

A review of current ornithological research in Triglav National Park (Julian Alps, northwestern Slovenia)

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Abstract - The following projects are currently going on in the park: The Atlas of Breeding Birds (EOAC method), The Atlas of Wintering Birds (method after The Atlas of Wintering Birds in Britain and Ireland) and The Inventory of Golden Eagle. The atlases are done in 5 x 5 km grid. The 500 m altitudinal zones and altitudinal distribution limits are also censused. So far, 110 breeding and 85 wintering species were recorded (presented in a table). The projects will be concluded in 1997 and the results published in 1998.

Introduction

Despite the considerable growth of interest in ornithology in Slovenia over the last two decades, the avifauna of the mountainous regions of the country remains less known.

The administrators of the Triglav National Park (TNP) and the DOPPS have decided to start a joint project which would result in an initial inventory of the birds in the park. The following projects were initiated: The Atlas of Breeding Birds, The Atlas of Wintering Birds and separately The Inventory of Golden Eagle (coordinated by Mr. Viktor Luskovec and not covered by this paper).

Geographical and Historical Context

The Triglav National Park has the area of 848 km² (4.2% of the country's territory) and is the only national park in Slovenia. It comprises the majority of Julian Alps and has the altitude span from approx 200 m to 2864 m asl.

The main landscape feature is karst and its accompanying phenomena. Forest predominates and covers approx. one half of the whole park area. The other half is covered with the habitats of the high mountains: rocky slopes, alpine meadows and pastures, Mountain Pine bush. Some urban habitats are present at lower altitudes with 24 smaller villages actually situated in the park itself. One bigger lake is also situated in the park.

Alpine climate predominates although considerably milder in the southwestern part due to the



Figure 1 - Research area.

submediterranean influence (Fabjan *et al.* 1985).

The park in its present boundaries has been protected since 1981 but the history of the protection of the central part goes as far as 1924.

Beside a few short notices only two papers were published on the avifauna of Triglav National Park (Gregori 1977, Matvejev 1983). The research area of Gregori only partly covers the territory of the park and the research of Matvejev was based on a one month excursion in 1955. The Atlas of Breeding Birds of TNP in 10 x 10 km grid was carried out in 1983 (Geister 1983) although the complete results were not published.

Methods

The field work is planned to be completed in six years (1991-1996). The grid used is 5 x 5 km based on UTM. There are ca. 10 skilled observers engaged in the project each year, each working in its own square. There are altogether 48 squares in the park. Altitudinal 500 m zones are censused separately: A-under 1000 m, B-1000 to 1500 m, C-1500 to 2000 m, D-over 2000 m. Two types of data are collected: 1. from the observers working specifically for the project and who spent at least 3 days in the field per square for the atlas of wintering birds and 6 days for the atlas of breeding birds, 2. more or less incidental data from other observers including local hunters and rangers.

The atlas of breeding birds

The method is based on the classical method of EOAC. The highest possible grade of breeding evidence is attempted to be reached for each species in each square. The codes used are from 0 to 16 following the method of the Slovene national atlas (Geister 1995) which is also based on the EOAC method (Sharrock 1973).

The estimated number of breeding pairs per square is collected both as a whole and separately in the altitudinal zones. The estimates are given on a logarithmic scale: a:1-3, b:4-10, c:11-30, d:31-100...

The observers are asked to collect the data on the lowest and highest altitudinal distribution limits for each species. To avoid confusion with data which basically cannot be compared (eg the highest confirmed breeding of Coal Tit on 1680 m but one bird observed on a ridge at 2300 m) we use the following four categories:

- I bird observed in breeding season (EOAC: 0-3, 8)
- II bird observed probably inside its nesting territory (EOAC: 4-6, 9, 12)
- III nest probably in close proximity of the observed bird (EOAC: 7, 10, 11, 14)
- IV nest found (EOAC: 9, 11, 13-16) EOAC codes are given for orientation only and not as a strict rule.

The atlas of wintering birds

The census has been taking place in December and January.

The method of The Atlas of Wintering Birds in Britain and Ireland is used (Lack 1986). The observers are asked to make notes on the daily number of the observed birds, time spent in the field, date, square number, weather and route taken. The data will be normalised on the fixed time of census to achieve better comparability of relative abundances.

The number of observed birds has also been collected in four altitudinal zones. The data will be normalised

to get the perspective of altitudinal distribution. The highest and the lowest altitudinal distribution limits are recorded for each species and each day of the census.

