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BIRDS OF THE KONČANICA FISH-PONDS, CROATIA

ANTUN DELIĆ[1] & IVAN DARKO GRLICA[2]

[1]Teacher Education Academy, University of Zagreb, Savska cesta 77, 10 000 Zagreb, Croatia (tel: 385 43 485 544; fax: 385 1 6177 862; e-mail: a_delic@yahoo.com)

[2]Petra Berislavića 19, 33 000 Virovitica, Croatia

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The paper presents the ornithofauna of the carp fish-ponds of Končanica and the surroundings. The research was conducted between the spring of 1985 and the autumn of 2001 The material comprises data on the registration and counting of individual species throughout the year. The investigation covered resident birds, summer visitors, winter visitors, passage migrants, regular vagrants and irregular vagrants. During approximately 3000 working hours, 170 bird species were recorded, of which there were 98 (57. 6%) species of breeding birds. The fish-ponds and the surrounding area are included in the migration routes of many bird species, particularly of the Anseriformes and Charadriformes. The European Threat Status is given for all the recorded species. Economic activities (agriculture, forestry, hunting), ongoing inside and outside the area of the fish-ponds, endanger the ornithofauna to a certain extent. The Končanica fish-ponds and the surrounding area are an exceptionally valuable ornithological locality, and as a result, should be proclaimed a protected area.

Key words: birds, the Končanica fish-ponds, upper Ilova river area, Croatia

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Predstavljena je fauna ptica šaranskih ribnjaka »Končanica« i bliže okolice koja je istraživana od proljeća 1985. godine do jeseni 2001 godine. Materijal predstavljaju podaci registriranja i brojenja primjeraka pojedinih vrsta tijekom cijele godine. Obrada je obuhvatila ptice stanarice, gnjezdarice selice, zimovalice, preletnice, redovite skitalice i neredovite skitalice. Tijekom oko 3000 radnih sati zabilježeno je 170 vrsta ptica, od kojih je 98 vrsta (57,6 %) gnjezdarica. Ribnjaci i okolno područje uključeni su u migracijske putove mnogih vrsta ptica, poglavito patkarica (*Anseriformes*) i vivčarica (*Charadriformes*). Za sve zabilježene vrste dat je status ugroženosti na području Europe (European Threat Status). Gospodarske aktivnosti (poljoprivreda, šumarstvo, lov) koje se odvijaju unutar ili izvan područja ribnjaka u određenoj mjeri ugrožavaju ptičju faunu. Ribnjaci »Končanica« i bliže okolno područje izuzetno su vrijedan ornitološki lokalitet, te ih zbog toga treba proglasiti zaštićenim područjem.

Ključne riječi: ptice, ribnjaci »Končanica«, gornje Poilovlje, Hrvatska

INTRODUCTION

Although the Končanica fish-ponds have existed for more than a hundred years, the first vigorous research into the bird-life of these fish-ponds and the surroundings began only in the 1980s. The research referred to the ecology of Coot (*Fulica atra*), Stork (*Ciconia ciconia*), White-tailed Eagle (*Haliaetus albicilla*), Cormorant (*Phalacrocorax carbo*), Black Kite (*Milvus migrans*), Mute Swan (*Cygnus olor*), and Whiskered Tern (*Chlidonias hybridus*), and a preliminary census of 38 species of waders was presented. The data can be found in the following papers: DELIĆ (1988 a, b, c, d; 1989; 1991a, b; 1992; 1993; 1998 a, b), DELIĆ & MATIJEVIĆ (1988 a, b), DELIĆ & MUŽINIĆ (1997), and MUŽINIĆ & DELIĆ (1997). Further research had as its objective the completion of this preliminary census, not only of waders but also of other species that are by their life-style in some way connected with water and the fish-ponds. Additionally, the objective of the research was also found the evaluation of the ornithological importance of this biotope on additional information.

THE AREA OF RESEARCH

The Končanica fish-ponds (Fig. 1) are situated in the area of the upper Ilova River area (17° 02' – 17° 07' E, 45° 37' – 45° 44' N) on the left bank of the Ilova River

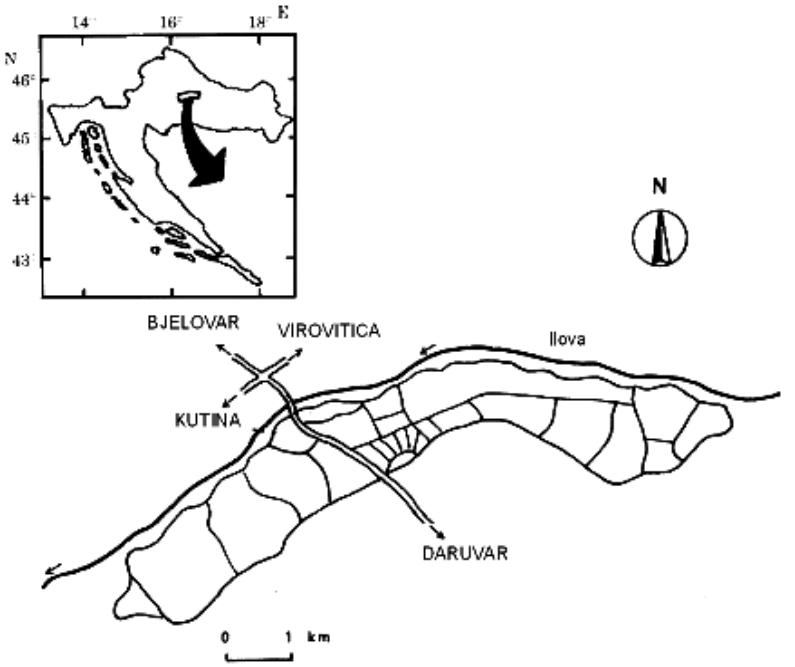

Fig. 1. The area of research (The Fish – ponds Končanica, Croatia)

(110 m above sea level). Only the south side is hilly, ascending towards the villages of Otkopi and Končanica (170 m above sea level in the village center). The building of the fish-ponds began in about 1900 on flooded and swampy forest terrain (Common Oak *Quercus robur* as dominant species) and grassland. The total surface is about 1500 ha (water surface: 1100 ha; dams and farm facilities: 400 ha), extending to about 12 km in length. The carp (*Cyprinus carpio*) is mostly reared in the fish-ponds, while cat fish (*Silurus glanis*), pike-perch (*Stizostedion lucioperca*), white amur (*Ctenopharyngodon idella*), etc., are reared to a lesser extent. The climate is moderately continental. From the geological point of view, the Ilova valley is composed of alluviums. The fish-ponds consist of 24 rather big fish crates separated by 5–10 m wide stretches of land (these can be up to 50m wide). A dam separates the fish-ponds from the Ilova River.

Inside the fish-ponds we can find a few different habitats: free water surface with emersed and submersed vegetation; swampy vegetation on the banks; some parts of the fish-ponds that are dried out and choked up with silt; fish-pond dams; flood grassland; willow-groves; flood woods; arable surfaces; settlements.

Between the fish crates there are numerous inflow-outflow canals filled with water. Two typical lowland streams – the Crnaja and Đurđička – flow through one part of the fish-ponds. The surrounding area consists of the occasionally flooded hayfields, woods of common oak (Crni lug, Zdenački gaj, Munijački lug) and arable surfaces (DELIĆ, 1989).

The Končanica fish-ponds include the immediate vicinity (total surface: 2,100 ha), and are included in the Croatian Important Bird Areas – IBA, under number 011 (GRIMMET *et al.*, 1989), but without the status of a protected area. In addition, they are included in the preliminary list of the wetlands in Croatia. The Bjelovar-Daruvar main road divides the fish-ponds from the north-west to the south-east, about 3 km in length.

