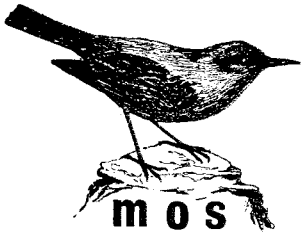
CONTENTS

IL-MERILL - publication of THE ORNITHOLOGICAL SOCIETY
P.O.Box 498 Valletta MALTA

Union Press

IL-MERILL

BULLETIN OF THE ORNITHOLOGICAL SOCIETY



JAN.– DEC. 1979 No. 20

IL-MERILL No. 20 January–December 1979

Moult of the Sardinian Warbler

CHARLES GAUCI & JOE SULTANA

Introduction

The Sardinian Warbler **Sylvia melanocephala** is a very common breeding resident in the Maltese Islands. It frequents most habitats including urban gardens. Formerly it was a winter visitor only, but became established as a breeding resident at the end of the last century (Sultana et al.1975). However, there are still indications of influxes in late autumn and winter (Sultana & Gauci 1976) and also evidence of spring passage in some years (Gauci & Sultana 1978).

Between the years 1974 and 1978, 511 moult cards (158 for adults and 353 for juveniles) were filled in by the authors for the MOS Ringing Scheme - Valletta. Moult was recorded following the criteria used in the moult enquiry of the British Trust for Ornithology, as described by Snow (1967). A score of 0 was allotted to an old feather, 1 to a feather missing or in pin, and 2, 3 and 4 to feathers up to one-third, two-thirds and nearly fully-grown respectively. New fully-grown feathers were given a score of 5. Fully-grown feathers still having a sheet of wax at the base have been scored as 4. Adult post-nuptial moult and post-juvenile moult are described separately. As will be seen later, a high percentage of adult birds were trapped when the primary score had already advanced to twenty or more. This bias is due to two factors: little ringing was done in June and July; also, birds are much less active in the early stages of moult.

Adult Post-Nuptial Moult

Sequence of Moult

The sequence of primary moult is the same as that found in most other passerines, the innermost (i.e. 1st) primary being shed first and the outermost (i.e. 10th) last - i.e. descendantly (Snow 1967). Occasionally, however, the 10th primary (which is reduced) is dropped at the same time as primary 7 or 8. Two to four (normally three) primaries are to be found moulting concurrently, but occasionally five. The first three primaries are dropped in quick succession or, much less frequently, together. Birds in the latter category were all estimated to have started moult late in the season (late July-earlyAugust). On average the entire primary moult takes place in 76 days (see below). Moult usually proceeds symmetrically on the two wings, but very occasionally a difference in score of one or two is observed.

The secondary scores are plotted against the primary scores in Fig.1. Only secondaries one to six are taken in consideration here. The others, the 'tertials', are treated separately. The outermost secondary is moulted first, when the primary score is approximately 19. As in most other species, the replacement proceeds from the outer towards the inner secondaries. When the first secondary is moulted there are four to six old primaries remaining. As in some other species, e.g. Great Tit **Parus major** and Blue Tit **Parus caeruleus** (Flegg & Cox 1969), and Tree Sparrow **Passer montanus** (Bibby 1970), secondary moult finishes some time after the termination of primary moult.

The tertials (Fig.2) start and finish earlier than the rest of the secondaries, moult commencing at an average primary score of 9, approximately at the same time as the 3rd or 4th primaries are dropped. On average they finish when

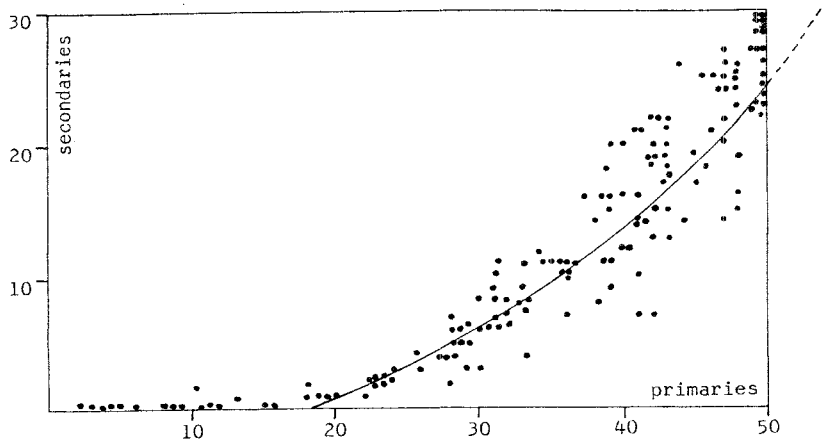


Fig.1. Secondary scores plotted against primary scores (adult Sardinian Warblers) Curve drawn by eye.

the primary score has reached 32. They are usually moulted in the order 8th-9th-7th, but very occasionally the 7th may be dropped before the 9th or both feathers are dropped simultaneously.

Tail moult is often difficult to record as newly grown and growing feathers tend to fall off easily when the birds are being extracted from nets or when they are put in bird bags. It starts rather early, at an average primary score of 7 and is usually completed by the time the primaries reach a score of 40. Tail feathers normally moult in pairs, starting with the innermost and proceeding outwards. However, this is not always the rule and a number of variations was recorded, some of which could be attributed to accidental feather loss.

The lesser, median, and greater coverts start moulting soon after the shedding of the first primary and are completed by the time the primaries have reached a score of 40. The first to finish are the greater, usually being renewed by the time the primary score reaches 25 - 30. The bastard wing is not renewed until late in the moult, starting after the greater coverts are completely renewed, and finishing before the primaries. The body feathers start at about the same time as the primaries, with the head the last to start. Moult of these feathers terminates shortly after the primaries, the underparts being the last to complete moult.

Duration of Moult

Assuming that the primary score advances more or less linearly with time, as has been found in other passerines (e.g. Evans 1966; Newton 1967; Buker et.al. 1975), it is possible to estimate the rate of advance of score/day from data pro-

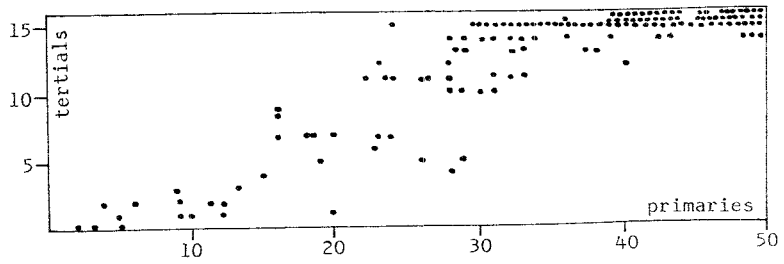


Fig.2. Tertial scores plotted against primary scores (adult Sardinian Warblers).

vided by birds examined more than once during the moult. In this study, twelve birds were caught twice and another two on three occasions. Newton (1967) showed that estimates of the rate of moult in abird made from two scores obtained less than a fortnight apart are unreliable so four of the above fourteen birds which had their moult recorded less than ten days apart are omitted. The rest are listed in Table 1.

TABLE 1 : Primary moult scores and rate of moult of birds caught two or three times.

Ring No.	Dates	Scores	Time Interval (days)	Advance of score	Rate of Advance of Score/Day
KC26051	22.7.75	22			
	24.8.75	42	33	20	0.61
KC26071	13.8.75	34			
	24.8.75	41	11	7	0.64
KC28707	1.8.76	29			
	24.8.76	43	23	14	0.61
KC29651	12.8.76	11			
	6.9.76	36	25	25	1.00
JK32742	17.8.77	32			
	28.8.77	39	11	7	0.64
	1.9.77	42	15	10	0.67
01246	17.8.77	41			
	28.8.77	47	11	6	0.55
01243	17.8.77	36			
	28.8.77	43	11	7	0.64
01228	5.8.77	16			
	28.8.77	31	23	15	0.65
	1.9.77	35	27	19	0.70
01222	4.8.77	31			
	7.9.77	48	34	17	0.50
KA95921	5.8.78	13			
	27.8.78	28	22	15	0.68
		Total	246	162	0.66

These ten birds handled twice (or three times) while in moult show a mean rate of advance of primary score of 0.66 per day (range 0.50-1.00). The birds with ring numbers 01222 and 01246 were re-caught when moult was almost complete and therefore had only the last primary in growth. KC29651, when first caught, had primaries 1 - 3 all showing a score of three; i.e. they had been dropped together. The other seven birds show a fairly uniform rate, ranging from 0.61 - 0.70/day. If the three birds not showing a uniform rate had been omitted from the analysis, the other would have shown a mean rate of 0.65/day, which is only marginally different from the rate obtained by including all birds. At a rate of advance of score of 0.66/day, the average time taken for the primaries to moult is 76 days.

As stated earlier the secondaries finish moulting after the completion of the primary moult. On average, in relation to the primaries, secondary moult finishes at a time when the primary score would have reached 53 if it had continued to this theoritical score rather than stopping at 50 (see Fig.1). This is about 4.5 days after the completion of the primary moult, assuming a rate of advance of primary score of 0.66/day. At this rate of advance of primary score, the total

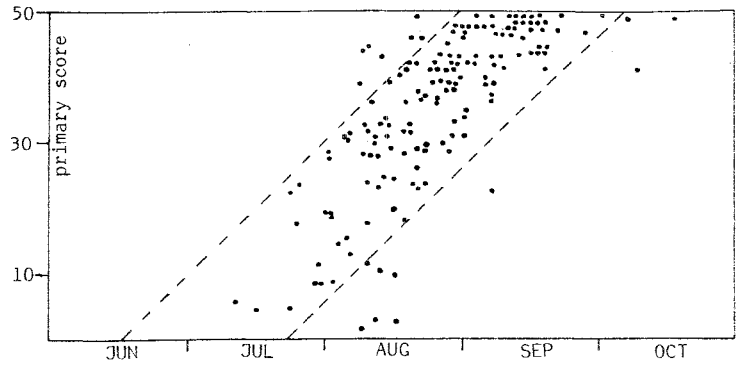


Fig.3. Primary scores plotted against date for adult Sardinian Warblers. Dotted lines show a rate of advance of score of 0.66/day and are fitted to embrace the majority of individual points.

time taken to replace the secondaries is 51.5 days (the time in which the primaries advance from 19 to the theoritical score of 53). From a total of 58 birds caught in advanced secondary moult, 37.9% had dropped or were growing the last two secondaries simultaneously, while in 25.9% of the birds the 6th secondary had been dropped at the same time as secondaries 3 or 4. The inner half of the secondaries is thus replaced more rapidly than the outer half. This is also indicated by the small sample of retrapped birds, in which the rate of advance of score in the secondaries varied greatly, depending on the stage reached. Thus a bird with a score of 1(feather missing) on 5th August had only advanced to 2 on 27th August, but one with a score of 11(state of feathers 0 0 0 2 4 5) on 17th August had advanced to 19 (1 1 3 4 5 5) on 28th August. Fig.1 also shows that the rate of advance of secondary score is non-linear.

The entire wing moult thus appears to take an average of 80 days. Deviations from this period seem to be mainly attributable to the variation that exists in the manner of replacing the secondaries. From Fig.1 it appears that in some individuals the entire wing moult can take up to 88 days.

