

# OCCURRENCE AND NESTING OF PIGMY CORMORANT (*PHALACROCORAX PYGMEUS*) IN THE SLOVAK REPUBLIC AND IN NEIGHBOURING COUNTRIES

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## Abstract

***Danko, Š.: Occurrence and Nesting of Pygmy Cormorant (*Phalacrocorax pygmeus*) in Slovak Republic and in neighbouring countries***

*In 1992 one pair of Pygmy Cormorants (*Phalacrocorax pygmeus*) began to nest in a colony of Night Herons, Grey Herons and Great White Herons in the State Nature Reservation Senné in Slovakia. Due to an incompetent intervention by the ringing ornithologists the clutch of Pygmy Cormorants was destroyed.*

*The paper also deals with a detailed review of the literary data about the occurrence of Pygmy Cormorant in the adjacent countries (Poland, Czech Republic, Germany, Austria, Hungary) with a special regard to its occurrence and nesting in Hungary, from where this species penetrated into Slovakia. The paper also summarizes the data on the nesting of Pygmy Cormorant from some more remote countries (Yugoslavia, Bulgaria, Greece, Romania).*

The Pygmy Cormorant is one of the rarest birds in Europe. It nests only in the former Yugoslavia (Serbia, Croatia, Macedonia), in Albania, North Greece, Thracian part of Turkey, Bulgaria, southern and eastern parts of Romania, in the Danube Delta and its surroundings and in South Ukraine. Another isolated part of its nesting range is situated in the Crimean Peninsula. In Russia, the Pygmy Cormorant nests along the south-eastern coasts of the Sea of Azov and north-western coasts of the Caspian Sea and in the delta of the Volga and Kuma rivers. The European populations of Pygmy Cormorant are prevalingly resident or partially migratory. A part of them winters in the Balkans, others migrate along the eastern coast of the Mediterranean Sea or even to North Africa. However, a small part of the populations, represented mostly by young individuals, wanders also northerly from the nesting area in the post-breeding period. These individuals are observed in those areas in autumn, in winter and in the early spring.

## Material and methods

### *Locality specification*

The fish-pond system near Iňačovce, located between the villages Senné and Blatné Remety, is, after the second stage of its building (in 1988) an area of more than 700 ha of water surface. Pygmy Cormorants are ecologically



bound to the nesting colonies of wading birds. Its distribution is closely linked to new colonies of these birds. The most northerly located fish-pond, the proper territory of the State Nature Reserve, has existed since 1970. During the 16 years of its existence, its dams have been damaged and its bottom filled by swamp etc. So some reconstructions were inevitable. Therefore, as early as 1985 the water began to be let out from the reservation and during the years 1986–1988 the whole area was without water. During that time, the dams were repaired and raised in their north-western and south-eastern part and the swamp was removed. During those three years, a dense stand of willows and other trees and shrubs arose, which, after the refilling of the fish-pond in 1988, created a suitable habitat for the wading birds. Immediately, in the next year 1989, a colony of Purple Heron (*Ardea purpurea*) accompanied, for the first time in the history of this reservation by two pairs of Great White Heron (*Egretta alba*) and in June the first pairs of Night Heron (*Nycticorax nycticorax*) established itself. In 1990 a new colony was founded nearby by the Grey Heron (*Ardea cinerea*) accompanied by *Egretta alba* and *Nycticorax nycticorax* and later also Spoonbill (*Platalea leucorodia*). In the colony of *Ardea purpurea* the number of *Nycticorax nycticorax* increased and, for the first time, also three pairs of Little Egret (*Egretta garzetta*) nested there. The number of nesting pairs of these wading birds increased continuously. According to my estimations, approximately 100 pairs of *Nycticorax nycticorax*, more than 20 pairs of *Ardea cinerea*, approximately 20 pairs of *Ardea purpurea* and more than 10 pairs of *Egretta alba* nested there in 1992. For the present, in order to prevent disturbing the nesting birds, an exact counting of the nests in the reservation has not been done, so the number of the nesting pairs might be even higher. *Egretta garzetta* nested there only once, *Platalea leucorodia* nested sporadically (sometimes more than 10 pairs). So far we have not observed the nesting of Squacco Herons (*Ardeola ralloides*) in spite of their sporadic occurrence in the locality. The increased occurrence of Glossy Ibis (*Plegadis falcinellus*) makes possible to suppose that the nesting of this species in this area has also occurred.