MATERIAL AND METHODS

The research into the ornithofauna of the Končanica fish-ponds and the surroundings was conducted every month in the period from the spring of 1985 to the autumn of 2001 The research area was partially visited. Approximately 4 hours a week were spent working on site (except for a part of the war years of 1991–1992), which amounts to a total of about 3000 working hours. The processing included the following bird categories: resident; summer visitor; winter visitor; passage migrant; regular vagrant; irregular vagrant.

In systematic order, with English and Croatian names of the species of birds, the most favoured division was made in *Ptice Hrvatske i Europe: sa Sjevernom Afrikom i Srednjim Istokom* (HEINZEL *et al.*, 1999).

For the status of birds the most favoured division was made in the *Birds in Europe: their conservation status.* Cambridge, U.K.: BirdLife International (BirdLife Conservation Series no. 3) (TUCKER & HEATH, 1994). **European Threat Status:** E-Endangered,

V-Vulnerable, R-Rare, D-Declining, L-Localized, S-Secure, ( )-Status provisional. **SPEC category:** 1 (Species of global conservation concern), 2 (Concentrated in Europe and with an Unfavourable Conservation Status), 3 (Not concentrated in Europe but with an Unfavourable Conservation Status), 4 (Concentrated in Europe and with a Favourable Conservation Status); ^{w} (Category relates to winter populations).

The material consists of the data of registration and counting of specimens of individual species throughout the year. Conclusions on nesting were made based on the findings of active nests, observations of downy young (pull.) and/or based on the cries of adult individuals in the breeding period. The identification of the species on site was done using 7x50 and 10x50 binoculars. On two occasions (August 14, 1999 and August 25, 2000) birds were caught with nets, and given rings, and, especially to do with the determination of *Acrocephalus scirpaceus* and *Acrocephalus palustris*, the method used was according to the *Identification to European Passerines*, Stockholm (SVENSSON, 1992).

For a part of the species, wherever possible, an approximate evaluation of the number was given. For a species that rarely appears in the research area all the observation dates were listed. During work on site, some photographic documentation was created as evidentiary material.

Fig. 2. Honey buzzard (*Pernis apivorus*), juv.

Fig. 3. Black-winged stilt (*Himantopus himantopus*)

RESULTS

In the area of the Končanica fish-ponds and the immediate vicinity, 170 bird species were recorded:

Gaviidae

1. Red-throated Diver *Gavia stellata*

Scarce winter visitor. Several records:

17. 12. 1989 – 1 specimen;

14. 01. 1992 – 1 specimen; during the traditional winter census of the water habitat birds in Croatia; 18. 01. 1992 one specimen was identified as *Gavia sp.* and might have been the same specimen;

One stuffed specimen can be found in the office of the chairman of the board of directors of Končanica d.d. company. The specimen was shot at the fish-ponds (date of shooting unknown).

Podicipedidae

2. Great Crested Grebe *Podiceps cristatus*

Regular summer visitor. 50 – 80 breeding pairs. Stays on the fish-ponds until late autumn. One specimen recorded wintering – 17. 01. 1998

3. Little Grebe *Tachybaptus ruficollis*

Regular summer visitor. Many observations.50 – 60 breeding pairs. Stays at the fish-ponds until late autumn. Also recorded wintering – 23. 02. 1996 – 2 specimens; 18. 02. 2001 – 1 specimen.

Pelecanidae

4. White Pelican *Pelecanus onocrotalus*

Irregular vagrant. One juvenile (young) specimen stayed at the fish-ponds from October 26th to October 28th, 2000

Phalacrocoracidae

5. Cormorant *Phalacrocorax carbo*

Regular vagrant and former summer visitor.

The first, and so far the only breeding occurring was in 1985 on the fish-pond table R-24. 167 pairs nested in the willows inside the fish-ponds (DELIĆ, 1988 c). Many observations in all seasons. In the autumn and winter period (if the water is not frozen) 2000 to 3000 specimens remain on the fish-ponds, and between 200 and 300 specimens in the spring and summer period.

6. Pygmy Cormorant *Phalacrocorax pygmeus*

Irregular vagrant. Observed in the period between April 18th and 20th 1987: 50 specimens recorded.

Ardeaidae

7. Bittern *Botaurus stellaris*

Summer visitor. In the breeding season the characteristic »boo« cry can be heard. As a winter visitor it was recorded on: 18. 01. 1992 – 1 specimen; 12. 01. 1994 – 1 specimen. In winter time, shot specimens were recorded on: 11. 12. 1986 – 1 specimen; 6. 01. 1990 – 1 specimen.

8. Little Bittern *Ixobrychus minutus*

Regular summer visitor. Observed several times. In 1986 a minimum of 7 breeding pairs were recorded (DELIĆ, 1988 c). The evaluation of the number has not been given because it is a very shy and evasive species.

9. Squacco Heron *Ardeola ralloides*

Passage migrant. Only one record: 1. 07. 1994, 27 individuals recorded.

10. Night Heron *Nycticorax nycticorax*

Regular vagrant in the summer period. Adult and juvenile specimens are frequent and numerous from June to August: 80–100 specimens.

11. Great White Egret *Egretta alba*

Winter visitor and passage migrant. Observed on a number of occasions throughout the year, not more than 400 specimens.

18. 01. 1992 – 5 specimens; 17. 01. 1998 – up to 200 specimens; 15. 04. 1989. – up to 80 specimens; 2. 10. 1999 – up to 50 specimens; 17. 01. 2001 – up to 400 specimens.

12. Little Egret *Egretta garzetta*

Passage migrant. Observed on several occasions: May 1986 – 1 specimen (DELIĆ, 1988 c); 25. 06. 1992 – up to 30 specimens; 17. 07. 1996 – up to 50 specimens; 14. 07. 2000 – up to 50 specimens.

13. Grey Heron *Ardea cinerea*

Passage migrant and winter visitor. Very numerous and the most frequent of all herons. Many observations in all seasons, up to 700 specimens: March 1987 – 14 dead specimens (DELIĆ, 1988 c);

18. 01. 1992 – up to 200 specimens; 30. 08. 2000 – up to 200 specimens; 17. 01. 2001 – up to 700 specimens.

14. Purple Heron *Ardea purpurea*

Passage migrant. Single specimens recorded during the spring migration and during summer: 4. 04. 1986 – 1 specimen; 9. 08. 1987 – 2 shot specimens with cut off beaks; 1 specimen on the canal by the main road (DELIĆ, 1988 c).

18. 05. 1994 – 1 specimen;

21. 08. 1999 – 1 specimen.

Threskiornithidae

15. Spoonbill *Platalea leucorodia*

Passage migrant. Single specimens recorded during migration. (DELIĆ, 1988 c). Observed on several occasions in large flocks:

12. 07. 2000 – up to 120 specimens;

21. 08. 2000 – up to 300 specimens.

16. Glossy Ibis *Plegadis falcinellus*

Irregular vagrant. Only one record 19. 06. 1994 – 4 specimens.

Ciconiidae

17. White Stork *Ciconia ciconia*

Summer visitor (up to 70 breeding pairs in the nearby villages) and regularly feeding on the fish-ponds (DELIĆ, 1988 a, c). Many observations from early spring to the second half of August.

18. Black Stork *Ciconia nigra*

Summer visitor. Nests in the woods of Crni lug and Zdenački gaj, 3 breeding pairs (DELIĆ, 1988 c). Observed flying on several occasions, on the nest and on feeding sites. 8–10 pairs breeding in the research area.

Anatidae

19. Whooper Swan *Cygnus cygnus*

Scarce winter visitor. Only one record: 18. 01. 1992 – 1 specimen.

20. Mute Swan *Cygnus olor*

Summer visitor and winter visitor. Since 1996 breeding on the fish-ponds (DELIĆ, 1998 a), and in the past ten years or so regularly wintering. Observed on several occasions throughout the year, up to 150 specimens.