Relationship between Moult and Breeding Season

In Fig.3 the primary scores of adults have been plotted against date. Dotted lines, showing a rate of advance of score of 0.66/day, have been fitted to embrace the majority of individuals. These show that the bulk of the population starts to moult between mid-June and the third week in July. Very few birds are still moulting after the end of September.

From nest record cards in the files of The Ornithological Society, the fledging dates of 119 broods of Sardinian Warblers were estimated by assuming a duration of 12 days each for the incubation and fledging periods. All cards were taken into consideration, irrespective of success, failure, or unknown outcome. The Sardinian Warbler is normally double brooded, but losses are somewhat high. Birds normally start building again a few days after a failed attempt (pers.obs.). Birds fledging between June and August are thus likely to be third broods after failure of the first or second attempts, or both. In Fig.4 the percentage of broods fledging, and the percentage of adults starting moult are plotted against time of year, grouped in 10-day periods. The majority start moult between mid-June and the third week in July, which follows the peak fledging period of the second broods. The estimated dates of start of moult in males and females were compared. No variation was found to exist. This is to be expected as in the Sardinian Warbler both sexes take part in nest-building, incubation and feeding of the young.

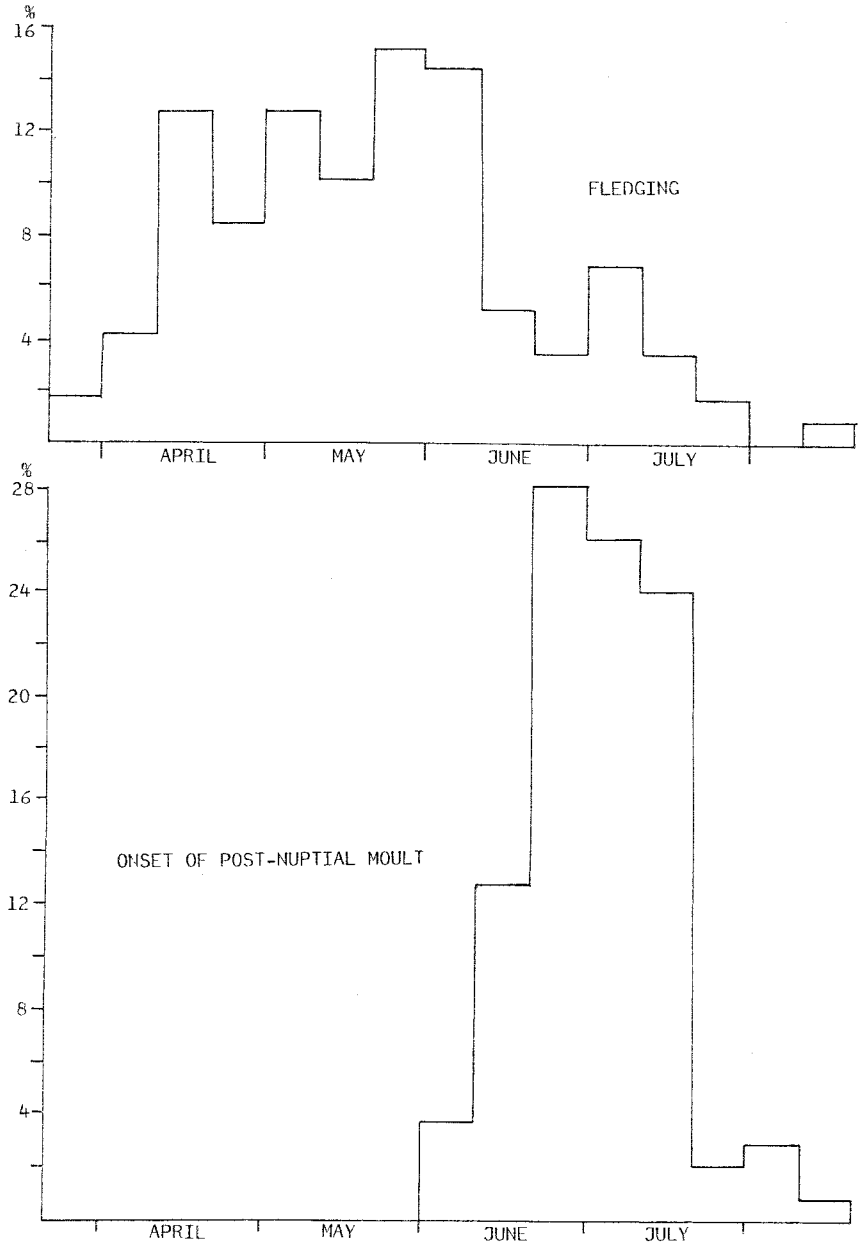


Fig.4. Estimated dates of broods fledging and onset of moult in the adult Sardinian warblers, grouped into 10-day periods.

Post-Juvenile Moult

In most species of passerine birds, post-juvenile moult is limited to body feathers, wing coverts (but not the primary coverts) and some tail feathers. Certain species of **Sylvia** warblers sometimes also moult some inner secondaries (Snow 1967). Post-juvenile moult in the Sardinian Warbler is extremely variable, ranging from a complete moult to a partial moult involving body feathers, wing coverts, bastard wing and tertials.

Complete Post-Juvenile Moult

55 out of 285 juveniles handled during moult were found to be having a complete regular moult as in adults. Most of these were caught in an advanced stage of moult, when the primaries had reached a score of 30 or more. The sequence of moult in the primaries and secondaries followed the same pattern as in adults. However, more primaries are moulted simultaneously between the scores of 11 and 45; usually three or four, but occasionally up to six. As a result, the secondary and tertial moult sequences start at a higher primary score than in adults. This is illustrated in Figs. 5 and 6, the secondaries starting at an average primary score of 25 and the tertials at an average primary score of 18 (as against 19 and 9 respectively for adults). The first secondary is usually dropped at the same time as primary 6 or 7 and the middle tertial between primaries 4 and 5. The bastard wing is renewed somewhat earlier, moult usually starting before the completion of the greater coverts.

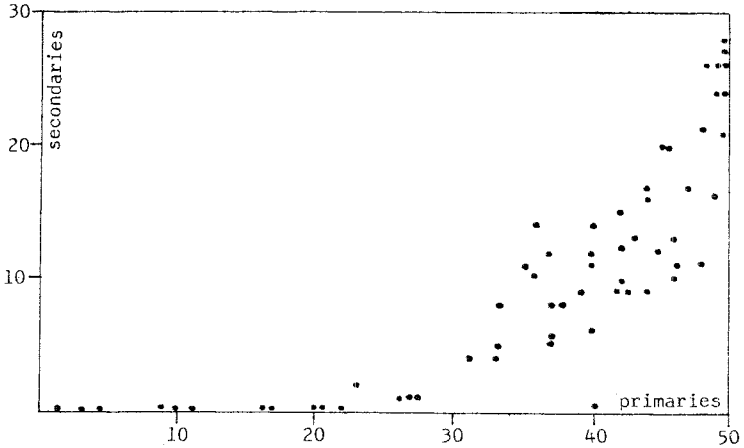


Fig.5. Secondary scores plotted against primary scores in juveniles undergoing a complete moult.

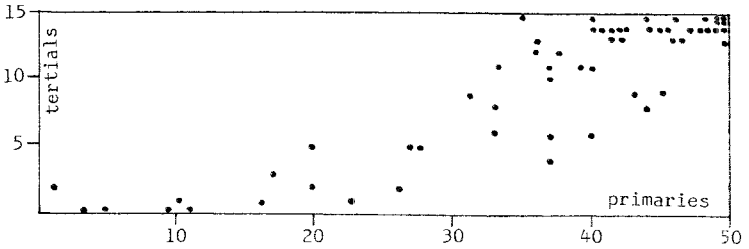


Fig.6. Tertial scores plotted against primary scores in juveniles undergoing a complete moult.

The average rate of primary moult, calculated from 8 retrapped birds (see Table 2), of 0.84/day is much higher than in adults. At this rate the primary moult would take an average of only 59.5 days. Allowing another 4.5 days for the termination of secondary moult (as in adults), the entire moult appears to take an average of 64 days.

The rate of 0.84/day was used to estimate the date of onset of moult in the above 55 birds. On this basis the start of moult ranged from the 19th June to 7th August with 51% starting moult between the 1st and 10th July.

TABLE 2 : Primary moult scores and rate of moult of birds caught twice (juveniles undergoing a complete post-juvenile moult).

Ring No.	Dates	Scores	Time Interval (days)	Advance of score	Rate of Advance of Score/Day
KC29637	9.8.76	31			
	18.8.76	38	9	7	0.78
KC29662	14.8.76	27			
	8.9.76	42	25	15	0.60
02289	31.7.77	23			
	22.8.77	43	22	20	0.91
01249	17.8.77	33			
	28.8.77	44	11	10	0.91
05068*	1.7.78	0			
	22.7.78	20	(21)	(20)	0.95+
05069	23.7.78	1			
	10.9.78	42	49	41	0.84
05094	22.7.78	26			
	13.8.78	46	22	20	0.91
05099	23.7.78	13			
	15.8.78	33	23	20	0.87
		Total	182	153	0.84

* Though the exact rate of advance of score/day is uncertain, the bird with ring number 05068 has been included as it shows a higher rate than the rest. If it had been omitted from the analysis the average rate of advance of score/day would have been 0.826, which is only marginally lower than the average of 0.84 calculated for all birds.

Partial Post-Juvenile Moult

The results are based on 217 moult cards for birds undergoing active partial moult and 68 cards for birds that were trapped after finishing a partial moult.

Partial moult is extremely variable. Body feathers, wing and tail coverts, and bastard wing are always renewed. In most (90%) birds all three tertials were renewed, but very occasionally only one or two were moulted. One individual moulted none. The number of secondaries and primaries moulted varied considerably, ranging from none to all. In the sample of 68 not showing active moult, 42.6% had old primaries, 29.4% had renewed 1 - 5 primaries, and the remaining 28.0% had renewed six or more primaries , at least on one wing. The Sardinian Warbler appears to be exceptional among European passerines in that juveniles also moult a variable number of primary coverts, irrespective of whether the corresponding primaries are moulted or not. Very often moult is not symmetrical on the two wings. An extreme example was one bird which moulted one tertial, three secondaries and no primaries on the right wing; and all tertials, no secondaries and six primaries on the left. Fig.7 shows which wing feathers are most frequently renewed. The figures are for the birds caught after having finished a partial moult.

