

Full Length Research Paper

A study on bird species under threat and avifauna of Erçek Lake (Van-TURKEY)

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Erçek Lake is a lake characterized with volcanic lava set in ecosystem of Van Lake basin. Lake water contains soda and most important water source is Memedik stream. This study was carried out to determine avifauna of Erçek Lake between June 2000 and June 2004. One observation was carried monthly interval using Dobinson method. Total 177 species and 2 subspecies belong to 44 families were detected at the end of the study. The distribution of these species are following according to IUCN Red Data list Categories; 4 species of CR, 11 species of E, 32 species of V, 19 species of NT, 93 species of LC, 6 species of DD and 14 species of NE. 6 observed species were found to be in Globally Threatened category. Observed species were grouped as following; 71 Resident, 71 Migratory, 24 Winter Visitor, 10 Transit Migrant, 2 Transit Migrant-Migrant and 1 Migrant –Winter Visitor.

Key words: Erçek Lake, Van Lake, aves, avifauna, ornithofauna.

INTRODUCTION

The aim of this study to detect bird species in Erçek Lake established in Van Lake basin and its near surroundings. Also, population density of these species, their position and their place in Red Data Book is to determine.

Erçek Lake is located 20 km east of Van Lake and other coordinates 38°, 35' North; 43°, 33' East. It was formed during an eruption of the volcano Nemrut when debris blocked the former outlet. Depth of the lake is ranged from 30 - 38 m. The lake is 1890 m in altitude and covers 9520 ha². It is surrounded by some mountains that their altitudes changes between 2300 and 2800 m (Tuncel, 1978).

Erçek Lake has soda and alkali and Ph is 10.75. The most vulnerable water source is Memedik stream and temperatures of water rise 23°C in July and reduces 1°C in January (Elma, 1992; Erdoğan, 2000). A unique fish living within the lake is İnci Kefali (*Chalcalburnus tarichi*). Meantime abundant zooplankton species those are *M. macrocorpa* of Copepoda, *N. monacha* of Rotatoria, *E. Atritarsis* of Dipteria, are present (Yıldız, 1997).

Erçek Lake takes into account as important bird area according to national and international marshy grouping

and is accepted B group of marshy region (Ertan, 1992; Yarar and Magnin, 1997; Kılıç et al., 2004). Unfortunately natural region in west part of Turkey is become destroying rapidly owing to industrialization. So bird species migrate to east region destructed less and birds living in Van Lake basin are species that are under threat of exhausting (Kızıroğlu, 1989, 1993, 2008, 2009).

Since 1966, a lot of bird researchers arranged trips to this region. Their observations were short period generally and carried out only summer seasonal (Vielliard, 1968; Kumerloeve, 1967, 1969; Van der ven et al., 1981; Kasperek et al., 1983). Recently many comprehensive ornithological studies carried out (Adızel et al., 1993, 1994, 1995, 1998).

MATERIALS AND METHODS

The material of this study is bird species in Erçek Lake and surroundings of it (Figure 1) and study carried out between June 2000 and June 2004. Dobinson's squaring method (1976, squaring card) used to count birds in the area. In this method the map scaled 1/25000 divided into 1 km² part and numbered. Observed birds were recorded to this square.

Identification of species, listing their position in East Anatolia and position Red Data Book were done according to Kızıroğlu (1993, 2008, 2009). Binocular (Nikon 10 x 25), telescope (Carton D = 80 mm FL = 420 mm), tripod, numerator, photography camera (Zenith12 Ca and 10/1000 objective), video camera (Sony 24 optic,

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Table 1. Birds species detected in Erçek Lake, their categories and criteria.

