

Supplementary material

Raimo Virkkala: Variation in population trends and spatial dynamics of waterbirds in a boreal lake complex. — *Ornis Fennica* 93: 197–211.

Finnish Environment Institute, Natural Environment Centre, Mechelininkatu 34 a,
P.O. Box 140, FI-00251 Helsinki, Finland. E-mail: raimo.virkkala@ymparisto.fi

Table S1. Characteristics of the water bodies of the Kukkia lake complex. Mean and maximum depth from Mäkirinta (1978). Rihanselkä was included in the western main Kukkia in the depth calculations of Mäkirinta.

Water body	Water area (km ²)	Shore line length (km)	Mean depth (m)	Maximum depth (m)
Western main Kukkia	21.40	126.4	5.3	34
Rihanselkä	1.55	10.1	–	–
Haltianselkä	3.93	27.6	8.2	28
Eastern main Kukkia	11.79	60.1	6.0	27
Leppänä	2.09	17.3	6.1	31
Läyliä & Äikkäänselkä	2.60	27.4	4.5	17
Rautajärvi	2.39	21.2	3.7	27

Table S2. Number of bird pairs observed in the total lake complex in the study years.

Species	Study years			
	1986/87	1998/99	2003/04	2012
Whooper Swan (<i>Cygnus cygnus</i>)	0	1	10	17
Canada Goose (<i>Branta canadensis</i>)	0	0	1	7
Eurasian Wigeon (<i>Anas penelope</i>)	38	44	42	12
Common Teal (<i>A. crecca</i>)	33	32	26	16
Mallard (<i>A. platyrhynchos</i>)	107	82	133	99
Northern Pintail (<i>A. acuta</i>)	1	0	0	0
Common Pochard (<i>Aythya ferina</i>)	36	29	33	16
Tufted Duck (<i>A. fuligula</i>)	16	38	20	4
Common Scoter (<i>Melanitta nigra</i>)	1	0	0	0
Common Goldeneye (<i>Bucephala clangula</i>)	136	186	153	41
Red-breasted Merganser (<i>Mergus serrator</i>)	74	68	71	29
Common Merganser (<i>M. merganser</i>)	82	37	38	31
Black-throated Diver (<i>Gavia arctica</i>)	50	53	56	64
Great crested Grebe (<i>Podiceps cristatus</i>)	27	10	9	4
Red-necked Grebe (<i>P. grisegena</i>)	26	85	104	60
Common Coot (<i>Fulica atra</i>)	1	9	14	3
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	412	158	138	236
Common Gull (<i>Larus canus</i>)	653	751	868	796
Lesser Black-backed Gull (<i>L. fuscus</i>)	83	55	69	67
Herring Gull (<i>L. argentatus</i>)	29	55	70	66

Table S3. Status of the most abundant species studied in different classifications. HA = habitat preference of waterbirds (Pöysä *et al.* 2013: G = generalist, E = eutrophic lakes, O = oligotrophic lakes; habitat preference patterns of gulls were not evaluated (n/a). DIR = EU BIRDS Directive species (Annex I), SPEC = species of European conservation concern (unfavourable conservation status: SPEC2–SPEC3, BirdLife International 2004), RES = species of special responsibility in Finland (Rassi *et al.* 2001), RED = Red-listed species in Finland in 2015 (near-threatened and threatened species, Tiainen *et al.* 2016).

Species	HA	DIR	SPEC	RES	RED
Eurasian Wigeon (<i>Anas penelope</i>)	E	–	–	+	+
Common Teal (<i>A. crecca</i>)	G	–	–	+	–
Mallard (<i>A. platyrhynchos</i>)	G	–	–	–	–
Common Pochard (<i>Aythya ferina</i>)	E	–	+	–	+
Common Goldeneye (<i>Bucephala clangula</i>)	G	–	–	+	–
Red-breasted Merganser (<i>Mergus serrator</i>)	O	–	–	+	+
Common Merganser (<i>M. merganser</i>)	O	–	–	+	+
Black-throated Diver (<i>Gavia arctica</i>)	O	+	+	–	–
Red-necked Grebe (<i>Podiceps grisegena</i>)	E	–	–	–	–
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	n/a	–	–	–	+
Common Gull (<i>Larus canus</i>)	n/a	–	+	–	–
Lesser Black-backed Gull (<i>L. fuscus</i>)	n/a	–	–	+	+
Herring Gull (<i>L. argentatus</i>)	n/a	–	–	–	–