In juvenile birds not undergoing a complete moult, the lesser coverts are shed first. They are usually followed by the greater and median coverts, upperparts, underparts, and one or two tail feathers. The head and bastard wing start

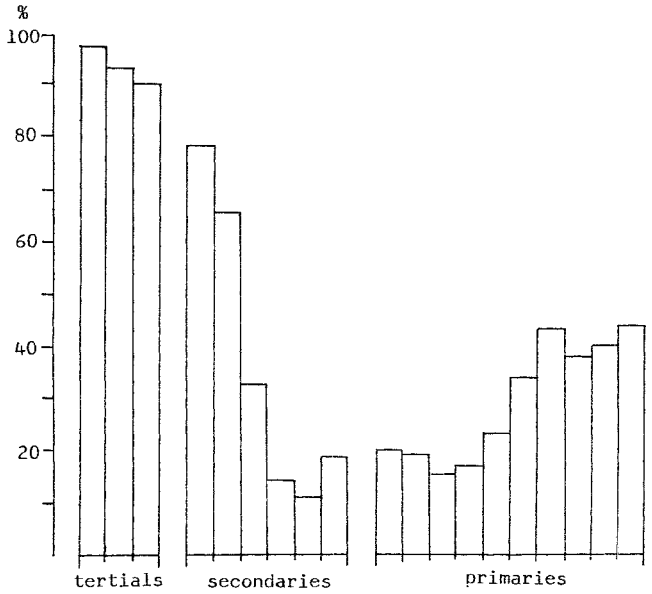


Fig.7. Percentage of wing feathers renewed in juveniles retrapped after finishing a partial moult.

immediately afterwards. Any primary coverts to be moulted, normally start at this time. The first tertial is dropped when the new greater coverts (often dropped together) have started growth. Birds which renew a number of primaries (usually the outermost four or five), start primary moult after the tertials are either fully grown, or are nearing completion. The primaries are either dropped in rapid succession or, more rarely, together. Moult on the secondaries may start soon after the new primaries begin to grow or sometimes (usually when less than three primaries are moulted) at the same time. It is thus not unusual to find up to seven feathers on one wing in active moult. Primary moult, no matter with which feather it starts, proceeds descendantly, either continuing to the outermost (10th), or being suspended before it reaches this feather. The secondaries seem to have no fixed sequence and moult can apparently proceed either way. When secondaries 5 and 6 are both renewed they are almost invariably dropped together.

As stated earlier, many juvenile Sardinian Warblers moult a variable number of primary coverts. In birds examined when in active moult the primary coverts (or some of them) were moulted ahead of their corresponding primaries, but sometimes at the same time. A bird which on 11th August 1976 had primary coverts 1st to 3rd in pin and 4th to 9th new but all the primaries old, later moulted all the primaries. Table 3 lists those birds caught after finishing a partial moult and in which the state of the primary coverts was recorded.

Owing to the extremely variable nature of moult in this class of juveniles, no satisfactory method could be found to estimate the rate of moult, even though

TABLE 3 : Primaries (numbered descendantly) and primary coverts moulted in 29 birds which had finished a partial moult.

	Right Wing		Left Wing	
Ring No.	pp. moulted	pc. moulted	pp. moulted	pc. moulted
JX03488	7, 8, 10	nil	7, 10	nil
JX59034	10	1-2	7, 9-10	1-2
JX03389	1, 5-10	1-9	1-2, 5-10	1-9
KA34313	1-4, 7	1-5	1-2, 7-8	1-5
KC26802	6-10	7-9	6-10	7-9
KB85500	6-10	1-3	6-10	1-3
KB85499	2	1-2	2	1-2
KC28616	6-10	1-3, 6-9	6-10	1-3, 6-9
KC26897	7-10	1-2, 8-9	7-10	1-2, 8-9
KC29858	1-10	1-4, 6-9	1-10	1-4, 6-9
KC29971	6-7	1-2	6-8	1-2
KC29973	nil	1-2	nil	1-2
00371	4-10	1-4, 8-9	2, 4-10	1-5, 8-9
KC29973	nil	1-2, 9	nil	1-2, 9
KH80795	nil	1-2	nil	1-4
JX59988	1-10	1-3	1-10	1-4
01483	1, 4, 7-10	1-5, 7-9	5, 9-10	1-5, 8-9
02437	7-10	9	7-10	9
01489	2-10	1-4, 7-9	1-2, 5-10	1-2, 4
KP63227	7	1-2	nil	1
KH82964	nil	1	3	1
02599	1-10	1-8	1-10	1-8
05278	6-10	1, 7, 9	5-10	1, 8-9
03844	nil	9	nil	9
KP64281	8-10	1-3, 9	1, 8-10	1-2, 9
00645	nil	1-4, 9	1-3, 6-7	1-7, 9
05091	nil	1-2, 4, 9	nil	1-2, 6, 9
05136	nil	1-4, 8-9	nil	1-4, 9

(8 others which did not moult any primaries renewed no primary coverts.)

a number of birds have been retrapped. The approximate dates of individual onset of moult could not therefore be calculated with the same degree of accuracy as for adults and juveniles undergoing a complete moult. The total wing score (tertials, secondaries and primaries; i.e. 95) is plotted against date in Fig.8. Those birds which had finished the partial moult when caught are also included. Not all birds showing a score of 0 are shown in the diagram; only those on which moult had started on the wing coverts. Those showing active moult and having a score of over 50 were in the process of renewing all (or most) primaries. These appear to have started moult at the same time as juveniles undergoing a complete moult, i.e. in late June or early July. Excluding these birds, the majority seem to start moult between early August and mid-September.

The Extent and Timing of Post-Juvenile Moult in Relation to Fledging

The estimated dates of fledging and onset of moult in juveniles undergoing a complete moult, as well as the total wing score of all juveniles caught in moult are plotted in Fig.8. Fig.8. also includes those birds in which moult had started on the wing coverts. Retraps of these birds indicate that wing moult starts about two weeks later.

As illustrated in Fig.8, both fledging and onset of moult show a spread of about four months each. The majority of birds undergoing a complete moult start moulting between the end of June and the end of July. Birds not undergoing complete moult but which renew a high percentage of wing feathers also seem to start at this time. Another group of juveniles start moult in August-September. These rarely renew more than half their wing feathers, usually the tertials and up to three inner secondaries.

The first birds to start moult are presumably those that have fledged from first broods. Most of these appear to have a complete moult, but a few retain up to five juvenile feathers (usually secondaries). Most birds undergoing a partial moult start between late July and late September. These are likely to be second and third brood birds.

Rather few nestling Sardinian Warblers have been ringed. The number of ringed newly-fledged birds is also low. The Ringing Scheme of the Ornithological Society keeps a retrap history of all birds ringed. An examination of these reveals that only seven Sardinian Warblers ringed as nestlings or as newly-fledged birds have been retrapped after a period of a month or more.

Two known to have fledged in mid-April (1st broods) were found to have undergone a complete moult when retrapped the following October. Three nestlings from 1978 second broods (one ringed on 24th May and two on 8th June) gave the following results. The 24th May bird had just started moulting the lesser coverts and contour feathers on 24th June. One of the 8th June birds showed no sign of moult on 10th July. The other, when retrapped in late August, was moulting the wing coverts, bastard wing and contour feathers as well as some tail feathers; whilst a month later it was renewing the tertials on both wings, secondaries 5 and 6 on the right wing and secondary 4 on the left, and had a new outermost primary on both wings. Two from a late brood (fledged early July) had not started in late August, but one of them was reported by the ringer to have started moulting two weeks later, on 9th September.

Discussion

Post-nuptial moult in the Sardinian Warbler follows the same pattern as in other small passerines studied. The peak moulting period follows closely the peak of the breeding season, moult starting soon after the fledging of the last broods. Primary moult is completed before the secondaries: this has also been observed in other species, e.g. Great Tit and Blue Tit (Flegg & Cox 1969) and Tree Sparrow (Bibby 1970). The calculated average duration of moult, 80 days, coincides with that of other sedentary species, e.g. the Bullfinch **Pyrrhula pyrrhula** and Yellowhammer **Emberiza citrinella** (Newton 1968). In migratory and also in eruptive species, moult takes place much faster and in some cases may leave birds flightless or almost so for some time, e.g. in the Bearded Tit **Panurus biarmicus** (Buker et al. 1975) and in the Redstart **Phoenicurus phoenicurus** (Snow 1969).

Some authors have described weight changes during moult. Both Bullfinches (Newton 1966) and Tree Sparrows (Bibby 1970, 1977) gain weight as moult advances. The number of adult Sardinian Warblers caught with a primary score below 25 was insufficient to permit a proper weight analysis in relation to progress of moult. There was, however, little apparent change in weight during moult. The mean weights of five score-groups (26-30, ... 46-50) were all either 11.9 g or 12 g. During the entire moult period Sardinian Warblers seem to feed mainly on fruit, mostly wild blackberries **Rubus ulmifolius** and figs **Ficus carica**, which are abun-

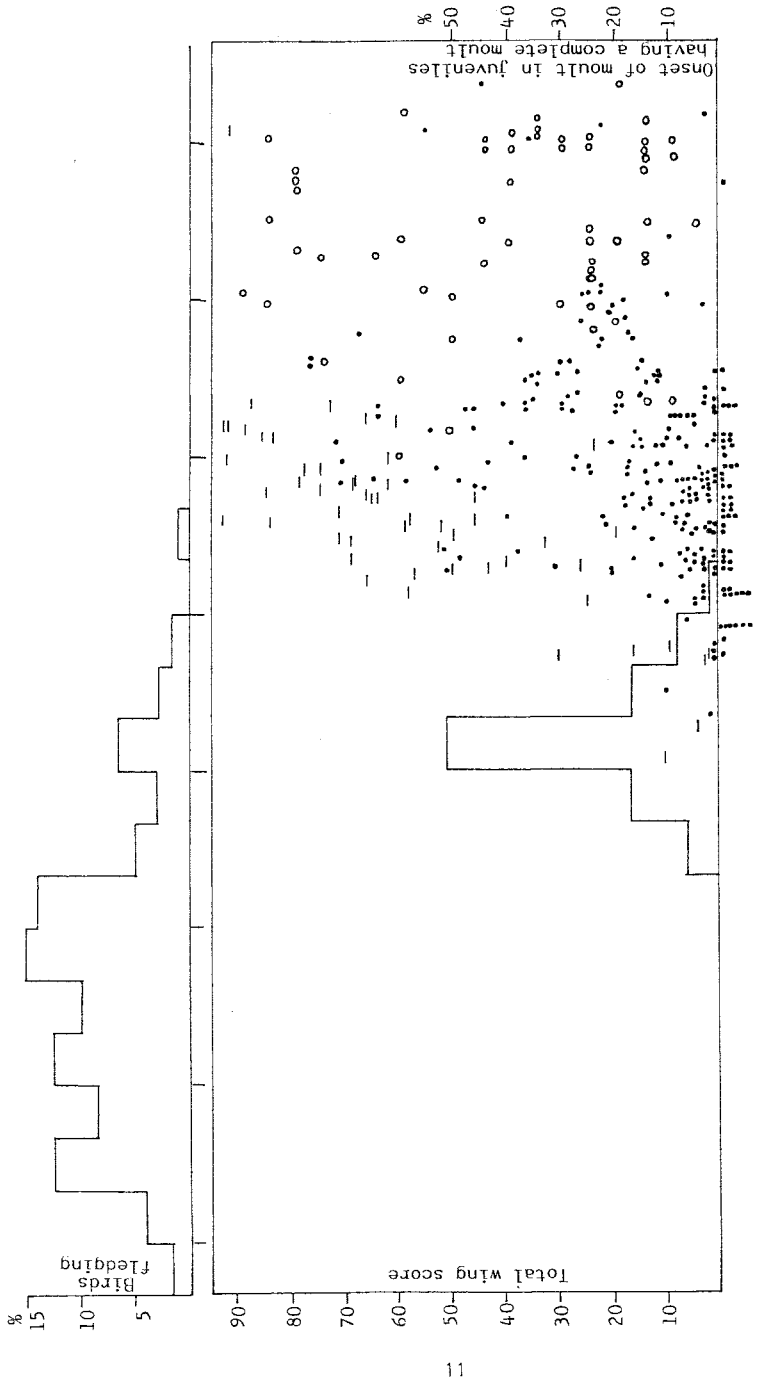


Fig.8. Dates of fledging (grouped in 10-day periods) and individual wing scores of all juveniles in moult. Since moult is often irregular, the total wing score has been adopted, where moult was not symmetrical on the two wings, only that wing showing the highes score has been included. Dashes represent scores of juveniles known to be undergoing a complete moult, solid dots juveniles having a partial moult and open circles juveniles trapped after finishing a partial moult. The percentage of onset of moult in juveniles having a complete moult is also shown - grouped in 10-day periods (see text).

dant at that time of the year. Migrant **Sylvia** warblers passing through Malta at the same time of year gain weight rapidly feeding on the same fruits.

