Autumn migration of seabirds pass Põõsaspea in 2013

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Abstract

During the period between 27th of August to 26th of October the seabird migration passed Põõsaspea in northwest Estonia was monitored. All species was counted and a total of 855,853 birds was seen with Barnacle goose *(Branta leucopsis)*, Common scoter *(Melanitta nigra)* and Long-tailed duck *(Clangula hyemalis)* being the most abundant. Good proportion of juveniles of Brent goose *(Branta bernicla)*, Great scaup *(Aythya marila)* and Velvet scoter *(Melanitta fusca)* indicates a good breeding season in Northern Russia this year. However, Long-tailed duck seems to continue decrease as a migrant pass Estonia with only 132,668 individuals counted during the period.

1 Introduction

The strait between the cape of Põõsaspea and Osmussaari Island in northwestern Estonia works as a bottleneck for seabirds travelling to and from their breeding sites in Russia and Siberia[3][4]. This makes it a very good spot for monitoring population dynamics of Siberian seabirds. It is estimated that over 10 million seabirds use this flyway to and from their breeding grounds[6]. Seabirds using this route are mostly swans, geese, ducks, divers, grebes, shorebirds, gulls, terns and auks. In the autumn of 2013 I decided to monitoring the seabird migration pass Põõsaspea between 27th of August to 26th of October. Since the start of the monitoring was in late august birds with migration peaks during summer were represented in the result in relative low numbers, e.g. common scoter, shorebirds and terns[3][4].

2 Methods

The counting of the migration took place at the cape Põõsaspea during the period of 27th of august to 26th of october. The reason why this period were chosen, was to cover the peak migration of as many species of seabirds as possible. As for most seabirds passing by Põõsaspea the second half of september to the first half of october are the most busiest period[3][4]. At the end of the chosen period it was estimated that the migration period pass Põõsaspea was over for most seabirds. Start of counting took place a half hour before sunrise every morning. Every bird were then counted for at least four hours as long as the weather alowed. Depending on the migration activity, counting could continue until sunset during peak days. In first half of september some counting took place during 1-2 hours in the evening as well. Migration were counted a total of 555 hours during the period, with an average of 9.25 hours per day. Monthly distribution was, in september an average of 9.93 hours per day and for october migration were counted an average of 7.9 hours a day which corresponds to the shorter days in october compared to september.

Every seabird were counted using binoculars, 10x42, and a scope 20-60x80. The scope were used mostly for identification of far distant birds. Bird identification of common species were made instantly, while rarer species were helped by several identification handbooks[1][2][7].

For at least 75% of the time, one observer counted the migration, but for shorter periods, up to four observers counted the migration. Days with more than one observer were concentrated to the peak period of ducks and geese in second half of september to first half of october. However, for some days with heavy seabird passage, e.g. the 23rd of September, the migration were only counted by one observer. This means that the real number of seabirds passing the cape were possible much higher on these days.

Estimation of juvenile proportions for brent geese,

scaups, scoters and divers were made by checking for juveniles in smaller flocks using sampling methods. Small estimation of feeding birds or birds at rest around the cape were done almost every day. Here, even passerines, raptors or others were noted to estimate the flow rate of migration birds, which can be useful to predict good passages.

2.1 Result from previous autumns

Monitoring the seabird migration at põõsaspea has been done during the previous atumns of 2004 and 2009[3][4]. During these two years over 1 million seabirds were counted between 27th of august to 26th of october in both years. Common scoter (170,000–220,000), Long-tailed duck (225,000-315,000) and Baranacle goose(190,000-210,000) were the most abundant birds [Approximated numbers for both years during my period in brackets]. The result from these years are compared with the result from 2013. If the migration of the year of 2013 would be similar to the migration in the years 2004 and 2009, a total of 1 million seabirds would have been expected and geese (250,000-300,000), ducks (600,000-700,000) and divers (30,000) would have been the most abundant groups of seabirds.