The development in the occurrence of Great Cormorants (*Phalacrocorax carbo*) was similar. As early as the beginning of the eighties their occurrence on these fish-ponds was very rare. After the refilling of the fish-ponds in 1988 there appeared some tens of the birds and, in August 1989, more than 200 individuals occurred in the reservation on two islands covered by high willows. The nesting of the first, approximately 20, pairs was observed in 1990, whereas in 1991 120 pairs and in 1992 approximately 80 pairs nested there.

These new factors and above all the establishment of a mixed nesting colony of the wading birds in the willow shrubs in the reservation created optimal conditions for the nesting of Pygmy Cormorants. At the same time, the neighbouring fish-ponds represented a good food basis for them.

The nest of the Pygmy Cormorant was searched for after observing the direction of the Cormorants' last evening flight into the colony of the wading birds with the help of another observer equipped with a portable radio-transmitter.



## Results and discussion

### *Occurrence in the Slovak Republic and in adjacent countries*

The occurrence of Pygmy Cormorants has been registered in the former Czechoslovakia several times. All older data are summarized by *Hudec, Černý et al. (1972)*. On 10. 10. 1856 a young male was shot on the fish-pond near Ostrava. Three individuals appeared at the same place in October 1864, among them one young bird was shot. In the same year, a further individual was shot on the Olša river near Těšín. The first observation of Pygmy Cormorant in Slovakia comes from April 1926, when one individual was shot near Senné. Two individuals were observed on the river Váh near Leopoldov on 29. 4. 1950, one adult male was shot. Finally, another male was shot on 30. 9. 1951 at Koupaliště fish-pond near Svitavy in Moravia. On 17. 7. 1981 *Kratochvíl (1983)* observed one bird on Sopřečský fish-pond near Pardubice. The only observation from more recent times was published by *Mošanský (1992)*, who observed one Pygmy Cormorant on the fish-pond in the Senné State Nature Reserve (in east Slovakia between the villages Iňačovce and Baltná Polianka) on 28. 5. 1990. The bird was not observed there before or after that date, in spite of the intensive ornithological observations carried out in the whole fish-ponds system.

At Senné, the Pygmy Cormorant was found for the first time on 22. 3. 1983, when the preparator of the Regional Museum of Zemplín *J. Kuchta (in verb.)* observed two specimens. The birds were fishing on the Poľanský rybník fish-pond. The flushed birds then flew to the neighbouring Iňačovský rybník fish-pond (in that time its surface did not exceed 300 ha), where they were not observed again, in spite of the checks carried out at least once a week. For the second time we observed one Pygmy Cormorant on the fish-ponds near Iňačovce on 3. 4. 1987 (together with *P. Pelz* and *V. Zavadil*). The bird was fishing on a small hibernating pond. After fishing it flew there to the Poľanský fish-pond. There we succeeded in observing it from behind the dam from a distance of approximately 80 m. The bird was sitting on a branch of a dry shrub. Probably the same bird was seen again on 20. 4. 1987 also on the hibernating fish-pond (*Votýpka, in litt.*).

After the mentioned observation of *Mošanský* of 28. 5. 1990 Pygmy Cormorants appeared on the Iňačovské rybníky fish-ponds once more in the year 1992. *T. Koutný, M. Ševčík* and *M. Vavřík* observed one specimen for the first time on 30. 4. 1992 and they presented a written report about their observation. Further observations were made as follows: on 11th May I observed one fishing bird on the Jastrabský rybník fish-pond. After fishing the bird flew from there towards the reservation. One early evening I took up an observation point on the reservation border where I saw it twice. The last flight was directed just to the middle of the colony of the wading birds in the northern part of the reservation. Once more we, together with *K. Takáč*, observed it on the Jastrabský fish-pond in the morning. We recorded the fishing bird by videocamera. The bird fished in the relatively shallow water



