

## The water bird community on fishponds at Gołysz in the breeding season and its differentiation

Robert GWIAZDA

Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences,  
ul. Sławkowska 17, 31–016 Kraków, Poland

(Received 9 March 1995, Accepted 28 December 1995)

**Abstract** – Thirty-three species of water bird were observed on the fishponds at Gołysz in the breeding season of 1994. The total number of water birds amounted to 1328–1886 individuals. The numerically dominant species, were *Anas platyrhynchos* L., *Larus ridibundus* L., and *Aythya fuligula* (L.). *L. ridibundus*, *Podiceps cristatus* (L.), *Podiceps nigricollis* (Brehm), and *A. fuligula* were the most numerous breeding species. On the basis of the food taken the species were divided into ecological groups. The greatest percentage participation was recorded for polyphagous (over 30% of the water bird community), phytophagous, and benthophagous. In comparison with the study carried out in the fifties great changes in the bird community were recorded.

**Key words:** waterfowl, fishponds, ecological groups, community.

**Zbiorowiska ptaków wodnych stawów rybnych w Gołysz w okresie lęgowym i ich zróżnicowanie.** W sezonie lęgowym 1994 zaobserwowano 33 gatunki ptaków wodnych na stawach rybnych w Gołysz. Całkowita liczebność ptaków wynosiła 1328–1886 osobników. Dominującymi gatunkami pod względem liczebności były kaczka krzyżówka, mewa śmieszka i czernica. Mewa śmieszka, perkoz dwuczuby, zausznik i czernica były najliczniejszymi gatunkami lęgowymi. Na podstawie pobieranego pożywienia gatunki podzielono na ekologiczne grupy. Największy procentowy udział stwierdzono dla wszystkożernych (ponad 30% zespołu ptaków wodnych), roślinożernych i bentosożernych. W porównaniu z badaniami z lat 50-tych stwierdzono duże zmiany w zespole ptaków.

### 1. Introduction

The first study of the bird community on the fishponds at Gołysz was carried out by Bocheński (1958, 1960). This community may have changed since that time. The purpose of this work was to determine the number of water bird species and ecological differentiation of the bird community on these ponds during the breeding season.

## 2. Study area, material, and methods

The observations were made on the fishponds at Gołysz (Upper Silesia, southern Poland). The total area of these ponds was about 270 ha. The ponds were generally shallow and usually little overgrown. On most of them rush-covered area there was no at all, the reed-bed constituting less than 1 ha on two ponds. There were only a few islands on the ponds. All the ponds were separated by narrow dikes. Covered with rich vegetation and in some cases trees and bushes grew there. The complex of ponds was boarded by forest from the south and by fields and meadows on the other sides. Observations of the numbers and structure of the water bird community on the fishponds at Gołysz were carried out from the shore twice a month in May, June, and July 1994. The observations lasted about 8 hours a day. All the ponds were examined. A 7x50 binocular was used. As breeding or probably breeding were identified birds which had nests or young and lived in pairs. On the basis of the food taken and the literature data (Dobrowolski 1969) the species were divided into ecological groups.

## 3. Results

A total of 33 water bird species were observed. Nineteen of them were identified as breeding or probably breeding (Table I). Twelve species were defined as entomophagous and 8 species as ichthyophagous (Table I). Most of the species (17–20 species) occurred on Chylińskie Ponds and Brzozowski Pond. The total numbers of breeding and non-breeding water birds amounted to 1328–1886 individuals. Numerically dominant species, i.e. *Anas platyrhynchos* L., *Larus ridibundus* L., and *Aythya fuligula* (L.), constituted over 70% of the bird community (fig. 1). Not all the birds which occurred at the Gołysz ponds bred there. The most numerous breeding species were represented by *L. ridibundus* (more than 160 pairs), *Podiceps cristatus* (L.) (about 28 pairs), *Podiceps nigricollis* (Brehm) (18–19 pairs), and *A. fuligula* (above 13 pairs). The greatest percentage participation was recorded for polyphagous (over 30% of the water bird community), phytophagous, and benthophagous birds. The percentage of ichthyophagous birds was not great (6–14% of bird community) (fig. 2).