2.2 Weather

First three weeks of September were warm with a stable high pressure located over southwest Russia, giving gently winds from southwest. In the last week of September a high pressure was built up around the White sea region giving very cold northerly winds over most of Scandinavia, Finland and the Baltics as several low pressure systems went westwards through the southern Baltic sea region. Through the end of October the weather was mostly unstable with low pressures going westwards through northern Europe giving gently to strong winds from mostly north and east but also west and south.

September was much warmer than normal with temperatures rising to over 20 degrees in several places. After the passing cold front in the end of September, October was colder than normal, with some snow at several places in southern Sweden and Finland. Temperature increased again in late october to 10 degrees. November and December was warmer than normal, with mostly cloudy days.

3 Result

During the period of 27th of august to 26th of october a total of 855,853 birds were counted. The three most abundant birds [table 1], Barnacle goose *(Branta leucopsis)*, Common scoter *(Melanitta nigra)* and Long-tailed duck *(Clangula hyemalis)*, accounted for 60% of the total. The total count and percentage of the total of these three species are shown in table 1. Abundant species were Red-throated diver *(Gavia stellata)*, Brant goose *(Branta bernicla)*, Wigeon *(Anas penelope)*, Teal *(Anas crecca)*, Northern pin-tail *(Anas accuta)*, Great scaup *(Aythya marila)* and Velvet scoter *(Melanitta fusca)*. Species ranked as common were Black-throated diver *(Gavia arctica)*, Shoveler *(Anas clypeata)*, Tufted duck *(Aythya fuligula)*, Eider *(Somateria mollissima)*, Goldeneye *(Bucephala clangula)*, Red-breasted merganser *(Mergus serrator)* and Little gull *(Hydrocoloeus minutus)*. In [table 2] all species of swans, geese, ducks, divers and grebes recorded more than once migrating pass the cape are listed, with total count, the highest count and percentage of the three highest count. Cormorants, cranes, shorebirds, skuas, gulls, terns and auks are represented in [table 3]. Several rare species were observed, e.g. Gannet *(Morus bassanus)* (10th record), Black scoter *(Melanitta americana)* (6th record), White-billed diver *(Gavia adamsii)* (2 records), Long-tailed skua *(Stercorarius longicaudus)* and White-winged Black Tern *(Chlidonias leucopterus)*. Other noteworthy observations were 18 Great White Egrets *(Ardea alba)* in one flock, 4 Hawk-owls *(Surnia ulula)*, Richard's pipit *(Anthus richardi)* and 4-7 Yellow-browed warbler *(Phylloscopus inornatus)*.

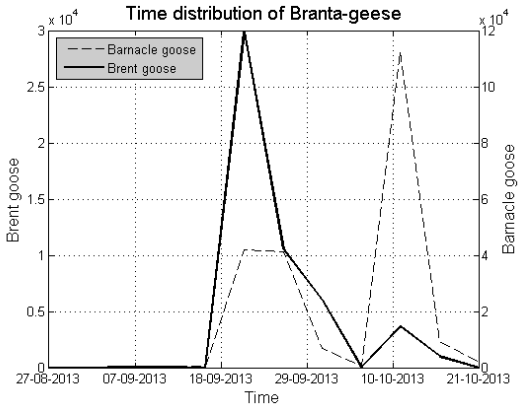

Figure 1: Time distribution for Branta-geese. Divided in five-days periods.

265,707 *Branta*-geese were counted during the period [table 2]. Branta geese passed by mainly during the period from the 22nd of September to 22nd of October [figure 1], with two clearly visible peaks. One between 22nd of September to 2nd of October with equal amount of Brent goose *(Branta bernicla)* and

Table 1: The three most abundant species, autumn 2013.

Species	Highest count	Total counted	Percentage of total
Bra leu	70,906	214,443	*25%*
Cla hye	20,994	132,668	*16%*
Mel nig	35,411	163,168	*19%*

Barnacle goose *(Branta leucopsis)*, and a second peak with maily Barnacle goose during 11^{th} of October to 16^{th} of October. 4 *B. b. hrota* and 2 *B. b. nigricans* were observed during the autumn.

