

POPULATION TRENDS IN WATERBIRD SPECIES IN THE ALLUVIAL AREA OF THE DYJE-RIVER, CZECH REPUBLIC

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Abstract

Large water-management regulations have affected or destroyed the wet meadow and reedbed habitats of many animal species in the South-Moravian region in the last thirty years. Several ornithological studies have been made of the Dyje-river valley floodplain, especially of the area between the cities of Drnholec and Breclav. The results of these observations allow us to evaluate the development of the population size of particular species in the last forty years in connection with the water-management regulations. A large area of suitable breeding habitat was destroyed by the building of the Nové Mlýny-reservoirs on the Dyje-river. The creation of new habitats on the banks of the existing reservoirs have not replaced those that were lost, and breeding populations of certain species have practically disappeared from this region. This statement is documented by trends in the bird populations on the southern bank of the upper reservoir, where in 1982, 1985, 1987 and 1993 the nests and breeding pairs were counted.

Pellantová, J. & J. Martiško: Bestandsentwicklung der Wasser- und Wiesenvogel Populationen im Überschwemmungsgebiet der Thaya

In den letzten dreißig Jahren wurden in Südmähren durch Regulierungsmaßnahmen mehrfach Feuchtgebiete beeinträchtigt oder zerstört, die für viele Tierarten besonders zur Brutzeit bedeutende Lebensräume darstellten. Betroffen sind Feuchtwiesen, nasse Böden und Schilfgebiete. Viele Ornithologen widmeten früher und auch heute ihr Interesse der attraktiven Vogelwelt in den Überschwemmungsgebieten des Thayatales, besonders zwischen den Städten Drnholec und Breclav. Die Ergebnisse dieser Beobachtungen ermöglichen uns die Entwicklung der Bestände bestimmter Vogelarten in den letzten vierzig Jahren in Zusammenhang mit den erwähnten Regulierungsmaßnahmen zu analysieren. Ein großes Gebiet, das als Lebensraum für Wasser- und Wiesenvögel geeignet war, wurde durch die Errichtung des Thayastausees Nové Mlýny zerstört. Die Schaffung künstlicher Biotope an den Stauseeufern kann den ursprünglichen Zustand nur in geringem Maß ersetzen, weshalb viele Arten aus dem Gebiet verschwunden sind. Das wurde durch die Entwicklung der Vogelbestände am Südufer des "oberen" Stausees dokumentiert, wo 1982, 1985, 1987 und 1993 die Nester und Brutpaare durch Zählungen erfaßt wurden.

Pellantová, J. & J. Martiško: Vývoj populací vodních a mokřadních druhů ptáků v aluviu řeky Dyje

V důsledku rozsáhlých vodohospodářských zásahů v jihomoravském regionu v posledních třiceti letech byla negativně ovlivněna nebo zničena značná část vodních a mokřadních území, kde nacházely vhodné životní podmínky mnohé živočišné druhy zejména v období rozmnožování. Týká se to zvláště zamokřených luk, mokřadů a rákosin. Záplavová oblast řeky Dyje, především lokality mezi obcí Drnholec a Břeclavi, které byly velmi atraktivní pro vodní druhy ptáků, vždy byla a dosud zůstává předmětem zájmu mnoha ornitologů. Podle výsledků těchto pozorování je možné zhodnotit vývoj populací jednotlivých druhů za posledních čtyřicet let v souvislosti se zmíněnými velkoplošnými vodohospodářskými zásahy. Výstavbou vodního díla Nové Mlýny na Dyji došlo ke zničení velkých ploch, sloužících za hnízdiště vodním a mokřadním druhům ptáků. Obnova biotopů na březích stávajících přehradních nádrží, které by částečně mohly nahradit někdejší vhodné plochy, je velmi pomalá a to je také důvod, proč populace dříve zde hnízdících ptáků z této oblasti prakticky mizí. Tento stav je doložen vývojem ptačích populací na jižním břehu horní nádrže, kde bylo prováděno sčítání hnízd a hnízdících párů v letech 1982, 1985, 1987 a 1993.