## 4. Discussion

Differences in the number of water birds can be compared only approximately with the data of Bocheński (1960) because different area of the ponds were studied (163 ha, Bocheński 1960; 270 ha, this study). The total number of most of the water birds on the fish ponds at Gołysz has changed since Bocheński's study (Table II). The greatest increase in abundance was recorded for dominant species (*A. platyrhynchos*, *A. fuligula*, *L. ridibundus*), this being connected with the population trends of these species (Tomiałojć 1990). The occurrence of *Phalacrocorax carbo* (L.), *Cygnus olor* (Gmel.), *Larus canus* L., and *Larus argentatus* Pontopp. in 1994, which were not recorded in 1954–1958, can be explained in the same way. Some bird species, such as *Ixobrychus minutus* (L.), *Aythya nyroca* (Güld.), *Gallinula chloropus* (L.), *Gallinago gallinago* (L.), *Chlidonias nigra* (L.), and *Acrocephalus scirpaceus* (Hermann), which nested and were often observed by Bocheński (1958, 1960) were not recorded at all on these ponds in 1994. The numbers of *Fulica atra*

Table I. Estimated ranges of number of individuals and breeding pairs of water birds observed on the ponds at Gołysz in the breeding season of 1994. Ecological groups: B — bentophagous, E — entomophagous, F — phytophagous, I — ichthyophagous, P — polyphagous, V — birds eating vertebrates.

Species	Ecological groups	Individuals	Breeding pairs
<i>Tachybaptus ruficollis</i> (Pall.)	E	0-6	2
<i>Podiceps cristatus</i> (L.)	I	48-62	28
<i>Podiceps nigricollis</i> (Brehm)	E	36-41	18-19
<i>Phalacrocorax carbo</i> (L.)	I	4-29	
<i>Ardea cinerea</i> L.	I	39-76	
<i>Nycticorax nycticorax</i> (L.)	I	2-3	
<i>Botaurus stellaris</i> (L.)	I	0-1	
<i>Ciconia ciconia</i> (L.)	P	2-7	
<i>Cygnus olor</i> (Gmel.)	F	12-17	3
<i>Anas platyrhynchos</i> L.	F	58-589	7-9
<i>Anas strepera</i> L.	F	1-9	2
<i>Anas querquedula</i> L.	F	0-2	
<i>Aythya ferina</i> (L.)	B	41-165	6
<i>Aythya fuligula</i> (L.)	B	240-411	13-45
<i>Haliaeetus albicilla</i> (L.)	V	0-1	
<i>Circus aeruginosus</i> (L.)	V	0-1	
<i>Fulica atra</i> L.	F	29-42	12
<i>Vanellus vanellus</i> (L.)	E	4-26	0-2
<i>Charadrius dubius</i> (Scop.)	E	2-10	0-2
<i>Limosa limosa</i> (L.)	E	0-1	1
<i>Tringa totanus</i> (L.)	E	2-10	0-1
<i>Tringa glareola</i> L.	E	0-9	
<i>Actitis hypoleucos</i> L.	E	0-2	0-2
<i>Philomachus pugnax</i> (L.)	E	0-2	
<i>Larus canus</i> L.	P	1-3	
<i>Larus argentatus</i> Pontopp.	P	1-5	
<i>Larus ridibundus</i> L.	P	475-721	160-260
<i>Chlidonias hybrida</i> (Pall.)	I	0-4	
<i>Sterna hirundo</i> L.	I	6-32	0-5
<i>Alcedo atthis</i> (L.)	I	0-2	
<i>Acrocephalus schoenobaenus</i> (L.)	E	7-13	11
<i>Acrocephalus arundinaceus</i> (L.)	E	1-3	2
<i>Emberiza schoeniclus</i> (L.)	E	2-5	4

L., *Vanellus vanellus* (L.) and *Acrocephalus arundinaceus* (L.) had decreased in 1994. Probably the reduced area covered by reed and rush and the lack of shallows was the main cause of this.

The large number of species observed on Chylińskie Ponds and Brzozowski Pond is connected with the differentiation of the environment (rush-covered area, islands, shallows).

The dominant species, *L. ridibundus* and *A. fuligula*, eat mostly invertebrates on the fishponds. Hence, these organisms are consumed mainly by the bird community on the fishponds at Gołysz in the breeding season.

