

Mammals in the Danish Common Bird Census

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Introduction

The Danish Common Bird Census (CBC, aka. Point Count Census) has been running since 1975 (winter) and 1976 (summer), respectively, and today comprises about 400 routes. Since 1984, the project participants (obligatorily) have been registering mammals, too. In total 37 mammal species have been counted (incl. Domestic Cat *Felis catus*, and of these, four species have been counted in numbers allowing calculation of robust population indexes, i.e. Brown Hare *Lepus europaeus*, Red Squirrel *Sciurus vulgaris*, Red Fox *Vulpes vulpes*, and Roe Deer *Capreolus capreolus*. Figs 1–4 shows the population trends for summer and winter for these four species. Some more notable species encountered during CBC include Wild Boar *Sus scrofa* (27 observations since 1984), Pine Marten *Martes martes* (23), European Otter *Lutra lutra* (17), Common Porpoise *Phocoena phocoena* (12), Grey Seal *Halichoerus grypus* (three) and European Beaver *Castor fiber* (two).

Species with population indices calculated

While the Brown Hare seems rather stable in the summer counts and markedly fluctuating in winter (Fig. 1), the Red Squirrel (Fig. 2) and the Red Fox (Fig. 3) numbers seem decreasing in both seasons. In both seasons, the Roe Deer have been increasing until the early 2010s and thereafter stable or decreasing (Fig. 4).

For three of these species the population trends can be compared to trends based on game yield statistics. As the Red Squirrel is not huntable, no game statistics exist for this species, and there are no known reasons for the decrease found in the CBC. Figs 5–7 shows the game yield statistics for Brown Hare and Red Fox 1995–2019 and for Roe Deer 1941–2020. As seen for Brown Hare, there doesn't seem to be any similarity between the CBC and the game yield tendencies. This discrepancy is noted, too, by the authors behind the game yield statistics (Madsen *et al.* 2021), who

add that though the game yield of Brown Hare is steeply decreasing, the hunters' own counts like those of the CBC tend to show a stable population trend of the species. The hunters' counts of Brown Hare and a few other huntable species have been carried out by volunteers from the Danish Hunters Association since 2013.

As to the Red Fox, both the CBC and the game yield trends seems to show the same negative tendency for the period in common, 1995–2019. According to Madsen *et al.* (2021), the decrease could be due to diseases as scabies and pupal distemper, which both have been widespread in Denmark, but now seems to have diminished. Despite of this, in 2019 for the first time the Red Fox was red-listed — as near-threatened (NT).

Regarding the Roe Deer, a striking similarity between the CBC and the game yield tendencies are seen. As for the Red Fox, the decrease since about 2011 may be due to diseases, but the decrease is an exclusively Danish phenomenon, which is not found in the neighbouring countries (Sunde *et al.* 2023).

Other statistics

Fig. 8 shows the daily temporal distribution summer and winter in one hour resolution for the 10 species that account for most CBC observations. Not unexpected, most species are most often encountered early in the morning. However, though most CBC counts are carried out in the early morning hours, too, species as Red Squirrel and Fallow Deer *Dama dama* (and Domestic Cat) are most frequently seen in the late morning, and the Roe Deer is seen and heard as well early as late in the morning. This is fully in accordance with the well-known habits of these species (Tonkin 1983, <https://www.raavildt.dk/database/biologi/57-dognrytme>, https://animaldiversity.org/accounts/Dama_dama/), as is the temporal position of the observations of bats (Chiroptera sp.) before sunrise and after sunset.

Table 1 shows the distribution of the most common

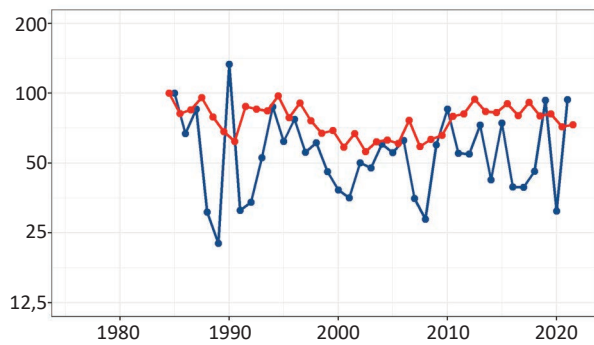


Figure 1. Population index for Brown Hare *Lepus europaeus* in Denmark since 1984 based on summer (red) and winter (blue) CBC surveys.

