

Supplementary information

Kjell Larsson* 2022: Age and sex ratios in the declining West Siberian/North European population of Long-tailed Duck wintering in the Baltic Sea: Implications for conservation. — *Ornis Fennica* 99: 117–131.

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Supplementary Table S1. Summary of data used to analyse age and sex ratios of long-tailed ducks wintering in different regions in the Baltic Sea between 2008 and 2021. The number of first winter females was assumed equal to the number of first winter males. First winter birds observed between January and May hatched during the preceding summer, that is, during the preceding calendar year.

Year	Months	No. of analysed photos	No. of adult males A	No. of females B	No. of first winter males C	Total no. of analysed birds (A+B+C)
Region 1. Coastal waters east of Gotland in central Baltic Sea						
2009	March–April	78	331	255	28	614
2010	March–April	335	815	895	109	1819
2011	Jan–April	615	1785	1530	118	3433
2012	Jan–March	427	1418	1425	299	3142
2013	Jan–April	552	1345	1757	364	3466
2014	Jan–March	373	1140	1711	413	3264
2015	Feb–March	369	1006	1251	259	2516
2016	Feb–March	419	1143	881	55	2079
2017	Feb–March	402	1557	2514	1183	5254
2018	Feb–March	357	1721	1763	288	3772
2019	Feb–March	377	2743	2495	242	5480
2020	March–April	328	799	879	153	1831
2021	March	427	1167	1031	115	2313
Sum		5059	16970	18387	3626	38983
Region 2. Offshore banks in central Baltic Sea						
2009	March–April	100	538	418	11	967
2010	March	218	872	708	49	1629
2011	March	252	1712	1410	94	3216
2012	March–April	158	523	438	68	1029
2014	March–April	211	1342	1301	230	2873
2015	March	221	1274	1116	64	2454
2016	March	287	1287	1056	39	2382
2017	March	413	2155	1747	181	4083
2018	March	265	1300	1058	40	2398
2019	March	368	1413	1229	46	2688
Sum		2493	12416	10481	822	23719
Region 3. Hanö Bay in southern Baltic Sea						
2010	March–April	40	141	85	5	231
2011	March	81	237	159	12	408
2012	March	50	86	46	1	133
Sum		171	464	290	18	772
Region 4. German waters in southern Baltic Sea						
2012	February	137	232	125	1	358
2013	January	226	738	603	50	1391
2014	February	300	640	553	71	1264
2015	January	414	798	556	4	1358
2016	January	117	387	242	2	631
2017	January	340	1062	858	41	1961
Sum		1534	3857	2937	169	6963
Region 5. Finnish waters. Åland Sea and western Gulf of Finland. Spring stopover sites						
2008	May	26	221	215	35	471
2009	May	180	905	821	71	1797
2010	April–May	393	1257	1428	150	2835
2011	April–May	417	2318	2277	189	4784
2012	April–May	350	2986	2733	450	6169
2013	April	69	775	992	298	2065
2014	April	121	1295	1432	372	3099

2015	April	91	800	806	91	1697
2016	April	138	2163	1931	67	4161
2017	May	202	1584	2064	769	4417
2018	April	328	3132	2950	168	6250
2019	April	271	2243	2031	144	4418
Sum		2586	19679	19680	2804	42163

Additional site a. North Öland in central Baltic Sea

2017	March	213	457	687	237	1381
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Additional site b. Kapellskär in northern Baltic Proper

2017	March	232	721	748	158	1627
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Supplementary Table S2. Summary of data used to analyse age and sex ratios of long-tailed ducks wintering in different regions in the Baltic Sea between 2008 and 2021. The number of first winter females was assumed equal to the number of first winter males. Standard errors (SE) of estimates of female age ratios and proportion males of adults were estimated by bootstrapping. Standard errors of the estimated proportion males of adults were for comparison also estimated by equation 2*. First winter birds observed between January and May hatched during the preceding summer, that is, during the preceding calendar year.