INTRODUCTION

During the last 30 years, large water management regulations in Moravia and Bohemia (stream-regulations, drainage of wetlands etc.) and ploughing of the meadows, have resulted in changes to the lowland and floodplain habitats. The loss and degradation of the wetland habitats is reflected in population trends of the water-bird species in the Dyje-river alluvial area.

In the period 1945-1965, the whole alluvial area of the Dyje-river between Drnholec and Breclav was regularly flooded. The area was characterised by hard alluvial forests with rich representation of old trees, and by waterlogged alder carrs, meadows, moorlands, rushes, pools, and old river branches. There were three ponds with rich *Phragmites*, *Typha* and other plant populations (Pouzdransky pond 50 ha, Strachotinsky pond 55 ha and Sakvicky pond 50 ha with associated reed-moorland) near the border of the alluvium. Two other pond-systems should also be mentioned: (1) the three ponds of Pohorelice have a total area of 442 ha. They were renewed in 1955, when rich reedbeds (approx. 35 ha) were found in the adjacent moor-meadows. (2) the four ponds of Lednice have a total area of 582 ha. At the same time large reedbeds (32 ha) and wet-meadows were situated near them. In the 1960s, radical management of the pond of Pohorelice occurred. A significant reduction of the aquatic plants took place, the bent-grass (*Typha latifolia*, *T. angustifolia*) completely disappearing. Most of the meadows were damaged by building fish-tanks. Many small islands originating from these management measures and became nesting places of birds, especially ducks and black-headed gulls (*Larus ridibundus*).

During the 1980s, intensification of the fish- and domestic duck-production, combined with an unsuitable water-regime and permanent disturbance of the banks, negatively affected the bird-populations. From 1985 a decline of the reedbeds and bent-

grass occurred (not yet explained). The populations of these plants are now so thin that the nesting of birds is nearly impossible.

During the 1960s, the wet meadows near the ponds of Lednice disappeared, as a result of the management, ploughing and eventual overgrowing. Reedbeds and bent-grass- populations mostly declined in the 1970s.

The inundation area of the Dyje-river survived without changes up to the end of the 1960s. In 1968 water-management regulations started in south Moravia. In 1973, the regulation of the Nove Mlyny - Breclav sector was finished. In 1975 the building of the Nove Mlyny began in the first sector: Drnholec - Dolni Vestonice. The building of the upper reservoir (528 ha) was finished in 1979, and the middle one (1031 ha) in 1981. As a result of damage to the second reservoir's walls, the middle reservoir was repaired up to 1987 and the water was maintained at a low level. In 1982 the building of the second sector began: Dolni Vestonice - Nove Mlyny. The water-management regulations in southern Moravia were finished in 1989 by the filling of the third (lower) reservoir (1834 ha).

During the building of the Nove Mlyny reservoirs, suitable conditions for water-bird nesting occurred for a limited period. In that time, the following bird species were observed to nest rarely in the mentioned area: *Platalea leucorodia*, *Chlidonias niger*. *Phalacrocorax carbo* is now nesting here and a significant increase of the population of *Sterna hirundo* was observed. *Larus canus* and *Larus melanocephalus* now nest here, as well as some of the following species: *Anas crecca*, *Anas clypeata*, *Anas querquedula*, *Actitis hypoleucos*, *Tringa totanus*, *Limosa limosa*, *Gallinago gallinago*. The building of the reservoir system probably also caused the nesting attempt of *Haliaeetus albicilla*. Completion of the water-management regulations in 1989 by the filling of the permanent increase of the water-level of the