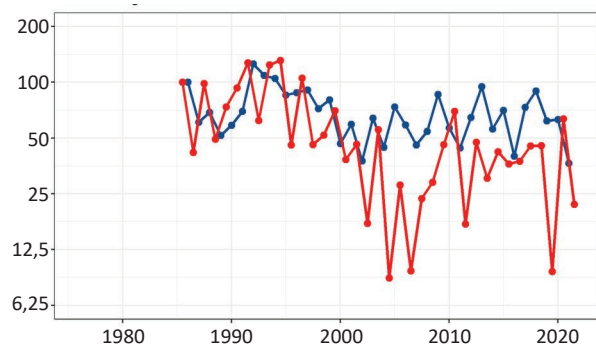


Figure 2. Population index for Red Squirrel *Sciurus vulgaris* in Denmark since 1984 based on summer (red) and winter (blue) CBC surveys.

Table 1. Number of records of the most common mammal species in Common Bird Counts (CBC) on seasons since 1984. SU = Summer (May 1 – Jun 15), W = Winter (Dec 20 – Jan 20), SP = Early spring (Mar 15 – Apr 30, only since 2021), N = Night (May 20 – Jul 10, only since 2021).

English species name	Scientific species name	Season	No. of obs
Brown Hare	<i>Lepus europaeus</i>	SU	10442
Roe Deer	<i>Capreolus capreolus</i>	SU	6744
Roe Deer	<i>Capreolus capreolus</i>	W	4225
Brown Hare	<i>Lepus europaeus</i>	W	1500
Red Squirrel	<i>Sciurus vulgaris</i>	W	1090
Red Fox	<i>Vulpes vulpes</i>	SU	1062
Red Squirrel	<i>Sciurus vulgaris</i>	SU	995
Red Fox	<i>Vulpes vulpes</i>	W	406
Fallow Deer	<i>Dama dama</i>	W	221
Red Deer	<i>Cervus elaphus</i>	SU	209
Fallow Deer	<i>Dama dama</i>	SU	202
Roe Deer	<i>Capreolus capreolus</i>	SP	140
Brown Hare	<i>Lepus europaeus</i>	SP	126
Roe Deer	<i>Capreolus capreolus</i>	N	44
Red Squirrel	<i>Sciurus vulgaris</i>	SP	34
Domestic Cat	<i>Felis catus</i>	SU	30
Domestic Cat	<i>Felis catus</i>	W	27
Wild Boar	<i>Sus scrofa</i>	SU	27
Bats sp.	<i>Chiroptera</i>	N	27
Red Deer	<i>Cervus elaphus</i>	W	26
Pine Marten	<i>Martes martes</i>	SU	23
Bats sp.	<i>Chiroptera</i>	SU	22
Pine/Beech Marten	<i>Martes martes/M. foina</i>	SU	17
Hedgehog	<i>Erinaceus europaeus</i>	SU	15
Eurasian Badger	<i>Meles meles</i>	SU	15

species on seasons. Note that the seasons ‘early spring’ and ‘night’ were introduced only in 2021 and thus cover just two years. Therefore, when comparing only the ‘old’ seasons summer and winter, common species as Brown Hare, Roe Deer and Red Fox all are most common in summer, while the opposite

is true for Red Squirrel. While this pattern is difficult to explain, it is easily understandable that hibernating species as bats, Hedgehog (*Erinaceus europaeus*) and Eurasian Badger (*Meles meles*) are only found in spring and summer.

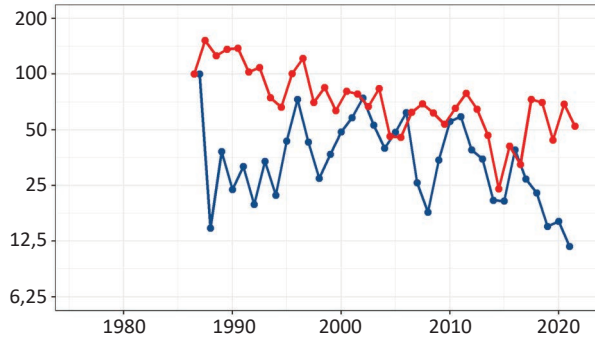


Figure 3. Population index for Red Fox *Vulpes vulpes* in Denmark since 1984 based on summer (red) and winter (blue) CBC surveys.

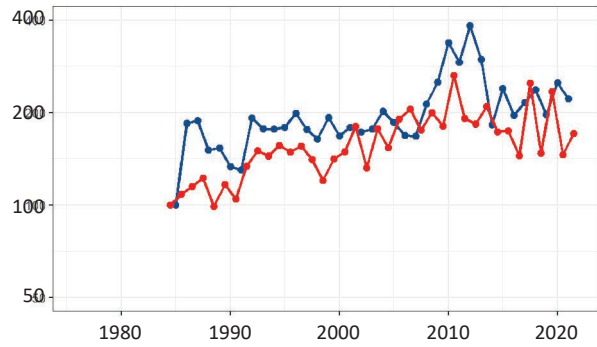


Figure 4. Population index for Roe Deer *Capreolus capreolus* in Denmark since 1984 based on summer (red) and winter (blue) CBC surveys.