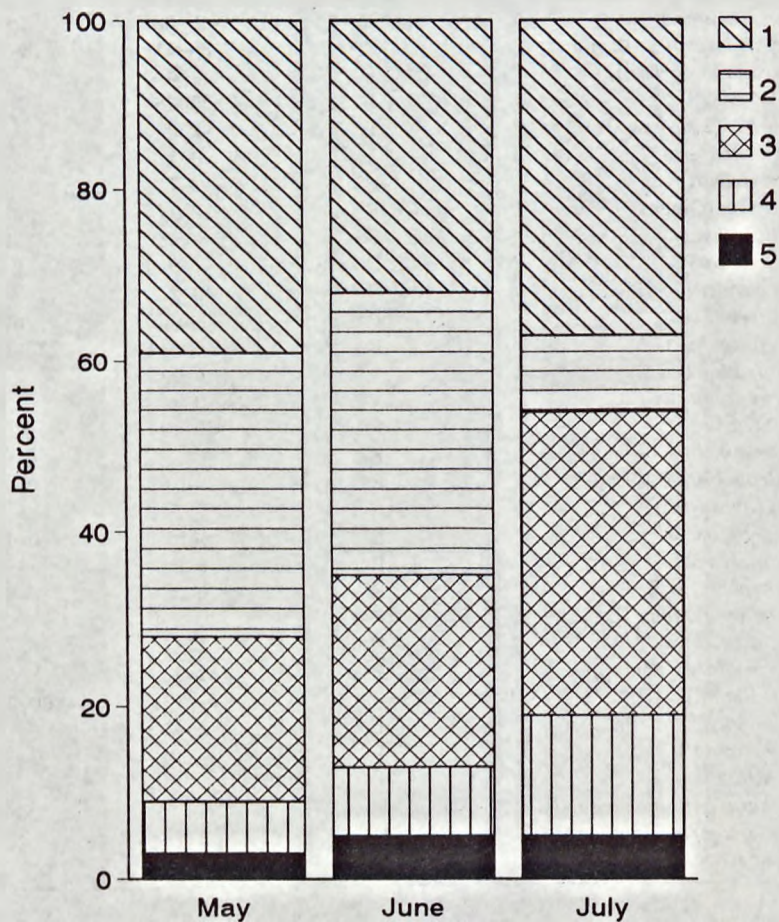


Fig. 1. Numbers of water birds on the fishponds at Golysz in the breeding season of 1994: 1 — *Anas platyrhynchos* L., 2 — *Larus ridibundus* L., 3 — *Aythya fuligula* (L.), 4 — *Aythya ferina* (L.), 5 — *Ardea cinerea* L., 6 — other.