21. 06. 2001 – up to 90 specimens and 2 breeding pairs.

21. Greylag *Anser anser*

Scarce winter visitor. Only one record:

18. 01. 1987 – 27 specimens (DELIĆ, 1988 c).

22. Bean Goose *Anser fabalis*

Winter visitor.

18. 01. 1987 – over 2000 specimens (DELIĆ, 1988 c);

14. 01. 1990 – 18 specimens (MIKUSKA & MIKUSKA, 1995 a).

23. Ruddy Shelduck *Tadorna feruginea*

Irregular vagrant. Between October 2nd and 4th 1999 3 specimens were recorded that stayed in the shallow water of a partially drained fish-pond and occasionally came out to the land.

24. Mallard *Anas platyrhynchos*

Summer visitor. Many observations in all seasons, up to 3000 specimens: 24. 01. 1988 – 655 specimens (MIKUSKA & MIKUSKA, 1993); 21. 01. 1989. – 28 specimens (MIKUSKA & MIKUSKA, 1994); 14. 01. 1990. – 350 specimens (MIKUSKA & MIKUSKA, 1995 a); 11. 01. 1991 – 54 specimens (MIKUSKA & MIKUSKA, 1995 b); 18. 01. 1992 – up to 1100 specimens; 15. 08. 2000 – up to 1000 specimens; 17. 01. 2001 – up to 3000 specimens.

25. Gadwall *Anas strepera*

Summer visitor (2–3 breeding pairs). Several records: 5. 03. 1992 – 5 specimens; 18. 06. 1996 – female with 7 young; 1. 06. 1999 – female with 5 young.

26. Wigeon *Anas penelope*

Winter visitor and passage migrant. Observed on several occasions, up to 9 individuals: 24. 01. 1988 – 1 specimen (MIKUSKA & MIKUSKA, 1993); 21. 01. 1995 – 2 specimens; 15. 03. 1995 – 9 specimens.

27. Teal *Anas crecca*

Winter visitor and passage migrant. Observed on several occasions, up to 150 individuals: 16. 08. 1987 – shot 19 specimens (DELIĆ, 1988 c); 24. 01. 1988 – 16 specimens (MIKUSKA & MIKUSKA, 1993); 24. 01. 1995 – up to 50 specimens; 28. 04. 1997 – up to 150 specimens.

28. Garganey *Anas querquedula*

Passage migrant. Several records of up to 50 individuals: 16. 08. 1987 – 1 ad. specimen (DELIĆ, 1988 c); 12. 04. 1992 – up to 50 specimens.

29. Pintail *Anas acuta*

Scarce winter visitor. Only one record:

11. 01. 1991 – 11 specimens (MIKUSKA & MIKUSKA, 1995 b).

30. Shoveler *Anas clypeata*

Scarce winter visitor. Only two records: 21. 01. 1995 – 1 specimen; 18. 02. 1999 – 5 specimens.

31. Red-crested Pochard *Netta rufina*

Scarce winter visitor. Only two records:

2. 02. 1993 – 5 specimens;

28. 01. 1998 – 1 specimen.

32. Tufted Duck *Aythya fuligula*

Passage migrant. Several records of up to 10 specimens: 14. 01. 1990. – 8 specimens (MIKUSKA & MIKUSKA, 1995 a); 11. 01. 1991 – 10 specimens (MIKUSKA & MIKUSKA, 1995 b); 7. 07. 1994 – 5 males and 1 female.

33. Scaup *Aythya marila*

Scarce winter visitor. Only two records: 18. 01. 1992 – 2 specimens; 28. 01. 1999 – 5 specimens.

34. Pochard *Aythya ferina*

Summer visitor. Up to 20 breeding pairs. Many observations in all seasons: 27. 04. 1987 – 1 pair (male and female); 9. 08. 1987 – 5 specimens; 16. 08. 1987 – shot 2 males and 1 female (DELIĆ, 1988 c);

16. 06. 1988 – female with 7 young; 11. 01. 1991 – 63 specimens (MIKUSKA & MIKUSKA, 1995 b).

35. Ferruginous Duck *Aythya nyroca*

Summer visitor. 20–30 breeding pairs. Many observations. For instance 16. 08. 1987 shot 54 specimens (DELIĆ, 1988 c).

36. Eider *Somateria mollissima*

Irregular vagrant. Only one winter record: 11. 02. 1988 – 7 specimens (Reported by LUKAŠ MIROSLAV).

37. Goldeneye *Bucephala clangula*

Winter visitor. On many occasions observed as a single specimen or in groups of up to 25 individuals:

24. 01. 1988 – 24 specimens (MIKUSKA & MIKUSKA, 1993); 14. 01. 1990. – 2 specimens (MIKUSKA & MIKUSKA, 1995 a); 11. 01. 1991 – 8 specimens (MIKUSKA & MIKUSKA, 1995 b); 18. 01. 1992 – 17 specimens; 17. 01. 1993 – 1 specimen; 12. 01. 1994 – 20 specimens.

38. Goosander *Mergus merganser*

Scarce winter visitor:

23. 11. 1986 – 1 shot male; 18. 01. 1987 1 male (DELIĆ, 1988 c);

24. 01. 1988 – 2 specimens (MIKUSKA & MIKUSKA, 1993);

18. 01. 1992 – 1 specimen.

39. Red-breasted Merganser *Mergus serrator*

Scarce winter visitor. Only one winter observation:

15. 02. 1992 – 5 specimens.

40. Smew *Mergus albellus*

Scarce winter visitor. Only two records:

24. 01. 1988 – 3 specimens (MIKUSKA & MIKUSKA, 1993);

15. 02. 1992 – 1 specimen.

Pandionidae

41. Osprey *Pandion haliaetus*

Passage migrant. Observed on several occasions during the spring and autumn migration, up to 6 individuals.

Accipitridae

42. White-tailed Eagle *Haliaeetus albicilla*

Resident. One breading pair in the nearby oak forest of Zdenački gaj recorded for the first time in February 1987 (DELIĆ, 1992; 1998 b). Observed on several occasions on and around the fish-ponds throughout the year. Up to 30 individuals recorded in a group during winter.

43. Black Kite *Milvus migrans*

Summer visitor. Breeding inside the fish-ponds and in the surrounding woods (DELIĆ, 1993). On several occasions 2 breeding pairs observed.

44. Marsh Harrier *Circus aeruginosus*

Summer visitor and winter visitor. Two pairs breeding in the reeds of the fish-ponds.

45. Hen Harrier *Circus cyaneus*

Winter visitor. Often in winter observed flying low above the nearby meadows, individually.

46. Montagu's Harrier *Circus pygargus*

Summer visitor and passage migrant. 1–2 breeding pairs in the swampy parts of the fish-ponds and on the nearby water meadows. Only 3 records:

16. 04. 1992 – 1 specimen;

21. 06. 1995 – 1 specimen;

3. 07. 1995 – 2 specimens.

47. Sparrowhawk *Accpiter nisus*

Resident. 2 breeding pairs in the nearby woods. Observed on several occasions in all seasons on the fish-ponds and in the surroundings, individually.

48. Goshawk *Accipiter gentilis*

Resident. 1 breeding pair in the forest of Crni lug.

49. Buzzard *Buteo buteo*

Resident. 8 or more breeding pairs in the forest part of the fish-ponds and the surrounding woods.

50. Honey Buzzard *Pernis apivorus*

Summer visitor. One breeding pair in the forest of Munijački lug in the vicinity of the fish-ponds. Several records, individually. 25. 09. 1992 – a young (juv.) specimen caught.

51. Lesser Spotted Eagle *Aquila pomarina*

Summer visitor. One breeding pair inside the fish-ponds.

