Comparison of Key Concepts between the Netherlands and Denmark

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Introduction

Based on the reported periods of ***Start of prenuptial migration*** **and** ***End of Reproduction*** in the *Key Concepts Document (KDC)* reported by all EU member states a comparison was made and any discrepancies of more than one decade between neighboring countries was reported to the respective countries. A thorough re-evaluation by the NL (Foppen 2019) included a substantial amount of new data lead to some changes in their reported periods, but also leaves some remaining discrepancies. Based on the Dutch re-evaluation the Environmental Protection Agency under the Ministry of Environment and Food of Denmark requested a re-evaluation of the Danish Key Concepts Document (Nielsen et al. 2018). If the re-evaluation between the Dutch and Danish data leads to any changes in the Danish KCD these are to be reported to the EU (Table 1, Table 2). Based on a comparison of data from DK, BE, DE and NL the text for Eurasian Teal *Anas crecca* was already revised. Any remaining discrepancies is to be discussed between the Danish Environmental Protection Agency and DCE (Table 3).

The species commented in this document follows the list received from the Netherlands. We have used the same categories as used by Foppen (2019).

- No discrepancies (following the dutch re-evaluation)
    - Start of prenuptial migration/breeding period
    - End of Reproduction
- Remaining discrepancies
    - Start of prenuptial migration/breeding period
    - End of Reproduction

Explanations to the color-coding:

Species in **Green** have 0 or 1 decade difference between DK and NL.
Species in **Yellow** have 2 decades differences between DK and NL.
Species in **Red** have 3 or more decades of difference between DK and NL.
Species where DK makes a change are noted with **– CHANGE** following the species name.
Species in **bold and black** are still open for discussion..

Table 1. Changes in the start of prenuptial migration or end of reproduction - to be implemented.

Species	Code	Subject	Existing decade	Changed decade
Cygnus olor	A036	End	RD26	RD30
Anas crecca	A052	Start	MD5	MD6
Perdix perdix	A112	End	RD24	RD26
Somateria mollissima	A063	End	RD22	RD24
Garrulus glandarius	A342	Start	MD6	MD10
Garrulus glandarius	A342	End	RD24	RD23

Table 2. Change of "Data Use" category – to be implemented

Species	Code	From	To
Columba oenas	A207	M	R
Columba palumbus	A208	M	R

Table 3. Species with remaining discrepancies.

Species	Code	Subject	Existing decade
Anser sp.	NA	NA	NA
Melanitta fusca	A066	start	MD5
Pluvialis squatarola	A141	end	RD22
Larus canus	A182	end	RD24

No discrepancies

Start of prenuptial migration period/breeding

Start of prenuptial migration/breeding is mainly based on long-term monitoring data from a series of Danish wetlands (mainly waterbirds) including the Wadden Sea, Tipperne and Vejlerne but also more recent data from Birdlife Denmark's national database (www.dofbasen.dk) and their newly finished (2014-2017) Bird Atlas (https://dofbasen.dk/atlas/). For some species, we have also contacted national experts to get their opinion.

Greylag goose *Anser anser*

Start of prenuptial migration in Denmark is defined as decade 4 (breeding period decade 5), which correlates fine with the Netherlands (suggested changed from decade 1 to 4).

NL is currently in the process of analyzing an alternative to the more traditional assessment of winter/spring movements based on migration counts, by looking at analyses that have been carried out using ringing, neck collar banding and (satellite) tracking.

Mallard *Anas platyrhynchos*

Start of prenuptial migration in Denmark is defined as decade 6 (breeding period decade 7), which correlates fine with the Netherlands (suggested changed from decade 10 to 6). Start of migration in Denmark can be obscured by feral birds which may cloud the picture.

Tufted duck *Aythya fuligula*

Start of prenuptial migration in Denmark is defined as decade 6 (breeding period decade 10), which correlates fine with the Netherlands (suggested changed from decade 9 to 6).

Greater scaup *Aythya marila*

Start of prenuptial migration in Denmark is defined as decade 6, which correlates fine with the Netherlands (suggested changed from decade 8 to 7). Birds are recorded from migration points from the beginning of March in Denmark though some local movements might occur.

Goldeneye *Bucephala clangula*

Start of prenuptial migration in Denmark is defined as decade 6 (breeding period decade 7), which correlates fine with the Netherlands (suggested changed from decade 12 to 5).

Grey partridge *Perdix perdix*

Start of breeding period in Denmark is defined as decade 5. We have used the definition "continuous occupation of breeding territory (6 decades before egg laying)" as defined in Key concepts of Article 7(4): Version 2014. We defined this as onset of male territorial behavior (continuous vocalizing by males). Earliest actual egg laying would hence start 6 decades later in decade 11 (definition from KCD). Historical studies from Denmark with regard to egg laying date seems to support decade 11, though these studies are rather old. We suppose the other countries have used actual egg laying or nest construction, which may explain the discrepancies in the reported periods.

Ring-necked pheasant *Phasianus colchicus*

Start of breeding period in Denmark is defined as decade 8, which correlates fine with the Netherlands (suggested changed from decade 8 to 7).

Moorhen *Gallinula chloropus*

Start of prenuptial migration in Denmark is defined as decade 7 (breeding period decade 10), which correlates fine with the Netherlands (suggested changed from decade 8 to 7). Onset of prenuptial migration is difficult to determine for this species as it is hardly recorded on visual migration.

Common oystercatcher *Haematopus ostralegus*

Start of prenuptial migration in Denmark is defined as decade 3 based on data from the Danish part of the Waddensea (Figure 1), which states that in normal years numbers start to build up from the end of January (Laursen & Frikke 2013). The Netherlands is a bit later (suggested changed from decade 12 to 5), but maybe large wintering numbers make the actual onset hard to detect?

