

The mean and standard deviations of the whole sample was determined., Table 1, and then subsamples of 200 (2), 100 (5), 50 (11), 25 (22) and 10 (10) were taken and the means of each subsample compared with the true mean. The comparison was made by considering the percentage variation of each subsample from the true mean.

The results are set out in Table 11, together with the percentage of subsamples which deviated more than 1% and 2% from the mean.

As expected there is a decrease in variability with increasing size of subsample. The low variability of wing length and weight and the relatively high variability of bill length were all rather unexpected. The bill length is generally assumed to be a more consistent measurement but it is clear that although it has a small size difference when measured in millimetres, when compared by % difference the measurement has greater variability, a probable result of the small number of size classes of the measurement.

- 5 The variation in weight were quite small when sample sizes of 50 or more were considered but increased considerably in smaller samples.

### SUMMARY

There is a decrease in variability of the sample with increasing sample size. However it is possible to give broad outlines of the number which should be processed.

Wing - samples as low as 10, but preferably 50, should give a close approximation to the mean.

Bill and Weight - if possible the sample size should be at least 50 but preferably 100.

Where large catches can be made and sufficient time is available a sample of 100 should be measured. However catches of 10 - 25 can also provide much information.

A Warning must be given and this is that the number recommended only refers to a winter population of a single subspecies. It is most probable that during the spring (March - May) and autumn (July - September or later) passage periods when other races may be present a much higher number is needed; then approximately twice the recommended numbers should be processed.

When taking a sample from a catch both new, retrap and controls should be treated alike otherwise a biased sample may result.

N.B. In order to increase the chances of a bird subsequently recovered having known measurements the larger the number of birds which can be processed the better.

### WADER NETS

by C. J. Mead

Wader nets have been sold by the B.T.O. for about twelve years. They are of a heavier material and larger mesh (1½" knot to knot) than the other mist nets sold and are fitted with stronger shelf

strings. They can therefore be used to catch larger birds or large numbers of smaller birds. They can be used in windy conditions when ordinary nets billow into a solid wall and so much tension can be put on the shelf strings without fear of their parting that they can also be used over mud and water where ordinary nets might drag and dampen birds in the bottom shelf.

The large mesh size of wader nets means that most birds get one or both carpals through a mesh (or meshes) and sometimes, as they struggle in the net, the rather rough thread of the netting cuts into the flesh of the carpal. Under windy and damp conditions this can happen to relatively docile birds. Although such injuries bleed the vast majority of injured birds can fly on release. A minority are more seriously injured and cannot fly on release. I do not suggest that this type of injury invariably happens when wader nets are used but it is characteristic of these nets that it can happen.

Waders are often badly tangled, relative to passerines, in standard mesh nets and the problems involved in releasing a small wader from a wader net are probably beyond even experienced inland mist-netters. I have seen a competent netter start extracting a Ringed Plover, flushed into a wader net about 1 minute earlier, spend some 15 minutes without success on it. Even netters experienced in the use of wader nets would not like to catch too many small waders at once in them since, even using the special techniques like passing wings through meshes etc., extraction still takes a lot longer than with standard mesh nets.

Relatively few of the many waders ringed in Great Britain are taken with wader nets. Most are from cannon-nets. However, I am taking this opportunity of putting these points before all wader group members and asking whether wader nets should ever be used in circumstances where numbers of small or medium sized waders are possibly going to be caught. They are probably the only nets for catching really large waders, the larger gulls and ducks. I seldom have the opportunity of catching waders nowadays but would certainly not use my wader nets unless I was pretty certain that they were only going to catch Gulls, Oystercatchers or Curlew. Normal material small mesh nets are not so satisfactory as standard mesh (1½" stretched) nets as the birds tend to bounce from the smaller mesh. The ideal net, I am sure, is the standard mesh (1½"), 3-shelf net with the shelf strings replaced by the wader-net shelf string material.

- 7 Jeremy Sorensen, in Ringers' Bulletin Vol. 3, No. 3, outlined a quick method for pulling through the new shelf string by welding it to the old. Conversion of a 60' net takes about an hour (including re-tethering). It is possible that we will stock a heavy shelf-stringed standard 60' net in the future, if demand is high enough. Please let the Ringing Office know if you would be interested in such nets - provided they cost relatively little more than 60' nets with ordinary shelf strings. As some of you will know prices of nets have increased dramatically - you will all be getting a price list in the near future - Wader nets will be £4.10.0d. and 60' standards £5. 5. 0d.