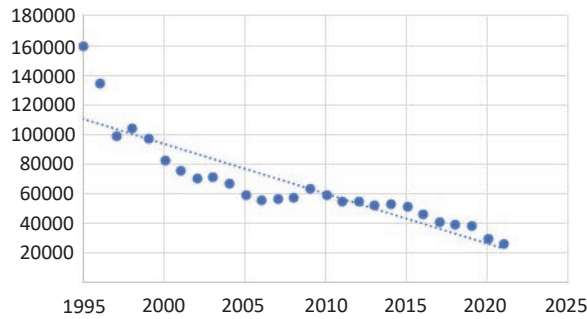


Figure 5. Annual game yield of Brown Hare *Lepus europaeus* in Denmark in 1995–2019 with tendency lines. The long term trend is shown on a dashed line. From Madsen et al. (2021).

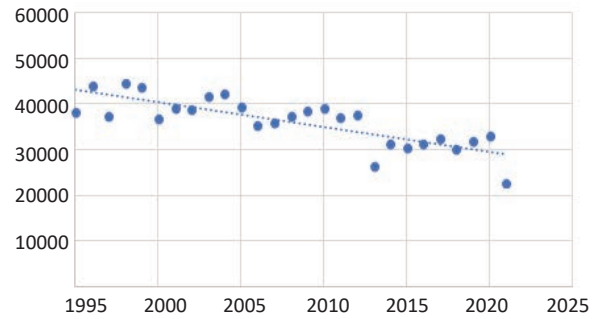


Figure 6. Annual game yield of Red Fox *Vulpes vulpes* in Denmark in 1995–2019 with tendency lines. The long term trend is shown on a dashed line. From Madsen et al. (2021).

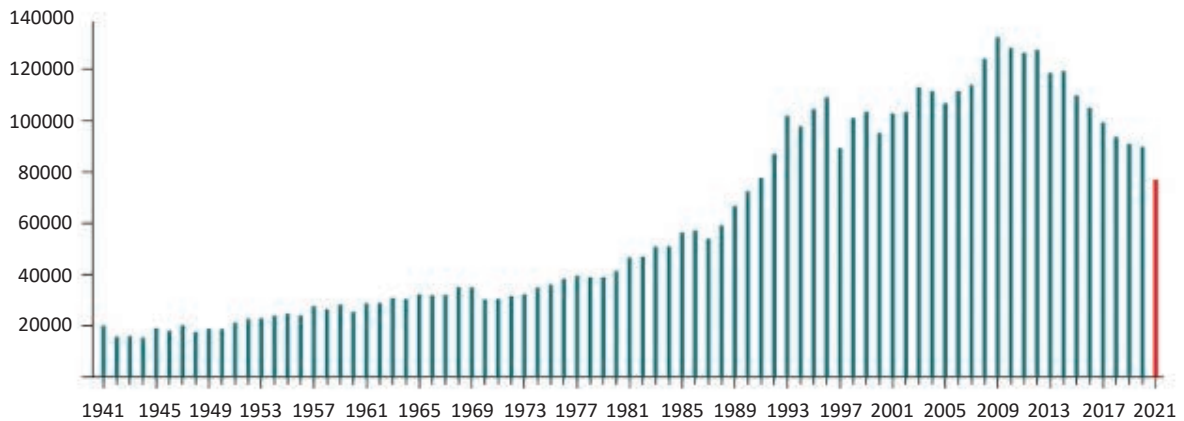


Figure 7. Annual game yield of Roe Deer *Capreolus capreolus* in Denmark 1941–2020. From Sunde et al. (2023).

