

THE WEIGHTS, MOULT AND MORPHOMETRICS OF SPOTTED REDSHANKS IN BRITAIN.

by Nigel A. Clark

Up to the end of 1975 231 Spotted Redshanks, *Tringa erythropus*, had been ringed in Britain. The Wader Study Group file contains the processing details of 114 of these. The majority have come from two sources - 46 birds were caught by the Mid-Kent Ringing Group between 1962 and 1968, and 60 birds were caught together at Terrington on the Wash by the Wash Wader Ringing Group on the 27th July, 1975.

The birds caught by the Mid-Kent Ringing Group, between July and November, consisted of 8 definite juveniles (age code 3), 16 definite adults (4) and 22 which were not aged (2). The Terrington sample, on the other hand, contained no juveniles. There were 53 in winter plumage which were, therefore, thought to be summering, possibly first summer, birds, and 7 presumed adults which were in full summer plumage. It had been noted for several years prior to the catch that there was a flock of Spotted Redshanks spending a period of time somewhere on the Wash each summer. It is probable, therefore, that a flock of non-breeding, possibly first-year, Spotted Redshanks regularly occurs on the Wash.

Figure 1 gives the bill lengths of 105 birds. There was no evidence of any variation due to age in the sample. Witherby et al. (1941) gives bill lengths of 53 - 59mm for males and 56.5 - 65mm for females. The mean of the 105 live birds on which the bill was measured was 58.3mm., standard deviation 2.9. Although there is some indication of bimodality, the data are not sufficient to attempt to test this.