Year	Months	Proportion males of adults A/(A+B-C)	Standard error Bootstrap	Standard error Eq. 2	Female age ratio C/(B-C)	Standard error Bootstrap
Region 1. Coastal waters east of Gotland in central Baltic Sea						
2009	March–April	0.593	0.018	0.021	0.123	0.046
2010	March–April	0.509	0.012	0.013	0.139	0.018
2011	Jan–April	0.558	0.008	0.009	0.084	0.010
2012	Jan–March	0.557	0.010	0.010	0.266	0.034
2013	Jan–April	0.491	0.012	0.010	0.261	0.024
2014	Jan–March	0.468	0.013	0.010	0.318	0.031
2015	Feb–March	0.504	0.014	0.011	0.261	0.030
2016	Feb–March	0.581	0.007	0.011	0.067	0.012
2017	Feb–March	0.539	0.033	0.009	0.889	0.140
2018	Feb–March	0.538	0.012	0.009	0.195	0.017
2019	Feb–March	0.549	0.008	0.007	0.107	0.016
2020	March–April	0.524	0.013	0.013	0.211	0.024
2021	March	0.560	0.010	0.011	0.126	0.016
Mean of yearly values		0.536			0.234	
Region 2. Offshore banks in central Baltic Sea						
2009	March–April	0.569	0.008	0.016	0.027	0.008
2010	March	0.570	0.010	0.013	0.074	0.012
2011	March	0.565	0.007	0.009	0.071	0.016
2012	March–April	0.586	0.014	0.016	0.184	0.035
2014	March–April	0.556	0.007	0.010	0.215	0.021
2015	March	0.548	0.006	0.010	0.061	0.011
2016	March	0.559	0.005	0.010	0.038	0.007
2017	March	0.579	0.006	0.008	0.116	0.017
2018	March	0.561	0.005	0.010	0.039	0.006
2019	March	0.544	0.004	0.010	0.039	0.007
Mean of yearly values		0.564			0.086	
Region 3. Hanö Bay in southern Baltic Sea						
2010	March–April	0.638	0.016	0.032	0.063	0.026
2011	March	0.617	0.015	0.025	0.082	0.036
2012	March	0.656	0.027	0.042	0.022	0.023
Mean of yearly values		0.637			0.056	
Region 4. German waters in southern Baltic Sea						
2012	February	0.652	0.013	0.025	0.008	0.009
2013	January	0.572	0.010	0.014	0.090	0.018
2014	February	0.570	0.010	0.015	0.147	0.022
2015	January	0.591	0.009	0.013	0.007	0.004
2016	January	0.617	0.011	0.019	0.008	0.006
2017	January	0.565	0.011	0.011	0.050	0.009
Mean of yearly values		0.595			0.052	
Region 5. Finnish waters. Åland Sea and western Gulf of Finland. Spring stopover sites						
2008	May	0.551	0.026	0.025	0.194	0.060
2009	May	0.547	0.009	0.012	0.095	0.014
2010	April–May	0.496	0.010	0.010	0.117	0.012
2011	April–May	0.526	0.005	0.008	0.091	0.008
2012	April–May	0.567	0.005	0.007	0.197	0.014
2013	April	0.528	0.016	0.013	0.429	0.052
2014	April	0.550	0.010	0.010	0.351	0.035
2015	April	0.528	0.007	0.013	0.127	0.019
2016	April	0.537	0.004	0.008	0.036	0.005

2017	May	0.550	0.012	0.009	0.594	0.048
2018	April	0.530	0.004	0.006	0.060	0.005
2019	April	0.543	0.004	0.008	0.076	0.008
Mean of yearly values		0.538			0.197	
Additional site a. North Öland in central Baltic Sea						
2017	March	0.504	0.020	0.017	0.527	0.083
Additional site b. Kapellskär in northern Baltic Proper						
2017	March	0.550	0.014	0.014	0.268	0.037

* Equation 2: $SE = \sqrt{\left(\frac{p(1-p)}{n-1}\right)}$ where p is the proportion males of adults, and n is the number of all adults in the sample (see methods section in the main text of the article for more details).