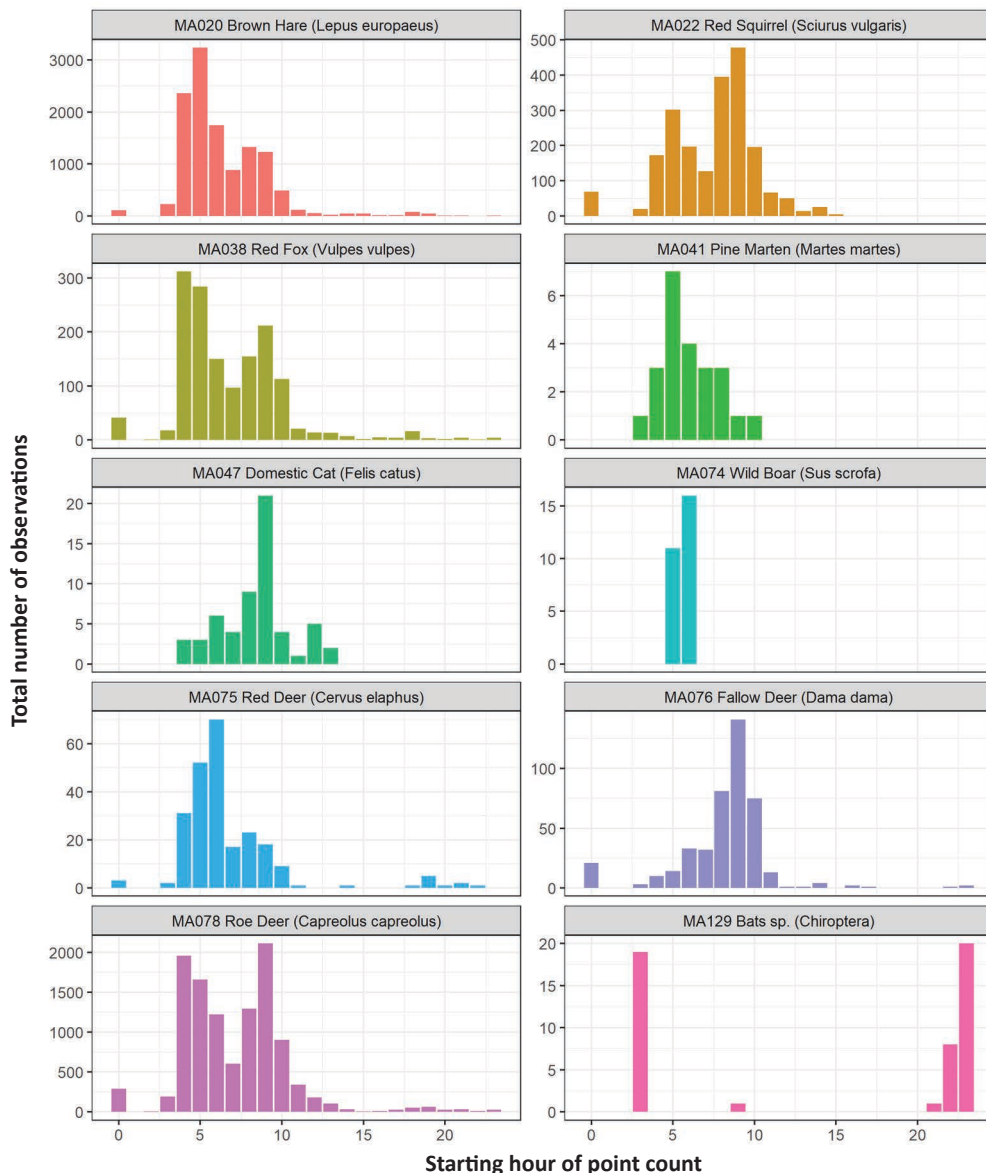


Figure 8. Daily temporal distribution summer and winter in one hour resolution of the Common Bird Counts (CBC) observations of the 10 most common mammal species.

References

- Madsen, A.B., Christensen, T.K., Madsen, J., Balsby, T.J.S., Bregnballe, T., Clausen, K.K., Clausen, P., Elmeros, M., Fox, A.D., Frederiksen, M., Hansen, H.P., Haugaard, L., Heldbjerg, H., Mayer, M., Mikkelsen, P., Nielsen, R.D., Pedersen, C.L., Pedersen, I.K., Sterup, J. & O.R. Therkildsen 2021. Vildtbestande og jagttider i Danmark. Det biologiske grundlag for jagttidsrevisionen 2022. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi – Videnskabelig rapport nr. 434. <http://dce2.au.dk/pub/SR434.pdf>
- Sunde, P., Balsby, T.J.S., Christensen, T.K., Hansen, J.L. & M. Mayer 2023. Bestandsanalyse af danske rådyr. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi – Videnskabelig rapport nr. 542. <http://dce2.au.dk/pub/SR542.pdf>
- Tonkin, J.M. 1983: Activity patterns of the Red Squirrel (*Sciurus vulgaris*). Mammal Review 13 (2–4): 99–111.
- Vikstrøm, T., Eskildsen, D.P., Jørgensen, M.F. & N.Y. Ali 2022: Overvågning af de almindelige fuglearter i Danmark 1975–2021. årsrapport for Punkttællingsprogrammet. DOF – BirdLife Denmark. <https://www.dof.dk/fakta-om-fugle/punkttaellingsprogrammet>

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