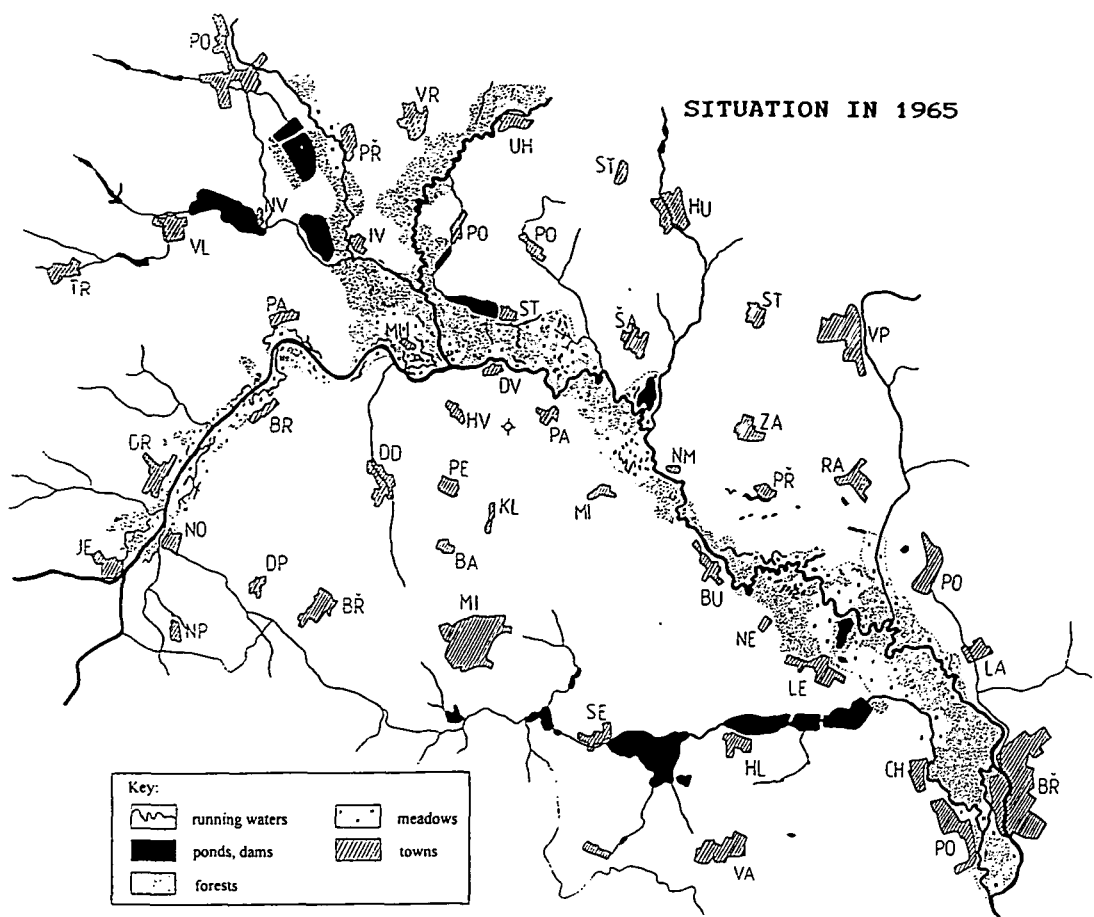


Fig. 1: Situation of the alluvial area of the Dyje-River in 1965

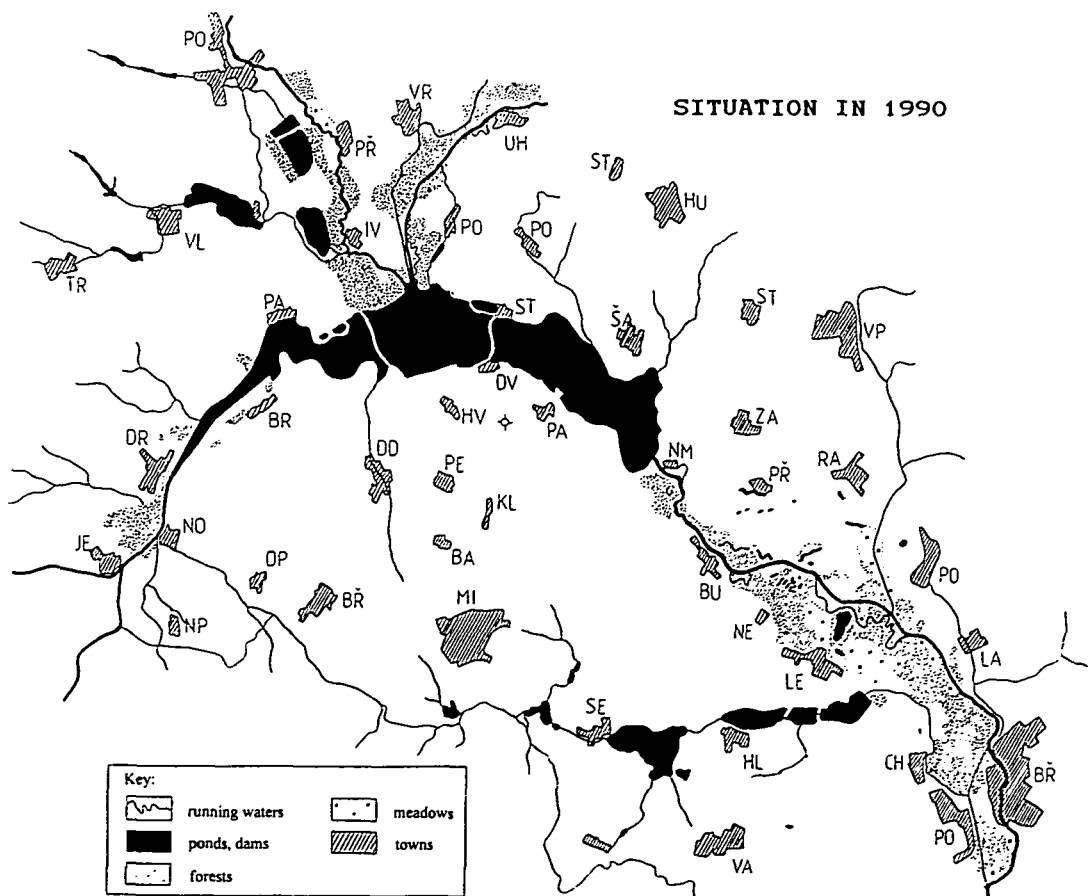


Fig.2: Situation of the alluvial area of the Dyje-River in 1990

Table 1: Comparison of the numbers of waterbird species during the periods 1945-1965 and 1989-1993

	1945-1965	1989-1993
Nesting species - total	50	44
RN - regularly nesting	42	38
NN - irregularly nesting	6	4
SN - sporadic nesting	2	2

Characterization of 44 species nesting during the period 1989-1993

A	Species near to extinction	11
B	Species with marked decreased numbers (more than 90 %)	6
C	Species with reduced numbers	9
D	Species with marked increased numbers (more than 100 %)	8
E	Species with increased numbers	3
F	Stable number	3
G	New breeding species in this region	4
H	Extinct species formerly regularly breeding	5

middle reservoir (after the years of reconstruction) caused such strong changes for the resident communities of waterbird species, that some of them nearly or totally disappeared. As a result of the 25 years of water-management regulations of the Dyje-river, some important nesting-places were damaged (e.g. Panske jezero, pond of Sakvice), and the wet meadows, reedbeds, moorlands and alder carrs were completely destroyed. The alluvial forests are now rather dry and no periodic flooding takes place at present. The remaining alluvial forests are fragmented according to the intensive wood-extraction, and are divided into small isolated communities.

The continuous forest-complex is practically extinct. The remains of the old forests (necessary for the nesting of *Ciconia nigra* and some birds of prey) are extremely rare. However, some localities with suitable conditions for waterbird species remain in the study area : Pastvisko near Lednice (50 ha) and Krive jezero near Nove Mlyny (104 ha). The middle reservoir with its small islands and limited bank areas is also important for birds. From the past localities, only very small, drying and overgro-