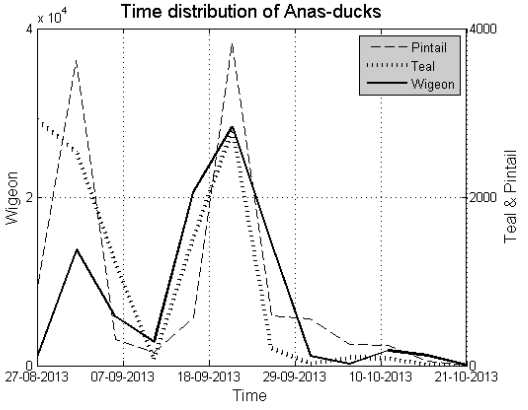

Figure 2: Time distribution for dabbling ducks. Divided in five-days periods.

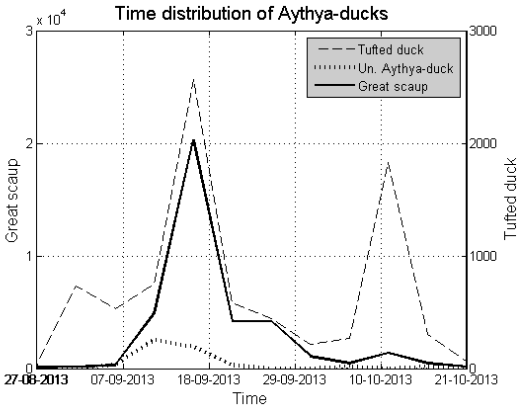

Figure 3: Time distribution for Aythya-ducks. Aythya sp. follows right axis. Divided in five-days periods.

117,542 *Anas*-ducks passed by the cape during the period [table 2]. Most dominated were as expected Wigeon *(Anas penelope)* standing for over 75% of the *Anas*-ducks. Teal *(Anas crecca)* and Pintail *(Anas accuta)* occured in similarly totals and showed along with Wigeon two clearly visible peaks around the end of August and first week of September and another during second half of September [figure 2], which shows how the species accompanies together to the wintering grounds.

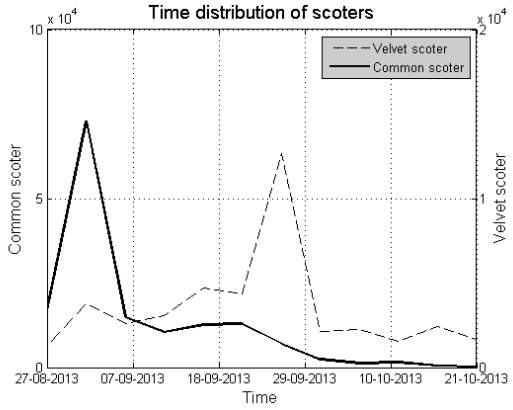

Figure 4: Time distribution for Scoters. Divided in five-days periods.

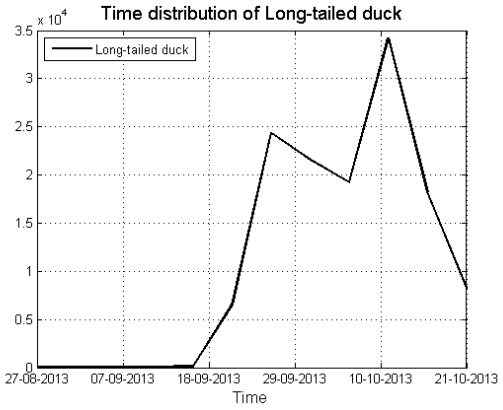

Figure 5: Time distribution for Long-tailed duck. Divided in five-days periods.

A total of 46,619 *Aythya*-ducks were counted. Among these, Great scaup *(Aythya marila)* were the most abundant and showed the most concentrated passage, with one high peak. Between 15^{th} and 19^{th} of September, over 20,000 were counted during five days [figure 3]. Tufted duck, however, showed two visible peaks. One during the same time as the peak for Great scaup and one during 10^{th} to12^{th} of October. Both peaks were of nearly same magnitude [figure 3].