There seems to be enough evidence showing that the extent of post-juvenile moult in the Sardinian Warbler is related to the time of fledging. In migrant **Sylvia** warblers breeding in Europe, the first fledglings are unlikely to be out of the nest before mid-June, except for some species (e.g. Subalpine Warbler **Sylvia cantillans**) in the extreme south. In these, post-juvenile moult is restricted to body plumage, some (or all) greater coverts, some inner secondaries (usually tertials only) and occasionally some tail feathers (Snow 1967). **Sylvia** species which are mainly sedentary in southern Europe may have a more extensive post-juvenile moult, having fledged earlier. Williamson (1964) records specimens of the Cyprus Warbler **Sylvia melanothorax** as having an incomplete post-nuptial moult (3 specimens examined in July, as well as two others in March-April showing a similar partial moult). These birds show the same type of moult found in juvenile Sardinian Warblers which have probably fledged from second broods, i.e. in May-June, and could well be first-year birds and not adults. Dartford Warblers **Sylvia undata** (winter visitor in small numbers to Malta) trapped for ringing also show a mixture of new and old wing feathers (pers. obs.), suggesting a similar post-juvenile moult. Some juvenile Subalpine Warblers on passage through Malta in autumn are sometimes found moulting one half of their tail, but in spring many show a clear mixture of old and new flight feathers, suggesting a similar partial moult in winter quarters (Gauci & Sultana 1976).

Juvenile Sardinian Warblers undergoing a complete post-juvenile moult are inseparable from adults (on plumage characteristics) after finishing moult. It seems likely that because of this, ringers have been incorrectly ageing a number of males when referring to Svensson (1975), who refers to adult males only as having the wings fresh and dark grey from September onwards. Similarly it is unsafe to age females on the clarity and extent of white on the outer tail feathers, since almost all juveniles also renew their tail.

Acknowledgements

Our thanks are due to M.A.S. Beaman and J.A. Hardman for valuable criticism of earlier drafts of this paper.

Summary

This paper reports on the sequence, rate and timing of moult in the Sardinian Warbler. Post-nuptial moult and post-juvenile moult are described. The sequence of moult in adults is the same as that found in most other passerines, Primary moult takes place in 76 days on average, but the entire moult takes an average of 80 days, as the secondaries finish moult after the primaries. Most adults start moult between mid-June and the third week of July, soon after the fledging of the last broods. Post-juvenile moult is variable. Some birds undergo a complete moult. In this category of juveniles, the secondaries and tertials start to moult at a later stage than in adults. Most start moult in July. Other juveniles moult the body feathers, wing coverts and usually the tertials and tail, plus a varying amount of primaries and/or secondaries. Juveniles undergoing partial moult may also renew a varying number of primary coverts, irrespective of whether the corresponding primaries are moulted or not. This phenomenon has not apparently been met with among other European passerines. Birds undergoing partial moult have been caught between late July and November. It seems that juveniles undergoing a complete moult are those which fledged in the earlier part of the season (late March-April); those undergoing partial wing moult fledged from second broods (May-June) and those showing moult on body feathers, wing coverts, alula and tertials only belonged to late replacement clutches (July-August).

References

BIBBY,C.J. 1970. Post-juvenile moult of the Tree Sparrow. **Wicken Fen Group Report** 2:10-20.

BIBBY,C.J. 1977. Observations on the moult of the Tree Sparrow. **Ringing and Migration** 1:148-157.

BUKER,J.B., BUURMA,L.S., OSIECK,E.R. 1975. Post-juvenile moult of the Bearded Tit, **Panurus biarmicus** (Linneaeus,1758),in Zuidelijk Flevoland, the Netherlands. **Beaufortia** 306:169-179.

EVANS,P.R. 1966. Autumn movements, moult and measurements of the Lesser Redpoll (**Carduelis flammea cabaret**). **Ibis** 108:183-216.

FLEGG,J.J.M. & COX,C.J. 1969. The moult of British Blue Tit and Great Tit populations. **Bird Study** 16:147-157.

GAUCI,C. & SULTANA, J. 1976. Migration of the Subalpine Warbler **Sylvia cantillans** through Malta. **Il-Merill** 17:15-20.

GAUCI,C. & SULTANA, J. 1978. Evidence of spring passage of Sardinian Warblers through Malta. **Il-Merill** 19:18-19.

NEWTON,I. 1966. Moult of the Bullfinch (**Pyrrhula pyrrhula**). **Ibis** 108:41-67.

NEWTON,I. 1967. Feather growth and moult in some captive finches. **Bird Study** 14:10-24.

NEWTON,I. 1968. The moulting seasons of some finches and buntings. **Bird Study** 15:84-92.

SNOW,D.W. 1967. A guide to moult in British Birds. British trust for Ornithology, Tring.

SNOW,D.W. 1969. The moult of British thrushes and chats. **Bird Study** 16:115-129.

SULTANA,J., GAUCI,C., BEAMAN,M. 1975. A guide to the birds of Malta. Malta Ornithological Society, Valletta.

SULTANA,J. & GAUCI,C. 1975. Influxes of Sardinian Warbler. **Il-Merill** 15:3-4.

SVENSSON,L. 1970. Identification guide to European Passerines. Naturhistoriska Riksmuseet, Stockholm.

WILLIAMSON,K. 1964. Identification guide for ringers: 3. The Genus **Sylvia**. British Trust for Ornithology, Tring.

The Extinct Maltese Crane

C.J.O. HARRISON

In 1890 when Lydekker examined a collection of Late Pleistocene bird bones from Zebbug Cave on Malta, presented to the British Museum (Natural History) by Admiral Spratt in 1878, he identified among others the bones of a crane. He described this as a new species **Grus melitensis**. The syntype specimens were part of a coracoid, 49365, which he regarded as unlike those of other cranes; the distal end of a tibiotarsus, 49361, recognised as similar to that of the large extant Sarus Crane **G. antigone**; and the distal end of a tarsometatarsus, 49358, which was also large and which he referred to this bird with some reservation. Later (1891), in his catalogue of fossil birds, he listed other specimens including toe bones, phalanges. He stated there that the "types" of the species were the coracoid and part of a pelvis no. 49322m. The latter bone is not gruiform and is probably referable to the very large fossil swan **Cygnus falconeri** which occurs in the same cave deposits. More Pleistocene cave material was collected from Tal-Gnien Caves on Malta by D.M.A. Bate in 1933,1934 and 1936, some of which has been referred to in a recent note on large extinct cranes (Harrison and Cowles 1977).

Among the material in the collection of the British Museum (Natural History) referred to this species there are twelve distal ends of tibiotarsi, BMNH 49361, 49322n, A3265, A4964 - 4972. These resemble each other in size and in this respect are also similar to the tibiotarsus of the Sarus Crane **G. antigone**. Lydekker (1890, 1891) pointed out that the distoproximal width of the tendinal bridge was narrower on his specimen than on **G. antigone**. This bridge is narrow on a major part of the Maltese specimen and although it is not a diagnostic feature it might indicate an isolate population developing specific characters.

The other part of a lower limb, a distal end of a tarsometatarsus, BMNH 49361, is worn and slightly fractured. In size it is very similar to that of **G. antigone**. The trochleae are, however, more widely splayed, and even allowing for the possible effects of fracture and crushing the visible cracks do not seem adequate to explain fully the gaps between the trochleae. It was this additional width which led Lydekker (1890, 1891) to assume that it might have come from a still larger species of crane. He stated that it resembled the tarsometatarsus of the Australian Crane **G. ribicunda** in its characters, but did not comment further and no obvious affinity is apparent.

The five phalanges listed by Lydekker (1891), BMNH 49324, are of dubious taxonomic value. Such bones tend to vary little among birds except where extreme adaptation has occurred. In the present instance it is possible to identify the basal phalanges of digits 3 (49324d) and 4 (49324e) and the second phalanx of digit 4, but for the last the larger example of 49324b differs from the smaller example of 49324b and 49324a and appears to originate from a different bird of much larger size. Phalanx 49324e lacks the narrow groove on the inner side near the proximal end which is typical of this bone in the cranes. If, with the exception of the large specimen, these were crane phalanges they would be of a stoutness comparable with those of **G. antigone** but about one-quarter to one-third shorter. It is as likely that they are referable to some other order.

Wing specimens now consist of two bones - a distal end of a humerus and the humeral end of a coracoid. The end of the humerus, from Tal-Gnien, BMNH A5162, is badly broken. It is of similar size and character to that of the Common Crane **G. grus**. The coracoid BMNH 49365 is the bone with the most distinctive characters. It is broken across the narrow part of the shaft and only the humeral half is preserved. In general it is similar in size to the coracoid of **G. grus** but differs in the following respects. The procoracoid is proportionally longer and more curved than in the latter species. The triossial canal surface is narrower, particularly at the ventral end of the furcular facet. On the external side the area

between the glenoid facet and the biciptal attachment ridge is narrower and more ceeply hollowed.

There is some difference of opinion concerning the status of the Maltese Crane **G. melitensis**. Mourer-Chauviré et al. (1975) mention the coracoid but limits a brief discussion to the characters of the syntypical tibiotarsal fragment and conclude that the bird is conspecific with the Sarus Crane **G. antigone**. Even if the tibiotarsus were referred to the latter species, there is the modified tarsometatarsus and the small coracoid and humerus to be explained away. It is with the coracoid that the name **melitensis** has been most closely linked, and this would be the obvious lectotype if the original material were to be reassigned.

There is also the coincidence that the thirteen bones that might indicate a large form are all leg bones, while the two possibly referable to a smaller form are wing bones. This becomes more relevant if other bird species occurring in the same deposits are taken into consideration. D.M.A. Bate (1916) described a small swan **Cygnus equitum** which had the wing bones reduced in size and is thought to have had the power of flight considerably reduced. Parker (1865) described another swan **C. falconeri** which was larger than any known species. It had a relatively short femur, long tarsometatarsus and very short toes. This suggests that it was more terrestrial than our present swans and structurally modified for more efficient walking.