(approximately 50–70 cm). It dived often, but stayed under water only briefly. It moved mostly just under the water surface and within a relatively short time it caught three small fish (about 10 cm). Sometimes it was attacked by Black-headed Gulls (*Larus ridibundus*) nesting in the near reed stand. On the same small fish-pond we observed two Pygmy Cormorants one afternoon. On 7 June, during a common excursion with Austrian ornithologists we observed the flight of individual birds between the rearing ponds and the reservation. On 8 June *P. Macháček* and *O. Mikulica (in litt.)* saw seven individuals on the fish-ponds near Senné. On 10 June *Š. Pčola (in verb.)* observed, together with a group of English ornithologists, four specimens sitting on the shrubs between the dam and western island in the reservation. On 17 June, together with *P. Kaňuch*, we observed at least three individuals. All birds were sitting on the shrubs in the reservation in the same places where they were observed earlier by *Š. Pčola et al.* and in 1990 also by *A. Mošanský*. Finally, on 1 July we observed with *H. Matušík* one individual sitting in the reservation.

In neighbouring countries Pygmy Cormorants have been observed as follows: there is no available published data about their occurrence in West Ukraine and Ruthenia. In Poland they were observed only six times in the past century (*Tomiałojć, 1990*): In 1852 one was shot near Daniszow, in 1856 one ex. was shot near Bratkowice, in the same year several individuals were shot in Silesia, three among them were deposited in the museum in Wrocław, and one ex. was shot in Łagow near Zgorzelec. In winter 1861 one ex. was shot in Skolinow near Varsovia. The specimen shot on the border river Olza near Cieszyn (Olša river near Těšín, see above) is taken as a Polish evidence of its occurrence, too. The last occurrence of Pygmy Cormorant was observed in 1899, when one was shot near Krasna.

In Germany, there are four known observations from 1860 and 14 observations from this century (*Bauer and Glutz, 1966*). Among the observations made in the past century, the observation of young male shot in Leopoldsheim near Görlitz in 1856 is of special interest for us. When compared with the Polish data, it is possible to conclude, that it could be the same bird as that reported from Łagowa near Zgorzelec. The majority of other observations made in Germany come from the south of country – from Baden-Württemberg and from Bavaria, where Pygmy Cormorants had penetrated along the Danube. They occurred directly on the Danube or on its tributaries (Iller, Inn) or on the adjacent fish-ponds near Ismaninger or at the lakes Chiemsee and Starnberger See.

The data on the Pygmy Cormorant's occurrence in Austria (until 1989) were summarized by *Berg and Samwald (1989)*, they registered altogether 15 observations. The majority of them come from South Austria, where Pygmy Cormorants penetrate along the Dráva and Mur rivers (9 reports). The observations from the Neusiedler See lake are interesting for us. The birds occurred there six times (on 16 November 1810 there was shot one specimen, but in the middle of the 19th Century Pygmy Cormorants were observed there several times). Further sporadic individuals were observed



there in August 1951 and in August-November 1989, always single individuals, and on the Danube on 13 December 1933 near Linz. In the last years *Straka* (1989 and 1990) observed their wintering near Zwentendorf (Fig. 1). In the winter 1988/89, there were 1–4 birds from 20 December to 16 April. In the winter 1989/90 there were regularly six birds from 15 December to 16 March. The last individual was observed there on 6 April. By summarization of the existing data we obtain the following timing pattern of the Pygmy Cormorant occurrence in Austria: January – 2x, February – 2x, March – 3x, April – 4x, August – 4x, September – 1x, October – 3x, November – 3x and December – 3x.