205,745 scoters were counted during the period with Common scoter *(Melanitta nigra)* as the most abundant. Good numbers were seen by Velvet scoter and on the 3^{rd} of Spetember a Black scoter *(Melanitta americana)* was seen in the big scoter passage. Common scoter showed a large peak in the beginning of the period and then did a rapid decline after the first week in September [figure 4]. Velvet scoter *(Melanitta fusca)* were seen in good numbers the whole period and had a large peak around late September.

Long-tailed duck *(Clangula hyemalis)* is a late autumn species and were almost absent for the first three weeks of the monitored period [figure 5]. After a rapid increase in the last week of September, good numbers were seen until the end of the period with a visible peak around the 11^{th} of October.

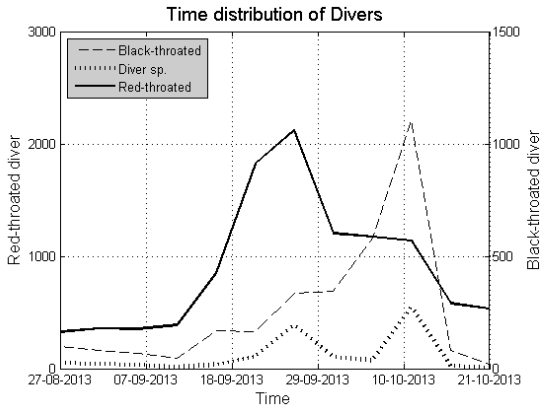

Figure 6: Time distribution for Divers. Diver sp. follows right axis. Divided in five-days periods.

A total of 14,658 divers passed by the cape during my monitoring period [table 2]. Red-throated diver *(Gavia stellata)* were the most common diver. More than 95% of the divers were identified. White-billed diver *(Gavia adamsii)* were observed at two occasions. The peak for Red-throated diver was extended over a longer period from third week of September to middle of October [figure 6]. Black-throated diver showed a more concentrated peak around second week of October.

4 Discussion

This discussion will mainly include species of swans, ducks, geese, divers and grebes as listed in table 2. The numbers of species in table 3 varies a lot and are sensitive to the weather condition for each species migration peak and will not in general be discussed here.

As 60 % of the total is accounted for just three species [table 1], the total mostly depends on the outcome of these three species. Barnacle goose showed a good result compared with previous years. The species has probably continue increasing as previous years indicates[3][4]. However, Common scoter and Long-tailed duck were counted in much lower numbers than expected. Since Common scoter peaks in july no conclusions can be made by the low numbers passing by in September and October. Long-tailed duck are suppose to peak in first half of October and since numbers were decreasing in the end of the period it is possible to assume that the peak were covered. Either, Long-tailed ducks were passing by too far offshore to be seen from Estonia or the numbers of Long-tailed ducks that spend their winter in the Baltic sea are decreasing rapidely.

The numbers of swans that was counted during the period was, as expected, low [table 1]. The number on Bewick's swan depends mainly on the wind as the species passes inland probably along the eastern border to Russia. This means that easterly winds are needed if high numbers is to be seen. Since the wind direction were mainly between WSW and N the huge numbers of Bewick's swans did not follow the coast this year.

As for Bewick's swan, *Anser*–geese probably follows the Russian border down winter grounds, and of the same reason as mentioned above no high numbers on *Anser*–geese were seen.

The numbers of Brent goose were good even if no big peak were observed. Highest count were of 16,051 ind. on the 23^{rd} of September. Most birds, together with Barnacle goose, passed probably during the night between 23^{rd} and 24^{th} of September, when large flocks of geese were counted late in the evening of the 23^{rd} and again in the morning of the 24^{th}. It was possible to hear geese all night. Samplings of smaller flocks, $<$50 ind., were checked more closely after juveniles. Result from this sampling indicates a really good year for the species. Flocks contained around 30-50% of juvenlies for flocks $<$20 ind. and approximate 10-30% for flocks between 20-50 individuals. In some flocks there were more juveniles than adults. This means probably that also Barnacle goose had a good breeding year as high numbers were counted also at Ottenby and Falsterbo in Sweden[8][5]. The diurnal dynamics of the geese migration did not show any special character. High numbers of geese were counted in mornings, noon and evening. For the peak day for Barnacle goose of 11^{th} of October, geese were not notice in high numbers until 10:00 o'clock. The migration then continued until 13:00 o'clock with small numbers continued through the whole afternoon. The 13^{th} of October of October 25,000 Barnacles were counted in a couple of hours in

the evening.

