of Eurasian Wigeon on Vrbje pond in the wintering period on the basis of data collected during field investigations between 1993 and 1996. The results were also compared with data of available literature.

Study area

In Lower Savinja valley (Central Slovenia), which is an intensive agricultural area, only a few wetlands have been preserved. One of those wetlands is Vrbje pond, an artificial

water body, which is located south from the town Žalec near the Savinja river (UTM: WM 12). The 13.5-ha-large pond supports emergent (*Typha latifolia, T. angustifolia*) and floating vegetation (*Potamogeton crispus, P. natans, P. spicatum, Myriophyllum spicatum, Elodea canadensis*). The maximal width of the vegetation belt on Vrbje pond is about 20 m compound mainly with *Typha latifolia*. After *Kauppinen & Väisänen* (*1993*) the pond can be classified as an eutrophic lake, characterised by shallow water dominated by very rich vegetation. The pond was developed for fish production and it is drained at least once a year (in spring and/or autumn) for about two-four months. The vicinity of the pond, where research was also carried out, is covered with some meadows, fields and hedges. In winter time up to 90% of the water surface freezes completely. Detailed description of the area is described in earlier papers (*Vogrin, 1996a*; *Vogrin & Vogrin, 1997*).

Methods

This work was part of a study that was carried out between 1993 and 1995 on Vrbje pond and its vicinity (*Vogrin, 1996b*). This work was continued also in part of 1996. During this period 80 field days were spent on the study.

Data were analysed using the SPSS 6.0 statistical program and according *to Sokal & Rohlf* (*1995*). In general, log-transformation was used to normalize the data.

Results and discussion

The Vrbje pond plays a very important role during the periods of waterfowl migration and wintering. For some species (Eurasian Wigeon, Coot – *Fulica atra*, Moorhen – *Gallinula chloropus*) the pond is important site even at a national scale (*Vogrin, 1996b; 1997b*).

According to national surveys, between 9–20% of the entire Slovene wintering Wigeon population winter on this lake. Wigeons are present on Vrbje pond during spring and autumn migration as well (Figure 1). During winter (December–January), Wigeons gather on Vrbje pond in a considerable density (Table 1) of up to 25 individuals/10 ha. Density values during migration (October, November) are even much greater (up to 54 individuals/10 ha).

Their densities are greater than detected anywhere else in Slovenia (*Bibič, 1988*; *Trontelj, 1992*; *Sovinc, 1994; pers. obs.)* and probably also higher than in neigbouring countries (e. g. *Pecl, 1992*; *Larsen, 1996*).

A positive correlation was found between the numbers of Eurasian Wigeons and Coots during autumn and winter (October–February) ($r = 0.93$, $P < 0.05$) and a negative correlation between the numbers of Wigeons and Moorhens ($r = -0.52$), however this correlation was not significant ($P > 0.05$).

Why is such a small pond so attractive in wintertime for this omnivorous bird? According to *Cramp & Simmons* (*1977*) and *Gardarsson & Einarsson* (*1997*) the Eurasian Wigeon is vegetarian, it feeds mainly on various leaves, stems, algae and other aquatic

vegetation. In winter food sources are dominated by various algae. On the Danish Wadden Sea Eurasian Wigeon feed mainly on seagrass *Zostera sp.* (*Madsen, 1988*) during migration. A large amount of floating vegetation and algae is present in Vrbje pond, they cover almost the entire surface of the lake. Floating vegetation and algae are also very attractive food sources for Coots and Mute Swans (*Cygnus olor*) e.g.

In many cases breeding bird density has been shown to be related to food abundance on the breeding grounds, and reproductive performance is often correlated with food resources (*Newton, 1980*). There is no reason to believe that food abundance has a less significant role in wintering densities, and it is supported also by my own observations on wintering Wigeons. The main reason for such huge concentration of Eurasian Wigeon and other mainly vegetarian birds on Vrbje pond is a plentitude of food (algae, floating vegetation).

Area	Size (ha)	Density (ind./10 ha)	Source
Vrbje pond	13.5	25 max. (16.7 average)	(*Vogrin*, unpubl.)
Ptuj reservoir	346	0.3 max.	*Bibič, 1988*
Zbilje reservoir	47	19 max.	*Troutelj, 1992*
Sečovlje salina	650	3-6 max.	*Sovinc, 1994*

Table 1. Wintering density (December–January) of Eurasian Wigeon (*Anas penelope*) at Vrbje pond and comparison with densities of other areas in Slovenia (max. = maximum density).