Hungary lies close to the nearest nesting places of Pygmy Cormorants in Croatia and in Serbia. With the lowland character of the Hungarian landscape, great rivers and extensive wetlands, numerous fish-ponds and lakes Hungary has the best conditions for the occurrence of this rare bird. Altogether, 79 records (more observations on a locality within one month were considered to be one record) were published in the Hungarian ornithological journals *Aquila* (since 1943 until 1991) and *Madártani Tájékoztató* (= Ornithological Reporter, since the first number issued in 1977 until first number of 1992). These records summarize the data in this century from the year 1924 until 1989. In individual months the Pygmy Cormorants occurred in Hungary as follows: January – 8x, February – 10x, March – 6x, April – 8x, May – 5x, June – 1x, July – 1x, August – 7x, September – 7x, October – 6x, November – 7x and December – 13x. Mostly single individuals were observed or small groups of the birds. More individuals occurred simultaneously in one term in the following localities and dates: 13 individuals – 19 July 1980 on the Hortobágy fish-pond (*Kovács, 1984*), 11 individuals – 22 and 23 March 1984 on the Danube near the village of Ráckeve (*Hajtó, 1985*) and, finally, 28 individuals – 9. November 1985 on a fish-pond near Szakmár (*Berdő and Kovács, 1988*). Directly on the rivers or their arms the Pygmy Cormorants were observed: 17-times on the Tisza river, 7-times on the Danube, once on the Körös river and once on the Ipeľ (in Hungarian Ipoly) river.

From the point of view of their territorial distribution in Hungary the Pygmy Cormorants occurred as follows: 23-times in the area between the Danube and Tisza river (Duna-Tisza köze): 15-times on the lake Fehértó near Szeged, four times on the lake Csaj-tó and once on a fish-pond near the Tisza river, twice on a fish-pond and once on a canal near the Danube. 16 times they occurred easterly of the Tisza river (Tiszántúl): 12 times on the fish-ponds and lakes in Hortobágy, three times on the fish-ponds near the river Körös and once on a fish-pond near the Tisza river. Eight times they occurred in the area westerly of the Danube (Dunántúl): 4 times on the fish-pond along the Dráva river, 3 times at Kis-Balaton and once on a fish-pond near the Danube.

The data from the close neighbourhood of the Slovak border are of a special importance for us (Fig. 1): on 4 October 1944 on the Danube near the village Tát (on the Slovak bank the village Obid near Štúrnovo – *Keve,*