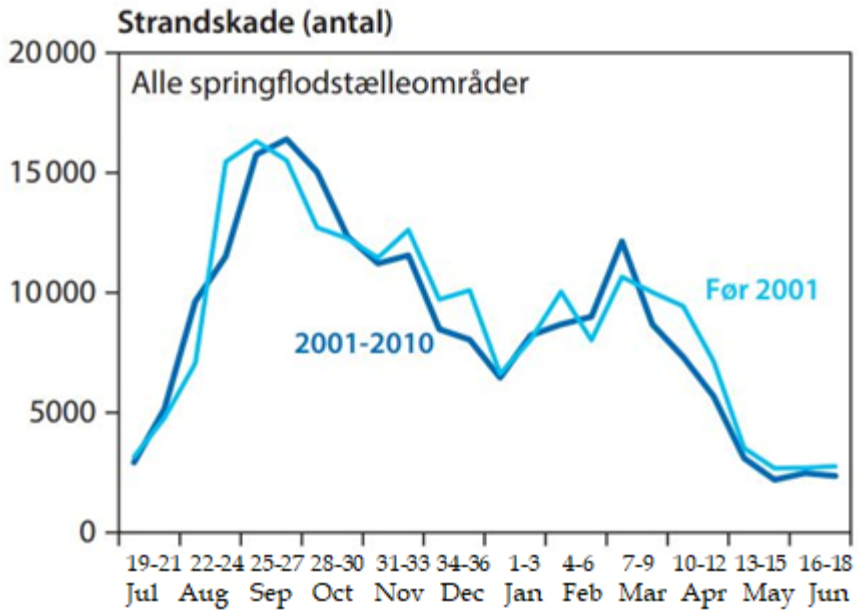


Figure 1. Number of staging Eurasian oystercatcher in the Danish part of the Wadden Sea (Laursen & Frikke 2013). Month and decade number shown on x-axis.

Jack snipe *Lymnocryptes minimus*

Start of prenuptial migration in Denmark is defined as decade 7, which correlates fine with the Netherlands (suggested changed from decade 11 to 6).

Woodcock *Scolopax rusticola*

Start of prenuptial migration in Denmark is defined as decade 7 (breeding period decade 8), which correlates fine with the Netherlands (suggested changed from decade 11 to 6).

Curlew *Numenius arquata*

Start of prenuptial migration in Denmark is defined as decade 4 (breeding period decade 8), which correlates fine with the Netherlands (suggested changed from decade 10 to 5 and definition from prenuptial migration to start of breeding season).

Spotted redshank *Tringa erythropus*

Start of migration period in Denmark is defined as decade 9, which correlates fine with the Netherlands (suggested changed from decade 10 to 8).

Black-headed gull *Larus ridibundus*

Start of prenuptial migration in Denmark is defined as decade 6 (breeding period decade 7), which correlates fine with the Netherlands (suggested changed from decade 7 to 6).

Stock dove *Columba oenas* - **CHANGE**

Start of breeding period in Denmark is defined as decade 5 (prenuptial migration decade 6), which correlates fine with the Netherlands (suggested changed from decade 7 to 5).

The definition of start of the breeding period from KCD is "occupation of the breeding sites, together with courtship display". There is an increase in the number of sites with cooing birds in February in DK (Figure 2). First reported nest with young is from early April (Birdlife Denmark's Atlas Project).

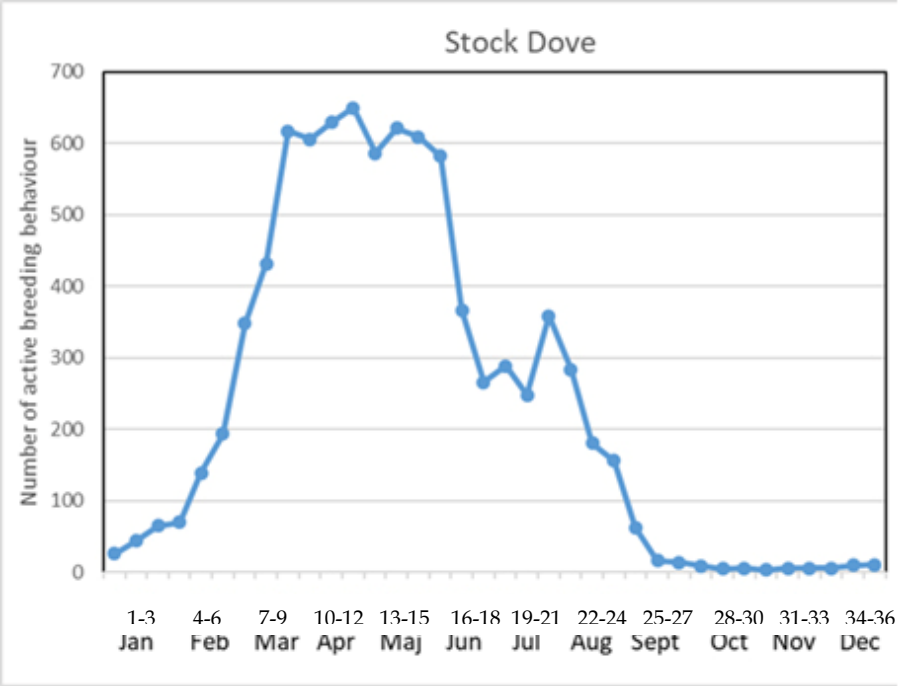


Figure 2 Number of stock doves reported as *breeding birds* in the period 2010-2018 in Birdlife Denmark's national database (www.dofbasen.dk). Month and decade number shown on x-axis.

We suggest changing "Data Use" category to reproduction (R) instead of migration (M).

Magpie *Pica pica*

Start of breeding period in Denmark is defined as decade 6, which correlates fine with the Netherlands (suggested changed from decade 7 to 6).

Jackdaw *Corvus monedula*

Start of prenuptial migration in Denmark is defined as decade 6, which correlates fine with the Netherlands (suggested changed from decade 7 to 6).

Rook *Corvus frugilegus*

Start of breeding period in Denmark is defined as decade 6, which correlates fine with the Netherlands (suggested changed from decade 7 to 5).

Hooded crow *Corvus corone*
Start of prenuptial migration in Denmark is defined as decade 6 (breeding period decade 7), which correlates fine with the Netherlands (suggested changed from decade 8 to 6).

