WADER STUDY GROUP

Bulletin No. 5 April 1972

Contents

Ringing and Migration Conference

The conference went ahead very successfully with extremely interesting and well delivered talks on waders by John Wilson, Tony Williams, Brian Stronach and Mike Pienkowski. Clive Minton chaired an open session of wader ageing methods which took place before the closed business session. We would like to thank all those members who brought along skins and wings of waders and stimulated many hours of discussion on various characters and certainly highlighted some of the problems!

Ageing Guide

The ageing guide was produced as promised at the Ringing and Migration Conference and distributed to W.S.G. members there. If you attended the conference it is assumed that you took an ageing guide and so one will not be sent with this bulletin. If you did not take one will you please contact Tony Prater to obtain your copy. There is no charge to members but if you need additional copies they cost 10p. plus postage.

Date Collection Forms

These forms were also produced in time for Swanwick and already almost a thousand have been circulated. We would please ask all members to submit processing details of all birds if they have ringed less than 100 of them and would hope that many ringing groups would place all past records on them. The forms are available for personal use but if they are used in this way we do have to charge their cost price of 10p. for 20 (25 entries to a form). If anyone needs more forms please contact Tony Prater.

Subscriptions

We would like to remind all members that their 1972 subscriptions were due on January 1st and if you have not already done so please let Ron Birch have your 50p. as soon as possible, made payable to him; his address is

8, Thornberry Close, Saughall, Chester.

Summer Meeting

The meeting of the representatives of ringing groups will again be held at Clive Minton's house in Shenstone on June 17th 1972. There will be the usual business meeting in the morning but in the afternoon it is suggested that Dunlin should be the main topic with discussion concentrating on wing and bill measurements but will probably also involve moult and weight. If possible could all participants bring with them histograms of the bill and wing length in each month.

Foreign Expeditions

This year there are to be at least three expeditions to ring waders. One is already operating in Iceland (organised by Guy Morrison and Jim Wilson) and will remain there until the end of the autumn. Another under the University of Aberdeen will be visiting northeast Greenland and will involve Harry Green and Tony Williams. The third is a repeat of the Morocco trip and is again organised by Mike Pienkowski. It is vital that as many birds as possible are trapped and processed in Britain so that the maximum information can be achieved.

Purple Sandpiper Enquiry

This B.T.O./Hilbre Bird Observatory enquiry has now started and is gathering information on the distribution and numbers of Purple Sandpipers in Britain and Ireland. Information not already sent in on these aspects would be very much welcomed. One of the other aspects of this enquiry is to colour ring populations in different parts of the country to see if any movements can be detected. Already this year over 40 have been colour ringed on Walney Island and the usual colour ringing has continued on Hilbre Island. The Iceland expedition will also colour ring this species as will the Tay R.G. on the Scottish east coast. As this species is very easy to approach closely it is requested that every opportunity be taken to carefully examine them for colour rings and would you please report any sightings to Professor J.D. Craggs at Dept. of Electrical Engineering, Brownlow Hill, P.O. Box 147, Liverpool L69 3BX.

Ringing in Winter 1971/72

This winter has seen the most encouraging signs of increased attempts to obtain really valuable results by catching at new sites. In Wales Harry Green has started trapping in Pembrokeshire (catching a total of 325) and is surveying the Monmouth coast area as well. In North Wales Peter Challinor and Mike Potts have been successful on the Conway River (with over a 1000 ringed). The Solway was again visited by a team from M.B.W.G. led by Ted Ponting and the North Solway R.G., and it resulted in an excellent catch of Oystercatchers. Teams from the W.W.R.G. visited two southern estuaries, Peter Stanley led one team which followed up the work carried out last year on the Swale and made a catch of over 1000 Knot and Dunlin in December. Clive Minton led the other team, strongly supported by Farlington R.G., which made successful catches in November on Chichester Harbour and in March on Portsmouth Harbour. The well established Groups continued to catch well with their highlights being a January catch of 2265 Dunlin and Knot on the Dee, catches of 2939 Knot and 1191 Dunlin on the Wash and 43 Purple Sandpipers and 450 Dunlin on Morecambe Bay. There continues to be very many Dunlin controls reported, in the major catches alone there were 29 Swedish, 13 Norwegian, 11 Finnish, 6 Heligoland, 5 Polish, 4 Danish and 1 Russian ringed birds!

	LRG	WWRG	MRG	MBWG	AB	FRG	Pembs.	Conway	SWRG
Oystercatcher	1	191		534	105	181		1	22
Lapwing	8			1		3			
Ringed Plover				29		8	37	9	
Grey Plover	1	29				16			3
Turnstone	1	30		9			9	17	4
Common Snipe	171					3			
Jack Snipe	12								
Curlew				2	14	1			
Bar-tailed Godwit	4	1							
Redshank	1	18		225		49		42	
Greenshank						2			
Knot	198	2296	121	138	1	3	1		394
Dunlin	39	942	1794	844	11	728	271	937	554
Purple Sandpiper				43					

Initials not used before: Conway = Peter Challinor and Mike Potts
Pembs. = Harry Green