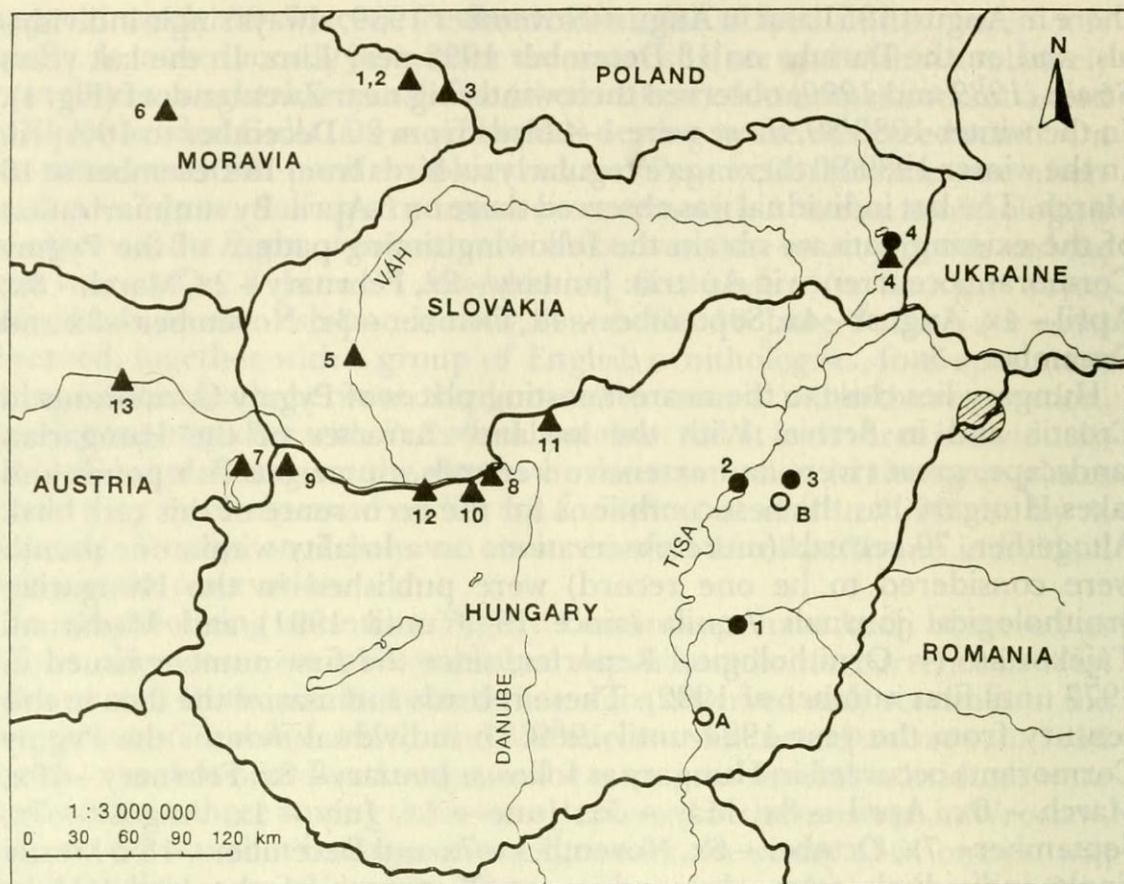


Fig. 1. Occurrence of the Pygmy Cormorant in Slovakia and in the vicinity of its border (published data for the whole discussed period) and its nesting in Slovakia and in Hungary in the recent period

▲ – occurrence: 1,2 – Ostrava 1856 and 1864, 3 – Český Těšín, 1864, 4 – Senné, 1926 and 1990, 5 – Leopoldov, 1950, 6 – Svitavy, 1951, 7 – Neusiedler See, 1810 +, 1951 and 1983, 8 – Tát, 1944, 9 – Mosonmagyaróvár, 1964, 10 – Nyergesújfalu, 1982, 11 – Ipolyszög, 1982, 12 – Naszály, 1984, 13 – Zwentendorf, 1988–1990.

○ – supposed breeding: A – Hódmezővásárhely: 1964 – Sasér, 1969 – Barcirét. B – Kunkápolnás, 1988.

● – proved breeding: 1 – Szarvas, 1963, 2 – Poroszló, 1988, 3 – Hortobágy, 1991, 4 – SNR Senné, 1992.

◐ – nesting place of the Pygmy Cormorants in the wetlands near the village Nagy Ecsed in the middle of the 19th century.

1. ábra A kis kárókatona előfordulása és fészkelése a Szlovák Köztársaságban és a szomszédos országokban

A kis kárókatona előfordulása Szlovákiában és határvidékein (az adatok a tárgyalt időszakra egészére vonatkoznak), valamint szlovákiai és magyarországi fészkelései

▲ előfordulás, ○ feltételezett fészkelés, ● bizonyított fészkelés, ◐ fészkelőhely Nagy Ecsed közelében a XIX. század közepén



1984), on 28 January 1964 one female was shot on the Little Danube (Kis-Duna or Mosoni-Duna) between the villages Mosonmagyaróvár and Feketeerdő (10 km south-westernlly of the Vojka nad Dunajom village). The hunter (*S. Szabad*) saw there four individuals in January. He shot one further individual of the remaining three birds on 21.2. 1964 (*Nagy, 1966*). One individual was observed on the Danube near the Nyergesújfalu village (on the Slovak banks between the villages Mužla and Moča) on 27. 9. 1982 (*Szimuly, 1983*). One individual was observed on the Ipeľ river (Ipoly) near the Ipolyszög village (Nyirjes, on the Slovak side the village Koláry near Slovenské Ďarmoty – *Kagyerják, (1985)* on 16. 11. 1982. Finally, one individual was observed on the fish-pond Ferencmajor between the villages Naszály and Szomód (on the Slovak side approximately 8 km easterly of the village Iža near Komárno – *Musicz, 1985*) on 12. 2. 1984.