Results

During the four year work for the atlas of breeding birds, 110 species were recorded. Of those 76 are certain, 24 probable and 10 possible breeders. The data were collected for 41 squares with 1652 species-per-square data registered. The squares were investigated as follows: 29 thoroughly, 6 insufficiently and 6 incidentally.

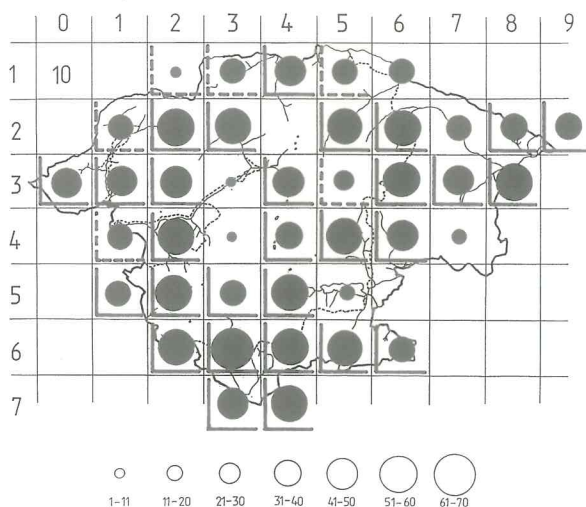


Figure 2 - Number of species per square recorded in breeding season after four years of research. The shading indicates the intensity of work done: full line - thoroughly, dashed line - insufficiently.

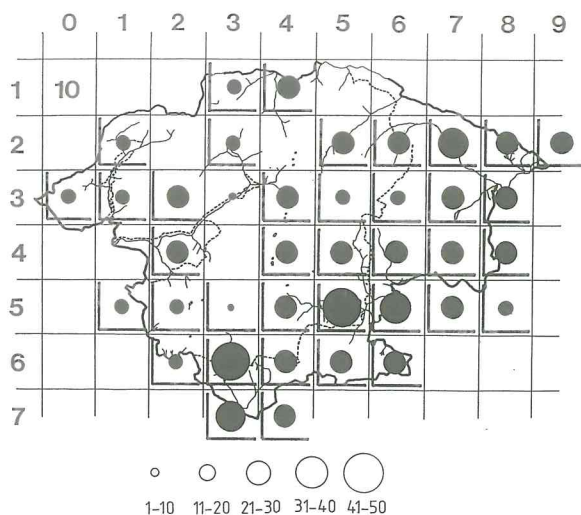


Figure 3 - Number of species per square recorded in winter after four years of research. The shading indicates the thoroughly investigated squares.

During the four year work for the atlas of wintering birds, 85 species were recorded with 1635 species-per-square data registered in 39 squares. The squares were

all thoroughly investigated.

The provisional list of the so far observed species with some interesting data is given on the Table 1.

Table 1 - The preliminary list of species recorded during the four year work on atlases of breeding and wintering birds in Triglav National Park (GBE = grade of breeding evidence: B-probable, C-possible, D-confirmed; % = percent of squares where species recorded; NoBP = estimated number of breeding pairs; Σ DM = the sum of winter daily maximums of squares).

SPECIES	BREEDING SEASON			WINTER	
	GBE	%	NoBP	%	Σ DM
<i>Gavia arctica</i>				2	1
<i>Tachybaptus ruficollis</i>				2	4
<i>Podiceps cristatus</i>				2	4
<i>Podiceps grisegena</i>				2	1
<i>Podiceps nigricollis</i>				2	1
<i>Phalacrocorax carbo</i>				2	1
<i>Ardea cinerea</i>				9	15
<i>Cygnus olor</i>				2	1
<i>Anas penelope</i>				2	1
<i>Anas strepera</i>				2	4
<i>Anas platyrhynchos</i>	C	7	11-30	7	159
<i>Aythya ferina</i>				2	4
<i>Aythya fuligula</i>				2	6
<i>Pernis apivorus</i>	C	19	11-30		
<i>Gyps fulvus</i>	B	9			
<i>Circaetus gallicus</i>	B	7	1-3		
<i>Accipiter gentilis</i>	C	16	11-30	12	4
<i>Accipiter nisus</i>	D	21	11-30	30	14
<i>Buteo buteo</i>	D	56	31-100	42	30
<i>Aquila chrysaetos</i>	D	35	4-10	30	22
<i>Falco tinnunculus</i>	D	47	31-100	5	2
<i>Falco peregrinus</i>	D	16	4-10	5	2
<i>Bonasa bonasia</i>	D	23	101-300	30	16
<i>Lagopus mutus</i>	D	37	101-300	19	19
<i>Lyrurus tetrix</i>	D	37	301-1000	16	36
<i>Tetrao urogallus</i>	D	26	101-300	19	26
<i>Alectoris graeca</i>	D	19	31-100	7	10
<i>Coturnix coturnix</i>	C	7	11-30		
<i>Crex crex</i>	B	2	4-10		
<i>Fulica atra</i>				2	113
<i>Scolopax rusticola</i>	C	2	1-3		
<i>Actitis hypoleucos</i>	C	2	1-3		
<i>Larus ridibundus</i>				2	3
<i>Columba palumbus</i>	C	14	31-100		
<i>Streptopelia decaocto</i>	C	2	1-3		
<i>Streptopelia turtur</i>	C	2	1-3		
<i>Cuculus canorus</i>	D	84	301-1000		
<i>Glaucidium passerinum</i>	C	7	4-10	12	5
<i>Athene noctua</i>	C	2	1-3		
<i>Strix aluco</i>	D	44	101-300	19	12

