

Article

Niche Analysis and Conservation of Bird Species Using Urban Core Areas

Vasilios Liordos ^{1,*}, Jukka Jokimäki ², Marja-Liisa Kaisanlahti-Jokimäki ², Evangelos Valsamidis ¹ and Vasileios J. Kotsiotis ¹

¹ Department of Forest and Natural Environment Sciences, International Hellenic University, P.O. Box 172, 66100-GR, Drama, Greece; vagvals@yahoo.gr (E.V.); kotsiotisv@yahoo.gr (K.V.)

² Arctic Centre, University of Lapland, P.O. Box 122, 96101-FI Rovaniemi, Finland; jukka.jokimaki@ulapland.fi (J.J.); marja-liisa.kaisanlahti@ulapland.fi (M.-L.K.-J.)

* Correspondence: liordos@for.ihu.gr

Table S1. Common and scientific names, total abundance (sum of individuals in all survey stations) and incidence (number of stations a species was observed) of the bird species recorded in more than 5% of the survey stations in the green spaces of Kavala (26 species) and Rovaniemi (15 species).

Species	Kavala (<i>n</i> = 19)		Rovaniemi (<i>n</i> = 19)	
	Total abundance	Incidence	Total abundance	Incidence
Black-headed Gull (<i>Chroicocephalus ridibundus</i>) ¹	–	–	5	2
Feral Pigeon (<i>Columba livia</i>)	96	10	–	–
Collared Dove (<i>Streptopelia decaocto</i>)	90	17	–	–
Common Cuckoo (<i>Cuculus canorus</i>)	3	3	–	–
European Bee-eater (<i>Merops apiaster</i>)	10	2	–	–
Syrian Woodpecker (<i>Dendrocopos syriacus</i>)	9	4	–	–
Northern House Martin (<i>Delichon urbica</i>) ^a	260	18	–	–
Barn Swallow (<i>Hirundo rustica</i>) ^b	147	9	–	–
White Wagtail (<i>Motacilla alba</i>) ²	5	2	5	5
Eurasian Blackbird (<i>Turdus merula</i>)	16	6	–	–
Fieldfare (<i>Turdus pilaris</i>)	–	–	19	13
Sardinian Warbler (<i>Sylvia melanocephala</i>)	12	5	–	–
Willow Warbler (<i>Phylloscopus trochilus</i>) ^b	5	3	5	5
Olivaceous Warbler (<i>Iduna pallida</i>)	4	2	–	–
Common Nightingale (<i>Luscinia megarhynchos</i>)	20	7	–	–
Great Tit (<i>Parus major</i>)	29	13	7	7
Eurasian Blue Tit (<i>Cyanistes caeruleus</i>)	12	4	5	5
Eurasian Magpie (<i>Pica pica</i>) ²	5	2	2	2
Eurasian Jay (<i>Garrulus glandarius</i>)	7	3	–	–
Western Jackdaw (<i>Corvus monedula</i>)	30	6	10	6
Hooded Crow (<i>Corvus cornix</i>)	31	13	4	4
Common Starling (<i>Sturnus vulgaris</i>) ^b	38	8	–	–
House Sparrow (<i>Passer domesticus</i>) ^{b3}	188	17	21	11
Eurasian Tree Sparrow (<i>Passer montanus</i>) ^b	30	2	8	6
Common Chaffinch (<i>Fringilla coelebs</i>)	39	11	11	8
European Goldfinch (<i>Carduelis carduelis</i>)	42	13	–	–
European Greenfinch (<i>Chloris chloris</i>) ³	36	14	4	4
Redpoll (<i>Acanthis flammea</i>)	–	–	3	3
European Serin (<i>Serinus serinus</i>)	4	2	–	–
Eurasian Siskin (<i>Spinus spinus</i>)	–	–	9	9

¹ Vulnerable; ² Near threatened; ³ Endangered; IUCN red list categories in Finland, assigned by the Red List of Finnish Species [71]. Species recorded in Greece have not been evaluated by the Red Data Book of Threatened Animals of Greece [72].

^a SPEC 2: species whose global populations are concentrated in Europe but have an unfavorable conservation status within Europe (Species of European Conservation Concern; [70]).

^b SPEC 3: species whose global populations are not concentrated in Europe but have an unfavorable conservation status within Europe (Species of European Conservation Concern; [70]).

Table S2. Environmental variables associated with the urban green spaces of Kavala and Rovaniemi.

Environmental variables	Kavala (<i>n</i> = 19)		Rovaniemi (<i>n</i> = 19)	
	Mean ± SD	Min–max	Mean ± SD	Min–max
Tree cover (%)	30.4 ± 17.6	10.0–71.9	26.6 ± 14.0	5.0–60.0
Shrub cover (%)	7.2 ± 5.6	0.0–14.8	3.8 ± 4.9	0.0–20.0
Bare ground cover (%)	9.0 ± 6.3	0.0–19.9	53.3 ± 16.4	20.0–85.0
Impervious cover (%)	53.4 ± 16.8	8.3–73.9	16.3 ± 14.6	5.0–50.0
Deciduous tree cover (%)	19.3 ± 12.7	1.0–42.4	16.8 ± 12.6	4.0–40.0
Coniferous tree cover (%)	11.1 ± 20.7	0.0–69.9	11.5 ± 12.6	0.0–43.5
Green space size (ha)	1.5 ± 3.8	0.1–17.0	1.7 ± 1.9	0.1–8.5
Green space perimeter (km)	0.6 ± 0.6	0.15–2.7	0.6 ± 0.3	0.1–1.3
Relative edge length (km/km ²)	98.2 ± 55.5	16.0–273.6	54.3 ± 28.3	13.7–140.0
Distance from city edge (km)	0.7 ± 0.3	0.1–1.	1.2 ± 0.5	0.4–2.0
Distance from city center (km)	1.5 ± 0.9	0.1–3.1	0.9 ± 0.7	0.3–2.6
Building height (floors/building)	2.9 ± 1.6	1–6	2.6 ± 1.2	1–4
Morning noise level (dBA)	34.7 ± 3.2	28.1–40.7	40.0 ± 3.9	33.1–49.1
Midday noise level (dBA)	48.2 ± 7.8	39.1–63.9	47.3 ± 5.5	35.4–56.9
Car traffic (cars/min)	10.3 ± 11.3	0–35	9.2 ± 11.2	0–43
Pedestrian traffic (people/min)	5.4 ± 5.9	1.0–25.0	2.4 ± 2.0	0–9