

## The Great White Egret *Egretta alba* during autumn and winter on Dravsko polje in northeastern Slovenia

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Distribution and abundance of the Great White Egret (*Egretta alba*) wintering on Dravsko polje in northeastern Slovenia were studied during 1985-1996. The wintering population of Great White Egret increased in the last years. About 30% (up to 50 individuals) of the entire Slovene wintering Great White Egret population was on Dravsko polje. Great White Egrets preferred waters and avoided arable lands during all studied months (October-March). They foraged in small groups. Feeding flocks were mobile and reformed after disturbance in new areas of the study site. The number of Great White Egrets and Grey Herons (*Ardea cinerea*) correlated in the study area.

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### 1. Introduction

The Great White Egret (*Egretta alba*) is cosmopolitan species. In Europe it occurs mainly in the Eastern and Southeastern parts of the continent (e.g. Bauer & Glutz von Blotzheim 1966, Cramp & Simmons 1977, Voisin 1991). In Europe its breed first of all in Ukraine, Hungary, Austria and Romania (Kárpáti *et al.* 1986, Voisin 1991, Monteanu & Ranner 1997). According to Voisin (1991) and Monteanu & Ranner (1997) European population winters chiefly in Mediterranean area and in North Africa, whereas in last years the numbers of Great White Egret wintering in Central Europe is increasing.

In Slovenia the Great White Egret is a common visitor, especially in NE Slovenia during spring and autumn migration (pers. obs.). The nearest breeding colonies is in

Hungary at Kis-Balaton marshland where there are 140 breeding pairs (Kárpáti *et al.* 1986) and in Austria in the reed belt of lake Neusiedl, where there are more than 400 breeding pairs (e.g. Dvorak *et al.* 1993, Winkler *et al.* 1994). During the last few winters in Slovenia the Great White Egret occurred along river Drava and in the Seèovlje Salina (Sovinc 1994, Škornik *et al.* 1992).

Nevertheless, the distribution of wintering Great White Egrets in Central Europe and the relationship with other herons are still poorly known (see Voisin 1991 and references therein). The purposes of this paper are to present numbers and occurrence of the Great White Egret on Dravsko polje in northeastern Slovenia during autumn and winter and to present the relationship between the number of Great White Egrets and the Grey Herons (*Ardea cinerea*).

## 2. Material and methods

Dravsko polje - Drava field (46°25'N, 15°45'E) is an alluvial plain, situated in northeastern Slovenia between river Drava and Mt. Pohorje on altitude from 238 m to 270 m. Dravsko polje belongs to the sub-Pannonic phytogeographical area (Marinèek 1987). Fishpond complex Racki ribniki and reservoir Medvedce are the most important wintering sites of the Great White Egrets. Detailed description of the whole area, fishpond complex and reservoir are given in earlier papers (Vogrin & Šorgo 1995, Vogrin 1996, 1997, 1999, Vogrin & Vogrin 1998).

Field observations were carried out between 1985 and 1996 (except 1988) during October and March. Observations from river Drava were not included in this analysis. Observations were divided into two groups for further statistical analyses: individuals observed near water (reservoirs, ponds, gravel pits) and on arable lands (fields, mown meadows and pastures).

Statistical analyses were performed with non-parametric tests (Chi-square, Kruskal-Wallis 1-Way Anova test), since data were not normally distributed and with Spearman correlation coefficient (Sokal & Rohlf 1995). Data were analysed using the SPSS 6.0 statistical programs.

## 3. Results and discussion

Altogether 285 individuals of the Great White Egret were observed in the study area. The mean number of individuals per check was 5.4. The highest average number of individuals per check was observed

in November (Fig. 1). The largest flocks with 36 individuals were observed in 1995 and 1996.

Great White Egrets preferred water, and avoided arable lands. The percentage of observations near water were: October 95%, November 98%, December 99%, January 22%, February 80%, March 91%, respectively. The differences between specimens per check among months were not significant (Kruskal-Wallis 1-Way Anova test, Chi-square=5.5, df=5,  $P>0.05$ ), whereas the differences among years were highly significant (Kruskal-Wallis 1-Way Anova test, Chi-square=21.14, df=7,  $P<0.005$ ). From Fig. 2 it is obvious that numbers of the Great White Egret on Dravsko polje is increasing.

The reason for the increasing number of the Great White Egret after 1994 is probably the new habitats provided by reservoir Medvedce, which was first filled with water in 1993. Reservoir Medvedce is 155 ha large and is intended for intensive fish rearing (Vogrin 1996). Since then reservoir was regularly drought in autumn (October-November) till late winter or early spring. In the bottom of the discharged reservoir remains a lot of fishes (pers. obs.) which could serve as food for

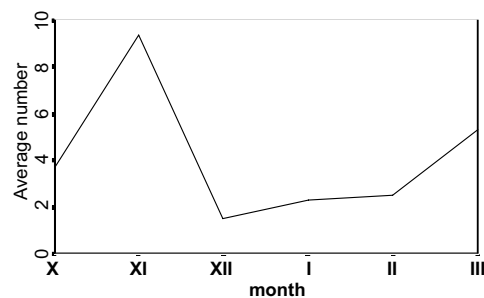


Fig. 1. Average number of Great White Egrets on Dravsko polje in northeastern Slovenia, 1985-1996.

herons. According to e.g. Newton (1980) the availability of food seems to be by far the most important factor in determining the numbers of birds and this is probably valid also for wintering Great White Egrets.