### **Nesting of Pygmy Cormorant in Hungary and the first observed nesting in Slovakia**

According to *Horváth* (in *Székey, 1958*) the Pygmy Cormorants nested in the territory of Hungary until the last century. The last nesting place located in the approximative distance of 80 km from our border (Fig. 1) was described by *Lovassy (1931)*. It was situated on the wetlands near the Kraszna river on the Hungarian-Romanian border between the villages Nagy-Ecsed and Carei. According to the indigenious bird watcher T. Nagy, between the years 1860–70 some small colonies occurred there on the small groups of willows surrounded by extensive reed swamps. The Pygmy Cormorants nested there together with *Nycticorax nycticorax*, *Ardeola ralloides* and *Plegadis falcinellus*. *Lovassy*, however, did not find them in the 1880es. The last record about the nesting of Pygmy Cormorants in the past comes from the lower part of the Tisza river near Hódmezővásárhely from the year 1901 (*Sterbetz, 1974*). In that year, *Bodnár* found a nest, from which he picked up three eggs for the collections of the local secondary school.

The first record about nesting of Pygmy Cormorants in this century comes from the sixties. *Vertse (1966)* saw one pair of Pygmy Cormorants on 16. 5. 1963 flying into a small nest colony of the wading birds in the flooded willow stands along the Kőrös river near the village Szarvas. A young flying Pygmy Cormorant was taken as an evidence of the nesting. Later *Sterbetz (1973)* observed two individuals of Pygmy Cormorants in a wading birds colony on the swamp Sasér at the Tisza river near Hódmezővásárhely on 8. 6. 1964. One individual was observed there also on 30. 6. 1964. A pair of Pygmy Cormorant was observed there on 22. 5. 1969, when one bird of that pair flew into the nesting colony of wading birds with a twig in the bill. Two individuals were observed there on 18 June and 28 July and one on 21 August 1969. In spite of the fact that *Sterbetz* did not find the nest, he considered their nesting to be highly probable.



Further cases of nesting were observed on the middle flow of the Tisza river near the water basin Kisköre (Kiskörei-víztároló) as early by the late eighties. The first nesting was proved by *Bodnár (1989)* in 1988. In a colony of wading birds near Poroszló he found, together with *I. Varró* and *L. Bögre*, a Pygmy Cormorant nest with a clutch of five eggs on 18 June. It was built on a dry poplar in the community of the nests of *Nycticorax nycticorax* of a distance of about 50 cm from each other. On 3 August he checked, together with *L. Tudosze*, this nest and observed young Pygmy Cormorants sitting on the twigs of the same tree, where the nest was built. They took photographs of the clutch and of the young and adults as well. Two years later, *Sándor (1990)* observed the nesting of five pairs on Lake Tisza (Tisza-tó) near Hortobágy. Two pairs nested on the Hortobágy fish-pond (Hortobágyi-halastó) in the year 1991 (*Kovács, 1991*). On an island in the mentioned fish-pond arose a new nesting colony of wading birds (*Egretta alba*, *Egretta garzetta* and *Nycticorax nycticorax*) in a willow stand, where Pygmy Cormorants also nested. In July he observed there five young. In addition, *Kovács (1991)* observed 2–3 Pygmy Cormorants in June and July 1988 flying regularly into a wading birds colony in the Kunkápolnás swamp near Nagyiván. On this basis, he pre-supposed Pygmy Cormorants to have nested in Hortobágy as early as in that year.