Recent Recoveries

Oystercatcher

Pull	25.5.64.	Skomer, Pembs.	x	Bull, Co. Dublin	19.9.71
Pull	20.6.71.	Fort William, Inverness	+	Ares estuary, Coruna, Spain	1.12.71
Pull	30.6.71	Delting, Shetland	x	Silecroft, Duddon	4.1.72.

to Norway

1S	29.8.69.	Dawsmere, Wash	x	Telemark, Norway	22.5.71.
Ad	30.1.71.	Heacham, Wash	x	Rogaland, Norway	end.7.71.
1S	5.7.69.	Heacham, Wash	x	Vest Agder, Norway	17.10.71.
Juv	30.8.68.	Snettisham, Wash	x	Rogaland, Norway	0.10.71.
Ad	25.8.68.	Whitford, Burry	x	More e Romsdal, Norway	0.6.71.
Ad	18.9.63.	Walney, Morecambe	x	Nordland, Norway	3.3.71.

other Foreign

Juv	24.9.68.	Snettisham, Wash	x	Harbøre, Jutland, Denmark	9.9.71.
1S	29.8.69.	Dawsmere, Wash	+	Sondervig, Jutland, Denmark	1.9.71.
Imm	17.8.66.	Whitford, Burry	x	Hagi, Iceland	23.6.71.
[illegible]	17.8.66.	Whitford, Burry	x	Skaftardalur, Iceland	0.5.71.
Ad	11.8.67.	Snettisham, Wash	x	Cotes-du-Nord, France	27.2.71.
Ad	28.7.68.	Wolferton, Wash	x	Alkmaar, Netherlands	26.12.71.

There were five cases involving a change of winter area with two birds from Morecambe Bay and one from the Dee wintering on the Solway, one from the Dee on Morecambe Bay and one from the Exe on Anglesey. Perhaps it is worth noting that in the mild 71/72 winter all these were birds wintering further north than in a previous winter.

Lapwing

Pull	17.5.69.	Calf of Man	x	Ballyhalbert, Co. Down	30.11.71.
Pull	1.6.69.	Orkney	x	Lough Neagh, Co. Antrim	10.1.72.
Pull	24.5.70.	Sutherland	x	Co. Antrim	5.2.72.
FG	22.9.65.	Kemsley, Kent	x	Juterbog, E. Germany	25.11.71.
FG	8.9.66.	Dowham Market, Norfolk	x	Landes, France	7.3.71.
PJ	24.8.68.	Rochester, Kent	x	Manche, France	31.1.72.
Ad	9.11.68	Packington, Leics.	+	Gironde, France	15.2.71.
1Y	13.9.69.	Aylburton, Glos.	+	Nieuwerood, Netherlands	4.9.71.

Ringed Plover

Ad	7.5.71.	Bardsea, Morecambe	c	Southport, Ribble	22.8.71.
Ad	16.3.68.	Snettisham, Wash	c	Morecambe Bay	29.1.72.
Ad	19.9.70.	Thornham, Wash	c	Morecambe Bay	29.1.72.

Little Ringed Plover

Pull	12.6.71.	Ecton S.F., Northants	x	West Flanders, Belgium	6.8.71.

Turnstone

Ad	9.3.69.	Snettisham, Wash	c	Revtangen, Norway	30.8.71.

Snipe

FG	18.10.70.	Ashford, Kent	+	Coruna, Spain	27.1.72.
PJ	11.1.69.	Maidstone, Kent	+	Hellum, Netherlands	15.10.71.
FG	19.9.70.	Stafford	+	Rabat, Morocco	1.1.72.
PJ	23.11.69.	Lowestoft, Suffolk	+	Finistere, France	26.1.72.
FG	3.10.71.	Willington, Derby	+	Croom, Limerick	27.12.71.
PJ	9.10.69.	Worksop, Notts.	+	Banbridge, Co. Down	26.1.72.
PJ	8.10.67.	Wisbeech S.F.	+	Holsworthy, Devon	Jan. 70 or 71.
Juv	28.8.70.	Formby, Lancs.	+	Holsworthy, Devon	27.12.71.
FG	11.9.71.	Eggington, Derby	+	Little Dilwyn, Hereford	11.12.71.
Juv	8.9.69.	Walney, Morecambe	c	Malvern, Worcs.	30.1.72.

Curlew

Pull	28.5.55.	Harrogate, Yorks.	c	Abergele, Denbigh	23.10.71.
Pull	27.5.67.	Malham Tarn, Yorks.	+	Cockerham, Morecambe	27.12.71.
PJ	26.7.68.	Rochester, Kent	x	R. Elbe, Germany	18.12.71.
FG	1.9.67.	Skokholm, Pembs.	x	Kuopio, Finland	10.6.71.
PJ	8.9.67.	Aylburton, Glos.	x	Vaasa, Finland	0.8.71.
FG	17.3.62.	Walcot, Salop	+	Kingbridge, Devon	28.12.71.
FG	4.9.67.	Skokholm	+	Pilling, Morecambe	14.11.71.
Ad	29.8.68.	Snettisham	x	Pilling, Morecambe	5.12.71.
FG	10.8.70.	N. Slob, Wexford	x	Criccieth, Caerns.	2.9.71.