First winter data from northeastern Slovenia for the Great White Egret was given by Lukaè (1983) for Ormož reservoir on river Drava. Since then the Great White Egret regularly wintering on river Drava (Janžekoviè 1986), up to 20 specimens (Sovinc 1994, pers. obs.).

However, until now Dravsko polje was not known as a wintering place for the Great White Egret in Central Europe. In the last two years (1995-1996) on average 30-50 individuals were wintering on Dravsko polje, mainly in drought reservoir Medvedce and fishponds Raèe (Landscape Park Raèki ribniki - Požeg). According to this data and data from Sovinc (1994), about 30% of entire Slovene wintering population of Great White Egret occurs on Dravsko polje.

Wintering population of the Great White Egret on Dravsko polje is important also in Central Europe if we compare data from Monteanu & Ranner (1997). It seems that some important wintering populations exist also in Croatia, mainly along river Sava and the nearest fishponds. Nevertheless, Ern (1990) and Schneider (1989) for example present only data from autumn migration (but see Monteanu & Ranner 1997).

Great White Egrets usually forage alone (e.g. Voisin 1991), whereas this was not true on Dravsko polje during autumn and winter (Chi-square=1.47, df=1,  $P>0.05$ ). For example, during this study Great White Egrets were encountered forage in average flock of 5.4 individuals

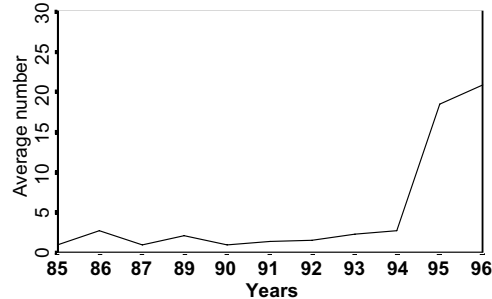


Fig. 2. Average number of Great White Egrets on Dravsko polje in northeastern Slovenia, 1985-1996.

(see also above). Feeding flocks were mobile and reformed after disturbance in new areas of the study site (Chi-square=4.17, df=1,  $P<0.05$ ), suggesting that the flocks were not simply temporary responses to a local food supply.

Great White Egrets feed mainly with fish but catch also small mammals, birds, amphibians and insects (Cramp & Simmons 1977, Voisin 1991), whereas Grey Herons feed mainly with fish (e.g. Bauer & Glutz von Blotzheim 1966, Fasola *et al.* 1993, Peris *et al.* 1994) and small mammals (e.g. Exnerova & Bohaè 1991). According to these data interspecific competition has been suspected to occur in competition for food, and, in particular, it is expected to be more effective when food is limited (Pianka 1974), e.g. during winter. This assumption is confirmed by observations of aggressive interactions between both herons in reservoir Medvedce during wintering. We can expect that relationship between these two species is negative. However, the number of Great White Egrets increased significantly with increasing numbers of Grey Herons (Fig. 3,  $r_s=0.46$ ,  $P<0.005$ ,  $n=33$ ). It may be assumed that Great White Egrets tend to form heterospecific

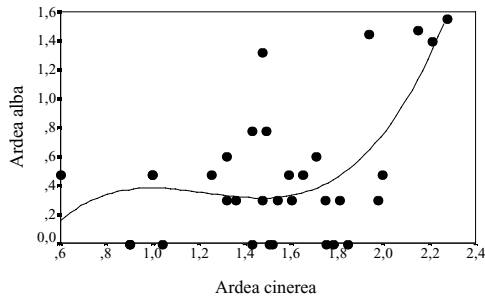


Fig. 3. The relationship (log transformed) between the number of Great White Egret and the Grey Heron on Dravsko polje in northeastern Slovenia.

flocks with Grey Heron in order to gain the profits provided by e.g. feeding efficiency and increasing antipredator protection (see e.g. Cresswell 1994).

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## Összefoglalás

### A nagykócsag őszi és téli előfordulása a Dravsko síkságon (ÉK Szlovénia)

A nagykócsag október és március közötti előfordulását mértük fel 1985-1996 között az ÉK Szlovéniai Dravsko síkságon. A telelő kócsag állomány jelentősen nőtt 1994 után. A teljes szlovén telelő nagykócsag állomány mintegy 30%-a a Dravsko síkságon található. A nagykócsag elsősorban a vizek mentén fordult elő, mezőgazdasági területeken csak elvétve volt megfigyelhető. Kis csoportokban táplálkozott, melyek zavarás után, új táplálkozó területeken is együtt maradtak. A nagykócsag és a szürke gém egyedszáma korrelált a vizsgált területeken.

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