Family and species	Position in area	Max indiv - min indiv.	IUCN red data LIST	Position in area	Max indiv- min indiv.	IUCN red data list	
NONPASSERES							
1.PODICIPEDIDAE				21. CUCULIDAE			
1. <i>Podiceps cristatus</i>	R	12 - 3	LC	93. <i>Streptopelia decaocta</i>	R	4 - 1	LC
2. <i>Podiceps grisegena</i>	M	73 - 12	VU	94. <i>Streptopelia turtur</i>	M	2 - 1	LC
3. <i>Podiceps auritus</i>	W	4 - 1	LC	95. <i>Cuculus canorus</i>	R	10 - 2	DD
4. <i>Podiceps nigricollis</i>	R	~3700 - 200	NT	22. STRIGIDAE			
5. <i>Podiceps ruficollis</i>	R	~1450 - 150	LC	96. <i>Athena noctua</i>	R	16 - 4	LC
2. PHALACROCORACIDAE				97. <i>Bubo bubo</i>	R	2 - 1	LC
6. <i>Phalacrocorax pygmaeus</i>	R	3 - 1	VU	98. <i>Otus scopus</i>	R	2 - 1	LC
3. ARDEIDAE				23. CAPRIMULGIDAE			
7. <i>Ardea cinerea</i>	R	2z3 - 5	LC	99. <i>Caprimulgus europaeus</i>	M	1	LC
8. <i>Ardea purpurea</i>	M	3 - 1	VU	24. APODIDAE			
9. <i>Egretta alba</i>	R	6 - 1	EN	100. <i>Apus apus</i>	M	120 - 6	LC
10. <i>Egretta garzetta</i>	M	48 - 21	NT	101. <i>Apus melba</i>	M	58 - 8	DD
11. <i>Ardeola ralloides</i>	R	4 - 1	VU	25. ALCEDINIDAE			
12. <i>Nycticorax nycticorax</i>	R	12 - 5	LC	102. <i>Alcedo atthis</i>	R	1	NT
13. <i>Botaurus stellaris</i>	R	6 - 2	VU	103. <i>Ceryle rudis</i>	R	2 - 1	CR
4. CICONIDAE				26. MEROPIDAE			
14. <i>Ciconia ciconia</i>	M	15 - 1	LC	104. <i>Merops apiaster</i>	M	38 - 6	LC
5. PHOENICOPTERIDAE				27. CORACIIDAE			
15. <i>Phoenicopterus ruber</i>	M	~1370 - 300	EN	105. <i>Coracias garrulus</i>	M	19 - 6	LC
6. ANATIDAE				28. UPUPIIDAE			
16. <i>Anser anser</i>	R	19 - 2	VU	106. <i>Upopa epops</i>	M	16 - 2	LC
17. <i>Anser albifrons</i>	W	23 - 3	NE	PASSERES			
18. <i>Tadorna tadorna</i>	R	~700 - 25	VU	29. ALAUDIDAE			
19. <i>Tadorna ferruginea</i>	W	~2100 - 800	LC	107. <i>Melanocorypha calandra</i>	R	3 - 1	LC
20. <i>Anas platyrhynchos</i>	R	~3450 - 600	LC	108. <i>Melanocorypha bimaculata</i>	M	4 - 1	LC
21. <i>Anas crecca</i>	W	~2750 - 75	NT	109. <i>Calandrella cinerea</i>	M	7 - 2	LC
22. <i>Anas strepera</i>	T	16 - 4	VU	110. <i>Calandrella rufescens</i>	M	75 - 2	LC
23. <i>Anas acuta</i>	R	16 - 6	VU	111. <i>Galerida cristata</i>	R	~250 - 8	LC
24. <i>Anas querquedula</i>	T	27 - 3	NT	112. <i>Lullula arborea</i>	R	50 - 2	LC
25. <i>Anas clypeata</i>	W	~360 - 78	EN	113. <i>Alauda arvensis</i>	R	~250 - 25	LC
26. <i>Marmareta anguirostris</i> *	M	9 - 2	EN	114. <i>Eremophila alpestris</i>	R	30 - 10	LC
				30. HIRUNDINIDAE			

Table 1. Contd.