18. 04. 1988 – 2 specimens; 13. 06. 1994 – 1 specimen; 12. 06. 1999 – 1 specimen.

Falconidae

52. Peregrine *Falco peregrinus*

Vagrant. Several records of 1–2 specimens in all seasons inside and outside the fish-ponds. 7. 04. 1989. – 1 specimen; 11. 09. 1989. – 1 specimen; 11. 03. 1994 – 1 specimen.

53. Hobby *Falco subbuteo*

Summer visitor. One breeding pair. Breeding in the forests around the fish-ponds. Several records of 1–2 specimens inside and outside the fish-ponds.

54. Kestrel *Falco tinnunculus*

Resident. Breeding on single trees and in smaller woods inside and outside the fish-ponds (3–5 breeding pairs). Many observations of 1–2 specimens and nests with the young.

55. Red-footed *Falco vespertinus*

Passage migrant. Several records inside and outside the fish-ponds during migration, up to 40 individuals: 1. 05. 1988 – 2 specimens (male and female); 14. 05. 1997 – up to 40 specimens; 2. 08. 2001 – 1 specimen (female).

Phasianidae

56. Pheasant *Phasianus colchicus*

Resident. Breeding inside and outside the fish-ponds. Many observations of one up to several specimens.

57. Grey Partridge *Perdix perdix*

Resident. Breeding inside and outside the fish-ponds. Several observations of 1–5 specimens.

58. Quail *Coturnix coturnix*

Summer visitor. Breeding inside and outside the area of the fish ponds. A few times observed, and many times its »pooch-poo-rooch« cry could be heard.

Rallidae

59. Spotted Crake *Porzana porzana*

Passage migrant. Only one record: 4. 07. 1992 – 1 specimen.

60. Water Rail *Rallus aquaticus*

Summer visitor. Breeding inside and outside the fish-ponds. Only several records individually in the breeding season: 3. 06. 1986. – 1 ad specimen and 1 downy young specimen (DELIĆ, 1988 c); 19. 08. 1994 – 1 specimen; 15. 06. 2000 – 1 specimen.

61. Moorhen *Gallinula chloropus*

Summer visitor. Breeding inside and outside the fish-ponds and summer visitor. Many observations of 1 or more specimens: adult (adultus), young (juv.) and downy young (pull.), and nests with eggs (DELIĆ, 1988 c). 25–35 breeding pairs.

62. Coot *Fulica atra*

Summer visitor and winter visitor. Breeding inside and outside the area of the fish ponds and summer and winter visitor. Many observations of 1-more specimens adults, young and downy young, and nests with eggs. From August to October up to 2000 individuals can be counted (DELIĆ, 1988 a, b, c; 1989; 1991 a, b; MIKUSKA & MIKUSKA, 1993; 1995 b). Not more than 100 to 150 breeding pairs.

Gruidae

63. Common Crane *Grus grus*

Passage migrant. Three records: 20. 03. 1989 – 5 specimens flew down on the snow-covered field in the vicinity of the fish ponds; 18. 03. 1991 – a flock of 8 specimens flying over; 5. 10. 1993 – a flock of up to 40 specimens on the fish-ponds.

Otididae

64. Great Bustard *Otis tarda*

Irregular vagrant. Only one record: 15. 04. 1985 – 12 specimens on the meadow near the fish-ponds.

Recurvirostridae

65. Black-winged Stilt *Himantopus himantopus*

Passage migrant. Only one record: 10. 07. 2000 – 14 specimens feeding in the shallow waters of the fish-ponds.

Charadriidae

66. Little Ringed Plover *Charadrius dubius*

Passage migrant. Two records: 23. 07. 1998 – up to 30 specimens; 19. 08. 2000 – up to 20 specimens.

67. Lapwing *Vanellus vanellus*

Summer visitor. Breeding inside and outside the fish-ponds. Many observations of 1–50 specimens from spring to the end of the summer.

Scolopacidae

68. Temminck's Stint *Calidris temminckii*

Passage migrant. Only one record: 8. 09. 2000 – 2 specimens.

69. Little Stint *Calidris minuta*

Passage migrant. Many observations of up to 20 specimens on the silty surfaces of the fish-ponds in the spring and autumn migration.

70. Ruff *Philomachus pugnax*

Passage migrant. Several records of up to 150 individuals (24. 03. 1991 – up to 100 specimens; 25. 03. 1991 – up to 150 specimens).

71. Snipe *Gallinago gallinago*

Passage migrant. Only two records:16. 08. 1987 – one shot specimen with the ring of an ornithological institute from Paris according to an oral report by KREJČI JOSIP (DELIĆ, 1988 c); 24. 03. 1991 – 1 specimen.

72. Woodcock *Scolopax rusticola*

Passage migrant. Only one record: 11. 09. 1996 – 1 specimen.

73. Black-tailed Godwit *Limosa limosa*

Passage migrant. Only two records:

24. 03. 1991 – 5 specimens;

18. 04. 1994 – 4 specimens.

74. Curlew *Numenius arquata*

Passage migrant. Several records inside the fish-ponds and on the meadows outside the fish ponds in flocks of up to 25 specimens (19. 03. 2000 – 25 specimens; 20. 03. 2000 – 18 specimens; 15. 03. 2001 – 22 specimens).

75. Slender-billed Curlew *Numenius tenuirostris*

Passage migrant. Only one record: 16. 08. 1987 – 2 shot specimens (DELIĆ, 1988 c).

76. Spotted Redshank *Tringa erythropus*

Passage migrant. Several records of up to 5 specimens.

77. Redshank *Tringa totanus*

Passage migrant. Many observations of up to 30 specimens during the spring and autumn migration.

78. Marsh Sandpiper *Tringa stagnatilis*

Passage migrant. Only one record: 5. 04. 2001 – 3 specimens.

79. Greenshank *Tringa nebularia*

Passage migrant. Several records of up to 25 specimens.

80. Woodsandpiper *Tringa glareola*

Passage migrant. Several records of up to 30 specimens.

81. Green Sandpiper *Tringa ochropus*

Passage migrant. Several records of up to 12 specimens.

82. Common Sandpiper *Actitis hypoleucos*

Passage migrant. Several records of up to 8 specimens (DELIĆ, 1988 c).

Stercorariidae

83. Long-tailed Skua *Stercorarius longicaudus*

Irregular vagrant. Only one record: 1. 07. 1987 – 1 specimen flying over the fish-ponds (DELIĆ, 1988 c).

Laridae

84. Black-headed Gull *Larus ridibundus*

Summer visitor and winter visitor. Breeding in the pure colony on a little islet inside the fish-pond's R-3 reservoir, up to 500 pairs. Many observations in all seasons inside and outside the fish-ponds: 1985 year – 191 breeding pairs; 1986 year – 274 breeding pairs (DELIĆ, 1988 c); 1993 year – up to 500 breeding pairs.

85. Yellow-legged Gull *Larus cachinnans*

Regular vagrant. Observed on several occasions as individual specimens (DELIĆ, 1988 c).

Sternidae

86. Common Tern *Sterna hirundo*

Summer visitor. Recorded breeding 2 times: in 1987, 17 breeding pairs (DELIĆ, 1988 c); 5. 07. 1993 – 5 nests with downy young in grass turfs (most of the brood destroyed by the flocks of ducks in rearing).

87. Black Tern *Chlidonias niger*

Passage migrant and summer vagrant. Several records in groups of up to 50 specimens.

88. Whiskered Tern *Chlidonias hybridus*

Summer visitor. Breeding on the fish-ponds, but not every year due to the drainage of water from the fish-ponds' reservoirs in the breeding season. Many observations inside and outside the fish-ponds. Up to 48 breeding pairs counted. The nests were built exclusively on islets of floating *Polygonum amphibium* (MUŽINIĆ & DELIĆ, 1997).