There is therefore evidence that at this period Malta had a fauna including endemic species of large waterbirds, related to more widespread species in Europe, but modified for a more terrestrial existence or with reduced power of flight. In these circumstances it would not be unreasonable to suggest that an endemic species of crane may have existed which was of similar size to **G. antigone** but with the wings reduced and more similar to those of **G. grus**; and which showed other osteological pecularities possibly linked with reduced power of flight and a more terrestrial existence. This hypothesis cannot be tested until further material becomes available but in the meantime it is better to regard **Grus melitensis** as a separate and possibly aberrant species, rather than to attempt to synonymise it with **G. antigone** on the basis of the overall size of one end of one leg bone.

References

BATE,D.M.A. 1916. On a small collection of vertebrate remains from the Ghar Dalam Cavern, Malta. **Proc. zool. Soc. Lond.** 1916:421-430.

HARRISON,C.J.O. & COWLES,G.S. 1977. The extinct large cranes of the North-West Palaearctic. **J. archaeol. Soc.** 4:25-27.

LYDEKKER,R. 1890. On the remains of some large extinct birds from the cavern-deposits of Malta. **Proc. zool. Soc. Lond.** 1890 :403-410.

LYDEKKER,R. 1891. Catalogue of fossil birds in the British Museum (Natural History). London : B.M. (N.H.).

MOURER-CHAUVIRÉ,C., ADROVER,R. & PONS,J. 1975. Présence de **Grus antigone** (L.) dans l' "Avenc de Na Corna" a Majorque (Espange). **Nouv. Arch. Mus. Hist. nat. Lyon.** 13,suppl.:45-50.

PARKER,W.K. 1865. Preliminary notes on some fossil birds from the Zebbug Cave, Malta. **Proc. zool. Soc. Lond.** 1865:752-3.

Site Tenacity and Pair Bond of the Eleonora's Falcon

DIETRICH RISTOW, CORALIE WINK & MICHAEL WINK

Introduction, Material & Methods

Birds with a long expectation of life tend to show site tenacity and life-long pair bonds (Bezzel 1977). Birds of prey usually belong to this group. The object of our study, Eleonora's Falcon **Falco eleonorae**, lives colonially and therefore offers the opportunity for ringing reasonable numbers and obtaining local retraps and recoveries. Preliminary results are presented in this communication.

The investigations were conducted in an Aegean colony of about 180 pairs during six breeding seasons (1965-78). The colony is situated on a small rocky island (< 1 km^2). Nestlings were ringed all over the island, but retraps of adult falcons were restricted to sites which were easily accessible and where disturbance could be kept to a minimum.

Results & Discussion

A total of 650 nestlings and 93 adults (23 ♂, 70 ♀) were ringed. The recoveries (Ristow 1975) are listed in Table 1 according to the time elapsed since ringing. The distances between ringing and recovery sites are shown in Table 2.

The number of nestlings, which are recovered, is quite low as compared to the Kestrel **Falco tinnunculus** (Cave 1966). Recoveries within the first three years are from distances greater than 300 km, and 6 out of 9 birds were recovered during the breeding season. This indicates that probably a dispersion of the young takes place. Four nestlings were found breeding in or close to their native colony 4-9 years later, among these a male and a female repeatedly. The oldest birds so far recorded are a 6-year-old female and a 9-year-old male.

Of the birds ringed as breeding adults, 12 out of 13 were recovered in, or close to, the breeding colony in subsequent years (Table 2), and the percentage of recoveries is markedly higher than in nestlings (Table 1). From this we assume that an adult falcon will return to the breeding colony once chosen.

Many eyries of the past year are marked already in May, two months prior to egg laying, with pellets and feathers of prey as well as down of adult falcons. The occupants of the territories correspond in their plumage phases (Wink et al. 1978) to the respective birds in those territories in the previous year. These indications for site (i.e. territory) tenacity are confirmed by retrap data (Table 3). Only 2 out of 8 females changed their territory, whilst of the 3 males

TABLE 1 : Recovery and retrap data of Eleonora's Falcons ringed in 1965-76. The 9 nestlings, recovered within two years, and 1 adult, recovered after three years, constitute data obtained by chance while the rest is systematically gathered data in or near the colony.

falcons ringed as	number ringed	number recovered	number* recovered after 1 2 3 4 5 6 7 8 9 years elapsed since ringing
nestlings	650	13	6 3 - 1 - 4 - 1 1
adults	93	13	2 7 1 2 1 - - - -

* Two nestlings retrapped repeatedly in different years are counted here for each year.

TABLE 2 : Distances between ringing and recovery sites. All data from May-September, except one winter record from Madagascar.

		n*	distance (km) 0-0.5 breeding island	0.5-5.0 neighbouring islands	5.0-50	50-500	> 500
nestlings	1 year	6	-	-	-	3	3
	2 year	3	-	-	-	-	3
	4 year	1	1	-	-	-	-
	6 year	4	2	1	1	-	-
	8 year	1	1	-	-	-	-
	9 year	1	1	-	-	-	-
adults	1 year	2	2	-	-	-	-
	2 year	7	7	-	-	-	-
	3 year	1	-	-	1	-	-
	4 year	2	2	-	-	-	-
	5 year	1	1	-	-	-	-

* Two nestlings retrapped repeatedly in different years are counted here for each year.

TABLE 3 : Site tenacity of retrapped adult Eleonora's Falcons in subsequent years.

sex	n	state of territory on recovery: same	new
males	3	3	-
females	8	6	2

in Table 3 one was recorded in the same territory in three different years. In comparison with the Kestrel (Cave 1966), Eleonora's Falcon shows a higher nesting site tenacity. This may be due to the space available for a pair within an island colony.

Apparently paired couples can be seen within their territory already in May, and when they leave the colony for hunting on the mainland about 2-3 hours after sunrise, the female flies ahead followed by the male in 10-20 m distance. In 1975 we succeeded to trap both partners of 5 pairs. In 1977 all five territories were occupied and even the same nests were used by 2 pairs. One pair and 2 females could be retrapped and were the same as two years earlier. The remaining birds could not be trapped but corresponded in their plumage phases to the respective birds ringed in 1975. Therefore the pair bonds had probably lasted for two years or more. We do not know, however, whether this fidelity applies to the mate or the nesting site.

Also, this observation suggests a high survival rate for adult falcons, but the number is too small as yet to evaluate the mortality of Eleonora's Falcon.

In conclusion, a strong tendency for site tenacity and lasting pair bond can be assumed but more data will certainly clarify this question.

Acknowledgements

We wish to thank for their help in ringing : H.Walter (1965), F.& R.Lammers (1969), J.Ristow (1971), U.Winter (1975) and J.Parrott (1976). Last not least we are grateful for the continuous support by our friends in Greece.

Summary

29 recoveries of 750 ringed Eleonora's Falcons show that juvenile falcons tend to disperse during their first years. Once they have chosen their breeding colony they tend to return to the same territory for years and stable pair bonds seem to exist as well. Oldest age proven of ♂ and ♀ are at least 6 and 9 years, respectively.

References

BEZZEL,E. 1977. Ornithologie. Ulmer, Stuttgart.

CAVE,A.J. 1968. The breeding of the Kestrel, **Falco tinnunculus** L., in the reclaimed area oostelijk Flevoland. Netherlands Journal of Zoology 18 : 313-407.

RISTOW,D. 1975. Neue Ringfunde vom Eleonorenfalken (**Falco eleonorae**). Vogelwarte 28 : 150-153.

WINK,M., WINK,C. and RISTOW,D. 1978. Biologie des Eleonorenfalken (**Falco eleonorae**) : 2. Zur Vererbung der Gefiederphasen (hell-dunkell). **Jour. f. Orn.** 119 : 421-428.

Addenda : The falcon pair mentioned in the text as being retrapped in their territory two years later were trapped again four years later in 1979. Both had new partners, however, and while the male occupied the nest of 1975, the female had her nest 15 m away; there were no direct sight connection between the two nests.

.....

Passer Species on Sardinia

DENIS SUMMERS-SMITH

Two species of **Passer** occur on Sardinia, the Spanish Sparrow **P.hispaniolensis** and the Tree Sparrow **P. montanus**. Cody (1974) reported observations by Hartmut Walter that in Cagliari, the major city of Sardinia, **P. montanus** is restricted to the downtown and port area, the more typically urban sparrow **P. hispaniolensis** being displaced to the suburbs and countryside. In April 1978 on a brief visit to Naples, which lies on the mainland Italian coast about the same latitude as Sardinia, I found the Tree Sparrow to be occupying the urban 'house sparrow' niche, whereas the Italian Sparrow, which is normally placed as a sub-species of the House Sparrow **P. domesticus**, was displaced to the suburbs. The Italian Sparrow **P.d. italiae** is a stabilised hybrid between **P. domesticus** and **P. hispaniolensis**, which at its northern limit in the Alps and its southern limit in Calabria and Sicily intergrades respectively with **P.d. domesticus** and **P.h. hispaniolensis** (Meise 1936). Previous observers have found the birds in Sardinia to be almost pure **P. hispaniolensis**, both in appearance and behaviour; in contrast, the birds of Corsica are typical **P.d. italiae** (Steinbacher 1954, 1956; Cheke 1966). **P. hispaniolensis** is very closely related to **P. domesticus** and where the latter is absent takes over the 'house sparrow' role and is to be found in completely urbanised surroundings (Summers-Smith 1977-78).

A visit was made to Sardinia in September-October 1979 to study the sparrow situation in more depth. Most parts of the island were visited and particular attention was paid to the sparrows in the villages and towns. Tree Sparrows were present in the squares, gardens, churchyards and waste places in Cagliari and, though a few Spanish Sparrows were seen, the Tree Sparrow was clearly occupying the 'house sparrow' role, visiting possible nesting sites in buildings. On the east coast at Tortoli and the neighbouring villages of Arbatax and Girasole the

Tree Sparrow was again the dominant species, but at Villagrande Strisaili and Villanova Strisaili, 15-20 km inland, although both species were present, the Spanish Sparrow was now dominant. Similarly, the Tree Sparrow disappeared as one proceeded north: it was not found at Dorgali, 5 km from the coast, but was present at Cape Comino and Olbia on the coast. In Olbia the majority of sparrows were **hispaniolensis** and **montanus** was not found further north.**

In the remainder of the island the Spanish Sparrow was a common bird, forming flocks of 50-100 birds in the cultivated land and olive groves and associating with large flocks of finches and Rock Sparrows **Petronia petronia** in open country. Although found on the outskirts of the towns and villages, Spanish Sparrows were rarely seen in built-up areas during the day in the way that one commonly finds Italian Sparrows in the towns of northern Italy, though they formed large roosts at night in trees in the squares of towns, for example in Porto Torres and Bosa, as has already been reported for Cagliari and Alghero by Steinbacher (1956), and they were also seen visiting nests and nest sites on isolated houses early in the morning and at dusk.