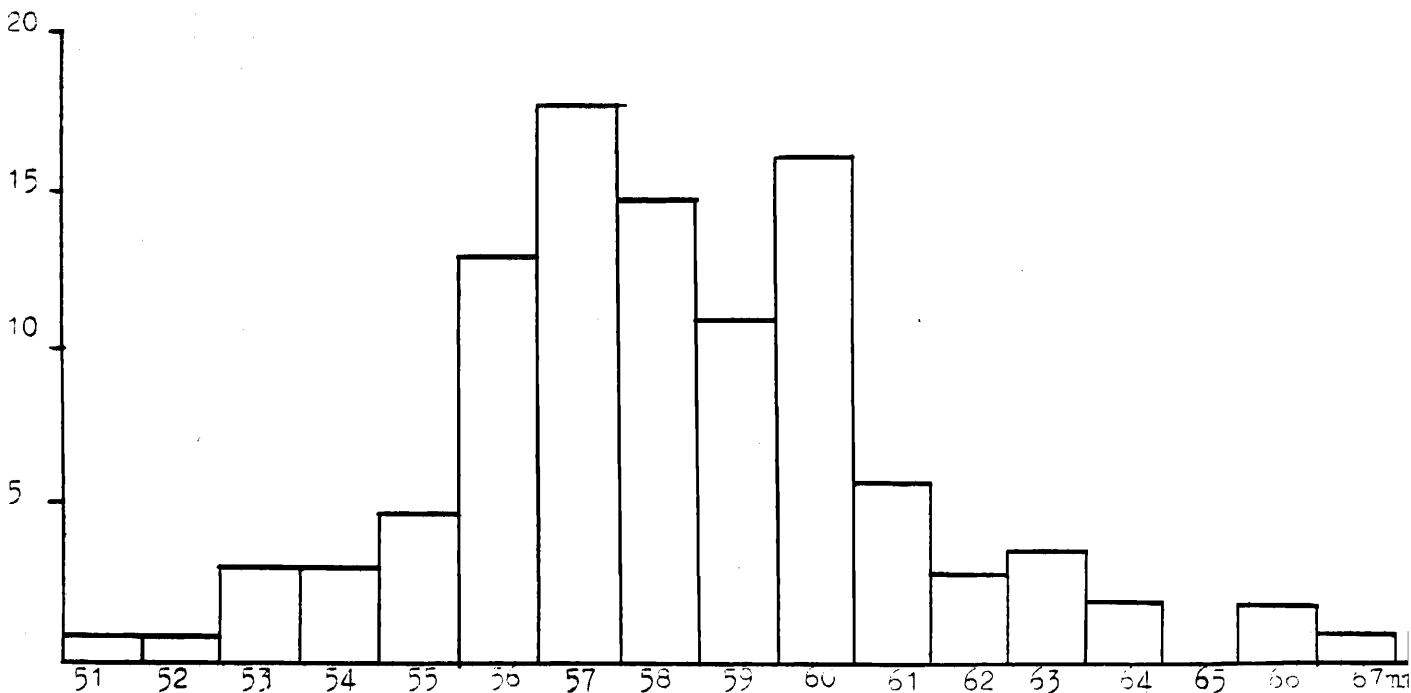


Figure 1, Bill lengths of Spotted Redshanks.

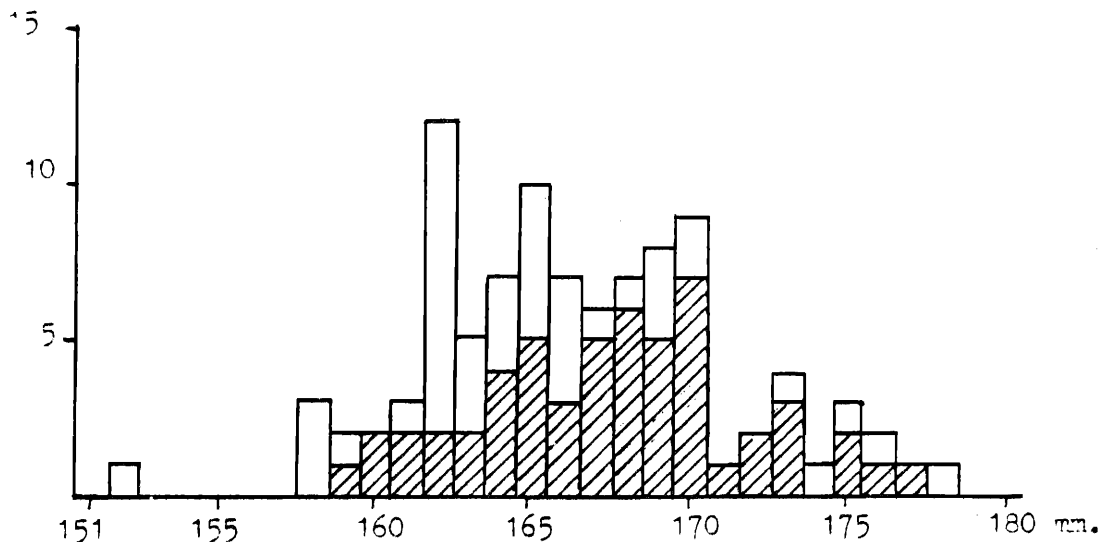


Figure 2, Wing lengths of Spotted Redshanks (Terrington sample hatched).

Figure 2 gives a histogram of the wing length of 97 birds measured using the maximum wing length method (Evans, 1964). The mean wing length of the Terrington sample (167.5mm, n = 53, s.d.4.24) was longer than that of the remainder (165.2mm, n = 44, s.d.5.29). This could be due to variation between measurers. There was a difference of 2.5mm in mean wing length between 'adult' (65.3, n = 7, s.d. = 2.7) and 'first-year' birds (67.8, n = 44, s.d. = 4.3) in the Terrington sample. This could have been due to a sex bias in the small sample (7) of adults. There was no evidence of bimodality in the wing length distribution but this could have been because of variations due to abrasion and to the measurer. As has been shown previously for Knot and Sanderling (Pienkowski and Minton 1973), the wing length becomes shorter as the feathers age, and this may blur any difference due to sex in the sample. Witherby gives the male range as 158mm. to 167.5mm., and the female range from 166mm. to 177mm. The mean for all live birds processed was 166.2mm., with a standard deviation of 5.2.