End of Reproduction

In general, very few actual studies of the End of Reproduction exists from Denmark. The Danish data is therefore mainly derived from Birdlife Denmark's national bird database (www.DOFbasen.dk) and the recently concluded Atlas of breeding birds (2014-2017, www.dofbasen.dk/atlas/). From these databases, records of "birds on nest", "incubating birds or other signs of eggs/young in the nest", "pullus" or "juvenile" have been selected in order to assess the timing of the latest hatching decade for the relevant species. Some uncertainty with aging of pulli exists, as observer comments on the age of young in specific observations in some cases does not match the age categorization, e.g., record categorized as "juvenile" are commented as downy young, suggesting "pullus" as the correct category of the record. In most cases observers does not insert a comment on the age of young, so in general, the precision in ageing cannot be assessed.

The lack of specific studies of the timing of End of Reproduction for most species have the implication that data on several species is scarce, with only few records of yearlings reported annually.

Mallard *Anas platyrhynchos*
End of Reproduction in Denmark is defined as decade 24, which correlates fine with the Netherlands (suggested changed from decade 25 to 24).

Moorhen *Gallinula chloropus*
End of Reproduction in Denmark is defined as decade 26, which correlates fine with the Netherlands (suggested changed from decade 23 to 26).

Common coot *Fulica atra*
End of Reproduction in Denmark is defined as decade 27, which correlates fine with the Netherlands (suggested changed from decade 24 to 26).

Blackbird *Turdus merula*
End of Reproduction in Denmark is defined as decade 24, which correlates fine with the Netherlands (suggested changed from decade 21 to 24).

Remaining discrepancies

Start of prenuptial migration period/breeding.

Geese

We agree with the NL (Foppen 2019) that it is difficult to use migration data concerning various goose species. What is actual migration and what is movements within the wintering area is not obvious. When possible, we have used data from migration points, where actual migrating birds will have to fly over open sea when leaving Denmark for northern/northeastern breeding areas. However, we acknowledge that birds can make local/winter movements between Denmark – Sweden and Denmark – Germany without any difficulty that may appear as migration. We look forward to see the Dutch analysis based on ringed/resighted birds.

Teal *Anas crecca* – **CHANGE DONE**
Start of prenuptial migration in Denmark is defined as decade 6, which is based on data from the Danish part of the Wadden Sea (Figure 3) from (Laursen & Frikke 2013). The species occurs in much lower numbers in spring compared to the autumn in the area.

We have changed the onset of prenuptial migration from decade 5 to decade 6 in Denmark. This aligns with NL (6), DE (6) and BE (6).

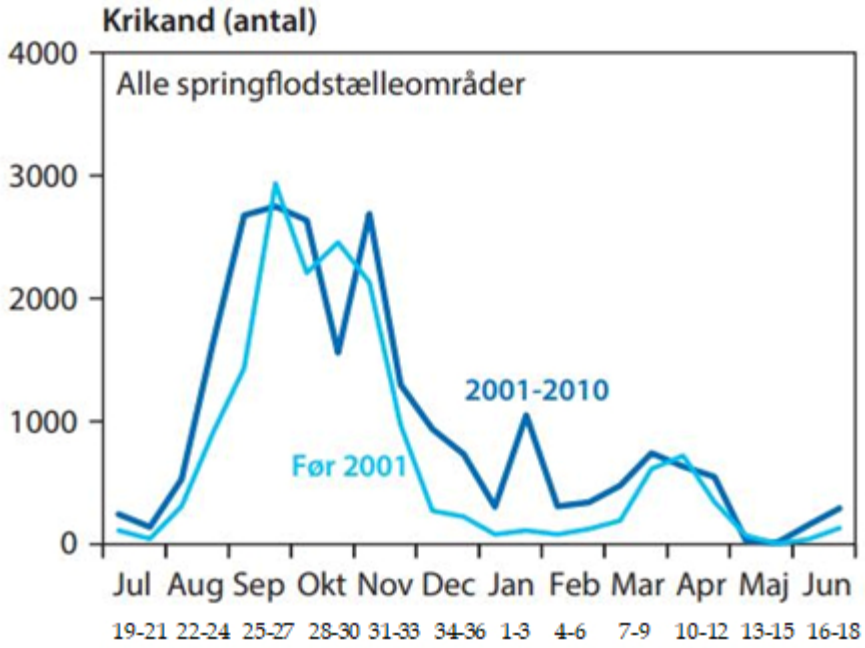


Figure 3 Number of staging Eurasian teal in the Danish part of the Wadden Sea (Laursen & Frikke 2013). Month and decade number shown on x-axis.

Pintail *Anas acuta*
Start of prenuptial migration in Denmark is defined as decade 5, which is based on data from the Danish part of the Wadden Sea (Figure 4) from (Laursen & Frikke 2013). This correlates fine with the proposed change from decade 7 to decade 5 from the Netherlands.

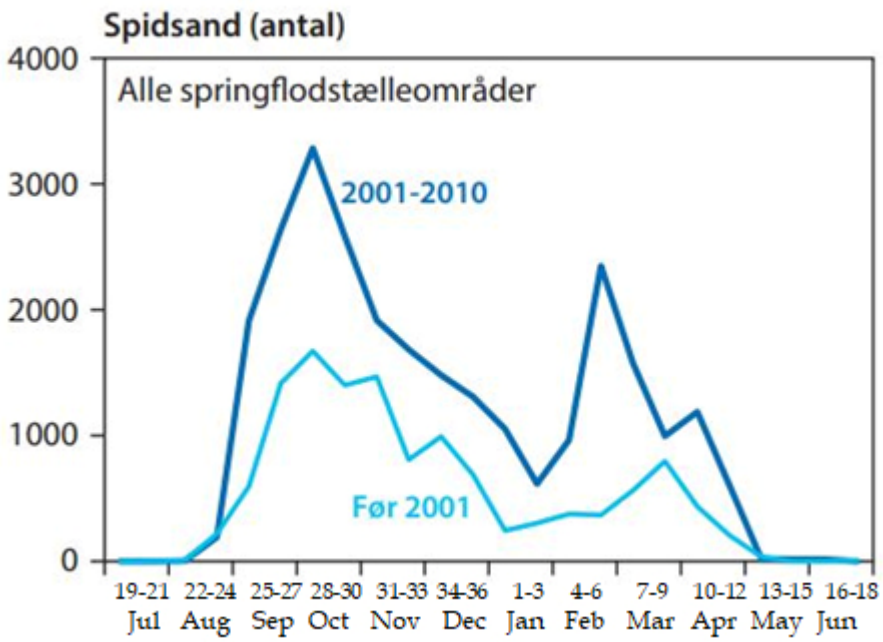


Figure 4 Number of staging pintail in the Danish part of the Wadden Sea (Laursen & Frikke 2013). Month and decade number shown on x-axis.