In the Far East, where **P. domesticus** is lacking, **P. montanus** becomes the complete house sparrow, as it does even in northern Iran, Afghanistan and Turkmenistan where it is resident and **P. domesticus** a summer visitor, breeding in open country away from towns. While, in the absence of both **domesticus** and **montanus**, **hispaniolensis** takes over the house sparrow niche, it appears to be normally sub-dominant in this respect to both the other species. The fact that **P. montanus** has displaced **P. domesticus italiae** in Naples suggests that the latter may be more related behaviourally to **hispaniolensis** than **domesticus**. Perhaps it might be better described as a sub-species of **hispaniolensis**.

A puzzling feature is the restriction of the Tree Sparrow to the east of Sardinia and its absence from the towns and villages of the north and west, though in Ireland, where it is also at the limit of its range, it is similarly restricted to the coast (Sharrock 1976).

References

CHEKE,A.S. 1966. Sparrows in Corsica and Sardinia. **Ibis** 108 : 630-631.

CODY,M.L. 1974. Competition and the Structure of Bird Communities. **Princetown University Press** 134-135.

MEISE,W. 1936. Zur Systematik und Verbreitungsgeschichte der Haus- und Weidensperling, **Passer domesticus** (L) und **hispaniolensis** (T). **J. Orn.** 84 : 631-672.

SHARROCK,J.T.R. 1976. The Atlas of Breeding Birds in Britain and Ireland. Berkhampstead.

STEINBACHER,J. 1954. Über die Sperlings-Formen von Sardinien und Sizilien. **Senckenbergiana** 34 : 307-310.

STEINBACHER,J 1956. Zur Variation des Gefieders und Verhaltens bei den Sperlingen Sardiniens und Siziliens. **Senckenbergiana** 37 : 213-219.

SUMMERS-SMITH,D. 1977-78. The Spanish Sparrow on Malta. **Il-Merill** 19 : 9-10.

** The distribution of the Tree Sparrow is shown in the figure on page 45.

Mammalian Content of Barn Owl Pellets from Gozo

STEPHEN P. SCHEMBRI & RICHARD CACHIA ZAMMIT

Introduction

Owl pellets are indigestible food remains,mainly feathers, fur and bones, which are compacted and regurgitated by the bird. Pellets can give valuable information on the composition of the food and food preferences of birds of prey (Miles 1952) and also on the distribution of small mammals, particularly in areas which are not readily sampled by the usual methods. It is thus surprising that the study of owl pellets has received no attention locally, with the exception of a single publication by Sultana (1971) who extracted remains of six species of mammals from 20 Barn Owl **Tyto alba** pellets. The present work reports on the mammalian content of Barn Owl pellets collected from Gozo. A future publication will report on the avian remains from these pellets.

Material examined

Sixteen intact pellets and fragments from about another three pellets were collected from one locality in Gozo on 15th July 1978; the material was sent to Dr. P.D. Jenkins of the British Museum (Natural History) who has examined and classified the mammalian remains. A list of the mammal species recorded from the pellets is given in Table 1.

TABLE 1 : The number and identity of skulls recovered from sixteen intact (Nos. 1-16) and fragments of about another three pellets of Tyto alba from Gozo. Pellets also contained numerous other bones and fur; yg.-young. Material marked by an asterisk has been deposited at the British Museum (Natural History).

Pellet No.	Crocidura suaveolens	Mus musculus	Apodemus sp.	Rattus spp.
1	1	mandible	mandible	-
2*	3	1	-	-
3	1	2	-	-
4	3	-	-	-
5*	1	2	1	-
6*	2	2+	-	-
7	1	1	-	-
8*	1	2	-	1 yg.
9	-	3	-	-
10	-	2	-	-
11	-	-	1	1
12	-	2	-	-
13	-	1	-	-
14	-	1	1	-
15	-	1	-	1 yg.
16	-	-	-	mandible yg.
ca. 3 (fragmented)	4	5+	-	2+

Discussion.

Three rodent genera **Mus**, **Apodemus** and **Rattus** and one insectivoran genus **Crocidura** were recorded from the pellets. All four genera have been previously recorded from the Maltese Islands (Lanfranco 1969). The House Mouse **Mus musculus** (L.) is the most common species in the pellets, followed by the Lesser White-toothed Shrew **Crocidura suaveolens** Pallas. The specific identity of **Apodemus** sp. and **Rattus** spp. could not be ascertained from the material available for study. Lanfranco (1969) records the Wood Mouse **A. sylvaticus** (L.), the Brown Rat **R. norvegicus** (Berk.) and the Black Rat **R. rattus** (L.) from Malta and it is likely that the pellet-material belonged to these species.

Sultana (1971) found that **M. musculus** (L.) was the most abundant species in the Barn Owl pellets. A total of 32 skulls were extracted from the 20 pellets collected; this compares well with our findings, as do the numbers of **A. sylvaticus** (4), **R. norvegicus** (1) and **R. rattus** (4). **C. suaveolens** was however represented by only 3 specimens. Two specimens of an additional species of shrew the Greater White-toothed Shrew **C. russula** Hermann, were also present in the pellets.

The presence of **C. suaveolens** Pallas in the pellets is very interesting. This shrew has recently been definitely confirmed to occur in the Maltese Islands (Schembri & Schembri 1979). The large number of skulls found in the pellets suggests that this species is far more common than previously thought.

It is interesting that while Sultana (1971) found remains of **C. russula** from Barn Owl pellets from Gozo, we have found no trace of this species in our material; it is worth mentioning though that the material came from totally different localities. The status of this shrew in the Maltese Islands thus remain unclear.

In view of the apparent restriction of the different species of shrew to the different islands of the Maltese Archipelago (Schembri & Schembri 1979) it would be very interesting to examine Barn Owl pellets from the other islands.

Acknowledgements

We are very grateful to Dr. P.D. Jenkins for kindly accepting to study our material. The pellets were collected by D.Cachia, R.Cachia Zammit and E.Curmi.

References

LANFRANCO,G.G. 1969. Maltese Mammals. Malta.

MILES,P.M. 1952. The entomology of bird pellets. The Amat. Ent. Soc. Leaflet No. 24 : London.

SCHEMBRI,P.J. & SCHEMBRI,S.P. 1979. On the occurrence of **Crocidura suaveolens** Pallas (Mammalia, Insectivora) in the Maltese Islands with notes on other Maltese Shrews. **Central Mediterranean Naturalist** 1 (1):18-21.

SULTANA,J. 1971. Barn Owl Pellets. **The Maltese Naturalist** 1 (2):29.

Short Notes

ADDITIONAL RECORDS OF HIPPOBOSCIDAE (INSECTA DIPTERA) FROM THE MALTESE ISLANDS.

To date, four species of Hippoboscid flies have been recorded from the Maltese Islands (Schembri,S.P. 1978 - Diptera Hippboscidae parasitising birds from the Maltese Islands - Il-Merill 9:5-6). This paper reports on a new species **Ornithophila metallica** Schiner, taken during recent ringing activities by the Ornithological Society and gives additional host data for two other species.

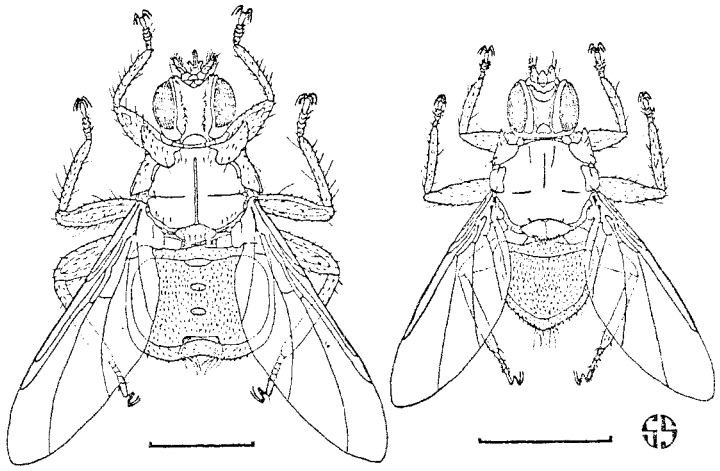
Ornithophila metallica Schiner
1 female GOZO : Lunzjata Valley 29.12.78
From White Wagtail **Motacilla alba** (Leg. J.Sultana/J.Grech).

Icosta (Ornithoponus) minor (Bigot)
(a) 1 female MALTA : Ghadira 19.04.78
From Pied Flycatcher **Ficedula hypoleuca** (Leg. J.Sultana/C.Gauci).
(b) 1 female MALTA : Xemxija 28.09.78
From Robin **Eritachus rubecula** (Leg. J.Sultana).
A total of four flies were removed from the host.
(c) 1 female GOZO : Lunzjata Valley 02.11.78
From Robin **Erithacus rubecula** (Leg. J.Sultana/J.Grech)
A total of three flies were removed from the host.

Ornithomya biloba Dufour
1 female MALTA : Rabat 08.10.78
From Swallow **Hirundo rustica** (Leg. M.V.Gauci).

I am indebted to Mr. A.M. Hutson of the British Museum (Natural History) for determining the insects and to Messrs. J. Sultana, C.Gauci, M.V.Gauci and J.Grech for collecting the specimens and supplying the relevant data.

Stephen P. Schembri



Hippoboscid flies from the Maltese Islands. Left : Ornithomya bilopa Dufour. Right : Ornithophila metallica Schiner. Both females in dorsal view. Scale represents 2mm.

A REVIEW OF THE ROUGH-LEGGED BUZZARD'S RECORDS.

The aim of this short note is to review the records of the Rough-legged Buzzard **Buteo lagopus** in Malta in the light of new information. Hereunder we are listing the records chronologically as recorded by various authors adding, where necessary, our comments.

(a) One in 1843 (Gulia 1858-63).
(b) One taken at Zurrieq in 1859 (Gulia 1858-63).
(c) One taken at Birzebbuga on 21st September 1916 (Despott 1916).
Despott (1917) reported this bird as being taken in summer 1915.
Before the auction sale of the late T. Conti's collection we were fortunate to examine some of the meticulous notes written by T. Conti himself regarding some of the specimens in his collection. One such note stated that the **Buteo lagopus** reported by Despott as taken at Birzebbuga on 21st September 1916 was in fact a Booted Eagle **Hieraaetus pennatus** and was to be found in his collection.
(d) One taken at Bahar ic-Caghaq on 29th September 1966 (De Lucca 1967).
This specimen in fact is also another **Hieraaetus pennatus** (Sultana et al.1975).
(e) One taken at Buskett on 3rd October 1956 (De Lucca & De Lucca 1959).
This specimen, which is correctly identified as **Buteo lagopus**, is held at the National Museum of Natural History. Later this record was listed as occurring on 8th April 1956 (Vella-Gaffiero 1975). To add to the confusion Bannerman & Vella-Gaffiero (1976) stated "there has been a single definite occurrence in Malta during autumn, one male shot on 8th April 1956".
We have lately visited the Natural History Museum where Mr. J. Vella Gaffiero kindly showed us the documented record list of the collection, including the specimen of **Buteo lagopus** in question, which was donated by C. De Lucca to the Museum. The typwritten date against **Buteo lagopus** is 8th April 1956. If one examines the paper in the **Rivista Italiana di Ornitologia** by De Lucca & De Lucca (1959) where the record of the **Buteo lagopus** in question was first published, one notes that there is the same sentence for both **Buteo buteo buteo** and **Buteo lagopus lagopus** respectively, i.e. "Un giovane maschio fu ucciso vicino al Bosketto il 3 Ottobre 1956". Though one can never be certain, it appears probable that this could have been an overlooked misprint. On the other hand one can also argue that there could have been a typwritten mistake in the list which includes the April date. Furthermore it is also more likely for a **Buteo lagopus** to appear in autumn than in spring.