Although the birds from Mid-Kent were caught between July and November, only four of these were in primary moult (two birds in August, one in September and one in October). Every bird in the Terrington sample was in wing moult. This was recorded using the scoring method of Snow (1967), the small outermost 11th primary being ignored. Of the 53 'first-years', the mean moult score was 33.1, standard deviation 3.8, and for the 7 'adults' the mean was 5.9, standard deviation 3.6. It can be seen from Figure 3 that there was no overlap in moult score between the 'adults' and the presumed summering birds. Examination of the pattern of feather dropping and replacement showed that the moult progression follows very closely that of other closely-related wader species. Though no moulting rate can be deduced from this limited data it is clear that the presumed 'first-year' birds must have been in moult for some time - probably 5 to 8 weeks - which is consistent with the field observations of this summering non-breeding flock.

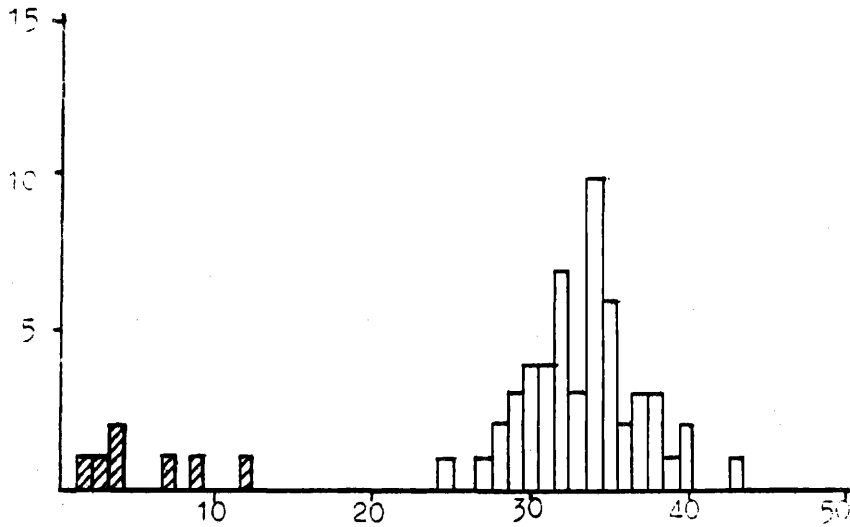


Figure 3. Moult scores for the Terrington sample (presumed adults hatched) caught on 27.07.75.

Figure 4 shows the weights obtained for Spotted Redshanks in Britain. The three birds below 120 grams were all caught on Fair Isle and were clearly very much below the normal weight for the species. From the distribution of weights of the Terrington sample, and the knowledge that birds in heavy wing moult usually have very little fat reserve, it can be deduced that the fat-free weight is probably around 140 - 150 grams. The weights above 180 grams are probably birds that have been putting on weight for onward migration. The heaviest birds, at a weight of 230 grams, are, therefore, carrying at least 50% fat.