Velvet scoter *Melanitta fusca* – open for discussion

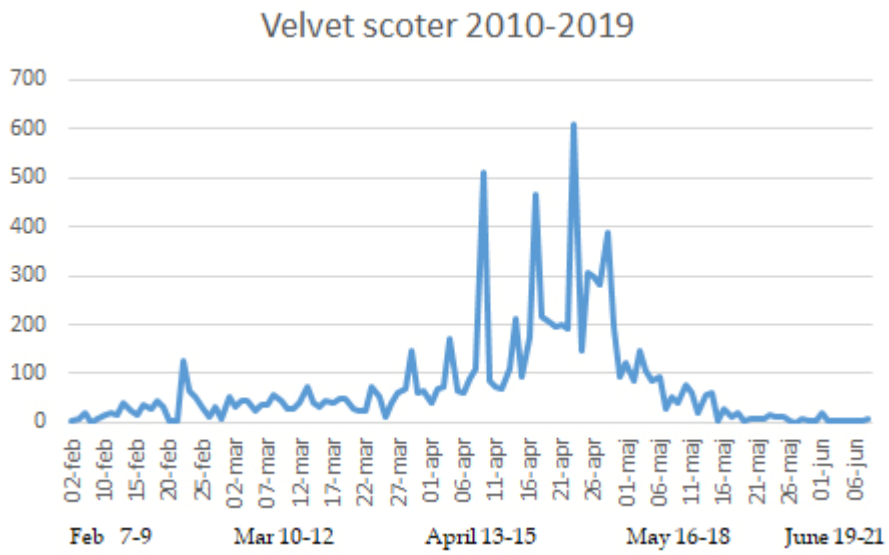
Start of prenuptial migration in Denmark is defined as decade 7. It is difficult to determine what is local winter movements (also including movements related to feeding or to compensate drift due to sea currents) and what is actual migration. The distribution of Velvet and common scoter *Melanitta nigra* in Denmark is not static and especially the distribution of velvet scoters have changed in recent years. This makes onset of prenuptial migration even harder to determine.

We present data from one of the species main migration points, Hyllekrog, in SE Denmark. Data (www.dofbasen.dk) has been pooled for the period 2010 - 2019 and shows data for 9.151 migrating birds (figure 5). The majority of birds clearly migrate in April but some bird activity is apparent in March, which could be both local winter movements and migration. However, as nearly all recorded birds migrate in easterly directions in March (Table 4), these early movements is considered to reflect genuine migration towards breeding areas. Time of prenuptial migration in PL (7), LV (8), DE (7) and FIS (8) seem to support that early movement in DK in March is migration, which would align with an increase in numbers/arrival in the countries mentioned earlier. Migration in both NL (11) and SE (11) is in compliance with what seems to be the main migration period. Data on spring arrival of birds to non-wintering areas would be important to know.

Table 4. Migration direction at Hyllekrog

SE	37
NE	10
SW	6
NO DIR	64
W	79
E	8876
ESE	79
Grand Total	9151

Figure 5. Number of migrating velvet scoters at Hyllekrog in the period 2010-2019 in Birdlife Denmark's national database (www.dofbasen.dk). Monthly decade numbers shown on x-axis.

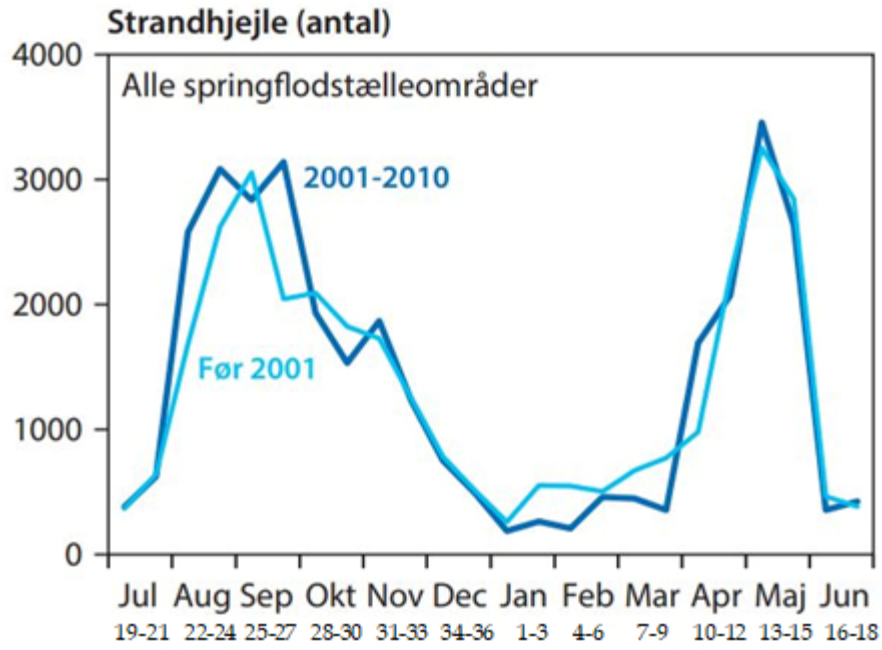


Grey plover *Pluvialis squatarola* - open for discussion

Start of prenuptial migration in Denmark is defined as decade 8, which is based on data (Figure 6) from the main staging area in Denmark, the Wadden Sea. Grey Plover is relatively scarce in winter in the Danish part of the Wadden Sea with birds arriving in spring during March and April (Laursen & Frikke 2013). Start of prenuptial migration in NL (12), DE (7) and BE (6) are quite different though with the Danish start in line with the ones reported from DE and BE. Could the difference be different data? Dutch data are birds reported from visual migration but the species can also migrate at night.