In Slovakia, Pygmy Cormorants began to occur often in the Senné State Nature Reservation Fish-Ponds and on the adjacent system of the fish ponds near Iňačovce in 1992. It was possible to suppose Pygmy Cormorants to nest also there, in the colony of wading birds. This presupposition was supported by my observations made on 11 May, when I saw one bird fly twice into the colony of wading birds. On 26 May, when passing together with *P. Kaňuch* through the colony of the wading birds (on the way we found 57 nests of *Nycticorax nycticorax*, 14 nests of *Ardea cinerea* and nine nests of *Egretta alba*) we came, by help of navigation by means of a radiotransmitter operated by *M. Balla*, to a willow shrub, which two Pygmy Cormorants flew from. Three nests were on the willow, one nest of *Nycticorax nycticorax* with a clutch of four eggs, one nest of *Egretta alba* with two big, nearly feathered young and one nest of Pygmy Cormorant. Five white eggs with a bluish tinge were in the nest (the nests were checked by a small mirror affixed on a telescopic rod). The nest was situated at a height of about three meters in the close vicinity of a *Egretta alba* nest. On the difference of the eggs of *Nycticorax nycticorax*, the eggs of Pygmy Cormorant were distinctly more elongate and light coloured. The nest was of a similar size to that of *Nycticorax nycticorax*. The twigs in the nest of Night Heron were situated mostly radially (they stuck out), while in the nest of Pygmy Cormorant they were twisted (in a round shape). To minimize disturbing the nesting birds as much as possible, we left the colony quickly and we did not pay attention to more details. The next checking of the nest was made on 11 June, together with *P. Kaňuch*. With the help of a mirror we found that the nest was empty. During the checking of the locality we found, that the young of *Egretta alba*, *N. nycticorax* and *Ardea*



*cinerea* in the colony were ringed incompetently. At the same time the eggs of Pygmy Cormorant were highly probably shaken down and destroyed.

The comparison of the occurrence of Pygmy Cormorant in the Slovak Republic and in adjacent countries makes possible to conclude that, in the past century, their invasion into Central Europe was observed in October and November 1856. In that year they were observed on three localities in Germany (two in Baden-Württemberg and one from the present German-Polish border, near Zgorzelec). In Poland they were found also at three places – near Rzesów, near Zgorzelec and the most abundant occurrence was observed in Silesia, where more individuals were registered simultaneously. Three of them were shot. Also the occurrence of Pygmy Cormorant near Ostrava in 1856 represents probably a manifestation of that invasion. In Switzerland in 1856, Pygmy Cormorants were reported from three localities (*Bauer and Glutz, 1966*). In the next period its occurrence was registered only sporadically. Just in the second half of the 19th century a regressive phase of its distribution and abundance began. The most northern colonies became extinct and the number of individuals decreased in the colonies lying within the regular nesting area. From the point of view of the occurrence of Pygmy Cormorants in Slovakia, it is to be noted that, in the later period, also the occurrence of the wandering individuals penetrating into Central Europe along the Danube (indicated especially by the data from Hungary from the years 1944 and 1982) can be taken also as their occurrence in South-West Slovakia, because these birds were observed within the border zone between Hungary and Slovakia. The observation made on the Slovakian banks of the Danube are missing as a consequence of an absence of ornithologists in that area. Pygmy Cormorants probably occurred in Slovakia more frequently, because the individuals observed in Austria in the winter of 1988/89 and 1989/90 could penetrate there doubtless only along the Danube.

The original literature about the nesting of Pygmy Cormorants in Yugoslavia is not available. However, according to the data presented by *Haraszthy (1988)*, the nearest locality to Slovakia exists in the confluence of the Danube and Dráva rivers (s. c. Kopački rit), where a large colony of Pygmy Cormorants was found. Later, their number decreased continuously. According to the data of *Mikuska and Pivar (1980)* 31 pairs still nested there in 1954, ten years later only two pairs and according to the last data from 1977 only three nesting pairs were found there.

A still stronger decrease on the population size was observed in the largest Yugoslavian colony in Serbia, in the nesting place Obedska bara on the Sáva river. According to the older data (ex *Haraszthy, 1988*) 1500 pairs nested there in 1883, with 1000 pairs by the end of the twenties, but according to *Mikuska and Pivar (1980)* only seven pairs nested there in 1956 and three pairs in 1961. Further colonies were at Hutovo Blato (in 1967 30 pairs), Skadar lake and Saxonian lake (200 and 100 pairs respectively) and in the valley Crna reka (ex *Haraszthy, 1988*). The data from these localities from recent years are unknown.