SPECIES	BREEDING SEASON			WINTER	
	GBE	%	NoBP	%	ΣDM
<i>Strix uralensis</i>	B	5	1-3		
<i>Asio otus</i>	B	2		2	1
<i>Aegolius funereus</i>	C	14	11-30	9	10
<i>Apus apus</i>	D	30	4-10		
<i>Apus melba</i>	D	16	4-10		
<i>Alcedo atthis</i>	B	2		5	4
<i>Jinx torquilla</i>	C	12	11-30		
<i>Picus canus</i>	C	37	11-30	7	3
<i>Picus viridis</i>	C	12	4-10		
<i>Dryocopus martius</i>	D	67	101-300	58	49
<i>Dendrocopos major</i>	D	63	301-1000	56	48
<i>Dendrocopos minor</i>				5	2
<i>Picoides tridactylus</i>	C	9	31-100	12	6
<i>Alauda arvensis</i>	C	7	31-100		
<i>Ptyonoprogne rupestris</i>	D	9	11-30		
<i>Hirundo rustica</i>	D	56	101-300		
<i>Delichon urbica</i>	D	60	101-300		
<i>Anthus trivialis</i>	D	79	3001-10000		
<i>Anthus spinoletta</i>	D	56	1001-3000	5	4
<i>Motacilla cinerea</i>	D	70	101-300	19	10
<i>Motacilla alba</i>	D	70	301-1000		
<i>Cinclus cinclus</i>	D	40	31-100	37	37
<i>Troglodytes troglodytes</i>	D	77	3001-10000	53	51
<i>Prunella modularis</i>	D	72	3001-10000	12	6
<i>Prunella collaris</i>	D	40	101-300	12	33
<i>Erithacus rubecula</i>	D	88	10001-30000	26	36
<i>Phoenicurus ochruros</i>	D	81	1001-3000	2	1
<i>Phoenicurus phoenicurus</i>	D	12	11-30		
<i>Saxicola rubetra</i>	D	16	101-300		
<i>Saxicola torquata</i>	B	2	1-3		
<i>Oenanthe oenanthe</i>	D	42	301-1000		
<i>Monticola saxatilis</i>	D	21	31-100		
<i>Turdus torquatus</i>	D	53	1001-3000	2	1
<i>Turdus merula</i>	D	84	3001-10000	40	335
<i>Turdus pilaris</i>	C	7	4-10	30	1024
<i>Turdus philomelos</i>	D	74	3001-10000	2	5
<i>Turdus iliacus</i>				5	3
<i>Turdus viscivorus</i>	D	58	1001-3000	44	276
<i>Sylvia curruca</i>	D	60	1001-3000		
<i>Sylvia communis</i>	B	2	1-3		
<i>Sylvia borin</i>	B	2	1-3		
<i>Sylvia atricapilla</i>	D	84	10001-30000		
<i>Phylloscopus bonelli</i>	C	14	101-300		
<i>Phylloscopus sibilatrix</i>	D	37	301-1000		
<i>Phylloscopus collybita</i>	D	84	3001-10000		
<i>Regulus regulus</i>	D	67	3001-10000	91	1723
<i>Regulus ignicapillus</i>	D	53	1001-3000		
<i>Muscicapa striata</i>	D	44	101-300		