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TABLE 1. Size range and mean size of a sample of wintering Dunlin in Morecambe Bay

	Wing	Bill	Weight
Size range	112 - 131	27 - 39	41 - 63
mean	121.24	32.37	50.48
S.D.	3.217	1.899	3.837
n.	555	556	552

TABLE 11. Percent variation of subsamples from true sample mean

Sample Size	mean	WING		mean	BILL		mean	WEIGHT	
		% of subsample which deviates from the mean by more than			% of subsample which deviates from the mean by more than			% of subsa which devi from the m by more th	
		1%	2%		1%	2%		1%	2%
200	.02	-	-	.60	-	-	.32	-	-
100	.27	0	0	.82	40	0	.47	20%	0
50	.33	0	0	1.39	73%	18%	.96	45%	0
25	.44	9%	0	1.44	73%	27%	1.34	59%	27%
10	.57	10%	0	1.70	60%	10%	1.91	80%	50%

## 7 Reports of Rarer Waders in August and September

Large numbers of both eastern and American waders have been reported during this period. Two Lesser Yellowlegs were the first American arrivals, appearing in Kent on 1st August and Sussex on 3rd. These were followed by two south-eastern birds, both Black-winged Stilts in Leicestershire and Fingringhoe (Essex) between the 3rd and 7th.

Little was then reported, apart from a White-rumped Sandpiper at Wisbech (Norfolk/Cambs.) on the 10th - 12th until after the westerly gales which started on 15th August. These brought a second White-rumped Sandpiper to Wisbech on the 23rd, a Spotted Sandpiper to St. Ives (Cornwall) on 17th, a Solitary Sandpiper to Radipole (Dorset), a Baird's Sandpiper to Welwyn (Herts.) on 23rd, a Lesser Golden Plover to Cork, a Semipalmated Sandpiper to Aberthaw (Glam) on 25th, and the first Pectoral Sandpiper to Wisbech on the 23rd.

With the resumption of easterly weather towards the end of August further arrivals of eastern birds were reported. Temminck's Stints were recorded in nine localities mainly on the east and south coasts, whilst a Marsh Sandpiper was at Hartlepool (Co. Durham) and a Broad-billed Sandpiper was trapped at Harty (Kent) on the 31st. Three further individuals of this species were found in September, one at each of Minsmere (Suffolk), 13th; Aberlady Bay (E.Loathian), 20th; and St. Just (Cornwall), 25th.

The large September fall of American waders began with Buff-breasted Sandpipers at Ballycotton (Cork) and St. Marys (Scilly) on the 2nd, building up at the latter site to 7 on the 19th. Others were recorded at Sidlesham (Sussex) on 5th, St. Just 21st, Frodsham (Cheshire) on 25th; one was present at Salthouse (Norfolk) on 3rd October. At least 28 Pectoral Sandpipers were recorded between the 5th and 22nd September, with peaks of 4 at Teesmouth on 5th and 3 at Stithians Reservoir (Cornwall); two were trapped on Lundy Island (Devon) on 17th. Dowitchers were found at Frodsham on 19th, and Keyhaven (Hants.); at the latter site another White-rumped Sandpiper was present on 12th; yet another of this species was reported from the Tamar (Cornwall) on 1st September. Further Baird's Sandpipers were present at Ballycotton 11-18th and Salthouse 18th-20th. Wilson's Phalaropes were found at Sandbach (Cheshire) on 6th-12th, possibly the same bird was on the Ribble (Lancs.) on the 19th, on Guernsey 9-17th and at Ballycotton 11-18th.

Moderate numbers of Curlew Sandpipers have appeared again this autumn; although relatively few records have been received from the east coast, the west coast has had good numbers with peaks of 20 on the Dyfi (Cards.) 27th August, 27 on the Ceint (Anglesey) on 10th September, 16 in Swansea Bay 15th September, 20 Morecambe Bay 16th September and 13 on the Wash on 20th September. Smaller numbers of Little Stint have been reported from very many localities.