In Bulgaria, according to *Nankinov (1989)*, the number of nesting pairs decreased by the beginning of the 20th century and the minimal population size was reached in the fifties-sixties as a consequence of a general decline of the Pygmy Cormorant population. This decline was still intensified by the regular shooting of Pygmy Cormorant because they were suspected to cause damage to fisheries. A gradual increase of population size began after 1960 and after a short stagnation in two last decades more nest colonies were registered on the Danubian islands along the border between Bulgaria and Romania and on the Black Sea coast. The first colony in inland Bulgarian arose on one of the islands on the Marica river near Vinica in 1986. By the end of the eighties the size of the Bulgarian population was estimated on 20–100 nesting pairs, at present there are about 90–150 nesting pairs (*Tucker and Heath, 1992*).

Colonies of Pygmy Cormorant are also in North Greece on the Mikra Prespa swamps. In 1971 there were 650 pairs, while in 1973 400 pairs (ex *Haraszthy, 1988*). The present population is estimated of 300–450 nesting pairs (*Tucker and Heath, 1992*). The strongest population of Pygmy Cormorants in Central Europe lives in the Danube Delta in Romania. In 1962, altogether 8000 pairs nested in 32 colonies (ex *Haraszthy, 1988*). The present population is estimated at 4000 pairs (*Tucker and Heath, 1992*). In recent years they have also nested in Italy (ex *Berg and Samwald, 1989* and *Tucker and Heath, 1992*).

The fluctuations in population sizes in the nesting places in South-Eastern Europe mentioned above, are sharply reflected in the frequency occurrence northwest from the above nesting places where the Pygmy Cormorants penetrated up the Danube and Tisza. This is indicated especially by their occurrence in Hungary. The sudden decline in the population at the beginning of the 20th century was also reflected in the frequency occurrence. Only nine observations were registered between 1924–1957. The increase in the population by the beginning of the sixties, as reported by *Nankinov (1989)*, was reflected also by the more frequent occurrence on the lower flow of the Tisza river and on its tributary the Kőrös. The first nesting of Pygmy Cormorants on the River Kőrös after 60 years was registered in 1963, at the same time as the more abundant observations (with considerably higher probability of their nesting) on the Tisza river near Hódmezővásárhely (in 1964 and 1969). A further wave of a more abundant occurrence began at the beginning of the eighties and the observations increased every year. At the time, when Pygmy Cormorants spread simultaneously along the Danube and Tisza, the nesting individuals preferred to nest only on the Tisza river and on the adjacent swamps, lakes of fish-ponds east from the river.

By the end of the eighties and by the beginning of the nineties the nesting localities of Pygmy Cormorant spread along the Tisza river toward the north. An evidence of this spreading is also the nesting of Pygmy Cormorant in East Slovakia.



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## A kis kárókatona (*Phalacrocorax pygmeus*) előfordulása és fészkelése a Szlovák Köztársaságban és a szomszédos országokban

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1992-ben a szlovákiai Senné Természetvédelmi Területen vegyes gémtelen, bakcsók, szürke gémek és nagy kócsagok társaságában 1 pár kis kárókatona fészkelte. A szerző az első szlovákiai költés kapcsán áttekinti a kis kárókatónával foglalkozó közép-európai megfigyeléseket és megpróbálja nyomon követni a világszerte veszélyeztetett faj areájának kiterjedését.

Elemzésében felhasználja a lengyel, a német, az osztrák, a cseh, a szlovák, de legfőképpen a többenél bőségesebb magyar adatokat. A faj magyarországi előfordulásait a múlt század 60-as éveitől napjainkig követi. Megállapítja, hogy a kis kárókatona terjedésében elsősorban a kedvező élőhelyi feltételeket nyújtó halastavaknak és a Tisza völgyének van szerepe. Feltételezi, hogy a szlovákiai megtelepedés is ennek folyamatnak a része.

A faj elterjedési területének bővülése azért érdekes, mert a kis kárókatona balkáni (jugoszláviai, bulgáriai, romániai és görögországi) állományában csökkenő tendencia érvényesül, melynek elsődleges oka az ottani élőhelyek degradációja.