In view of the above, it is recommended that the records of the **Buteo lagopus** should read : one in 1843, one at Zurrieq in 1859 and one at Buskett in 1956, though Gulia's records may also be considered doubtful.

References

BANNERMAN,D.A. & VELLA-GAFFIERO,J.A. 1976. Birds of the Maltese Archipelago. Museums Dept. Valletta.
DE LUCCA,C. 1967. Appunti sull'ornitologia delle Isole Maltesi. **Riv.Ital. Orn.** (37)2:1-6.
DE LUCCA,C. & DE LUCCA,V. 1959. Note sull'ornitologia delle Isole Maltesi. **Riv. Ital. Orn.** (29)2:61-67.
DESPOTT,G. 1916. Ornithological Notes for the Maltese Islands (July to Dec. 1916). **Arch.Mel.** (2)21-24:251-256.
DESPOTT,G. 1917. Notes on the Ornithology of Malta. **Ibis** (10)5:281-349,466-526.
GULIA,GAV. 1858-63. Repertorio di Storia Naturale. Anglo-Maltese, Malta.
SULTANA,J., GAUCI,C., BEAMAN,M. 1975. A Guide to the Birds of Malta. Malta Ornith. Soc. Malta.
VELLA-GAFFIERO,J.A. 1975. Some birds accidental to Malta at the National Museum of Natural History, Mdina. **Natural Heritage** 1:1-19.

Joe Sultana & Charles Gauci

FURTHER BREEDING RECORDS OF THE SPOTTED FLYCATCHER.

The known breeding records of the Spotted Flycatcher **Muscicapa striata** from 1971 to 1976 have already been documented by the present writers (Il-Merill 10:10, 15:4, & 17:29-30).

Following are further breeding attempts, this time unsuccessful, by a female in 1977 and 1978 at Buskett using the same nest-site which was described in Il-Merill (17:29-30).

On 22nd May 1977 a bird was seen twice carrying nesting material to the nest site adding it to the same nest used in the previous year and on 26th May it was noted sitting on the nest. On 29th May this female was again noted sitting and when the nest was examined it was found to contain 4 eggs. The colour of the eggs was bluish green speckled and blotched with brick-red. On 5th June the female was still incubating. However, on the 11th June there was no sign of the bird and the 4 eggs were still unhatched. On visiting the nesting site on 25th June, the female was again noticed incubating, this time sitting on 6 eggs. These must have included some, if not all, eggs of the previous infertile clutch. On 2nd July the female was still incubating but the number of eggs had decreased to four, and, though egg-shells were found under the nest-site, the nest contained no young. On 3rd and 9th July the female was still incubating the unhatched eggs. There was no sign of any male at any time in the area when visited during the whole period.

In 1978 a bird, presumably the same female, was noted on 28th May sitting again on 4 eggs in a nest which was built over last year's nest in the same nest-site. On 2nd June the female was still incubating but there was no sign of a male in the area. On 7th June the female was seen again sitting on the eggs. However, this time, another Spotted Flycatcher was heard calling nearby. When the area was visited again on 9th and 10th June the female was seen sitting on the nest but on both occassions there was no sign of any other adult bird. On 14th June the female was still sitting on the unhatched eggs which once again were infertile. During this visit the other bird, presumably a male, was seen in the area. This time the female must have laid the clutch before the arrival of a male. However a family party of 4 birds was noted at Buskett on 23rd July and another party of at least 3 birds, one of which seemed to have just fledged, was seen close to the nesting area on 15th August.

In 'A Guide to the Birds of Malta' (1975) Sultana, Gauci , Beaman stated that a clutch of Spotted Flycatcher's eggs taken from Buskett previous to 1971 was found in a local collection. The exact year of this breeding record could not be obtained then. The date of this record, which under the circumstances it has to be stated that it was also an unsuccessful breeding attempt, was acquired before the auction sale of the late T. Conti's collection, when one of the authors, accompanied by V. Cilia, noted and examined the clutch of 4 eggs labelled Buskett 19th July 1963. Another nest with 4 eggs dated 27th April 1961 from Buskett was acquired by the Natural History Museum from T. Conti's collection (J. Vella Gaffiero pers.comm.).

Joe Sultana & Charles Gauci

.....

MOBBING BEHAVIOUR BY A FERAL ROCK PIGEON.

While going through Pieta on 8th December at ca. 08.00 hours, I saw two Black-headed Gulls **Larus ridibundus** flying close together in Pieta Creek. Suddenly a feral rock pigeon flew nearby and started to mob the two gulls. It dived repeatedly at the two Black-headed Gulls until these separated and flew in different directions. The pigeon then lost interest and flew away.

John Azzopardi

NOTEWORTHY OCCURRENCES.

1. Rose-breasted Grosbeak Pheucticus ludovicianus.

An immature **Pheucticus ludovicianus** was trapped by a finch trapper on 31st October 1979 at the limits of Delimara. At first glance the bird looks like a large olive-coloured female sparrow with Hawfinch-like beak. The specimen has a white supercilium which almost goes to the back of the head and a wide moustachial stripe which merges into a faint buffish collar. Lighter colour on the centre of the crown gives the impression of a brown streak above the supercilium. The brownish, olive-tinged back is heavily streaked. Dark brownish streaks are also present on its breast and flanks. The tail is also olive, tinged brown. The whitish tips of the median coverts and the greater coverts form two wing bars on the closed wing. It has bright yellow underwing and its wing length is 103 mm.

When the bird was trapped its plumage was perfect and showed no sign of captivity. The Rose-breasted Grosbeak breeds in North America and is a vagrant to Europe in autumn. This is the first published occurrence of this species in Malta

2. Falcated Duck Anas falcata.

A medium sized duck, approaching **Anas penelope**, with a very dark general appearance, was shot at Birzebbuga on 10th October 1979. On close examination, it turned out to be an immature male Falcated Duck **Anas falcata**.The specimen has a dark blackish-brown crown with pale sides to its head, copiously flecked with dark brown. Upperparts are blackish brown with mantle feathers edged yellowish buff. The underparts are buffish closely flecked with dark brown. A few moulted breast feathers are buffish white with two black crescents, one in the middle of the feather and the other at the tip. The under-tail coverts are lighter. The speculum is black with a green sheen and is bordered by greyish white. Its measurements in mm are wing - 252; tail - 60; and bill - 47.

The Falcated Duck is a rare straggler to Eastern Europe from its Asiatic breeding grounds. It is also known as an escape in Europe. To date this duck species had never been recorded in Malta.

The above two specimens are found in my collection.

Alfred Vassallo

.....

AN UNUSUAL NUMBER OF EGGS IN A SPECTACLED WARBLER'S NEST.

An abondoned nest of the Spectacled Warbler **Sylvia conspicillata** containing eight eggs was found at Bubaqra, Zurrieq, at the beginning of August 1979. The Spectacled Warbler usually lays from three to five eggs, normally four or five.

The nest looked normal in all other respects. The colour of the eggs was off-white speckled with greenish brown and varied in width from 11.7 to 13.2 mm and in length from 16.0 to 16.7 mm. The nest seemed to have been abondoned for about two months prior to its discovery.

There is the possibility of the female laying a second clutch after the first proved infertile. If this was the case it would also be most unusual as this species, like many other passerines, uses the nest once.

John Attard Montalto

A LIST OF NOTEWORTHY SPECIMENS ACQUIRED BY THE NATIONAL MUSEUM OF NATURAL HISTORY FROM THE COLLECTION OF MR. THEMISTOCLES CONTI.

Ruddy Shelduck **Tadorna ferruginea** : Female from Ramla Bay, Gozo on 28/12/1932.
Gadwall **Anas strepera** : Male from Marsaxlokk on 28/11/1942.
Tufted Duck **Aythya fuligula** : Female from Salina on 28/11/1928.
Little Bustard **Tetrax tetrax** : Male and female from Delimara on 16/11/1961.
Knot **Calidris canutus** : Male from Marsaxlokk on 25/5/1943.
Bar-tailed Godwit **Limosa lapponica**:Female from Salina on 19/9/1961.
Grey Phalarope **Phalaropus fulicarius** : One from Marsaxlokk on 25/12/1969. (This has already been reported by Sultana, Gauci, Beaman in 'A Guide to the Birds of Malta' 1975).
Pomarine Skua **Stercorarius pomarinus** : One from the S.E.Coast of Malta on 16/11/1937.
Long-tailed Skua **Stercorarius longicaudus** : Immature from off Filfla on 25/10/1967.
Audouin's Gull **Larus audouinii** : Male from Marsaxlokk on 14/2/1954.
Common Tern **Sterna hirundo** : Male from Marsaxlokk on 13/7/1967.
Little Tern **Sterna albifrons** : Male from Marsaxlokk on 22/5/1951.
Stock Dove **Columba oenas** : Female bought from Valletta Market on 8/11/1931.
Little Swift **Apus affinis** : One from Birzebbuga on 4/4/1971.
Savi's Warbler **Locustella luscinioides** : One from Hal Far on 20/9/1937.
Ruppell's Warbler **Sylvia rueppelli** : An immature male from Hal Far on 15/9/1915 and an adult male from Birzebbuga on 15/3/1965.
Desert Warbler **Sylvia nana** : One from Dingli on 16/3/1931 (ssp. **deserti**).
Red-backed Shrike **Lanius collurio** : Male from Marsaxlokk on 16/6/1961 and single females from Kalafrana on 23/6/1933 and 21/10/1937.
Lesser Grey Shrike **Lanius minor** : One from Gozo on 1/3/1956 and a female from Marsaxlokk on 15/2/1968.
Great Grey Shrike **Lanius excubitor** : Male from Birzebbuga on 6/11/1935.
Woodchat Shrike **Lanius senator** : Male and female belonging to the subspecies **badius** from Birzebbuga on 12th and 4th April 1975 respectively.
Rose-coloured Starling **Sturnus roseus** : Female from Hal Far on 9/7/1916, male from Imriehel on 23/10/31 and male from Santa Venera on 23/5/1946.

Joseph A. Vella-Gaffiero

.....

HOUSE MARTINS ON MIGRATION SHELTERING FROM THE RAIN.

While birdwatching at Xlendi Bay in Gozo on 1st April 1979 we witnessed an unusual behaviour. It was a cold day, the sky was heavily overcast and it was drizzling all the time. Then, under the cornice on the top floor of a two-storey house still under construction, we saw a flock of about 120 House Martins **Delichon urbica** clinging with their feet to the vertical wall, huddled together and sheltering from the rain. The birds were clinging to the western and southern sides of the building.

As far as is known, there has been no record of such behaviour in Malta where the House Martin is only a migrant.