We therefore suggest keeping our original start of the prenuptial migration in decade 8.

Figure 6. Number of staging grey plovers in the Danish part of the Wadden Sea (Laursen & Frikke 2013). Month and decade number shown on x-axis.



Records from Birdlife Denmarks national database (www.dofbasen.dk) also suggest and increase in numbers in late March (Figure 7). Again, the majority of birds recorded in Denmark is from the Danish part of the Wadden Sea.

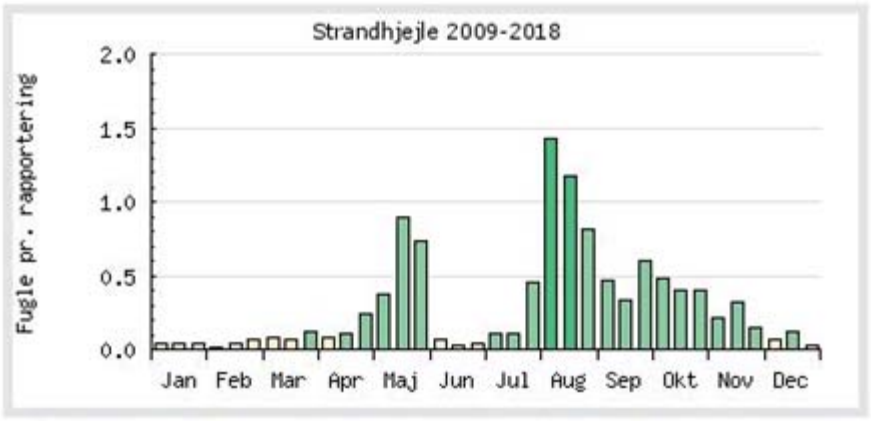


Figure 7 Phenology reported as average number of birds pr. trip report of grey plover 2009-2018 in Birdlife Denmark's national database (www.dofbasen.dk).

Bar-tailed godwit *Limosa lapponica*

Start of prenuptial migration in Denmark is defined as decade 8 (Figure 8). Two populations of Bar-tailed godwit migrate through Denmark. The nominate *L. l. lapponica* (wintering in Western Europe and NW Africa) and *L.l. taymyrensis* (wintering in Africa). The nominate ssp. *lapponica* arrives in the Wadden Sea on spring migration in March with ssp. *taymyrensis* not arriving until late April/early May (Laursen & Frikke 2013), which corresponds very well with the graphs from NL (11). The reported data from DE (7) fits very well with DK.

We therefore keep our original start of the prenuptial migration in decade 8.

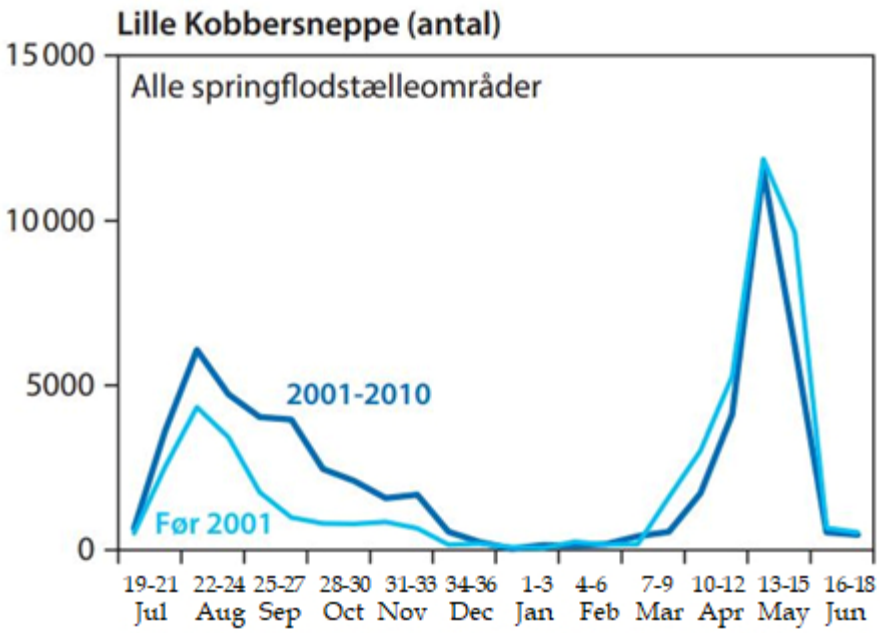


Figure 8 Number of staging bar-tailed godwit in the Danish part of the Wadden Sea (Laursen & Frikke 2013). Month and decade number shown on x-axis.

Spotted Redshank *Tringa erythropus*

Start of prenuptial migration in Denmark is defined as decade 9, which correlates fine with the Netherlands (suggested changed from decade 10 to 8).

Common gull *Larus canus*

Start of prenuptial migration in Denmark is defined as decade 5 (Figure 9). Migration data from Hyllekrog support this or maybe decade 6. Data (1976-2001) from the island of Christiansø in easternmost Denmark show a similar pattern with peak numbers in March/April and the first birds arriving in late January (Lausten & Lyngs 2004).

Adult birds dominate during the first months of migration with 2nd cal. year birds dominating from early May into June, hence the end of prenuptial migration is around the 20th of May.

The reported onset of prenuptial migration from our neighboring countries is not conclusive with BE (1), DE and PL in decade 5 and NL and SE in decade 8.