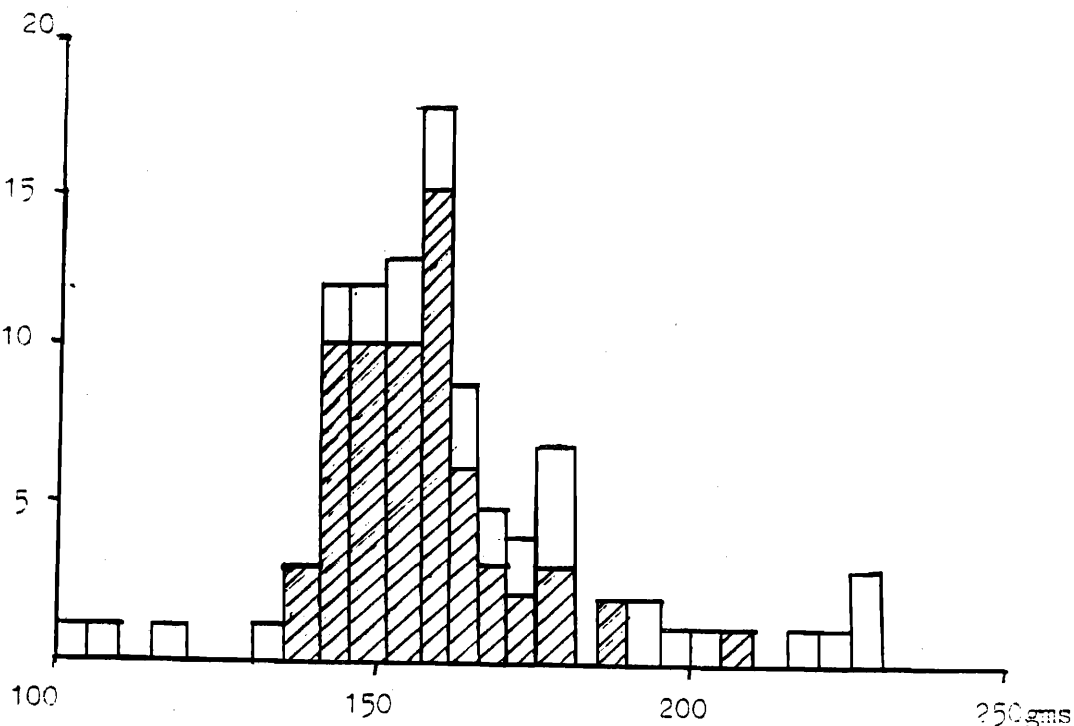


Figure 4, Weights of Spotted Redshanks (moulting birds hatched).

Estimates of flight ranges of birds carrying fat vary tremendously. Johnston and McFarlane (1967) consider that the Pacific Golden Plover, a species of comparable fat-free weight (mean of 23 birds = 112 grams) needs only 18 grams of lipid to fly the 3,800 km it migrates across the Pacific. Figure 5 shows the estimates of flight ranges for Spotted Redshanks at different weights. This shows that the heaviest Spotted Redshanks recorded had a potential flight range of between 2,000 and 8,000 km according to these estimates. It should be noted that Nisbet et al. worked on the Blackpool Warbler at 20 gms., whereas Tucker looked at all birds and is probably more relevant to a bird the size of a Spotted Redshank. However, equations given by two recent reviews of the mechanics of flight lead to rather longer estimates: 3,800 km (Greenewalt 1975) and 9,700 (Pennycuick 1975).

The migration route of the Spotted Redshank is poorly understood. The main wintering area is just south of the Sahara, between 5° and 15° N (Moreau 1972, Grimes 1969), though some hundreds winter in Portugal and noted a few wintering even as far north as Britain. There is evidence of coastal migration in autumn through Morocco (Smith 1965) and evidence for trans-Saharan migration from Grimes (1974) and Moreau (1967) in autumn.