1. táblázat. A fütyülő réce (*Anas penelope*) állománysűrűsége Szlovénia különböző vizes területein a telelés időszakában (december–január) (max. = maximum denzitás).

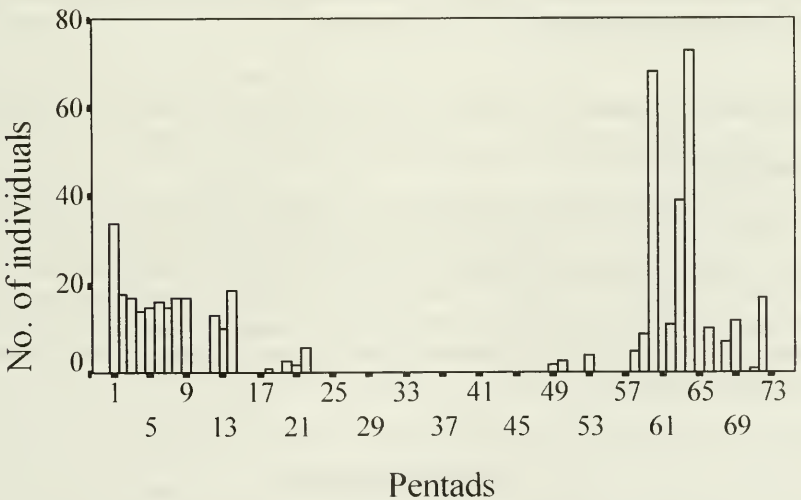

Figure 1. Occurrence of the Eurasian Wigeon (*Anas penelope*) on the Vrbje pond (Slovenia) expressed as pentads peaks between 1993–1996, N = 478.

1. ábra. A fütyülő réce (*Anas penelope*) állománya a szlovéniai Vrbje-tavon ötnapos pentádok csúcsértéke szerinti ábrázolásban 1993–1996 között (N=478).

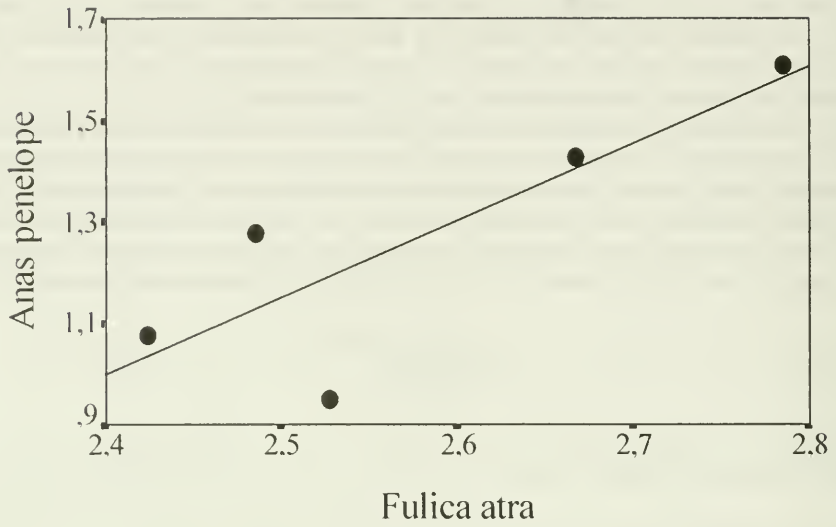

Figure 2. The (log-transformed) relationship between the number of Eurasian Wigeon (*Anas penelope*) and the number of Coot (*Fulica atra*) on the Vrbje pond during autumn and winter (October–February).

2. ábra. A fütyülő réce (*Anas penelope*) és a szárcsa logaritmikusan transzformált állományadatainak összefüggése a Vrbje-tavon ősszel és télen (október–február).

Occasionally, I observed competition (fights) for food Between Coot and Eurasian Wigeon on this pond. Despite competitions, a positive correlation was found between these two species (Figure 2).

I never saw Wigeons feed terrestrially near Vrbje pond that had been described by *Madsen (1988)*, *Larsen (1996)* *Gardarsson & Einarsson (1997)* and many others for the species. It is an intriguing phenomenon if we consider that Wigeon belongs to grazing wildfowl, and it feeds for about 14 hours per day during winter to meet its energy requirements (*Mayhew, 1988*). It seems that grass quality around the pond is less favourable food supply to Wigeons than the pond's aquatic vegetation, not unlikely for its inferior nutrient value.

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