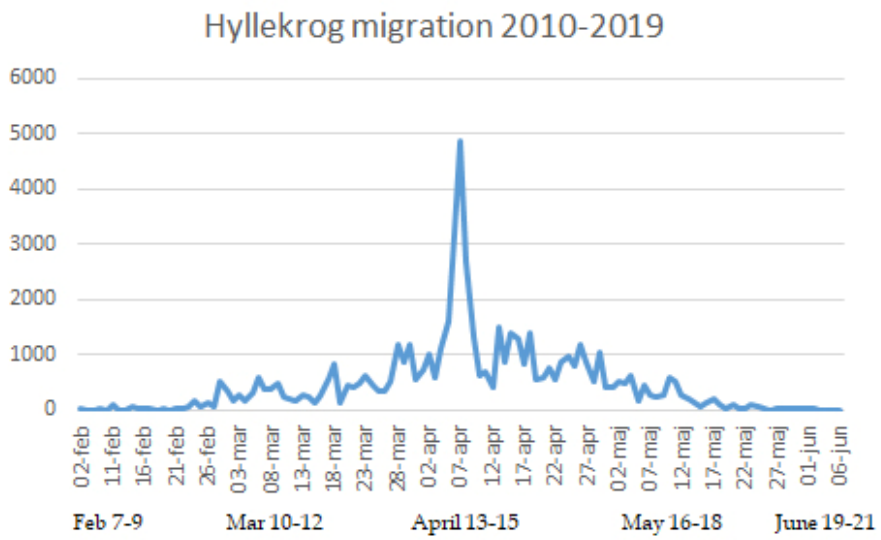


Figure 9 Number of migrating common gulls at Hyllekrog in the period 2010-2019 in Birdlife Denmark's national database (www.dofbasen.dk). Monthly decade numbers shown on x-axis.

Herring gull *Larus argentatus*

Start of prenuptial migration in Denmark is defined as decade 5. Difficult to assess the actual migration, but birds already start to appear in breeding colonies in the middle of February. Lyngs (1992) states that birds arrive back into the colonies between the middle of February and the middle of March in normal years. Recent data from Birdlife Denmarks database (www.dofbasen) support this with several observations of territorial birds within normal breeding areas/colonies from the middle of February. Start of prenuptial migration in BE (4) is in line with the one reported from DK but much earlier than the one reported from NL (9)

Coulson (2019) states that "Scottish and northern Scandinavian Herring Gulls that were still present in England in January all left and returned to their breeding areas over a period of less than two weeks in February" and "Particularly noticeable was the sudden and synchronous departure of individuals from north-east England in the first two weeks of February, which involved both Scottish and Scandinavian breeders. A similar sudden departure in the West Midlands suggesting that a return towards breeding areas at this time may be widespread, involve huge numbers of Herring Gulls".

Could the reported difference between Denmark and the Netherlands be due to different subspecies, *L. a. argenteus* vs *L. a. argentatus*?

Common wood pigeon *Columba palumbus* - **CHANGE**
Start of prenuptial migration/breeding period in Denmark is defined as decade 4. The species is very common on migration and in winter in Denmark with the first birds seen on migration in February on the traditional migration spots (Figures showing migration at a single spot, Korshage (Figure 10) and all of Denmark (Figure 11)). The actual onset of prenuptial migration is difficult to assess, as daily movements of the large wintering flocks throughout Denmark might be recorded as migration.

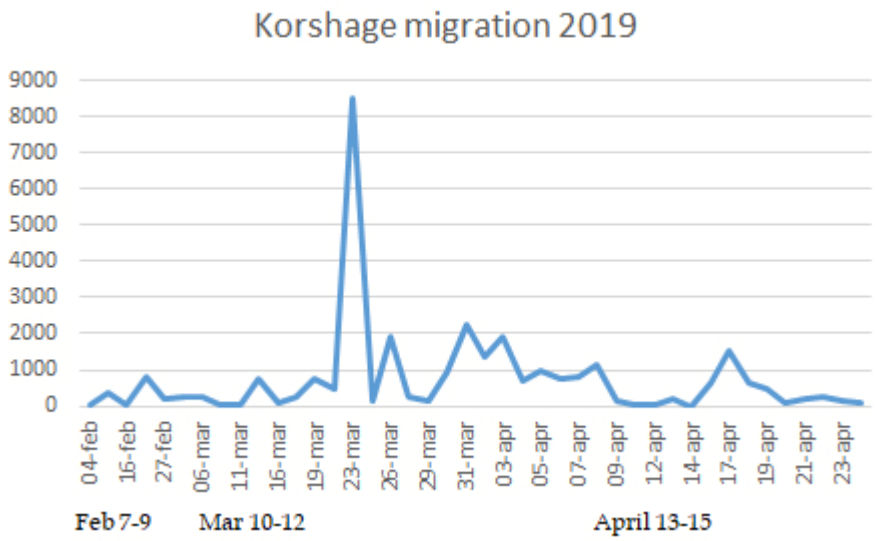


Figure 10 Number of migrating common wood pigeon at Korshage 2019 in Birdlife Denmark's national database (www.dofbasen.dk). Monthly decade numbers shown on x-axis.

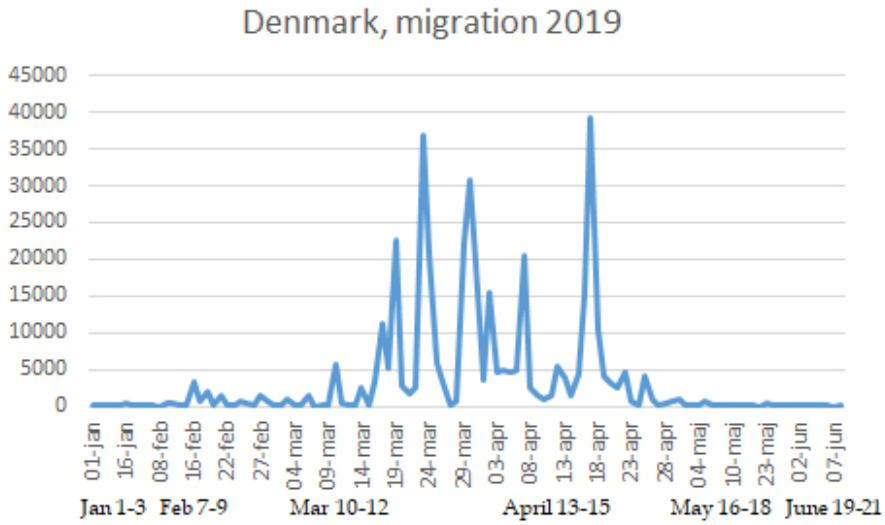


Figure 11 Number of migrating common wood pigeon in Denmark in 2019 reported to Birdlife Denmark's national database (www.dofbasen.dk). Monthly decade numbers shown on x-axis.

