

Great Reed Warblers *Acrocephalus arundinaceus arundinaceus* performing complete remex moult before post-breeding migration

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The European populations of the Great Reed Warbler *Acrocephalus arundinaceus arundinaceus* perform a moult strategy which generally involves, both for adult and first-year birds, a partial summer moult on the breeding grounds, a complete moult in the wintering areas and a partial pre-breeding moult in late winter, prior to spring migration (Cramp 1992, Svensson 1992). Nevertheless, the beginning, suspension and completing of primary moult have already been reported for a minority of adults (Martinez 1984, Olioso and Pambour 1989, Sultana and Gauci 1976, Spina 1990) and, more recently, first-year birds (King 1994) trapped in southern Europe. Despite the rather high frequency and wide distribution of such observations, the origin of these birds was never ascertained, although an eastern origin for the major part of the birds trapped on passage in western Europe has been supposed (Martinez 1984, Olioso and Pambour 1989).

In eight years of ringing activity (1988-1995) carried out at some small wetlands scattered close to the southern edge of the Po Plain, Italy, we trapped a total of 20 adult Great Reed Warblers (August 17 inds, September 1 and October 2). Such small figures reflect a low density of breeding pairs as well as a scarce presence of migrants, because trapping effort

was rather high during the study period, with a total of more than 16,000 birds ringed in reedbeds between August and October. Great Reed Warblers were aged according to iris and mouth colours and state of plumage.

Only the two birds trapped in October were in active primary moult and near to complete it (Tab. 1). The first individual (A) was caught at an inland pond (La Badia PS, 43° 48'N, 12° 39'E) on 14.10.1989 and showed a body mass of 30.5 g and very low subcutaneous fat deposits, score 2 according to Busse (1970). The second one (B) was caught three times at the same river mouth (Foce Conca RN, 43° 58'N, 12° 43'E): the first time on 20.08.1993, it had a body mass of 40.5 g, fat score 5, a regressing brood patch and no active or suspended moult; the second one on 14.10.1994, it had a body mass of 33.5 g, fat score 2 and active remex moult; the third one on 6.09.1995, it had a body mass of 50.0 g, fat score 5 and the two innermost primaries renewed on the left wing only.

Body mass and fat score of the individuals moulting in October were far from pre-migratory values, neither seemed to resemble those of freshly landed birds. Considering the migratory strategy of this species, featured by long-stage flights and rather rapid stop-overs (Cramp 1992), we suppose we dealt with

Table 1. Flight feather moult scores of two adult Great Reed Warblers caught in north-eastern Italy. Primaries numbered descendantly, secondaries ascendantly and rectrices centrifugally (cf. Ginn and Melville 1983).

Ind.	Date	Secondaries									Primaries										Rectrices						
		9	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	
A	14.10.89	l.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5
		r.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5
B	14.10.94	l.	4	5	5	1	1	1	3	4	5	5	5	5	5	5	5	3	2	2	0	4	4	4	4	4	4
		r.	5	5	5	0	1	1	2	4	5	5	5	5	5	5	4	4	3	3	0	4	4	4	4	4	4

locally breeding birds prior to migration. Moreover, the high intensity rate of primary moult in the individual B in October (3-4 primaries simultaneously growing) could, in this case, exclude any hypothesis of active moult during migration, as suggested by King (1994), because of the reduced flight capability and high energetic requirements of moult. Further reasons for considering at least individual B as a local breeder are the presence of the brood patch when ringed in August and its retraps in the same reedbed spot in the following two years.

Body mass values and fat loads of individual B in August 1993 and September 1995 indicated, on contrary, typical pre-migratory conditions. It seems therefore that the same individual had adopted different moult strategies and migratory timing in different years. This fact could confirm the influence of proximate factors, like protracted breeding period or poor feeding conditions, on the genetic determination of the migratory behaviour.

The low figures of our sample do not allow any speculation on the frequency of complete remex moult on the breeding quarters, but indicate that further studies on the southern populations of Great Reed Warbler could reveal a complex geographical distribution and wider diffusion of different moult strategies.

Riassunto - Vengono segnalati due Cannareccioni adulti in muta, catturati a scopo di inanellamento in zone umide situate presso il limite meridionale della Pianura Padana. Entrambi i soggetti, in ottobre, stavano per completare la muta delle remiganti e delle timoniere. Per almeno uno di questi individui si suppone un'origine locale.

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