27. <i>Aythya ferina</i>	M,W	~250 - 67	LC	115. <i>Riparia riparia</i>	M	500 - 40	VU
28. <i>Aythya fuligula</i>	W	74 - 45	NT	116. <i>Hirundo rustica</i>	M	~1000 - 200	LC
29. <i>Aythya nyroca</i> *	M	13 - 4	EN	117. <i>Delichon urbica</i>	M	~350 - 95	VU
30. <i>Oxyura leucocephala</i> *	R	13 - 5	EN	31. MOTACILLADAE			
7. ACCIPITRIDAE				118. <i>Anthus campestris</i>	M	10 - 2	LC
31. <i>Milvus migrans</i>	R	2 - 1	EN	119. <i>Motacilla flava</i>	M	~1500 - 40	LC
32. <i>Neopron percnopterus</i>	M	3 - 1	VU	120. <i>Motacilla alba</i>	R	~750 - 20	LC
33. <i>Gypus fulvus</i>	R	2 - 1	EN	121. <i>Motacilla cinerea</i>	R	35 - 10	LC
34. <i>Circaetus gallicus</i>	M	1	VU	122. <i>Motacilla flava feldegg</i>	R	~200 - 50	LC
35. <i>Circus aeruginosus</i>	R	4 - 1	NT	32. TROGLODYTIDAE			
36. <i>Circus cyaneus</i>	W	1	DD	123. <i>Troglodytes troglodytes</i>	R	20 - 5	LC
37. <i>Buteo buteo</i>	R	6 - 1	LC	33. TURDIDAE			
38. <i>Buteo rufinus</i>	R	6 - 1	NT	124. <i>Erithacus rubecula</i>	R	12 - 2	LC
39. <i>Aquila clanga</i> *	T	2 - 1	NE	125. <i>Saxicola rubetra</i>	R	7 - 2	VU
40. <i>Aquila chrysaetos</i>	R	8 - 1	LC	126. <i>Saxicola torquata</i>	R	10 - 2	VU
41. <i>Aquila rapax</i>	R	6 - 1	CR	127. <i>Irania gatturalis</i>	R	5 - 1	LC
42. <i>Hieraetus pennatus</i>	T	1	VU	128. <i>Phoenicurus ochrurus</i>	M	11 - 2	LC
43. <i>Haliaeetus leucoryphus</i>	W	2 - 1	LC	129. <i>Phoenicurus phoenicurus</i>	R	5 - 2	LC
8. FALCONIDAE				130. <i>Oenanthe oenanthe</i>	M	27 - 4	LC
44. <i>Falco naumanni</i> *	M	13 - 2	VU	131. <i>Oenanthe hispanica</i>	M	15 - 1	LC
45. <i>Falco tinnunculus</i>	R	7 - 2	LC	132. <i>Oenanthe deserti</i>	M	7 - 1	EN
46. <i>Falco subbuteo</i>	M	3 - 1	LC	133. <i>Oenanthe isabellina</i>	M	35 - 2	LC
47. <i>Falco biarmicus</i>	R	4 - 1	VU	134. <i>Oenanthe finschii</i>	M	7 - 2	LC
48. <i>Falco cherrug</i>	R	3 - 1	CR	135. <i>Oenanthe pleschanka</i>	M	12 - 2	LC
49. <i>Accipiter nisus</i>	R	4 - 1	NT	136. <i>Manticola saxatilis</i>	M	7 - 1	LC
50. <i>Accipiter gentilis</i>	R	6 - 1	NT	137. <i>Luscinia svecica</i>	M	11 - 1	VU
9. PHASIANIDAE				34. SYLVIDAE			
51. <i>Alectoris chukar</i>	R	32 - 12	VU	138. <i>Cettia cetti</i>	R	3 - 1	LC
52. <i>Coturnix coturnix</i>	M	76 - 21	VU	139. <i>Locustella luscinioides</i>	M	11 - 1	VU
10. RALLIDAE				140. <i>Acrocephalus melanopogon</i>	M	1	LC
53. <i>Rallus aquaticus</i>	R	2 - 1	LC	141. <i>Acrocephalus schoenobaenus</i>	R	1	NT
54. <i>Gallinula chloropus</i>	R	3 - 1	LC	142. <i>Acrocephalus palustris</i>	M	2 - 1	LC
55. <i>Fulica atra</i>	R	~1750 - 200	LC	143. <i>Acrocephalus scirpaenus</i>	M	3 - 1	LC

Table 1. Contd.

