

**Appendix 2 to K. Hansen (2024) Moulting in Common Whitethroat in a confined breeding population in relation to date, sex, breeding history and weight. – Dansk Orn. Foren. Tidsskr. 118: XX-XX.**

Tab. A1. For individuals with only one clutch, there is room in the calendar for greater individual variation in the onset of moulting, whereas birds with two clutches often end in contradictory forms of behaviour because late breeders must either give up feeding the nestlings or suspend moulting of some feathers to start autumn migration at the right time. Note that 149 moult cards were completed, but since some individuals were recaptured and analysed more than once at intervals of at least 24 hours, the material includes only 40 unique individual males and 53 unique individual females, i.e., 93 individuals from the breeding population.

*For individer med kun et kuld er der plads i kalenderen til større individuel variation i fældningens startdato, hvorimod fugle med to kuld ofte ender i modstridende former for adfærd, fordi sene ynglepar enten må opgive at fodre ungerne eller undlade at forny flere svingfjer for at kunne starte efterårstrækket i tide. Bemærk, at der er udfyldt 149 fældningskort, men da nogle individer blev genfanget og analyseret mere end en gang med et interval på mindst 24 timer, omfatter materialet kun 40 unikke hanner og 53 unikke hunner, dvs. 93 individer fra ynglebestanden.*

Sex	Number of birds	First day of moult	Last day of moult	Number of days moulting	Period
All males	64	78	139	61	17 July - 17 September
All females	85	80	156	76	19 July - 3 October
One clutch males	40	75	145	70	14 July - 22 September
One clutch females	54	79	150	71	18 July - 27 September
Two clutch males	24	83	137	54	22 July - 14 September
Two clutch females	31	82	168	86	21 July - 15 October

Tab. A2. Comparison of the complete moulting process for all feather groups between the two sexes and for different breeding trajectories.

*Sammenligning af det fulde fældningsforløb for alle fjergrupper mellem de to køn og med forskelligt yngleforløb.*

Sex	Group of feathers	Formula	First day moulting*	Last day moulting*	Number of days moulting	Period
Male	64	$y = 0.9 * x + -70.52$	79	134	55	18 July - 11 September
Female	85	$y = 0.79 * x + -62.3$	80	142	62	19 July - 19 September
Male	64	$y = 0.33 * x + -26.44$	82	171	89	21 July - 18 October
Female	85	$y = 0.21 * x + -18.22$	89	230	141	28 July - 16 December
Male	64	$y = 0.53 * x + -41.27$	79	135	56	18 July - 12 September
Female	85	$y = 0.41 * x + -33.05$	82	154	72	21 July - 1 October

\* Days are numbered starting with 1 May as #1 and so on to make comparisons more illustrative and to highlight the compressed timetable of these birds.

### **Text A3. Three cases of disastrous late breeding**

One first clutch of 4 pulli that hatched on 25 July were all found dead in the nest five days later when they were supposed to be ringed. These pulli were judged to have been dead for at least a day. The male ZM 9559673 was never caught, while the female ZM 9559679 was monitored on 30 July – the same day the pulli were found dead. She had two almost fully grown new inner primaries as well as new tertials, but all secondaries were old, and two tail feathers were in moult. The moulting score for this female therefore added up to 23 points. Based on Fig. 3, this female must have started moulting around 25 days earlier, namely on 5 July. Thus, she had been moulting throughout the entire breeding process, which schematically can be divided into egg laying on 9-13 July and incubation on 14-25 July.

Another first clutch of 3 eggs from 16 July was abandoned. The male ZM 9589659 was later examined twice and found to have a normal moulting process, with 58.5 points on 5 August and 114 points on 29 August. However, the female ZM 9589670 was examined three times and exhibited a quite abnormal moulting process. On 22 July she had a moulting score of zero, on 15 August she scored 15,5 points, but on 8 September this same female only achieved 37.5 points out of a possible 125.

Furthermore, another first clutch with four already ringed pulli, which had hatched on 23 July, was found dead in the nest on 1 August. They had been ringed at an age of six days on 29 July, when all were actively begging but seemed "very retarded" in their development according to the ringer's note. The average measurements on 29 July were tarsus 14.71 mm, wing length 11.26 mm, tail 0.67 mm and weight 7.3 g (variation 5.2-9.1), which corresponds more to four days old pulli than their actual age of six days. Male ZM 9562764 was never examined, whereas on 30 July female ZM 9562082 achieved 12.5 moulting points, with two inner primaries two-thirds renewed while all secondaries were old, and two tail feathers were just emerging. This female must have started moulting approximately 10 days earlier, i.e., 20 July, while she was still incubating.

### **Tre tilfælde af katastrofalt sene yngleforsøg**

Et første kuld med fire dununger klækkede den 25. juli 1976, men blev fundet døde i reden fem dage senere, da de skulle ringmærkes. De blev vurderet til at have været døde i mindst et døgn. Hannen ZM 9559673 blev aldrig fanget, mens hunnen ZM 9559679 blev aflæst den 30. juli – samme dag som ungerne blev fundet døde. Hunnen havde to næsten fuldt udviklede nye inderste håndsvingfjer samt nye tertialer, mens alle armsvingfjer var gamle, og to halefjer lige var begyndt at vokse ud. Alt i alt blev det til en score på 23 point. Ved sammenligning med data i Fig. 3, må denne hun være begyndt at fælde omkring 25 døgn tidligere, hvilket vil sige 5. juli. Denne hun har således været i fældning gennem hele yngleprocessen, som skematisk kan opdeles i æglægning 9.-13. juli og rugning 14.-25. juli.

Et andet første kuld med 3 æg fra 16. juli 1976 blev opgivet. Hannen ZM 9589659 blev senere aflæst to gange og udviste et normalt fældningsforløb med 58,5 point den 5. august og 114 point den 29. august. Hunnen ZM 9589670 blev kontrolleret tre gange, men udviste

en ganske anormal fældningsprocedure. 22. juli havde hunnen en fældningsscore på nul, den 15. august opnåede hun 15,5 point, mens hunnen den 8. september kun scorede 37,5 point ud af de mulige 125.

Også et første kuld med fire allerede ringmærkede pulli, som var udklækket 23. juli, blev fundet døde i reden den 1. august. De var blevet ringmærket i en alder af seks dage den 29. juli, hvor alle tiggede aktivt, men virkede "meget retarderede" i udvikling ifølge ringmærkerens notat. Gennemsnitsmålingerne den 29. juli lød på tarsus 14,71 mm, vingelængde 11,26 mm, hale 0,67 mm og vægt 7,3 g (variation 5,2-9,1), hvilket svarer mere til fire dage gamle pulli end til ungeres faktiske alder på seks dage. Hannen ZM 9562764 blev aldrig kontrolleret, mens hunnen ZM 9562082 den 30. juli scorede 12,5 fældningspoints med to inderste håndsvingfjer fornyet med to tredjedele, mens alle armsvingfjer var gamle, og kun to nye halefjer var lige brudt frem. Denne hun må være begyndt at fælde cirka 10 dage tidligere, dvs. omkring den 20. juli, mens hun stadig rugede.