Territorial behavior with birds cooing or in display flight begins already in January; Birdlife Denmark's national database (www.dofbasen.dk) with constant breeding behavior/establishment of territory in decade 4 hence start of breeding season in Denmark is also decade 4. The definition of breeding was changed in DK during a revision in 2010 (Noer & Pihl 2010) from start egg laying to constant territorial behavior. The definition in the KCD is either "occupation of the breeding sites where it is mainly migratory" or "construction

of the nest in all other cases". There might be a slight difference between constant territorial behavior and nest construction but this difference is assessed to be negligible. The main migration period of Scandinavian breeders through DK is in March and April which is in line with NL (7) and BE (7).

We suggest to change "Data Use" to reproduction (R) instead of migration (M).

Fieldfare *Turdus pilaris*

Start of prenuptial migration in Denmark is defined as decade 7, which correlates fine with the Netherlands (decade 7).

Redwing *Turdus iliacus*

Start of prenuptial migration in Denmark is defined as decade 8, which correlates fine with the Netherlands (decade 7).

Eurasian jay *Garrulus glandarius* - **CHANGE**

Prenuptial migration is mainly recorded in springs following autumn irruptions. The species can be totally absent on spring migration in some years (in 2019 a total of 21 birds) with more birds recorded in spring after autumn irruptions (in 2011 a total of 673 birds) data from www.dofbasen.dk. We did not change the start/end of prenuptial migration prior to this recent KCD update due to the lack of data. We suspect that the birds seen in irruption years in Denmark primarily come from Scandinavia or further northeast, hence not being the same birds as seen in the Netherlands and Belgium?

However, data (Figure 12) from Birdlife Denmarks database (www.dofbasen.dk) does support a change to decade 10. It is worth noticing that the below figure isn't based on a high number of birds (N=1029) and is dominated by high numbers from three irruption years (2011, 2013 and 2015) in the period 2010-2019. In this analysis, we have excluded birds from non-obvious migration points (e.g., inland forested areas) as these might as well involve feeding flocks.

We have changed the onset of prenuptial migration from decade 6 to decade 10 in Denmark. This aligns with NL (11) and BE (10).

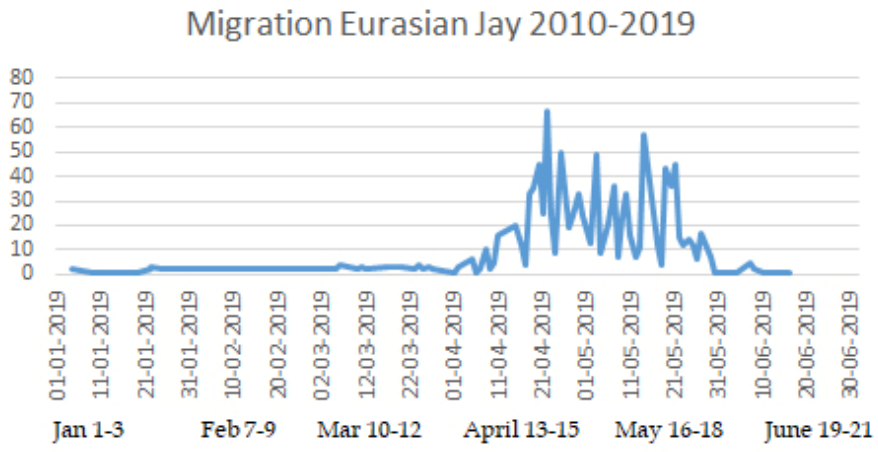


Figure 12 Number of migrating Eurasian Jays from 2010-2019 in Birdlife Denmark's national database (www.dofbasen.dk). Monthly decade numbers shown on x-axis.

Starling *Sturnus vulgaris*
Start of migration period in Denmark is defined as decade 5, which correlates fine with the Netherlands (suggested changed from decade 7 to 5). Decade 5 as migration start also corresponds with the earliest arrival of breeding birds at nesting boxes (www.dofbasen.dk).

End of Reproduction

Mute swan *Cygnus olor* – **CHANGE**
End of Reproduction in Denmark is defined as decade 26, which is based on the KCD definition of independence of young 120-150 days after the last hatching date is too early though KCD also states, "Some broods accompany parents to wintering area". Observations in Birdlife Denmark's database (www.dofbasen.dk) indicate that decade 26 as the End of Reproduction is too early and a more correct end would be around decade 30 which would also be in compliance with SE (decade 28) and DE (decade 30). It is difficult to assess the correct age of the reported birds.

We suggest to change End of Reproduction to decade 30 which is in line with SE (28), DE (30) and NL (32) but not BE (24).

Canada goose *Branta canadensis*
This species is still very scarce as a breeder in Denmark (< 10 pairs in the last couple of years) so not much data exist on the end of reproduction. It looks like the Danish End of Reproduction (decade 22) is in line with data from the much larger Dutch population (decade 22), hence we keep decade 22.

Gadwall *Anas strepera*
The species is a quite scarce breeding bird in Denmark with a low number of useful breeding observations, besides sporadic/occasional observations of pulli in Birdlife Denmark's national database (www.dofbasen.dk) and the recently concluded Atlas of breeding birds (2014-2017). The End of Reproduction in Denmark is defined as decade 23 is almost in line with NL (decade 25) and the difference could maybe be explained by geographical differences, or simply by more substantial data from NL. The Danish End of Reproduction is in line with DE (24) and SE (22).

Tufted duck *Aythya fuligula*
End of Reproduction in Denmark is defined as decade 26, which correlates fine with the Netherlands (suggested changed from decade 24 to 27).

Common eider *Somateria mollissima* - **CHANGE**
End of Reproduction in Denmark is defined as decade 22, which is supported by a few reports of breeding birds/pulli in the Birdlife Denmark's database (www.dofbasen.dk), but Lyngs (1992) state that the latest hatchlings appear in early July, which support a later date of End of Reproduction.