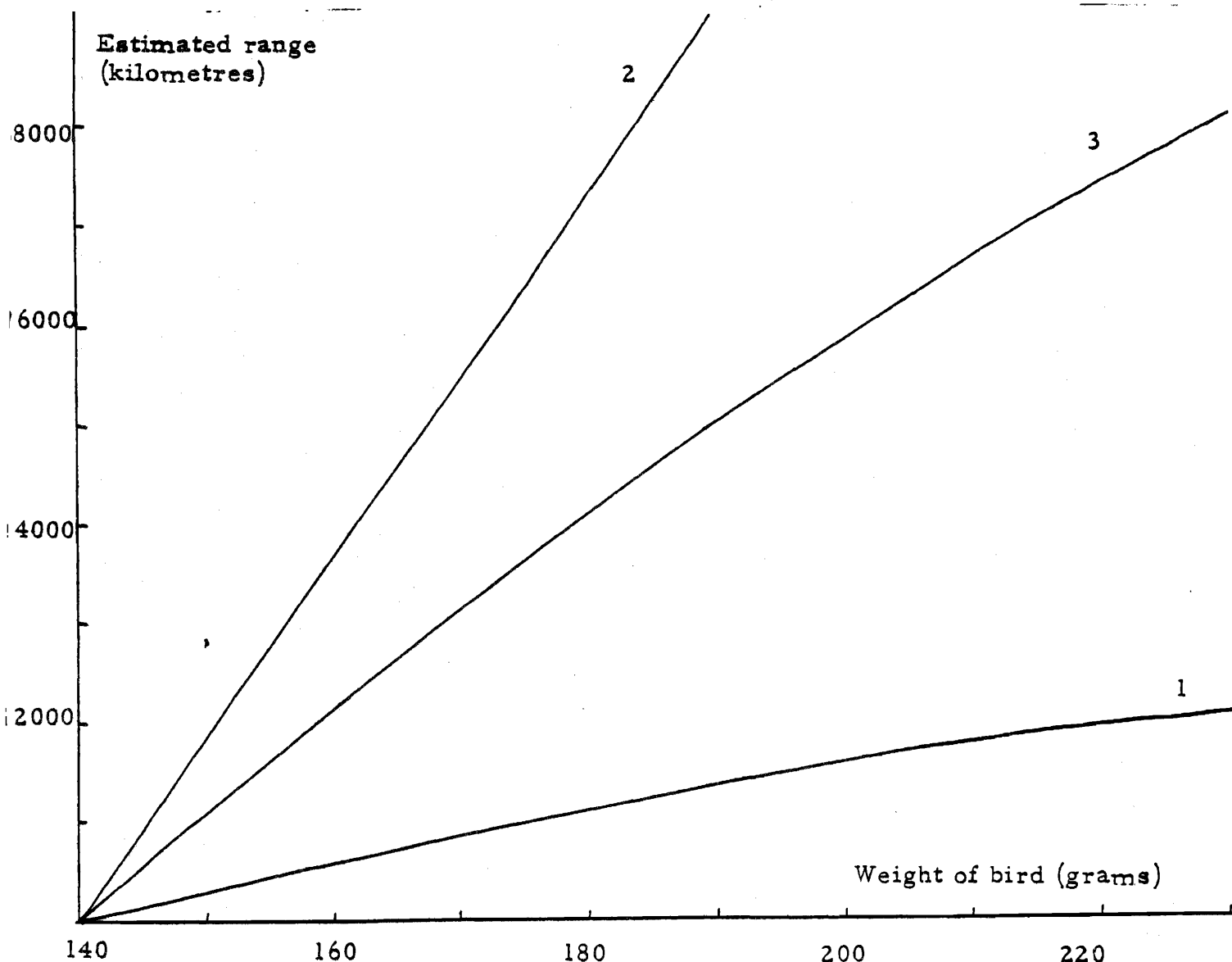


Figure 5. Estimated flight ranges of Spotted Redshanks based on the equations of various workers: 1. Nisbet et al. (1963), 2. Johnson & McFarlane (1967), 3. Tucker (1971).

The meagre evidence so far from recoveries suggests that British Spotted Redshanks may use both routes. There are three autumn recoveries, one on the Atlantic coast of Southern France (2 Sept. 1970), one in Central France (4 Oct. 1969) and one on the Mediterranean coast of France (4 Sept. 1955). The three spring recoveries came from Malta (19 April 1968), the Atlantic coast of Morocco (25 March 1976) and Denmark (11 May 1967).

If Spotted Redshanks have a flight range of 2,000 km from Great Britain it is surprising that there are three recoveries from France, all within six weeks of ringing, as the birds could have reached the North African coast in one hop. If Tucker's estimate is accurate they would then need to attain a weight of 230 grams to make the trans-Saharan flight and it may be an advantage to Spotted Redshanks to make short hops maintaining a high weight until they have to make the trans-Saharan migration. However, until more consensus is achieved in methods of estimating flight range interpretation of migration strategy remains highly speculative.

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