Anas-ducks were observed in normal numbers compared with the years 2004 and 2009. However, Wigeon were expected to be counted in a six-digit number but a total of over 90,000 is close to the numbers counted in 2009, so it still falls in what can be expected as a normal autumn for the species. As for Common scoter an unneglible number of *Anas*-ducks pass by in August, so it is possible that high numbers of Wigeon were passing by already earlier in the autumn. Most *Anas*-ducks passed by during pre-noon even if some days the migration continued into the afternoon. Teal often passed in high numbers during the first morning hours in September, probably due extended nocturnal migration.

Aythya-ducks were, this autumn, counted in relative high numbers compared to 2004 and 2009. Impressive numbers of Great scaup passed the point in the middle of September corresponding to the males peak migration. Small numbers of Tufted duck could have passed among these large numbers of Great scaup unnoticed, but not in any larger numbers that could affect the total. The high numbers of mainly Great scaup could possible correspond to good breeding results in Russia. As for most of the seabirds, the passage of *Aythya*-ducks took place mainly from a couple of hours after sunrise until noon. During 11^{th} of October high numbers of *Aythya*-ducks, mergansers and Goldeneye passed by in the evening.

Eider, as compared with previous autumns, continue to decrease. This is also observed in the spring migration in Sweden[8]. This corresponds probably to a true decline in the Eider population in the Baltic Sea.

Compared with Common scoter, that was seen in less numbers than expected, Velvet scoter had a really good autumn with over 40,000 counted during the period. Among these a relative high number of juveniles were observed in October. Days with over 1000 Velvet scoters were observed almost every week and the 29^{th} of Sepetember, 8,310 Velvet scoter were counted passing the point. A really good autumn number. Flock after flock of 100 or so of Velvet scoters passed all day. Interesting to notice were the diurnal dynamic of the Velvet scoter migration. Most seabirds peaked during the morning often 2-3 hours after sunrise. Velvet scoter, however, were rarely observed in any numbers until after 3-4 hours after sunrise, and peaked there after often around noon or sometimes several hours after noon. This delayed in the migration dynamic could possible correspond to a starting point futher in of Gulf of Finland.

Divers were a group that were seen in much lower numbers compared to 2004 and 2009. Only just below 15,000 were counted during the period compared with around 30,000 that was counted in 2004 and 2009. I have not found any reason for this difference in numbers, since the breeding season seems to have been successfull for most seabirds. The observers during 2004 and 2009 was always at least two, while I was, for the most of the time alone. This affects deffinitely the totals negative. The diurnal dynamics of the divers differ slightly between Blck-throated and Red-throated. The highest numbers of Black-throated diver passed by during the first morning hours while Red-throated peaked often a couple of hours later. Difference in time schedule could possible be explane of different routes and starting points.

Grebes were another group that were seen in lower numbers compared with 2004 and 2009. Just over 900 were counted which is less than half of the numbers seen in 2004 and 2009 during the same period. Fewer observes is one reason to the low number, but it is possible of a failed breeding season for the grebes.

Little gull were seen in good numbers this autumn. 60% were seen during three days in late October. This species is very hard to monitor because numbers are very weather dependent. Most Little gulls were adults, $<5\%$ were juveniles, which indicates a failed breeding season. From mid-october good numbers of gulls were seen passing by the cape, most Herring and Common, but at least 15 Caspian gulls were seen among these.