SPECIES	BREEDING SEASON			WINTER	
	GBE	%	NoBP	%	ΣDM
<i>Ficedula parva</i>	D	9	11-30		
<i>Aegithalos caudatus</i>	D	30	31-100	30	125
<i>Parus plaustris</i>	D	58	1001-3000	63	430
<i>Parus montanus</i>	D	74	3001-10000	86	633
<i>Parus cristatus</i>	D	58	3001-10000	74	753
<i>Parus ater</i>	D	79	10001-30000	91	1608
<i>Parus caeruleus</i>	D	21	31-100	56	143
<i>Parus major</i>	D	77	1001-3000	77	729
<i>Sitta europea</i>	D	49	301-1000	53	112
<i>Tichodroma muraria</i>	D	23	31-100	2	1
<i>Certhia familiaris</i>	D	42	301-1000	58	170
<i>Certhia brachydactyla</i>	D	14	31-100	12	6
<i>Oriolus oriolus</i>	C	2	1-3		
<i>Lanius collurio</i>	D	42	101-300		
<i>Lanius excubitor</i>				2	1
<i>Pica pica</i>				2	1
<i>Garrulus glandarius</i>	D	74	1001-3000	67	146
<i>Nucifraga caryocatactes</i>	D	58	1001-3000	51	95
<i>Pyrrhocorax graculus</i>	D	49	101-300	33	508
<i>Corvus monedula</i>	B	2			
<i>Corvus corone cornix</i>	D	40	31-100	16	21
<i>Corvus corax</i>	D	74	31-100	84	129
<i>Sturnus vulgaris</i>	C	5	11-31		
<i>Passer domesticus</i>	D	14	31-100	12	36
<i>Passer montanus</i>	D	5	4-10	5	11
<i>Montifringilla nivalis</i>	D	23	31-100	7	56
<i>Fringilla coelebs</i>	D	86	10001-30000	77	1031
<i>Fringilla montifringilla</i>				44	497
<i>Serinus serinus</i>	D	19	11-30		
<i>Carduelis chloris</i>	D	65	301-1000	51	740
<i>Carduelis carduelis</i>	D	33	101-300	44	521
<i>Carduelis spinus</i>	D	37	101-300	51	545
<i>Carduelis cannabina</i>	D	14	101-300	2	1
<i>Carduelis flammea</i>	D	26	101-300	9	36
<i>Loxia curvirostra</i>	D	51	301-1000	47	362
<i>Pyrrhula pyrrhula</i>	D	81	3001-10000	84	1169
<i>Coccothraustes coccothraustes</i>	D	26	11-30	9	49
<i>Emberiza citrinella</i>	C	7	11-30	9	10
<i>Emberiza cirrus</i>	C	2	1-3		
<i>Emberiza cia</i>	D	33	101-300	7	4
<i>Emberiza calandra</i>	B	2	1-3		

Discussion

After evaluating the field work we found out that the agreed minimum number of census days was too small since the species number had still been increasing with the number of census days. Unfortunately the financial possibilities didn't allow us to extend the field work. Nevertheless the results are a good basis for the further projects.

We didn't find some species which otherwise breed in the near proximity and for which the appropriate habitats are present in the park: Hoopoe *Upupa epops*, Lesser Spotted Woodpecker *Dendrocopos minor*, Italian Sparrow *Passer domesticus italiae*, Carrion Crow *Corvus corone corone*, Hobby *Falco subbuteo*, Eagle Owl *Bubo bubo* and Nightjar *Caprimulgus europaeus*.

We also didn't record the four species for which there are data of certain or probable breeding in the past: Willow Warbler *Phylloscopus trochilus* (Gregori 1987), Chough *Pyrrhocorax pyrrhocorax* (Matvejev 1983), Brambling *Fringilla montifringilla* (Šere 1986) and Citril Finch *Serinus citrinella* (Gregori 1977, Matvejev 1983).

Most of the expected species were recorded during the work for the atlas of wintering birds. The main problem was sometimes very difficult field work due to the heavy snowfall. The abundances of several species will have to be rechecked especially so for Owls and Grouse.

The project will be foreseeably concluded in the season

95/96 (all squares censused). The season 96/97 is reserved for more difficult squares and species. The book with all the results will be published in 1998.

The work done so far has shown that there are a few cases at which the current measures of protection are not sufficient. Several vulnerable and interesting sites should be put under stricter regime of protection.

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