We suggest changing the Danish End of Reproduction to decade 24 based on the defined fledging period of 65-75 days (KCD definition) which would be in line with neighboring countries; DE (21), SE (24), NL (23).

Grey partridge *Perdix perdix* - **CHANGE**
End of Reproduction in Denmark was previously set to decade 24, but assessed on sparse data. Geographical differences between NL (27), DE (27), BE (25) and SE (21) may exist which could explain some of the difference. More

thorough studies from Denmark is required and specifically from areas where no release of feral birds takes place. A historic study from 1953 describes the main breeding period as ending in the middle of July with a few later outliers with the majority of eggs hatching in June (Paludan 1954). Data from a more recent study (Olesen 2016) support that the latest chicks appear throughout the second half of July, however, with the majority of late birds being re-nesters (C. R. Olesen, pers. comm.).

Records of pulli from the period 2010-2019 in Birdlife Denmarks database (www.dofbasen.dk) could also suggest a later End of Reproduction than the one reported (decade 24), but the release of feral birds to supplement the population (for hunting purposes) clouds the picture. It is estimated that 20.000-25.000 birds are released annually (Miljøministeriet, Naturstyrelsen 2012) and it is legal to release birds up until one month before hunting opens on 15 September.

We suggest to change End of Reproduction to decade 26

Ring-necked pheasant *Phasianus colchicus*
End of Reproduction in Denmark is defined as decade 26, which correlates fine with the Netherlands (suggested changed from decade 25 to 27).

Lapwing *Vanellus vanellus*
End of Reproduction in Denmark is defined as decade 22, which correlates fine with the very impressive data set from the Netherlands (suggested changed from decade 22 to 23).

Curlew *Numenius arquata*
End of Reproduction in Denmark is defined as decade 22, which correlates fine with the Netherlands (decade 21). The Danish End of Reproduction is based on a limited amount of data.

Woodpigeon *Columba palumbus*
End of Reproduction in Denmark is defined as decade 31, which correlates fine with the Netherlands (decade 32).

Collared dove *Streptopelia decaocto,*
End of Reproduction in Denmark is defined as decade 31, which correlates fine with the Netherlands (decade 31).

Turtle dove *Streptopelia turtur*
Very scarce breeding bird in Denmark hence not much data available. End of Reproduction in Denmark based on limited amount of data defined as decade 23, which correlates fine with the Netherlands (decade 24).

Song thrush i
End of Reproduction in Denmark is defined as decade 22, which correlates fine with the Netherlands (suggested changed from decade 21 to 24).

Eurasian Jay *Garrulus glandarius* - **CHANGE**
End of Reproduction in Denmark is defined as decade 24, which is three decades later than the Netherlands (suggested changed from decade 20 to 21). Other neighboring countries also have an End of Reproduction earlier than Denmark, SE (23) and DE (23).

We looked at data reported as "Incubating bird or other signs of eggs/young in the nest" from Birdlife Denmarks Atlas Project 2014-2017 (Figure 13) and this suggests decade 18 as the latest nest with egg (one record from decade 25 ought to be an outlier/mistake). One of the two records from decade 18 is reported as "bird on nest" which suggests that the eggs have not hatched or at least that the young are newly hatched. Adding 50 days (6-8 weeks defined in KCD) to the last decade gives an End of Reproduction in decade 23. We accept that this is based on a small dataset (N=29) and that the dataset was not designed to describe the End of Reproduction.

We suggest changing the Danish End of Reproduction to decade 23.

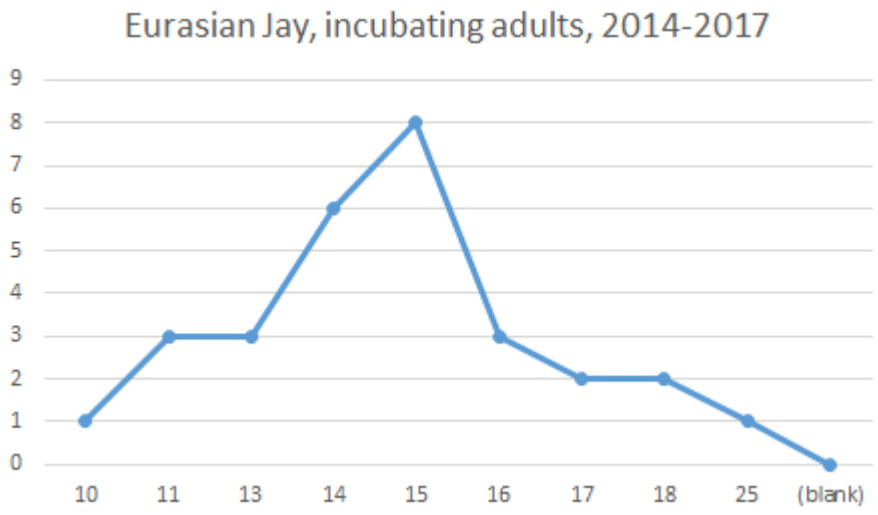


Figure 13 Phenology of incubating Eurasian jays from 2014-2017 reported to Birdlife Denmark's Atlas III survey (https://dofbasen.dk/atlas/). X-axis show decade number from April (10-12) to June (16-18) and outliers (25).

Magpie *Pica pica*

End of Reproduction in Denmark is defined as decade 22, which correlates fine with the Netherlands (suggested changed from decade 19 to 21).

Jackdaw *Corvus monedula*

End of Reproduction in Denmark is defined as decade 22, which correlates fine with the Netherlands (suggested changed from decade 19 to 20). Data reported as "Fledged young" from Birdlife Denmark's Atlas Project 2014-2017 support this with the latest records from late July/early August. The species often nest in inaccessible places, which makes determination of hatching date difficult. KCD defines End of Reproduction as "Independence of young birds (c. 7 decades after hatching)" which would lead to all eggs having hatched by decade 15 in DK.

There are some discrepancies between neighboring countries with DE (25), SE (21), B (20) and NL (20).

Rook *Corvus frugilegus*

End of Reproduction in Denmark is defined as decade 19, which correlates fine with the Netherlands (decade 18).

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