Whimbrel

FG	9.8.68.	Harty, Kent	+	Norresand, Jutland, Denmark	12.8.71.

Common Sandpiper

Ad	12.8.70.	Abberton	+	Calvados, France	12.8.71.

Redshank

Pull	13.6.71.	Angus	+	Finistere, France	21.11.71.
Ad	16.2.71.	Snettisham	x	Akureyri, Iceland	16.5.71.
FG	27.2.64.	Point of Air, Dee	c	Snettisham	15.2.72.
Ad	4.10.70.	Aldingham, Morecambe	c	Liverpool	5.9.71.

Knot

Ad	7.3.70.	Heacham, Wash	+	Jutland, Denmark	6.8.71.
Ad	27.2.71.	Snettisham, Wash	+	Ejersted, Jutland, Denmark	3.9.71.
1Y	27.4.71.	Hest Bank, Morecambe	+	Charante Maritime, France	14.9.71.
Juv	10.1.70.	Heacham	+	Calvados, France	29.10.71.
Ad	8.2.70.	Middleton, Morecambe	c	Mikoszewo, Poland	4.8.71.

There were 20 movements between British estuaries and these are summarised below.

Ringed on	Recovered on Humber	Wash	Swale	Dee	Ribble
Humber	-	2	2	-	-
Wash	1	-	-	-	1
Dee	-	1	-	-	-
Morecambe	-	3	-	2	7
Solway	-	-	-	-	1

The other recovery was

1Y 5.5.69. Wolferton, Wash c off N. Wales 26.7.71.

Dunlin

The only foreign recoveries reported were

1Y	10.10.66.	Kemsley, Kent	c	Hame, Finland	16.8.71.
Ad	23.12.69.	Bardsea, Morecambe	c	Hame, Finland	16.8.71.
Ad	16.3.68.	Snettisham	x	Oland, Sweden	12.8.71.
Ad	11.9.68.	Cherry Cob, Humber	x	Limfjorden, Jutland, Denmark	23.8.71.
1Y	28.12.70.	West Kirby, Dee	x	Jutland, Denmark	0.3.71.
Ad	31.8.69.	Terrington, Wash	+	Manche, France	26.9.71.
Ad	8.9.67.	Dawsmere, Wash	c	Amager, Denmark	17.7.71.
J	16.8.68.	Snettisham, Wash	c	Mikoszewo, Poland	25.7.71.
J	28.8.71.	Dartford, Kent	c	Mikoszewo, Poland	3.8.71.

The 14 British recoveries are listed below

	Wash	Swale	Chichester	Milford Haven	Conway	Dee
Northumberland	-	-	-	-	1	-
Wash	-	-	1	2	3	2
Swale	1	-	-	-	-	-
Dee	-	1	-	-	-	-
Ribble	-	-	-	-	-	1
Morecambe Bay	-	-	-	1	-	-

Sanderling

FG	29.8.69.	Hilbre, Dee	+	Algarve, Portugal	early 8.70.
PJ	24.5.71.	Point of Air, Dee	+	Dakar, Senegal	26.1.72.
PJ	13.7.68.	Snettisham, Wash	+	Manche, France	7.8.71.
Ad	26.8.69.	Snettisham, Wash	+	Humberston, Humber	4.2.72.
Juv	18.9.71.	Thornham, Wash	x	Alger, Algeria	18.2.72.

Cannon Netting on the Swale Dennis Elphick.

Wader trapping on the Swale in North Kent has for the last 12 years been largely carried out by the North and mid-Kent Ringing Groups on an independently agreed basis. Mist-netting at night-time, high-tide roosts has been the major method used. With the obvious need to help fill the gap in the work being carried out in other parts of the country and with increasing pressures on the area, highlighted by its designation as a suitable site for a Maritime Industrial Development Area in 1970, interested members from both groups got together in 1971, to form the Swale Wader Ringing Group. All wader trapping in the area is now controlled by this group and it is hoped to collate all past records with the eventual production of a report covering the period up to 1971.

With discussions on the formation of this group well under way the opportunity of combining forces to assist in a cannon netting expedition arose. During the weekend 13th/14th February 1971 Peter Stanley and a team from the WWRG came down to Harty for Oystercatchers. Of two nets set on the saltings on the Saturday, one was successfully fired, catching 152 birds. Unfortunately, because the Oystercatchers were close to walking over the nets it was not possible to wait for the Bar-tailed Godwits, also present, to move into the trapping area. Of this catch 4 birds were controls:

3103851	pull	Horsey Island, Essex	25.6.65.	63 Km	SSW
EDC0626	Ad	Snettisham, Norfolk	12.8.67.	168 Km	SSE
SS75155	Ad	"	21.8.67.		
SS76456	Ad	"	29.6.68.		

An attempt to catch Knot on turf fields behind Shellness on the Sunday was, however, unsuccessful, despite attempts to 'roll' the birds with Landrovers and the presence of the Director!

A second trip was arranged for the weekend 4th/5th December 1971 and this proved to be considerably more successful. A total of 1038 birds were caught of which 59 were controls.