11. OTIDIDAE				144. <i>Acrocephalus arundinaceus</i>	M	5 - 1	LC
56. <i>Otis tarda</i> *	M	1	EN	145. <i>Hippolais pallida</i>	W	21 - 2	LC
12. HAEMATOPODIDAE				146. <i>Sylvia communis</i>	M	20 - 2	LC
57. <i>Haematopus ostralegus</i>	M	16 - 8	NT	147. <i>Sylvia borin</i>	M	15 - 2	LC
58. <i>Himantopus himantopus</i>	M	43 - 9	LC	148. <i>Sylvia atricapilla</i>	M	2 - 1	LC
13. RECURVIROSTRIDAE				149. <i>Phylloscopus sibilatrix</i>	T	2 - 1	DD
59. <i>Recurvirostra avosetta</i>	M	~274 - 35	VU	150. <i>Phylloscopus collybita</i>	M	22 - 2	LC
14. BURHINIDAE				151. <i>Phylloscopus trochilus</i>	15 - 2	LC	15 - 2
60. <i>Burhinus oedicephalus</i>	M	8 - 1	VU	152. <i>Phylloscopus nitidus</i>	5 - 2	LC	5 - 2
15. CHARADRIIDAE				153. <i>Regulus regulus</i>	4 - 1	LC	4 - 1
61. <i>Charadrius dubius</i>	M	32 - 3	NT	154. <i>Regulus ignicapillus</i>	5 - 1	DD	5 - 1
62. <i>Charadrius leschnaultii</i>	M	6 - 1	EN	35. MUSCICAPIDAE			
63. <i>Vanellus vanellus</i>	R	~630 - 34	LC	155. <i>Muscicapa striata</i>	3 - 1	LC	3 - 1
16. SCOLOPACIDAE				156. <i>Ficedula parva</i>	5 - 1	NT	5 - 1
64. <i>Calidris minuta</i>	W	210 - 29	NE	36. SITTIDAE			
65. <i>Calidris temminckii</i>	W	13 - 2	NE	157. <i>Sitta naumayeri</i>	3 - 1	LC	3 - 1
66. <i>Calidris alpina</i>	W	23 - 23	NE	37. PARIDAE			
67. <i>Philomachus pugnax</i>	W	410 - 24	NE	158. <i>Parus major</i>	12 - 1	LC	12 - 1
68. <i>Gallinago gallinago</i>	W	74 - 3	CR	38. REMIZIDAE			
69. <i>Limosa limosa</i>	W	210 - 56	NE	159. <i>Remiz pendulinas</i>	2 - 1	LC	2 - 1
70. <i>Tringa erythropus</i>	W	7 - 1	NE	39. LANIIDAE			
71. <i>Tringa totanus</i>	M	~750 - 39	NT	160. <i>Lanius callurio</i>	25 - 4	LC	25 - 4
72. <i>Tringa stagnatilis</i>	W	7 - 2	DD	161. <i>Lanius minor</i>	15 - 2	LC	15 - 2
73. <i>Tringa nebularia</i>	W	23 - 10	NE	40. CORVIDAE			
74. <i>Tringa ochropus</i>	W	12 - 5	NE	162. <i>Pica pica</i>	50 - 8	LC	50 - 8
75. <i>Tringa glareola</i>	W	36 - 23	NE	163. <i>Corvus monedula</i>	75 - 25	LC	75 - 25
76. <i>Actitis hypoleucos</i>	M	43 - 5	VU	164. <i>Corvus frugilegus</i>	~2500 - 150	LC	~2500 - 150
77. <i>Arenaria interpres</i>	W	4 - 1	NE	165. <i>Corvus corone cornix</i>	78 - 5	LC	78 - 5
17. LARIDAE				166. <i>Corvus corax</i>	7 - 1	LC	7 - 1
78. <i>Larus ridibundus</i>	W	~340 - 120	LC	41. STURNIDAE			
79. <i>Larus genei</i>	T	16 - 2	VU	167. <i>Sturnus vulgaris</i>	~2000 - 20	LC	~2000 - 20
80. <i>Larus canus</i>	W	48 - 2	NE	168. <i>Sturnus roseus</i>	140 - 4	LC	140 - 4
81. <i>Larus fuscus</i>	T	210 - 23	NE	42. PASSERIDAE			
82. <i>Larus armenicus</i>	R	~630 - 79	LC	169. <i>Passer domesticus</i>	~1000 - 50	LC	~1000 - 50

Table 1. Contd.