wing wetland areas (about 5 ha) are present, near the reservoirs. In the ponds of Lednice a low level of nesting bird populations is present, and no nesting occurs in the ponds of Pohorelice. The large area of the Nove Mlyny reservoirs is important for the migration of birds, and during certain periods high densities of waterbird populations are observed. The middle reservoir holds a summer concentration of greylag goose *Anser anser*; in winter some tens of thousands of *Anser fabalis* and *Anser albifrons* overwinter here. The building of the Nove Mlyny reservoirs was one of the most damaging actions for the wetland habitats, which could be documented. Ornithological research continued there with variable intensity from 1945. A high diversity of wetland habitats could be observed : Dyje-river, temporary or permanent pools in the old river-branches; temporary or permanent wet meadows with disseminated willows; partly wet alluvial forest, etc.. 34 typical waterbird species were recorded here up to 1977. About 13 of them were important for the South-Moravian flooded areas. Regularly nesting were : *Anser anser*, *Anas clypeata*, *Anas*

Table 2: Differences in the nesting of birds in the alluvial region of the river Dyje (Thaya) between 1945-1965 and 1989-1993 (RN - regularly nesting, NN - irregularly nesting, SN - sporadic nesting, N - nesting)

Species	1945-1965		1989-1993		
	N	Numbers	N	Numbers	
<i>Podiceps cristatus</i>	RN	common	RN	reduced	C
<i>Podiceps nigricollis</i>	RN	common	RN	2-100	A
<i>Tachybaptus ruficollis</i>	RN	common	RN	m.reduced	B
<i>Phalacrocorax carbo</i>	NN	0-18	RN	400-600	D
<i>Ardea cinerea</i>	RN	50-60	RN	240-250	D
<i>Ardea purpurea</i>	NN	0-5	RN	0-2	F
<i>Nycticorax nycticorax</i>	RN	100-200	RN	200-250	E
<i>Botaurus stellaris</i>	RN		SN	0-1	A
<i>Ixobrychus minutus</i>	RN	common	RN	5-10	A
<i>Ciconia ciconia</i>	RN		RN		F
<i>Ciconia nigra</i>	RN		RN	reduced	C
<i>Platalea leucorodia</i>	SN		-		
<i>Cygnus olor</i>	NN	0-3	RN	8-12	D
<i>Anser anser</i>	RN	150	RN	280-290	D
<i>Anas platyrhynchos</i>	RN	3000	RN	200-300	B
<i>Anas strepera</i>	RN	100	RN	40-60	C
<i>Anas clypeata</i>	RN	80-100	RN	2-4	A
<i>Anas querquedula</i>	RN	100	RN	0-4	A
<i>Anas crecca</i>	RN	10-20	NN	0-2	A
<i>Anas acuta</i>	RN	5-10	-	extinct	H
<i>Netta rufina</i>	RN	30-50	RN	60-80	E
<i>Aythya ferina</i>	RN	400	RN	reduced	C
<i>Aythya fuligula</i>	RN	5-10	RN	increased	D
<i>Aythya nyroca</i>	RN	5-30	SN	0-2	A
<i>Milvus milvus</i>	-	0	RN	4-5	G
<i>Milvus migrans</i>	RN	4-6	RN	6-8	E
<i>Circus aeruginosus</i>	RN	10-15	RN	20-30	D
<i>Rallus aquaticus</i>	RN	common	RN	m. reduced	B
<i>Porzana parva</i>	RN	common	NN	0-2	A
<i>Porzana porzana</i>	NN		-		
<i>Crex crex</i>	RN	common	-	extinct	H
<i>Fulica atra</i>	RN	common	RN	m. reduced	B
<i>Gallinula chloropus</i>	RN	common	RN	reduced	C
<i>Vanellus vanellus</i>	RN	common	RN	m. reduced	B
<i>Charadrius dubius</i>	RN		RN		F
<i>Actitis hypoleucos</i>	RN	30-40	NN	0-3	A
<i>Tringa totanus</i>	RN	60-80	NN	0-3	A
<i>Limosa limosa</i>	RN	15-30	-	extinct	H
<i>Gallinago gallinago</i>	RN	common	-	extinct	H
<i>Himantopus himantopus</i>	SN		-		
<i>Recurvirostra avosetta</i>	NN	0-9	-		
<i>Larus canus</i>	-	0	RN	2-3	G
<i>Larus ridibundus</i>	RN	8000-12000	RN	15000-20000	D
<i>Larus melanocephalus</i>	-	0	RN	2-4	G
<i>Chlidonias niger</i>	NN		-		
<i>Sterna hirundo</i>	RN	30-60	RN	120-140	D
<i>Alcedo atthis</i>	RN	common	RN	m. reduced	B
<i>Motacilla flava</i>	RN	common	RN	4-6	A
<i>Saxicola rubetra</i>	RN	common	-	extinct	H
<i>Luscinia svecica c.</i>	-	0	RN	5-10	G
<i>Locustella luscinioides</i>	RN	common	RN	10-30	C
<i>Acrocephalus arundinaceus</i>	RN	common	RN	reduced	C
<i>Panurus biarmicus</i>	RN	common	RN	40-60	C
<i>Remiz pendulinus</i>	RN	common	RN	reduced	C