	New Birds Ringed	Controls	Total
Oystercatcher	22	-	22
Turnstone	4	-	4
Grey Plover	3	-	3
Knot	394	1	395
Dunlin	554	58	612

The site chosen for the Saturday was again turf fields behind Shellness, although not the same as was attempted in February. The bare earth on the site was reasonably dry, and the weather was dry but overcast. Two nets were set and the birds entering the area about two hours before high tide (1330 hrs) acted as a nucleus. Soon after 1200 hrs. the main tidal movement began and c.2000 Dunlin arrived in the area. As soon as a break in the landing flocks was noted one net was fired (c.1230 hrs.) Covering was soon accomplished and extraction took about 50 mins. The Oystercatchers were ringed immediately on extraction to conserve available storage space (8 keeping cages). Nine members of the WWRG and seven of the SWRG were present and ringing was completed in 2hrs. 40 mins., the whole operation being carried out in daylight. The Turnstone, Grey Plover and samples of 50 Dunlin and 162 Knot were processed, as well as some of the controls by a team of four from the Wash.

Because no other sites had been surveyed the nets were set in the same site on the Sunday. One being set in a damper site for Oystercatcher that had been present there on the Saturday. Unfortunately, the Oystercatcher did not leave the saltings and smaller waders landed in the area of this, the larger meshed net. There was considerable discussion as to whether firing should take place or not. The majority of birds were loathe to land in the area but joined a second nucleus in a nearby field. After 'rolling' with the Landrovers it was considered that a sufficient number of birds was in the catching area to fire, the decision being prompted by birds beginning to move out of the area. Firing took place at about 1430 hrs. but only 22 birds were caught, all of which were processed. Two of four controls were from the previous day.

Of the Dunlin controls nine were foreign ringed birds:
Norway - 3, Sweden - 4, Denmark - 1, Finland - 1.

47 had been ringed locally. The following age analysis shows that more than half of these were four years old or more:

Minimum Age (yrs)	No. of birds	Minimum Age (yrs)	No. of Birds
11	3	5	9
10	-	4	3
9	7	3	5
8	2	2	3
7	3	1	2
6	5	Birds of the year	5

Only one Dunlin controlled was ringed elsewhere in Britain, at East Tilbury, Essex on 19.12.65. as an adult. The single Knot controlled was ringed at Cherry Cob on the Humber on 22.10.67. as a PJ. 17 Dunlin were reringed and ten had new rings added, five had badly worn rings which were removed and taken to Beech Grove. They have since been successfully deciphered.

Of the 395 Knot ringed only four (1%) were aged as juveniles and others, although probably not adults, provoked some discussion on the possibility of being second year birds. Of the 554 Dunlin 13 (2.3%) were aged as juveniles. A preliminary plot of wing measurements against bill for Dunlin showed that there was a high proportion of the Northern Race (Calidris a. alpina) as has previously been shown with birds caught in this area. A further trip has now been arranged for the end of February, when it is hoped to catch Turnstone, Oystercatcher and Bar-tailed Godwit.

P.S. The February trip came and went without a net being fired. The tide beat the Turnstones to the net on the beach and the Oystercatchers roosted all round but not in the trapping area on the saltings. Attempts were made to walk them into the area but it was unsuccessful. Cold winds and heavy drizzle did nothing to alleviate the frustration!

Report on Cannon Netting of Waders on Hayling Island 20/21 November 1971 by

David Steventon

LOCATION: Mill Rithe, East Hayling Island, Hants.
PERSONS PRESENT: Eight visitors from Wash Wader Ringing Group, having cannon netting licence and supplying equipment, and seven members of the Farlington Ringing Group.
20 NOVEMBER 1971: Three nets were set on Rushy Point, an area of saltings above M.H.W.M., primarily to obtain a moderate catch of small waders. One net was fired shortly before high tide: the composition of the catch is set out below.
21 NOVEMBER 1971: Three nets were set on saltings about 500m. south of Rushy Point. None were fired as no birds came into the catching area due to the prevailing weather conditions.

20 November:

Species	Totals
Dunlin	552
Redshank	19
Grey Plover	16
Knot	3
Curlew	1
	591

Dunlin Controls:

Ring Number	Age	Date	Place of Ringing
Bt. Mus BB43097	Juv	8.9.68.	Snettisham, Norfolk.
Stockholm 3171787	Juv	22.8.67.	Skanor, Malmohus, Sweden.
" 3205269	Juv	23.9.69.	Ottenby, Oland, Sweden.
" 3183978	Juv	11.9.70.	" " "
" 3108605	Adult	11.7.64.	" " "
Helsinki P241404	Postjuv	8.7.68.	Niemi, Lahti, Hame, Finland.

Dunlin 19 (3.4%) of the 552 Dunlin were juveniles. The high percentage of adults may perhaps indicate that segregation is taking place, perhaps to the best feeding areas.

	Mean	Standard Deviation	Sample Size	Range
Wing length	118.9mm	3.2mm	234	110-127
Bill length	32.7mm	2.6mm	234	27-39
Weight	51.1gms	3.7gms	234	41-59

c.f. comparative data from the Wash

Wing length	119.1mm	3.2mm	228
Bill length	33.1mm	2.4mm	226

This shows the population, Northern Dunlin, to be almost identical with that on the Wash in winter: the scatter diagram of wing against bill length shows there are a few, if any, of the Southern race present however. (Proportion of Northern to Southern given approximately by number having wings and bills greater than 118, 32mm to number having wings and bills less than 114, 29mm.)