Thanks to

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Species	Highest count	Date of peak	Total counted	% of the total for the three highest counts
Cyg olo	29	25-sep	243	*30 %*
Cyg cyg	50	22-oct	219	*63 %*
Cyg colu	81	2-oct	104	*92 %*
Ans ans	57	22-sep	81	*93 %*
Ans ery	2	28 & 29-sep	4	*100 %*
Ans alb	944	29-sep	1918	*96 %*
Ans fab	217	29-sep	485	*70 %*
Ans sp.	255	29-sep	539	*89 %*
Bra ber	16,051	23-sep	51,264	*62 %*
Bra leu	70,906	11-oct	214,443	*57 %*
Tad tad	2	28-aug & 1-sep	4	*100 %*
Ana pen	10,706	23-sep	91,753	*30 %*
Ana cre	1,238	23-sep	11,480	*29 %*
Ana acu	1,928	23-sep	11,072	*41 %*
Ana stre	14	21-sep	64	*42 %*
Ana pla	326	17-oct	927	*62 %*
Ana que	2	27 & 21-sep	7	*71 %*
Ana cly	273	23-sep	2,239	*27 %*
Ayt fer	12	7-sep	63	*49 %*
Ayt ful	1,447	11-oct	8,339	*36 %*
Ayt mar	6,553	16-sep	37,684	*43 %*
Ayt sp.	152	14-sep	533	*69 %*
Som mol	2,330	6-oct	8,265	*53 %*
Cla hye	20,994	11-oct	132,668	*36 %*
Mel nig	35,411	3-sep	163,168	*39 %*
Mel fus	8,310	29-sep	42,576	*32 %*
Buc cla	522	6-oct	5,627	*27 %*
Mer alb	102	22-oct	345	*66 %*
Mer ser	670	11-oct	7,111	*23 %*
Mer mer	30	22-oct	177	*32 %*
Gav ste	812	27-sep	10,848	*19 %*
Gav arc	745	11-oct	3,098	*40 %*
Gav sp.	257	11-oct	710	*62 %*
Pod gri	55	3-sep	582	*26 %*
Pod cri	40	11-oct	367	*26 %*
Pod aur	1	e.g. 13-sep	4	*75 %*

Table 2: List of counted species recorded more than once, their totals and highest counts

Species	Highest count	Date of peak	Total counted	% of the total for the three highest counts
Pha car	445	14-sep	5,349	*22 %*
Gru gru	2,260	24 & 22-sep	6,550	*91 %*
Hae ost	32	4-sep	93	*61 %*
Cha hia	17	4-sep	83	*55 %*
Plu apr	23	30-aug	58	*64 %*
Plu squ	16	31-aug	116	*38 %*
Cal can	98	29-aug	118	*94 %*
Cal alb	40	27-sep	53	*91 %*
Cal fer	3	8-oct	7	*71 %*
Cal alp	1,402	23-sep	2,445	*86 %*
Cal mar	2	19-oct	5	*80 %*
Cal sp.	11	7-sep	20	*90 %*
Phi pug	17	5-sep	74	*62 %*
Gal gal	1	13 & 6-sep	2	*100 %*
Lim lap	17	15-sep	74	*58 %*
Num pha	13	31-aug	25	*88 %*
Num arq	5	30-aug	15	*67 %*
Tri neb	2	6-sep	4	*100 %*
Are int	2	1-sep	6	*83 %*
Ste pom	1	e.g. 25-oct	4	*75 %*
Ste par	24	3-sep	93	*62 %*
Ste sp.	1	e.g. 3-sep	3	*100 %*
Hyd min	836	25-oct	2,990	*61 %*
Chr rid	463	11-sep	7,216	*16 %*
Lar can	1,165	25-oct	8,454	*32 %*
Lar fus	5	18-oct	61	*23 %*
Lar arg	2,442	18-oct	11,064	*56 %*
Lar cac	6	19-oct	15	*80 %*
Lar mar	12	19-oct	101	*24 %*
Chl nig	2	2-sep	6	*67 %*
Ste par	9	30-aug	17	*88 %*
Ste hir	598	30-aug	1,238	*86 %*
Ste sp.	48	30-aug	85	*98 %*
Tha san	26	18-sep	202	*34 %*
Uri aal	3	9-oct	8	*63 %*
Alc tor	22	25-oct	93	*42 %*
Cep gry	5	26-oct	41	*32 %*

Table 3: List of counted species recorded more than once, their totals and highest counts