18. STERNIDAE				43. FRINGILLIDAE			
83. <i>Gelochelidan nilotica</i>	M	13 - 5	VU	170. <i>Carduelis carduelis</i>	40 - 3	LC	40 - 3
84. <i>Hydroprogne caspia</i>	M	5 - 1	VU	171. <i>Carduelis cannabina</i>	20 - 2	LC	20 - 2
85. <i>Sterna hirundo</i>	T, M	8 - 2	LC	172. <i>Rhodopechys sanguinea</i>	5 - 1	LC	5 - 1
86. <i>Sterna albifrons</i>	T, M	16 - 2	NT	173. <i>Carpodocus erythrinus</i>	2 - 1	LC	2 - 1
87. <i>Chlidonias niger</i>	T	13 - 2	VU	44. EMBERIZIDAE			
88. <i>Chlidonias leucopterus</i>	T	~740 - 6	NT	174. <i>Emberiza hortulana</i>	20 - 5	LC	20 - 5
19. PTEROCLIDAE				175. <i>Emberiza melanocephala</i>	50 - 4	LC	50 - 4
89. <i>Pterocles orientalis</i>	M	2 - 1	VU	176. <i>Emberiza schoeniculus</i>	M	5 - 1	NT
20. COLUMBIDAE				177. <i>Emberiza buchani</i>	M	5 - 1	LC
90. <i>Columba livia</i>	R	210 - 23	LC	178. <i>Emberiza cineracea</i>	R	7 - 1	VU
91. <i>Columba oenas</i>	M	6 - 1	VU	179. <i>Emberiza calandra</i>	R	25 - 4	LC
92. <i>Columba palumbus</i>	R	14 - 2	NT				

* : Globally threatened birds.

R: Resident; M: Migrant; W: Winter Visitor; T: Transit Migrant

IUCN Red List Categories: Critically endangered (CR), Endangered (EN), Vulnerable (VU), Near threatened (NT), Least concern (LC), Data deficient (DD), Not evaluated (NE).

700 digital zoom) were used in the study.

RESULTS

Findings in the study are given Table 1.

DISCUSSION

Total 179 bird species (2 of them are subspecies) belong to 44 families were detected in Erçek Lake and it's near surrounding at the end of this study in two years. Distribution of species according to IUCN Red List Categories are like this; 4 Critically endangered, 11 Endangered, 32 Vulnerable, 19 Near threatened, 93 Least concern, 6 Data deficient and 14 Not evaluated species. 6 out of 179 were found to be in Globally threatened category.

Observed species, grouped as following; 71 Resident, 71 Migrant, 24 Winter visitor, 10 Transit migrant, 2 Transit migrants- Migrant and 1 Migrant-

Winter visitor. The bird population was more extensive in spring season after migration. In summer and late autumn population continue same with. With winter season population density decreasing and only resident and winter visitors' bird appear in area.

The results of this study was good agreement with previous studies of Vieliard (1968) and Kumerloeve (1967, 1969) but Crane (*Grus grus*) and dalmatian pelican (*Pelecanus crispus*) species that mentioned in some previous work were not come acrossed in the study.

According to observations of Van der ven et al. (1981) and Kasperek et al. (1983) crane and great bustard nesting in study area, But in this study time no nest was found in Erçek Lake for crane (*G. grus*) and great bustard (*Otis tarda*) during our study. Although the lake is known an important area generation place for these birds.

Birds were most populated in two are; one is between Gendelova village and train station, second

is the marshy area lying between Erçek Lake and Karagündüz village.

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