And c.f. comparative data from wintering birds in Kent

Wing length Mean 120.7mm Sample size 96
Bill length Mean 33.5mm Sample size 99

There is a more noticeable difference between the Chichester and Kent populations, the bigger size of the Kent birds may perhaps indicate a [illegible] N.E. origin - most of U.S.S.R. recoveries are from Kent.

REDSHANK:

	Mean	Range	Sample size
Wing length	163.5mm	154-168mm	19
Bill length	42.4mm	39-44mm	19
Weight	149gms.	130-174gms	19

Wing and bill size indicate few if any Icelandic birds present in this population. (Proportion of Icelandic to British given roughly by number having wings greater than 169mm to number having wings less than 161mm: half the Icelandic population has wing lengths of 170mm and greater.) This compares with 76% Icelandic birds on the Wash December-February.

The lowest normal weight is usually 120-130gms, so this series of birds is quite heavy. Mean winter weight on the Wash is 165gms, due largely to the many more Icelandic birds which have a larger body size.

GREY PLOVER:

All adults perhaps indicating segregation to better feeding areas again.

	Mean	Range	Sample Size
Wing length	200.5mm	196-204mm	13
Bill length	29.9mm	27.36mm	16
Weight	257gms	220-299gms	16

Wing and bill length in the same range as elsewhere in the U.K. Four birds were completing or in arrested moult: this is the last species to complete autumn wing moult. The lowest normal weight is usually 200-220gms, so this series of birds is again quite heavy: peak winter weight is reached December-January and then falls off for an as yet unexplained reason.

Note: All birds measured by W.R.G. members so comparison with Wash and Kent data is valid.

Aspects of spring migration of Knot in Morecambe Bay

Tony Prater and John Wilson.

During the springs of 1969, 1970 and 1971 the Morecambe Bay Wader Group have made a special study of the Knot. This short paper presents some of the results concerning weight and plumage studies and compares these results with those made in Iceland during 1970 and 1971.

There is normally a marked spring passage (late March - early May) of Knot through Morecambe Bay. The peak of the passage varies from year to year, but total numbers in the whole Bay may exceed 100,000 compared with a mid-winter population of about 70,000 birds. One of the main Knot roosts is on the West Bank Saltmarsh on the east of the Bay. Most of the Knot ringed in spring have been caught on this roost, almost all with mist nets. The spring population on this roost during the period of study is shown in Figure 1.

Summer Plumage Studies

For each bird processed the degree of summer plumage it possessed was estimated. The scale used was winter plumage, trace, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ or full summer plumage.

Although there was some difficulty in deciding what stage certain individuals had reached, the amount of redness of the underparts does give a reasonable degree of reproducibility. Figure 2 presents the change in the percentage summer plumage during the spring. It shows that the first signs appear at the end of the third week of March and that by the end of the first week of April over half of the adults are in some stage of summer plumage. Full (or $\frac{3}{4}$) summer plumage starts to appear by about the 10th April and the percentage of birds in it increases rapidly until the end of the second week in May almost all adults are in summer plumage. A few adults do not attain any summer plumage until the beginning of May. By the time they reach Iceland (10-12th May) almost all individuals are in full summer plumage.

Weight Studies

Figure 3 summarises the mean weights of individual catches made in the spring. The confidence limits are not put in the graph because the weight range is invariably large and it would obscure the picture. Also included on this graph are the means for catches made in Iceland in 1970 (from the Cambridge -London Expedition 1970 report) and 1971 (by courtesy of Dr. Guy Morrison).

There are a number of aspects which arise from this figure which are worth considering in more detail.

1) Variation between years

At first sight the yearly variation seems very large, however if the count data (from Figure 1) is compared it can be seen that most of the differences can be explained.

1969 was an 'average' year with a quick build up at the end of March and a quick departure in the second week of May. The weights were still at their winter average in mid April, however they rose rapidly in late April and early May until on May 6th two weight groups were present: one of these with full summer plumage had a mean weight of 195.7 $\pm$ 3.1gms.; the other group were in half summer plumage and weighed 172.5 $\pm$ 6.3gms. It is clear that there was a speedy weight build up at the end and those in full summer plumage were about to migrate (weighing up to 220 gms.)

1970 In this year numbers built up well with a corresponding fairly rapid rise in weight during mid April. However after these rises there was a halt in passage and very large numbers were present for longer than any other year. The weights remained very similar and only a small further increase was noted. During the late spring of 1970 only three Knot exceeded 200gms. in weight (max 208). It seems very likely that they did not put much more weight on Morecambe Bay, although the large flock noted on the Foulney mussel beds in early May may have contained heavy birds.

1971 Unfortunately fewer counts and fewer catches were made in 1971, however a late build up in numbers in mid April and a corresponding rapid increase in weight was noted. In late April out of 67 processed birds no fewer than 29 weighed over 200gms. (up to 226gms.) and it is probable that during the next few days the departure weight was reached. The comparison with Icelandic weights will be made in a later section. Large arrivals of Knot were noted in Iceland on May 9th.