Columbidae

89. Woodpigeon *Columba palumbus*

Summer visitor. Breeding inside and outside of the area of the fish-ponds. Many observations of up to 200 specimens from spring to autumn.

90. Collared Dove *Streptopelia decaocto*

Resident. Many observations in all seasons inside and outside the fish-ponds, individually.

91. Turtle Dove *Streptopelia turtur*

Summer visitor. Breeding inside and outside the fish-ponds. Many observations, individually.

Cuculidae

92. Cuckoo *Cuculus canorus*

Summer visitor. Breeding inside and outside the fish-ponds. In spring regularly made heard by a characteristic cry, observed individually.

Strigidae

93. Little Owl *Athene noctua*

Resident. Many times at night heard with its characteristic cry.

94. Eagle Owl *Bubo bubo*

In 1960s it nested in the surroundings of the fish ponds. Dermoplastic preparation is exhibited in the local inn in Ivanovo Selo. Shot in about 1960 in Munijački lug wood near the fish ponds. Present status unknown.

95. Long-eared Owl *Asio otus*

Resident. Many times observed inside and outside the area of the fish-ponds.

96. Ural Owl *Strix uralensis*

Resident. Several records inside and outside the area of the fish-ponds.

19. 02. 1997 – 1 shot specimen.

97. Tawny Owl *Strix aluco*

Resident. One pair regularly nesting in the trunk of an old apple-tree since 1994 or even before.

98. Barn Owl *Tyto alba*

Resident. Several records under the roof of a farmhouse in Majur (the area of the fish-ponds).

Apodidae

99. Swift *Apus apus*

Passage migrant. Only one record: 21. 08. 2000 – 7 specimens flying low above the fish-ponds.

Alcedinidae

100. Kingfisher *Alcedo atthis*

Resident. Many observations of 1–5 specimens in all seasons.

Upupidae

101. Hoopoe *Upupa epops*

Summer visitor. Several records during breeding season.

Meropidae

102. Bee-eater *Merops apiaster*

Passage migrant. Observed many times flying over the fish-ponds at the end of August and in the beginning of September at the time of migration. No record of breeding inside the fish-ponds or in the near surroundings. However, closest to the fish-ponds (about 15 km air distance from the fish-ponds) breeding on the northern side of Bilogora mountain near the village of Vukosavljevice not far from Virovitica (DELIĆ *et al.*, 1997).

Picidae

103. Black Woodpecker *Dryocopus martius*

Resident. Only two records: 18. 03. 1989 – 1 specimen; 5. 02. 1990 – 1 specimen.

104. Green Woodpecker *Picus viridis*

Resident. Many observations throughout the year.

105. Great Spotted Woodpecker *Dendrocopos major*

Resident. Many observations throughout the year.

106. Middle Spotted Woodpecker *Dendrocopos medius*

Resident. Many observations throughout the year.

107. Lesser Spotted Woodpecker *Dendrocopos minor*

Resident. Many observations of 1 – 2 specimens in all seasons inside and outside the area of the fish-ponds.

108. Wryneck *Jynx torquilla*

Summer visitor. Its cry was heard many times, and it was observed on 12. 05. 1998 – 1 specimen.

Alaudidae

109. Woodlark *Lullula arborea*

Summer visitor. On several occasions up to 3 specimens observed

110. Skylark *Alauda arvensis*

Summer visitor. On several occasions up to 5 specimens observed from spring to autumn.

111. Crested Lark *Galerida cristata*

Resident. Many observations inside and outside the area of the fish-ponds of up to 15 specimens in all seasons.

Hirundinidae

112. House Martin *Delichon urbica*

Summer visitor. Nesting under the eaves of farm houses and houses inside the fish ponds in a colony of up to 15 pairs. Many observations during spring and summer.

113. Swallow *Hirundo rustica*

Summer visitor. Several hundreds of pairs breeding in the barns of the surrounding settlements. Many observations during season.

Motacillidae

114. Tree Pipit *Anthus trivialis*

Summer visitor. Several records of up to 2 specimens.

115. Meadow Pipit *Anthus pratensis*

Passage migrant. Only two records: 12. 02. 1999 – 7 specimens; 23. 02. 1999 – 8 specimens.

116. Pied Wagtail *Motacilla alba*

Summer visitor. Many observations of up to 2 specimens during spring and summer. On several occasions the nests with eggs and the young were observed.

117. Yellow Wagtail *Motacilla flava*

Passage migrant. Only two records: 9. 02. 1992 – 1 specimen; 18. 03. 1993 – 1 specimen.

Bombycillidae

118. Waxwing *Bombycilla garrulus*

Winter visitor. Several records in groups of up to 200 specimens.

Turdidae

119. Nightingale *Luscinia megarhynchos*

Summer visitor. Their song can often be heard. Several records of individual specimens.

120. Robin *Erithacus rubecula*

Summer visitor. Several records.

121. Stonechat *Saxicola torquata*

Summer visitor. Many observations of individuals and in pairs during spring and summer.

122. Black Redstart *Phoenicurus ochruros*

Summer visitor. Only one record: 25. 08. 2001 – 1 adult (adultus) specimen and 5 young ones that had just left the nest.

123. Redstart *Phoenicurus phoenicurus*

Summer visitor. Several records of individuals and in pairs during the breeding season.

124. Blackbird *Turdus merula*

Resident. Many observations of individuals or in pairs from early spring to late autumn, and even during winter.

125. Fieldfare *Turdus pilaris*

Winter visitor. Many observations. During winters without snow (from December to March) in flocks of hundreds or even thousands of specimens on the meadows by the fish-ponds.

126. Song Thrush *Turdus philomelos*

Summer visitor. A larger number of observations during breeding season. A young (juv.) specimen found near the road (probably smashed against the car) near Zdenački gaj woods on 17. 06. 1996

Sylviidae

127. Grasshoper Warbler *Locustella naevia*

Summer visitor. Several records of individual specimens during breeding season.

128. Savi's Warbler *Locustella luscinioides*

Summer visitor. Several records of individual specimens during breeding season.

129. Reed Warbler *Acrocephalus scirpaceus*

Summer visitor. Several records of individual specimens. Eight young (juv.) specimens caught by net on 25. 08. 2000.

130. Great Reed Warbler *Acrocephalus arundinaceus*

Summer visitor. Many observations of up to 20 specimens from spring to the end of summer. Regularly heard with its characteristic song. One specimen caught by net on 25. 08. 2000

131. Sedge Warbler *Acrocephalus schoenobaenus*

Summer visitor. Several records.

25. 08. 2000 –11 young (juv.) specimens caught by net.

132. Garden Warbler *Sylvia borin*

Passage migrant. 25. 08. 2000 – 1 specimen caught by net.

133. Whitethroat *Sylvia communis*

Summer visitor. Many observations of up to 2 specimens from spring to the end of summer.

134. Blackcap *Sylvia atricapilla*

Summer visitor. Many observations of up to 2 specimens from spring to the end of summer.

135. Chiffchaff *Philloscopus collybita*

Summer visitor. Several records.

25. 08. 2000 – 1 specimen caught by net.

136. Goldcrest *Regulus regulus*

Passage migrant. Several records during migrations.

Muscicapidae

137. Spotted Flycatcher *Muscicapa striata*

Summer visitor. Many times observed. 25. 08. 2000 – 1 specimen caught by net.

138. Collared Flycatcher *Ficedula albicollis*

Passage migrant. Only one record: 10. 04. 1999 – 1 specimen (male).

Aegithalidae

139. Long-tailed Tit *Aegithalos caudatus*

Resident. Many observations of up to 20 specimens.

Remizidae

140. Penduline Tit *Remiz pendulinus*

Summer visitor. Many observations from spring to summer. Nests with eggs and the young found many times: 14. 08. 1999 – 17 young (juv.) specimens caught by net.

