

Sexing juvenile Siskins *Carduelis spinus*

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Juvenile Siskins *Carduelis spinus* (EURING code 3J), similar to most juvenile cardueline finches, have a typically streaked brownish plumage which does not allow sexual determination. In this paper we propose the length of the dark spot on the second outermost rectrix as a valuable sexing criterion. A sample of 58 individuals were measured. Differences between sexes were statistically significant. Juvenile individuals with a dark spot measuring above 29 mm can be sexed as females, and below 28 mm as males. This characteristic can also be used as an additional ageing criterion for Siskins.

Key words: Siskin, *Carduelis spinus*, sexing criterion, partial moult.

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After their post-juvenile moult, Siskins *Carduelis spinus* are easily sexed according to clear differences in the crown feathers between males (black feathers with a grey contour) and females (yellowish-green feathers with no black; Busse 1984, Svensson 1992). This is not the case for juvenile birds (i.e. before their post-juvenile moult, EURING code 3J), since both sexes have a similar streaked brownish colour pattern in contour feathers. During their first moult, Siskins change these body feathers, but retain their remiges, rectrices and some coverts (EURING codes 3/5). A few juveniles moult all their coverts, tertials and even a few secondaries, primaries and tail feathers (see Jenni & Winkler 1994, p. 173).

In this paper we test for a difference in the colour pattern of rectrices between male and female yearling Siskins (EURING codes 3/5). Since these feathers remain from the juvenile plumage, sexual differences detected in the yearlings (which can be readily sexed) could be applied to enable the sexing of juvenile birds. The variable measured was the length of the dark spot of the second outermost pair of tail feathers, taken as the maximum distance from the tip of the feather to the proximal part of black colour, in contact with the calamus (Fig. 1).

Twenty seven wintering Siskins were trapped and measured in a suburban area of Barcelona (NE Spain) during the winter 1993-94. Birds were caught in two

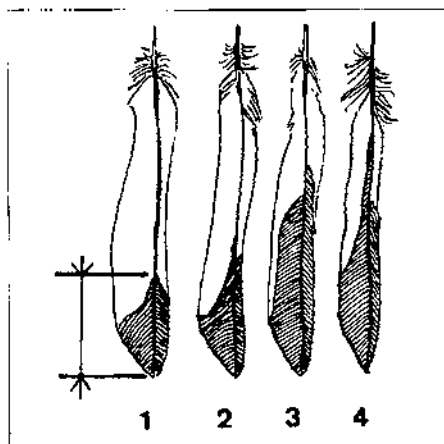


Figure 1. Diagram showing the measurement of the dark spot on the second outermost tail feathers of Siskins: 1) adult male; 2) adult female; 3) yearling male; 4) yearling female.

Figura 1. Disseny de la mesura presa a la taca negra del segon parell més extern de les rectrius del Lluer: 1) mascle adult; 2) femella adulta; 3) mascle jove; 4) femella jove.

mist-nets placed beside several live decoys, which attracted the birds. Additionally, 31 museum skins were also examined (Museu de Zoologia de Barcelona). Birds were aged and sexed according to literature (Busse 1984, Cooper & Burton 1988, Martin 1992, Senar & Copete 1992, Svensson 1992).

The length of the dark spot on the second outermost rectrix showed statistically significant differences between sexes (Table 1). Juvenile Siskins with a dark spot measuring above 29 mm could be sexed as females, and below 28 mm as males (see table 2). Age differences were also detected (Tables 1 & 2). However, because of the overlap between ages, the colour of the tail should only be used as a complementary ageing criterion.

To what extent the presented values could vary between localities is still un-

known. Payevsky (1976) tested for colour pattern differences between male and female Siskins. He proposed the measurement of the dark spot of the second innermost rectrix (we measured the second outermost one) as a possible sexing criterion for Siskins in Russia, but the results were not statistically tested.

Finally, given that a partial post-juvenile moult is the most common moult strategy amongst passerines (Ginn & Melville 1983, Svensson 1992), ringers are encouraged to examine other species where sexing traits can be found in the flight feathers, and to consider the use of these characteristics in the sexing of juvenile birds.♦

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	F	d.f.	p
Sex	222.389	1	<0.0001
Age	43.796	1	<0.0001
Sex * Age	3.202	1	=0.0792

Table 1. Relationship between sex and age in the length of the dark spot on the second outermost pair of tail feathers of Siskins (n=58).

Taula 1. Relació entre sexe i edat en la longitud de la taca negra del segon parell més extern de les rectrius del Lluer (n=58).

	\bar{X}	s.e.	mode	Max.	Min.	N
Yearling (female)	32.4	0.43	30.6	34.9	29.4	14
Adult (female)	28.2	0.94	27.4	32.9	21.9	14
Yearling (male)	21.1	0.81	19.1	27.9	16.6	17
Adult (male)	13.9	1.12	13.9	10.5	25.9	12

Table 2. Mean, standard error, mode, maximum and minimum values and sample size of measured Siskins.

Taula 2. Mitjana, error estàndard, mode, valors màxims i mínims i mida de la mostra dels Lluers mesurats.

RESUM

Sexat dels Lluers *Carduelis spinus* juvenils

Els individus juvenils de Lluer *Carduelis spinus*, com els de la majoria de fringíl·lids, presenten un característic plomatge llistat, idèntic en ambdós sexes. Per esbrinar si es poden sexar els individus juvenils s'examina la llargària de la taca negra del segon parell més extern de rectrius com a caràcter susceptible de presentar-hi diferències. Es va mesurar una mostra de 58 individus. Les diferències entre sexes van resultar estadísticament significatives (ANOVA: $F = 222.389$, D.F. = 1, $p < 0.0001$). Els individus juvenils amb una mesura superior als 29 mm poden ser sexats com a femelles i els que mesuren menys de 28 mm com a mascles. A més, aquest caràcter també pot ser emprat com un criteri addicional per a la determinació de l'edat.

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