2) Rate of weight build up

1969	19th April	157.5gms.	28.5gms. in 17 days.
	6th May	186.0gms.	
			= 1.68gms./day
1970	10th April	152.8gms.	19.5gms. in 14 days.
	24th April	172.3gms.	
			= 1.39gms./day
1971	25th March	154.0gms.	43.4gms. in 33 days.
	27th April	197.4gms.	
			= 1.32gms./day

These figures for the rate of weight again are minimal because the starting point of the rise was not known and the end point may not quite have been reached. A better idea of the potential rate of increase probably can be gained from the data obtained in Iceland in 1971.

11th May	165.7gms.	41.9gms. in 14 days.
25th May	207.6gms.	
		= 2.99gms./day

The catch made on 25th May almost certainly involved birds which had just about reached their departure weight, for five days later almost no Knot were left in Iceland. Also one of the Knot trapped then weighed 229gms. the heaviest one recorded.

3) The survival value of fat deposits

Figure 3 shows that the arrival weights in Iceland are much lower than the departure weights in Morecambe Bay. No catch in Morecambe Bay was followed immediately by a massive departure, so it is reasonable to assume that the average departure weight from Britain is about 200gms. or even a little higher. The arrival weight in Iceland is about 165gms. This means that they lose a minimum of 35 to 40 grams during the flight. Taking a mean ground speed of 50 m.p.h. and a distance from Morecambe Bay to southwest Iceland as 1,000 miles, the flight time is 20 hours. Therefore they lose about 2gms. of weight per hour flying.

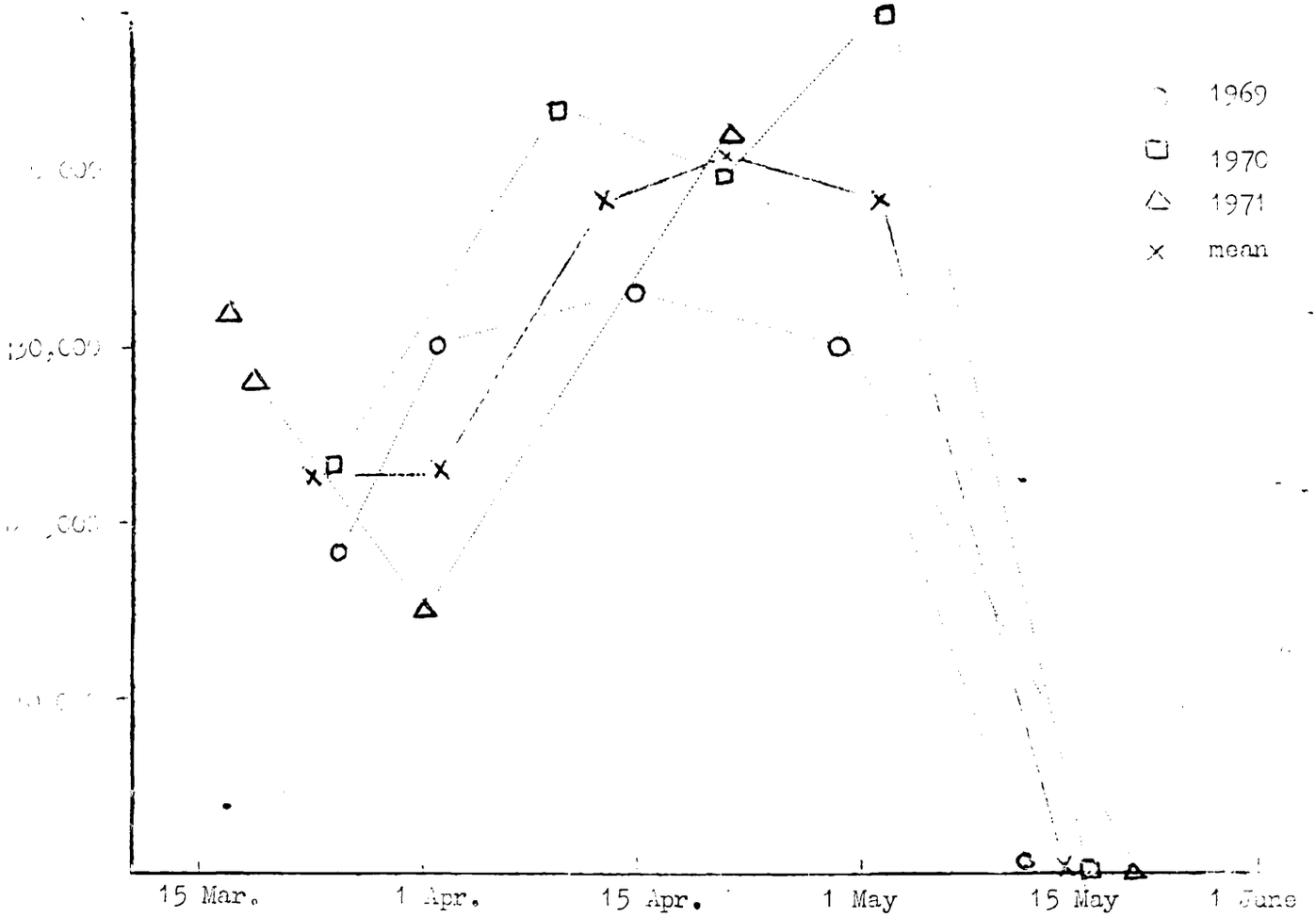

Fig. 1 The number of Knot at Hest Bank, Morecambe Bay during the spring.