Paridae

141. Marsh Tit *Parus palustris*

Resident. Many observations of up to 10 specimens in all seasons.

142. Great Tit *Parus major*

Resident. Many observations of up to 20 specimens in all seasons.

143. Blue Tit *Parus caeruleus*

Resident. Many observations of up to 20 specimens in all seasons.
25. 08. 2000 – 15 young specimens (juv.) caught by net.

Sittidae

144. Nuthatch *Sitta europea*

Resident. Many observations of up to 2 specimens in all seasons.

Troglodytidae

145. Wren *Troglodytes troglodytes*

Resident. Many observations of individual specimens in all seasons.

Lanidae

146. Great Grey Shrike *Lanius excubitor*

Winter visitor. Several records during wintering.

147. Red-backed Shrike *Lanius collurio*

Summer visitor. Many observations of up to 7 specimens from spring to the end of summer. Nests with eggs and the young observed many times.

Corvidae

148. Jay *Garrulus glandarius*

Resident. Many observations of up to 8 specimens in all seasons.

149. Magpie *Pica pica*

Resident. Many observations of up to 30 specimens in all seasons.

150. Rook *Corvus frugilegus*

Regular vagrant. Its breeding close to Virovitica is well known (about 15 km air-distance from the fish-ponds). Breeding on the fish-ponds and in the vicinity unknown. Since 2000, regularly observed in groups of up to 50 specimens on the surrounding meadows from late spring until the end of summer.

151. Hooded Crow *Corvus corone cornix*

Resident. Many observations of up to 50 specimens in all seasons.

152. Jackdaw *Corvus monedula*

Resident. Many observations of up to 50 specimens in all seasons.

153. Raven *Corvus corax*

Resident. Several observations of up to 5 specimens in all seasons.

Oriolidae

154. Golden Oriole *Oriolus oriolus*

Summer visitor. Several observations of up to 2 specimens from spring to the end of summer: 21. 06. 2001 – a nest discovered hung on the fork branch of horizontal willow branches.

Sturnidae

155. Starling *Sturnus vulgaris*

Summer visitor. Many observations of up to 900 specimens from spring to the end of summer.

Passeridae

156. House Sparrow *Passer domesticus*

Resident. Many observations of up to 500 specimens in the settlement inside the fish-ponds in all seasons.

157. Tree Sparrow *Passer montanus*

Resident. Many observations of up to 500 specimens in all seasons.

Fringillidae

158. Brambling *Fringilla montifringilla*

Winter visitor. Several records in groups of up to 20 specimens.

159. Chaffinch *Fringilla coelebs*

Resident. Several observations of up to 200 specimens in all seasons.

160. Serin *Serinus serinus*

Summer visitor. Several records of individual specimens and nests with eggs.

161. Redpoll *Acanthis flammea*

Winter visitor. Only one record:

19. 01. 1986. – 9 specimens.

162. Linnet *Acanthis cannabina*

Resident. Several records in all seasons.

163. Siskin *Carduelis spinus*

Winter visitor. Several records during wintering in groups of up to 12 specimens.

164. Goldfinch *Carduelis carduelis*
Resident. Many observations of up to 50 specimens in all seasons.

165. Greenfinch *Carduelis chloris*
Resident. Only one record:
16. 05. 2000 – 1 specimen.

166. Bulfinch *Pyrrhula pyrrhula*
Winter visitor. Many observations in groups of up to 20 specimens.

167. Hawfinch *Coccothraustes coccothraustes*
Resident. One specimen on 27. 08. 1999

Emberizidae

168. Corn Bunting *Miliaria calandra*
Resident. Several observations of up to 5 specimens in all seasons.

169. Yellowhammer *Emberiza citrinella*
Resident. Many observations of up to 10 specimens in all seasons.

170. Reed Bunting *Emberiza schoeniclus*
Resident. Many observations of individuals and in pairs throughout the year.

DISCUSSION AND CONCLUSION

Although the Končanica fish-ponds are not a protected locality, we believe that this list will be a useful base for future research and measures that should be taken for the protection of the most endangered species. With more detailed research we can realistically expect some corrections in the total number of breeding birds and of the other recorded species.

In the area of the Končanica fish-ponds and the near surroundings 170 species have been recorded, 98 of which (57.6%) are breeding birds.

During mild winters the populations of some species number several thousands of specimens e.g. *Phalacrocorax carbo*, *Fulica atra*, *Anser fabalis*, *Turdus pilaris* and *Anas platyrhynchos.* During the breeding season, at the fish-ponds there are more than a thousand individuals of the following species: *Fulica atra*, *Anas platyrhynchos*, and *Larus ridibundus.* Some other species appear in the populations of several dozens and even up to a hundred and more specimens. This refers primarily to the species of *Ardea cinerea* throughout the year, and *Nycticorax nycticorax*, especially numerous in the period between June and August when the young (juv.) specimens come to the fish-ponds from distant breeding localities in search of food and shelter. During migration and the summer season the following specimens also appear in large numbers: *Egretta alba*, and *Platalea leucorodia.* The populations of the following species are also numerous in breeding *Podiceps cristatus*, *Tachybaptus ruficollis*, *Aythya*

ferina, Aythya nyroca, Gallinula chloropus, Chlydonias hybridus. In the past few years flocks of several dozens of specimens of *Corvus frugilegus* also came to the meadows and arable land next to the fish-ponds.

During mild winters, but in the past few years also in the breeding season, there have been numerous Mute Swans (*Cygnus olor*), sometimes even more than a hundred specimens. Since 1996 this species has become a new breeding bird of the fish-ponds (2 breeding pairs since 2000).

In the nearby settlements about 70 pairs of White Stork (*Ciconia ciconia*), and in the surrounding woods probably up to ten pairs of the Black Stork (*Ciconia nigra*), and 1 pair of White-tailed Eagle (*Haliaetus albicilla*) and 1 pair of Lesser Spotted Eagle (*Aquila pomarina*) breed.

The fish-ponds and the surrounding area are included in the migrational routes of many types of bird species, mainly of Anseriformes and Charadriformes. During migration, open water surfaces of the fish-ponds are important for the Anseriformes, which develop after the harvesting of the cultured fish from the fish-ponds, and silty surfaces for the Charadriformes. Some other species regularly appear in larger or smaller number of specimens as passage migrants (e.g. *Egretta garzetta, Ardea purpurea, Pandion haliaetus*), others as rare winter visitors (e.g. *Gavia stellata, Mergus merganser, M. serrator, M. albellus*), and some are just rare or accidental visitors (e.g. *Gavia stellata, Mergus merganser, M. serrator, M. albellus*).

Cormorant *Phalacrocorax carbo* (167 breeding pairs in 1985) is a former breeding bird (DELIĆ, 1988 c, d). The indications of possible breeding on the fish- ponds exist for two species of ducks, Garganey *Anas querquedula* and Tufted Duck *Aythya fuligula*, and for the Spotted Crake *Porzana porzana*, but their breeding has not been proved. One species, Eagle Owl *Bubo bubo*, used to breed in the 1960s, and was not observed during the research.