Table 3: Nesting bird species and number of pairs during the years 1981-1993 in the area covering the Dunajovice drain mouth

F - number of years of determined breeding

Growth ecophases: TR - terrestrial, LM - limosal, LT - littoral

thick line - main environment

Species	1981	1982	1984	1985	1987	1993	F	TR	LM	LT
<i>Tachybaptus ruficollis</i>			1				1			—
<i>Podiceps cristatus</i>		1		2	2	3	4			—
<i>Podiceps nigricollis</i>				3			1			—
<i>Anas strepera</i>				1			1	—	—	
<i>Anas platyrhynchos</i>	1	6		4		2	4	—	—	-
<i>Anas querquedula</i>	1			1			2	—	-	
<i>Netta rufina</i>			2	1			2	-	—	—
<i>Aythya ferina</i>			1	2		1	3		—	—
<i>Aythya fuligula</i>				1			1		—	—
<i>Circus aeruginosus</i>			1	2			2			—
<i>Rallus aquaticus</i>			1			1	2		—	-
<i>Porzana parva</i>			1				1		-	—
<i>Gallinula chloropus</i>	1	3	4	1	2	4	6		-	—
<i>Fulica atra</i>	2	10	27	18	2	8	6		-	—
<i>Locustella naevia</i>					1		1	—		
<i>Locustella luscinioides</i>			3		1	2	3	-	-	—
<i>Acrocephalus schoenobaenus</i>	24	11	13	9	43	45	6	—	-	
<i>Acrocephalus palustris</i>		4	3	5	2	8	5	—	-	
<i>Acrocephalus scirpaceus</i>	4	30	27	16	28	30	6	-		—
<i>Acrocephalus arundinaceus</i>		2	3	7	2	10	5			—
<i>Panurus biarmicus</i>			3			2	2	—		—
<i>Remiz pendulinus</i>						2	1	—		
<i>Emberiza schoeniclus</i>	5	2	6	4	5	18	6	—	-	
Number of species	7	9	15	16	10	14				
Number of pairs	38	69	96	77	88	136				

querquedula, *Tringa totanus*, *Gallinago gallinago*, *Motacilla flava*, *Locustella luscinioides*, *Remiz pendulinus*; *Anas platyrhynchos* nested in large numbers, and the follwong species nested irregularly: *Nycticorax nycticorax*, *Limosa limosa* and *Sterna hirundo*.

After the completion and filling of the reservoir in 1979, about 500 ha of the area was split by small islands composed mainly of dead trees and small reedbeds and bent-grass. The largest reedbed was situated on the southern bank and a prognosis was made, that in some years the

root should grow in an area of about 40 ha. Intensive tourism takes place on the whole reservoir, so that the reedbeds are declining; this is possibly caused not only by the mechanical damage by people, but also by the intensive waves and poor water quality in the water sources of the reservoir. Consequently, the development of the bird communities is very slow, and the bird community is composed mainly of small passerines (see table 3). The occurrence of other nesting species which previously occurred here is rare. Wet meadow

species cannot find any possibility for nesting in the entire area.

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