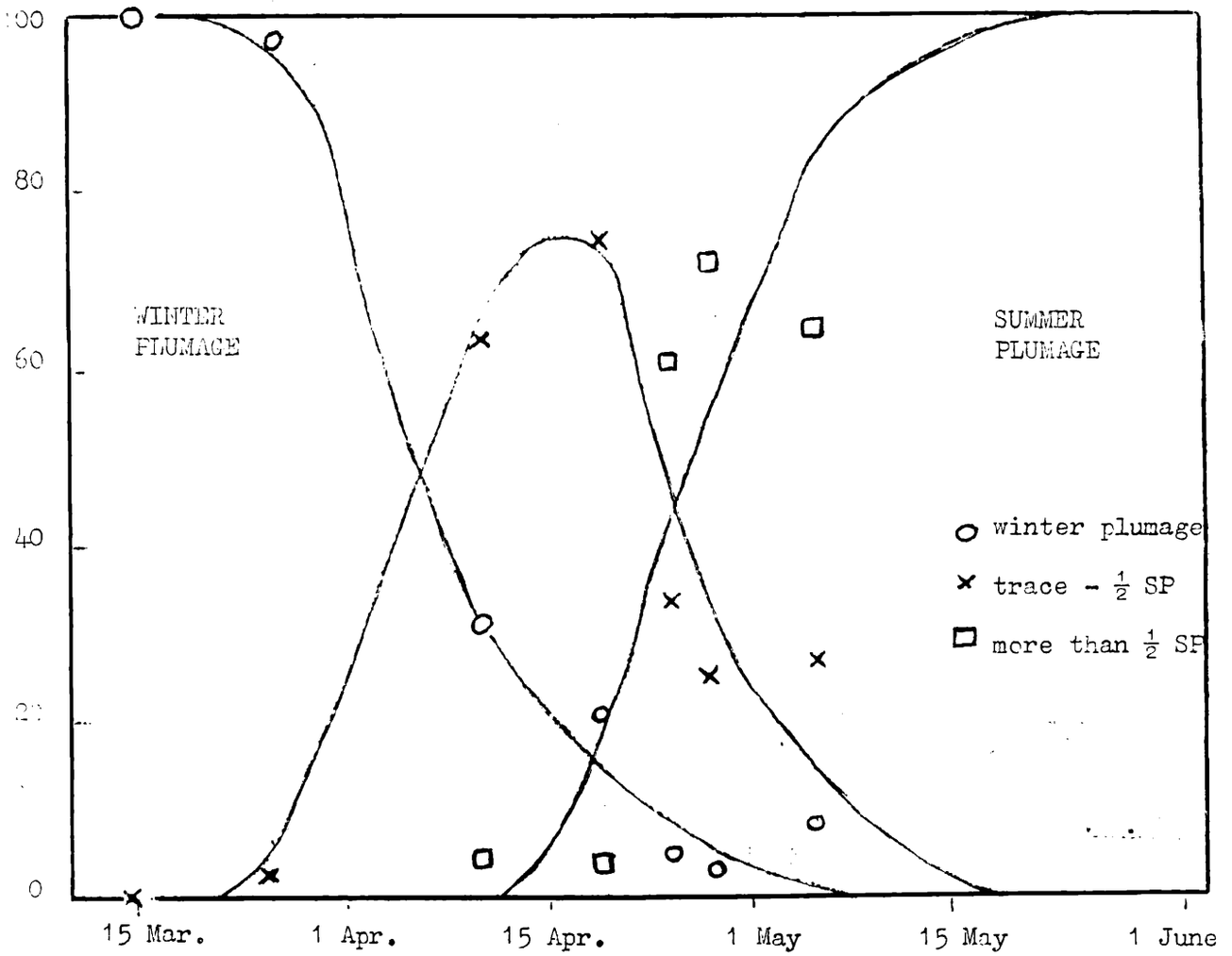

Fig. 2 Percentage of adult Knot in Morecambe Bay in summer plumage in spring.