The European Threat Status has been given for all the birds recorded at the fish-ponds. One species (*Platalea leucorodia*) has the status of endangered species (E-Endangered), 23 species have the status of vulnerable species (V-Vulnerable), 6 species have the status of rare species (R-Rare), 20 species have the status of species whose number is declining (D-Declining), one species (*Aythya marila*) has the status of localized in winter (L^W), and 85 species have the status of secure (S). Two species (*Botaurus stellaris, Ixobrychus minutus*) have the (V)-Status provisional, three species (*Galerida cristata, Saxicola torquata, Lanius collurio*) have the (D)-Status provisional, and 28 species have the (S)-Status provisional. According to TUCKER *et al.* – APPENDIX 1 (1994), 90 species fall under a special category (SPEC category) of 1 to 4 degrees of endangerment. 51 species of this number are breeding birds. Three species are globally endangered (SPEC category 1): *Aythya nyroca, Otis tarda, Numenius tenuirostris*; 7 species fall under the SPEC category 2; 46 species fall under the SPEC category 3; 33 species fall under the SPEC category 4 (Tab. 1). According to APPENDIX 2: SPECs Listed by Country-Croatian List, TUCKER *et al*., (1994), out of the total number of species residing on the fish-ponds (170 species), 68 species are on the Croatian List. Among them 51 species are breeding birds, and only one species (*Aythya nyroca*) has the status of a globally endangered species; 6 species belong to SPEC category 2; 33 species belong to SPEC category 3; 28 species belong to SPEC category 4 (Tab. 2).

Tab. 1. European Threat Status

	Species	Spec. category	European threat status
1	*Gavia stellata*	3	V
2	*Podiceps cristatus*	–	S
3	*Tachybaptus ruficollis*	–	S
4	*Pelecanus onocrotalus*	3	R
5	*Phalacrocorax carbo*	–	S
6	*Phalacrocorax pygmeus*	2	V
7	*Botaurus stellaris*	3	(V)
8	*Ixobrychus minutus*	3	(V)
9	*Ardeola ralloides*	3	V
10	*Nycticorax nycticorax*	3	D
11	*Egretta alba*	–	S
12	*Egretta garzetta*	–	S
13	*Ardea cinerea*	–	S
14	*Ardea purpurea*	3	V
15	*Platalea leucorodia*	2	E
16	*Plegadis falcinellus*	3	D
17	*Ciconia ciconia*	2	V
18	*Ciconia nigra*	3	R
19	*Cygnus cygnus*	4^{w}	S
20	*Cygnus olor*	–	S
21	*Anser anser*	–	S
22	*Anser fabalis*	–	S
23	*Tadorna feruginea*	3	V
24	*Anas platyrhynchos*	–	S
25	*Anas strepera*	3	V
26	*Anas penelope*	–	S
27	*Anas crecca*	–	S
28	*Anas querquedula*	3	V
29	*Anas acuta*	3	V
30	*Anas clypeata*	–	S
31	*Netta rufina*	3	D
32	*Aythya fuligula*	–	S
33	*Aythya marila*	3^{W}	L^{W}
34	*Aythya ferina*	4	S
35	*Aythya nyroca*	1	V
36	*Somateria mollissima*	–	S
37	*Bucephala clangula*	–	S
38	*Mergus merganser*	–	S
39	*Mergus serrator*	–	S
40	*Mergus albellus*	3	V
41	*Pandion haliaetus*	3	R
42	*Haliaeetus albicilla*	3	R
43	*Milvus migrans*	3	V
44	*Circus aeruginosus*	–	S
45	*Circus cyaneus*	3	V
46	*Circus pygargus*	4	S
47	*Accipiter nisus*	–	S
48	*Accipter gentilis*	–	S
49	*Buteo buteo*	–	S
50	*Pernis apivorus*	4	S
51	*Aquila pomarina*	3	R
52	*Falco peregrinus*	3	R
53	*Falco subbuteo*	–	S
54	*Falco tinnunculus*	3	D
55	*Falco vespertinus*	3	V
56	*Phasianus colchicus*	–	S
57	*Perdix perdix*	3	V
58	*Coturnix coturnix*	3	V
59	*Porzana porzana*	4	S
60	*Rallus aquaticus*	–	(S)
61	*Gallinula chloropus*	–	S
62	*Fulica atra*	–	S
63	*Grus grus*	3	V
64	*Otis tarda*	1	D
65	*Himantopus himantopus*	–	S
66	*Charadrius dubius*	–	(S)
67	*Vanellus vanellus*	–	(S)
68	*Calidris temminckii*	–	(S)
69	*Calidris minuta*	–	(S)
70	*Philomachus pugnax*	4	(S)
71	*Gallinago gallinago*	–	(S)
72	*Scolopax rusticola*	3^{W}	V^{W}
73	*Limosa limosa*	2	V
74	*Numenius arquata*	3^{W}	D^{W}
75	*Numenius tenuirostris*	1	
76	*Tringa erythropus*	–	S
77	*Tringa totanus*	2	D
78	*Tringa stagnatilis*	–	(S)
79	*Tringa nebularia*	–	S
80	*Tringa glareola*	3	D
81	*Tringa ochropus*	–	(S)
82	*Actitis hypoleucos*	–	S
83	*Stercorarius longicaudus*	–	(S)
84	*Larus ridibundus*	–	S
85	*Larus cachinnans*	–	(S)
86	*Sterna hirundo*	–	S

	Species	Spec. category	European threat status
87	*Chlidonias niger*	3	D
88	*Chlidonias hybridus*	3	D
89	*Columba palumbus*	4	S
90	*Streptopelia decaocto*	–	(S)
91	*Streptopelia turtur*	3	D
92	*Cuculus canorus*	–	S
93	*Athene noctua*	3	D
94	*Bubo bubo*	3	V
95	*Asio otus*	–	S
96	*Strix uralensis*	–	(S)
97	*Strix aluco*	4	S
98	*Tyto alba*	3	D
99	*Apus apus*	–	S
100	*Alcedo atthis*	3	D
101	*Upupa epops*	–	S
102	*Merops apiaster*	3	D
103	*Dryocopus martius*	–	S
104	*Picus viridis*	2	D
105	*Dendrocopos major*	–	S
106	*Dendrocopos medius*	4	S
107	*Dendrocopos minor*	–	S
108	*Jynx torquilla*	3	D
109	*Lullula arborea*	2	V
110	*Alauda arvensis*	3	V
111	*Galerida cristata*	3	(D)
112	*Delichon urbica*	–	S
113	*Hirundo rustica*	3	D
114	*Anthus trivialis*	–	S
115	*Anthus pratensis*	4	S
116	*Motacilla alba*	–	S
117	*Motacilla flava*	–	S
118	*Bombycilla garrulus*	–	(S)
119	*Luscinia megarhynchos*	4	(S)
120	*Erithacus rubecula*	4	S
121	*Saxicola torquata*	3	(D)
122	*Phoenicurus ochruros*	–	S
123	*Phoenicurus phoenicurus*	2	V
124	*Turdus merula*	4	S
125	*Turdus pilaris*	4^{W}	S
126	*Turdus philomelos*	4	S
127	*Locustella naevia*	4	S
128	*Locustella luscinioides*	4	S
129	*Acrocephalus scirpaceus*	4	S
130	*Acrocephalus arundinaceus*	–	(S)
131	*Acrocephalus schoenobaenus*	4	(S)
132	*Sylvia borin*	4	S
133	*Sylvia communis*	4	S
134	*Sylvia atricapilla*	4	S
135	*Phylloscopus collybita*	–	(S)
136	*Regulus regulus*	4	(S)
137	*Muscicapa striata*	3	D
138	*Ficedula albicollis*	4	S
139	*Aegithalos caudatus*	–	S
140	*Remiz pendulinus*	–	(S)
141	*Parus palustris*	–	S
142	*Parus major*	–	S
143	*Parus caeruleus*	4	S
144	*Sitta europaea*	–	S
145	*Troglodytes troglodytes*	–	S
146	*Lanius excubitor*	3	D
147	*Lanius collurio*	3	(D)
148	*Garrulus glandarius*	–	(S)
149	*Pica pica*	–	S
150	*Corvus frugilegus*	–	S
151	*Corvus corone cornix*	–	S
152	*Corvus monedula*	4	(S)
153	*Corvus corax*	–	(S)
154	*Oriolus oriolus*	–	S
155	*Sturnus vulgaris*	–	S
156	*Passer domesticus*	–	S
157	*Passer montanus*	–	S
158	*Fringilla montifringilla*	–	S
159	*Fringila coelebs*	4	S
160	*Serinus serinus*	4	S
161	*Acanthis flammea*	–	(S)
162	*Acanthis cannabina*	4	S
163	*Carduelis spinus*	4	S
164	*Carduelis carduelis*	–	(S)
165	*Carduelis chloris*	4	S
166	*Pyrrhula pyrrhula*	–	S
167	*Coccothraustes coccothraustes*	–	S
168	*Miliaria calandra*	4	(S)
169	*Emberiza citrinella*	4	(S)
170	*Emberiza schoeniclus*	–	S