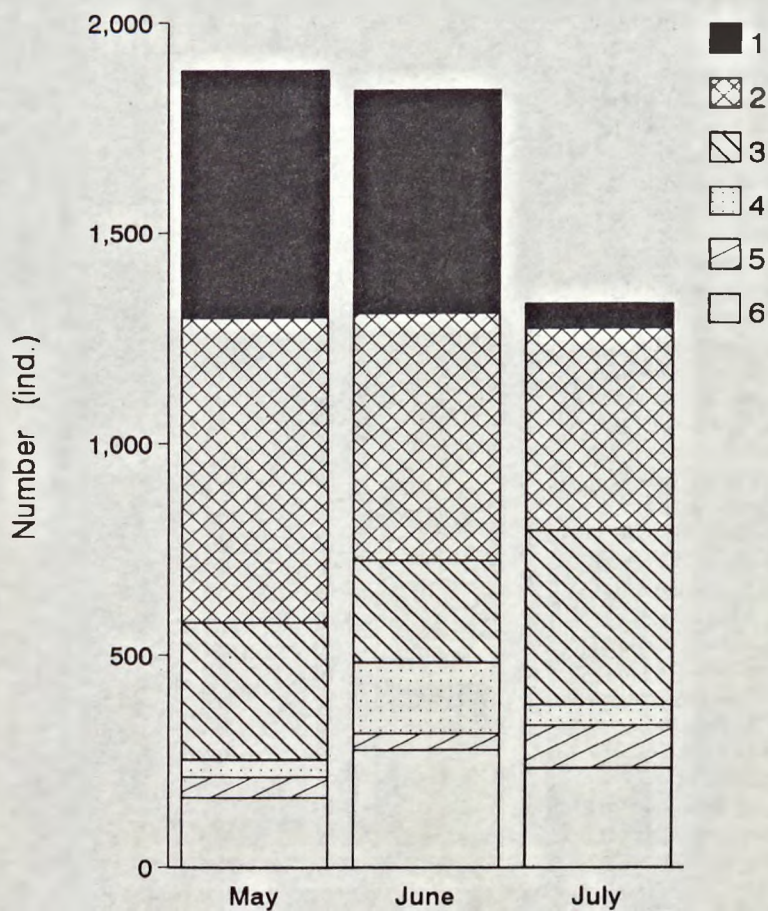


Fig. 2. Structure of ecological groups in the bird community living on the ponds at Golysz in the breeding season of 1994: 1 — polyphagous, 2 — phytophagous, 3 — benthophagous, 4 — ichthyophagous, 5 — other.

Table II. Comparison of numbers of adult birds observed on the ponds at Golysz in May 1958 (Bocheński 1960, area 163 ha) and 1994 (this study, area 270 ha): + — unknown number.

Species	1958	1994
<i>Tachybaptus ruficollis</i> (Pall.)	10	0
<i>Podiceps cristatus</i> (L.)	6	48
<i>Podiceps nigricollis</i> (Brehm)	30	37
<i>Phalacrocorax carbo</i> (L.)	0	4
<i>Ardea cinerea</i> L.	+	49
<i>Nycticorax nycticorax</i> (L.)	0	1
<i>Botaurus stellaris</i> (L.)	0	1
<i>Ixobrychus minutus</i> (L.)	14	0
<i>Ciconia ciconia</i> (L.)	+	2
<i>Cygnus olor</i> (Gmel.)	0	12
<i>Anas platyrhynchos</i> L.	70	586
<i>Anas strepera</i> L.	0	1
<i>Anas querquedula</i> L.	4	0
<i>Aythya nyroca</i> (Guld.)	8	0
<i>Aythya ferina</i> (L.)	45	41
<i>Aythya fuligula</i> (L.)	4	321
<i>Circus aeruginosus</i> (L.)	0	1
<i>Fulica atra</i> L.	50	29
<i>Gallinula chloropus</i> (L.)	10	0
<i>Vanellus vanellus</i> (L.)	30	4
<i>Charadrius dubius</i> (Scop.)	4	10
<i>Limosa limosa</i> (L.)	4	1
<i>Tringa ochropus</i> (L.)	2	0
<i>Tringa totanus</i> L.	6	2
<i>Gallinago gallinago</i> (L.)	6	0
<i>Larus canus</i> L.	0	1
<i>Larus argentatus</i> Pontopp.	0	1
<i>Larus ridibundus</i> L.	110	721
<i>Chlidonias hybrida</i> (Pall.)	20	0
<i>Sterna hirundo</i> L.	0	6
<i>Acrocephalus schoenobaenus</i> (L.)	0	13
<i>Acrocephalus arundinaceus</i> (L.)	25	1
<i>Acrocephalus scirpaceus</i> (Herm.)	10	0
<i>Emberiza schoeniclus</i> (L.)	10	5

## References

- Bocheński Z. 1958. Observations on the ornithofauna of the fishponds at Golysz (Silesia, Distr. Cieszyn). *Zesz. Nauk. UJ, Zool.*, 3, 203–222 [in Polish with English summary].
- Bocheński Z. 1960. Attempts at analysing the bird population of the fish ponds at Golysz. *Ekol. pol.*, Ser. B, 6, 269–280, [in Polish with English summary].
- Dobrowolski K. A. 1969. Structure of the occurrence of waterfowl types and morpho-ecological forms. *Ecol. pol.*, Ser. A, 17, 29–73.
- Tomiałojć L. 1990. *Ptaki Polski — rozmieszczenie i liczebność* [The birds of Poland — their distribution and abundance]. Warszawa, PWN, 464 pp.