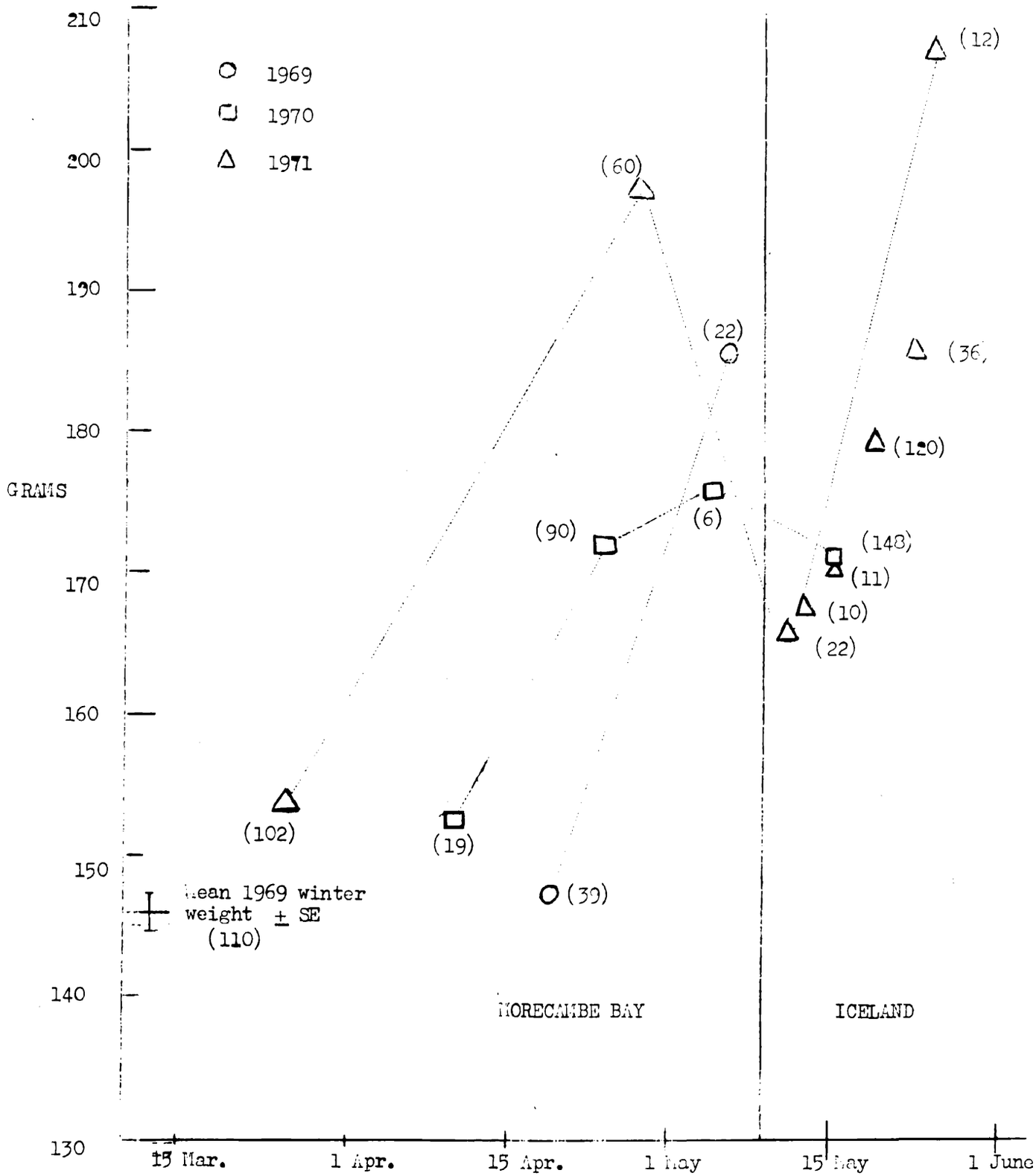

Fig. 3. Average weights of Knot in Morecambe Bay and Iceland during the spring. The sample size is included in brackets by each point.

The distance between S.W. Iceland and N.W. Greenland/Ellesmere Island is about 1400 miles. This would take about a further 28 hours flying. If the same rate of weight loss continued then a further 50 to 55 grams would be used up. Thus taking a mean starting weight of 200gms. the weights of Knot on arrival on their breeding grounds if they made a direct flight from Morecambe to Greenland would be between 105 and 115 grams. This is very close to the minimum weights recorded in Morecambe Bay and probably is only a little above the critical weight, i.e. that below which death must follow.

Although this is rather hypothetical the weight loss can be calculated theoretically and for the Morecambe Bay - Iceland flight the theoretical weight loss would be 38.17gms., almost exactly the observed weight loss.

The adaptation of Knot weight build up is clear. They would normally fly to Iceland with quite a large reserve fuel supply, where they refuel. If, due to weather conditions, they miss Iceland on their flight, they will have enough energy to reach the east and probably the west coast of Greenland. Because Greenland has relatively few good feeding areas for Knot, especially in early May, the birds overflying Iceland will be under more physical stress than others and may be expected to survive less well. The large increase in weight in Iceland is undoubtedly because the Knot cross the centre of Greenland and have to fly over the Greenland Ice cap.

Summary

1) The spring passage of Knot in Morecambe Bay occurs between late March and early May.

2) Summer plumage is attained at the same time as the passage occurs.

3) Knot increase their weight rapidly in late April, a rate of increase of 2.99gm./day has been recorded in Iceland.

4) The average departure weights lay between 200 and 210 grams. Weights of up to 226gms. have been found in Morecambe Bay and 229gms. in Iceland.

5) The weight loss from Britain to Iceland is 35-40gms. observed and 38.17gms. calculated. Weight is lost at the rate of 2gm./hr. during flight.

6) Only a small percentage of Knot could reach their N.W. Greenland breeding areas directly from Britain without refueling in Iceland.

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