Tab. 2. SPECs Listed by Country – Croatian List

	Species	Spec. category		Species	Spec. category
1	*Botaurus stellaris*	3	35	*Merops apiaster*	3
2	*Ixobrychus minutus*	3	36	*Picus viridis*	2
3	*Ardeola ralloides*	3	37	*Dendrocopos medius*	4
4	*Nycticorax nycticorax*	3	38	*Jynx torquilla*	3
5	*Ardea purpurea*	3	39	*Galerida cristata*	3
6	*Platalea leucorodia*	2	40	*Lullula arborea*	2
7	*Ciconia ciconia*	2	41	*Alauda arvensis*	3
8	*Ciconia nigra*	3	42	*Hirundo rustica*	3
9	*Anas strepera*	3	43	*Luscinia megarhynchos*	4
10	*Anas querquedula*	3	44	*Erithacus rubecula*	4
11	*Netta rufina*	3	45	*Saxicola torquata*	3
12	*Aythya ferina*	4	46	*Phoenicurus phoenicurus*	2
13	*Aythya nyroca*	1	47	*Turdus merula*	4
14	*Haliaeetus albicilla*	3	48	*Turdus philomelos*	4
15	*Milvus migrans*	3	49	*Locustella naevia*	4
16	*Circus pygargus*	4	50	*Locustella luscinioides*	4
17	*Pernis apivorus*	4	51	*Acrocephalus scirpaceus*	4
18	*Aquila pomarina*	3	52	*Acrocephalus schoenobaenus*	4
19	*Falco peregrinus*	3	53	*Sylvia borin*	4
20	*Falco tinnunculus*	3	54	*Sylvia communis*	4
21	*Falco vespertinus*	3	55	*Sylvia atricapilla*	4
22	*Perdix perdix*	3	56	*Regulus regulus*	4
23	*Coturnix coturnix*	3	57	*Muscicapa striata*	3
24	*Scolopax rusticola*	3^{W}	58	*Ficedula albicollis*	4
25	*Tringa totanus*	2	59	*Parus caeruleus*	4
26	*Chlidonias niger*	3	60	*Lanius collurio*	3
27	*Chlidonias hybridus*	3	61	*Corvus monedula*	4
28	*Columba palumbus*	4	62	*Fringila coelebs*	4
29	*Streptopelia turtur*	3	63	*Serinus serinus*	4
30	*Athene noctua*	3	64	*Acanthis cannabina*	4
31	*Bubo bubo*	3	65	*Carduelis spinus*	4
32	*Strix aluco*	4	66	*Carduelis chloris*	4
33	*Tyto alba*	3	67	*Miliaria calandra*	4
34	*Alcedo atthis*	3	68	*Emberiza citrinella*	4

It should be pointed out that economic activities (agriculture, forestry, hunting) ongoing inside or outside the area of the fish-ponds, in a certain way threaten the ornithofauna. For instance, as one of the measures for the new production season in spring, water is drained from particular fish-pond reservoirs, which causes the failure of many already created broods of waders. For instance in 1995, this was the case with the Mute Swan *Cygnus olor* (DELIĆ, 1998 a). A similar thing happens dur-

ing the cutting of the vegetation on the banks in spring, which is done in order to prevent the fish ponds' reservoirs being choked up. Or, for instance, the cutting of the trees in forestry, which causes the disturbance and disappearance of favourable breeding sites, especially for the big birds of prey, as was the case of the White-tailed Eagle *Haliaetus albicilla* in the woods of Zdenački gaj in 1998 (DELIĆ, 1998 b).

Furthermore, since the surrounding area of the fish-ponds is an agricultural area, the use of chemical substances in agricultural production causes the pollution of large surfaces of different habitats with pesticides. The pollution is transferred into the food chain and the birds of prey are the most endangered ones.

Since hunting on the fish-ponds is an additional economic activity along with fish rearing, the game birds (especially *Anseriformes*) sometimes get killed in hunting, intentionally or accidentally, as well as some other rare and protected species.

To a certain extent, the natural features of the fish ponds as the birds' biotope are disturbed by different kinds of factors, especially at the time of breeding (the activity of fish farmers in the process of production).

In addition, there is a record of a case of the destruction of one bird species, the Cormorant *Phalacrocorax carbo,* due to the obvious economic damage that this species is causing with its feeding habits. In 1985 and 1986 all the breeding localities were destroyed as well as the new broods of this bird. Nesting never occurred again (DELIĆ, 1988 c).

From all that has been presented so far, we can conclude that the Končanica fish-ponds and the surrounding area represent an exceptionally valuable ornithological locality, primarily for waders, as well as a major scientific and educational potential, and they rightfully hold the title of IBA locality. In order to preserve the wholeness of this ecosystem it is necessary to carry out further faunistic, phenological and population research into the ornithofauna. We also believe that this locality deserves at least a minimum degree of protection.

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SAŽETAK

Ptice ribnjaka »Končanica«, Hrvatska

A. Delić & I. D. Grlica

Ptice ribnjaka »Končanica« do danas nisu temeljito istraživane. Dosadašnja ornitološka valorizacija uglavnom se temeljila na nekoliko publiciranih radova u kojima je dat nepotpun faunistički popis ili se samo radilo o populacijskim istraživanjima pojedinih vrsta. Istraživanjima koja su provedena na ribnjacima i bližoj okolici u razdoblju od proljeća 1985. do jeseni 2001 godine zabilježeno je 170 vrsta ptica, od kojih je 98 vrsta gnjezdarica (57,6 %), jedna je vrsta bivša gnjezdarica – veliki vranac (*Phalacrocorax carbo*), jedna je vrsta tek od nedavno gnjezdarica – crvenokljuni labud (*Cygnus olor*), a tri vrste – patka pupčanica *Anas querquedula,* krunata patka *Aythya fuligula*, riđa štijoka *Porzana porzana*, vjerojatno su gnjezdarice.

Za sve ptice koje su zabilježene na istraživanom području dat je status ugroženosti, a 90 vrsta pripada u specijalnu kategoriju ugroženosti (SPEC category). Tri vrste su globalno ugrožene: patka njorka *Aythya nyroca,* droplja *Otis tarda,* tankokljuni pozvizdač *Numenius tenuirostris*. Na popisu Hrvatske liste ugroženosti nalazi se 68 vrsta, od kojih je 51 vrsta gnjezdarica.

Čimbenici koji na određeni način ugrožavaju ptičju faunu na istraživanom području su: pesticidi (primjena u poljoprivredi, uništavanje travnate vegetacije po nasipima ribnjaka), aktivnosti koje su vezane uz proizvodni ciklus na ribnjacima naročito u vrijeme gniježđenja (košnja obalne vegetacije, uznemiravanje, namjerno uništavanje legla), sječa stabala u šumarstvu kao gnjezdilišta velikih grabljivica i lov.

Zbog posebnih ekoloških osobitosti (močvarni biotop) i radi očuvanja cjelovitosti ovog složenog ekosustava potrebno je provesti detaljnija faunistička, fenološka i populacijska istraživanja ornitofaune. Ovaj IBA-lokalitet zaslužuje barem minimalni stupanj zaštite.