John Azzopardi & Guido Bonett

UNPUBLISHED RECORDS OF RARITIES FROM THE LATE T. CONTI'S COLLECTION.

Mute Swan **Cygnus olor** : female on 18th January 1941, Marsascala Bay.
Red Kite **Milvus milvus** : one on 7th April 1943, Marsaxlokk.
Puffin **Fratercula arctica** : one on 6th January 1924, Delimara.
Alpine Accentor **Prunella collaris** : one on 16th April 1956, limits of Zurrieq.
Moussier's Redstart **Phoenicurus moussieri** : male on 3rd December 1933, limits of Kalafrana.
Great Tit **Parus major** : one in April 1919 (locality not recorded).

Joe Sultana & Charles Gauci

.....

WARDLAW RAMSAY'S RECORDS OF S. CANTILLANS FROM MALTA.

Wardlaw Ramsay (1923) stated that both the nominate **cantillans** as well as the race **albistriata** of the Subalpine Warbler **Sylvia cantillans** occur in Malta and mentioned that two specimens of **albistriata** were obtained "4/9/14" and two others belonging to the nominate race were obtained on "9/9/14". In all past literature previous to 1975 there has been no mention of other records of **albistriata** except those of Ramsay. Sultana et al. (1975) included Ramsay's records and added that "a few others" trapped for ringing in both spring and autumn since 1965 belonged to the race **albistriata**. Bannerman and Vella-Gaffiero (1976) who listed most species trinomially stated that the Subalpine Warbler was purposely named binomially in their work, obviously doubting Ramsay's records and the above statement. They wrote that both the eastern and the western subspecies "were said by Col. Wardlaw Ramsay in his Birds of Europe and North Africa,p.111 to be represented in the British Museum Collection, each by two specimens collected in the Maltese Islands". In view of this statement D.A. Bannerman asked Mr. Derek Goodwin of the British Museum staff "to examine the four specimens in the British national collection and report whether he agreed with Wardlaw Ramsay's determination". After receiving a reply from Mr. Goodwin, Bannerman and Vella-Gaffiero (1976) concluded that "It appears that of the Maltese specimens in the British Museum to which Col. Wardlaw draws our attention in his book, three were presented to the Museum by a Miss Wright (no indication of original collector and probably purchased from a trapper in the island)". Four dates of specimens are then given, different from those given by Ramsay (1923) and mentioning no races.

This confusion resulted from the erroneous assumption that the four specimens of **S. cantillans** mentioned by Ramsay (1923) were at the British Museum. Contrary to what Bannerman & Vella-Gaffiero (1976) stated, nowhere did Ramsay state this. It is a fact, however, that after inheriting the vast collection of birds formed by his uncle Arthur, Marquess of Tweedale, Col. R.G. Wardlaw Ramsay generously presented it to the British Museum. But he did this on condition that a set of duplicate specimens was to be sent to the Edinburgh Museum (see In Memoriam by W.E.C. in Ramsay 1923).

Ramsay's book, which was not ready when he died, was published posthumously and in the preface by WM. Eagle Clark we find that Surgeon-Rear-Admiral Stenhouse

helped in completing the work and that he worked on specimens in the Royal Scottish Museum. Dr. Stenhouse, who after his retirement, worked voluntarily for ten years at the Royal Scottish Museum, had a fine eye for the discrimination of racial forms (Ritchie 1931).

In view of the above the present writers wrote to Mr. I.H.J Lyster, Curator of Birds at the Royal Scottish Museum, who kindly informed us that the four specimens of Subalpine Warbler mentioned in Ramsay's book are held at the Museum and they form part of 'H.W.Fielden & Harvey Brown Collection'. The labels bear the initials HWF and thus the specimens were probably taken by Fielden in Malta. Mr. Lyster also informed us that there is an error in the dates (4/9/14 and 9/9/14) in Ramsay's book as the year of the Subalpine Warbler's records should be 1874 and not 1814 or 1914. This corresponds to the fact that H.W.Fielden was in Malta in 1874 and collected birds (Wright 1874).

We are indebted to Mr. I.H.J. Lyster and to Surgeon-Rear-Admiral Stenhouse's son, Mr. Bruce Stenhouse, who have forwarded to us the relevant information.

References

BANNERMAN,D.A. & VELLA-GAFFIERO,J.A. 1976. Birds of the Maltese Archipelago. Museums Dept. Valletta.

RITCHIE,J. 1931.Obituary. John Hutton Stenhouse. **Brit. Birds** (2)25:52-53.

SULTANA,J., GAUCI,C., BEAMAN,M. 1975. A Guide to the Birds of Malta. Malta Ornithological Society, Valletta.

WARDLAW RAMSAY,R.G. 1923. Guide to the Birds of Europe and North Africa. Gurney & Jackson, Edinburgh.

WRIGHT,C.A. 1874. Fifth appendix to the List of Birds observed in the Islands of Malta and Gozo. **Ibis** (3)4:223-241.

Joe Sultana & Charles Gauci

.....

ERRATA : Il-Merill No. 18 (1977) p.26 : Unusual Nests of the Spectacled Warbler **Sylvia conspicillata**. "an introduced tree **Agave americana**" should read " a tree **Rhamnus alaternus**".

.....

Report on Bird Ringing for 1977 and 1978

This report covers the two-year period 1977-78 during which a total of 24,941 birds was ringed.This represents an increase of 5,256 birds on the two previous corresponding years (1975-76). This increase is mostly due to a greater effort and efficiency on the part of some of the ringers who spent more hours in the field. By the end of 1978 the grand total stood at 89,186 of131 species.

The number of birds ringed in 1977 was 13,511 of 89 species, the highest for any one year since ringing started. In 1978 the total decreased by 2,081, to 11,430 birds of the same number of species. This decrease is reflected mainly in the totals of Chiffchaff and Sand Martin (2,689 and 1,112 in 1977 down to 893 and 538 in 1978 respectively), though twice as many Storm Petrels and nearly twice as many Swallows were ringed in 1978 than in 1977.

4 new species have been added to the ringing list during the two-year period: Olive-backed Pipit and Water Pipit in 1977 and Melodious Warbler and Yellow-breasted Bunting in 1978. The Olive-backed Pipit was also the first record for Malta (see Il-Merill 19:11). Owing to the recent adoption of Voous' order, the Eastern Collared Flycatcher also figures as a new species in 1977's list. Amongst the rare visitors ringed one notes the Orphean Warbler, the Rustic Bunting and the Rufous Bush Chat. The increase in number of Cetti's and Fan-tailed Warblers ringed reflects the successful colonization by these new breeding species. On the other hand the dearth of waders ringed is attributable to lack of suitable catching areas and to human interference, mainly shooters, in places such as Ghadira and Salina, the only two localities where waders could otherwise be ringed in any numbers.

The variation in numbers of spring and autumn migrants and winter visitors ringed from year to year is always expected due to their fluctuations in abundance. This is also evident in the two-year period under observation, for hirundines, Spotted, Pied and Collared Flycatchers, Wood Warbler, Dunnock, Serin and especially in the Chiffchaff which was very common in 1977. However, the general pattern of birds ringed is nearly the same as in previous years with the Robin and the

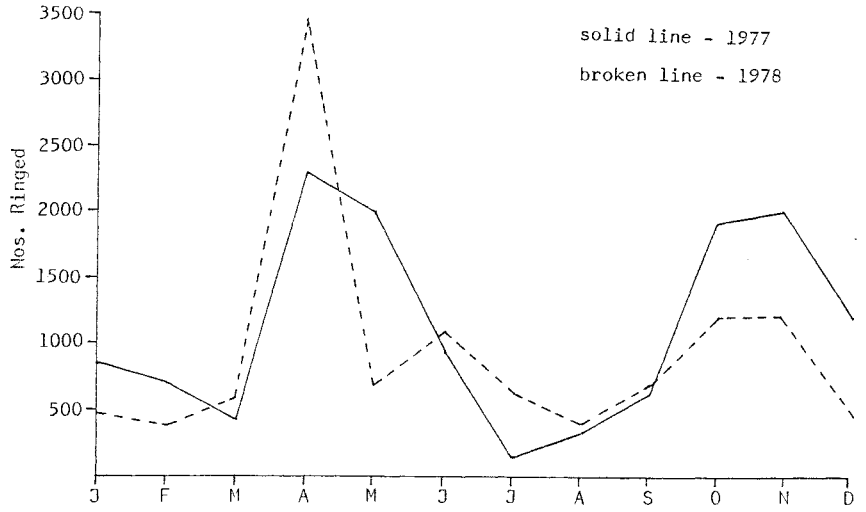


Fig.1 :The number of birds ringed for each month during 1977-78.

Chiffchaff dominating the figures from October to March; Blackcap from January to March; migrant species in April and May (topping the list - hirundines, Sedge, Wood and Willow Warblers), in August and September (mostly Subalpine, Garden and Reed Warblers) and in October (Swallows and winter visitors). Storm Petrels figure in June and July when Filfla islet is usually visited, while the two common resident species, the Sardinian Warbler and the Spanish Sparrow, figure prominently all year round but especially during the post-nuptial period. The pattern of the number of birds ringed for each month during the two-year period is shown in Fig. 1.

Topping the list of birds ringed in 1977 and 1978 we find the Chiffchaff (2,689) and the Swallow (1,727) respectively. However, at the end of 1978 we find the Robin heading the list of the grand total of birds ringed (1965-1978) with 11,715. Following is a table of the top 15 species ringed since 1965 with the annual totals for the 5 years 1974-78.

	1974	1975	1976	1977	1978	1965-1978
Robin	850	1,584	1,381	1,843	1,586	11,715
Chiffchaff	1,363	986	1,108	2,689	984	10,785
Storm Petrel	351	1,243	460	578	1,285	9,800
Swallow	1,003	383	840	901	1,727	8,669
Spanish Sparrow	384	690	820	812	694	6,021
Sand Martin	1,016	250	272	1,112	538	4,392
Sardinian Warbler	338	365	531	675	691	3,767
Garden Warbler	229	555	486	283	271	3,683
Blackcap	247	718	252	625	551	3,290
House Martin	498	391	359	406	272	3,066
Subalpine Warbler	247	298	346	218	238	2,177
Yellow Wagtail	203	317	111	157	257	1,641
Wood Warbler	60	166	348	305	145	1,536
Willow Warbler	126	141	139	174	248	1,343
Redstart	110	162	153	155	128	1,337

1977 and 1978 produced several annual record totals. Those for 1977 were Robin (1,843), Sand Martin (1,112), Sardinian Warbler (675), Pied Flycatcher (310), Sedge Warbler (244), Meadow Pipit (183), Spotted Flycatcher (151), Stonechat (119), Spectacled Warbler (118), Collared Flycatcher (51), Grey Wagtail (50), Serin (33), Whinchat (44) and Golden Oriole (17). The record annual totals for 1978 were Swallow (1727), Sardinian Warbler (691), Willow Warbler (248), Fan-tailed Warbler (188), Dunnock (132), Reed Warbler (104) and Cetti's Warbler (51). As in previous years, except for the Storm Petrel and Shearwaters, mostly small passerine species were ringed in any substantial numbers.

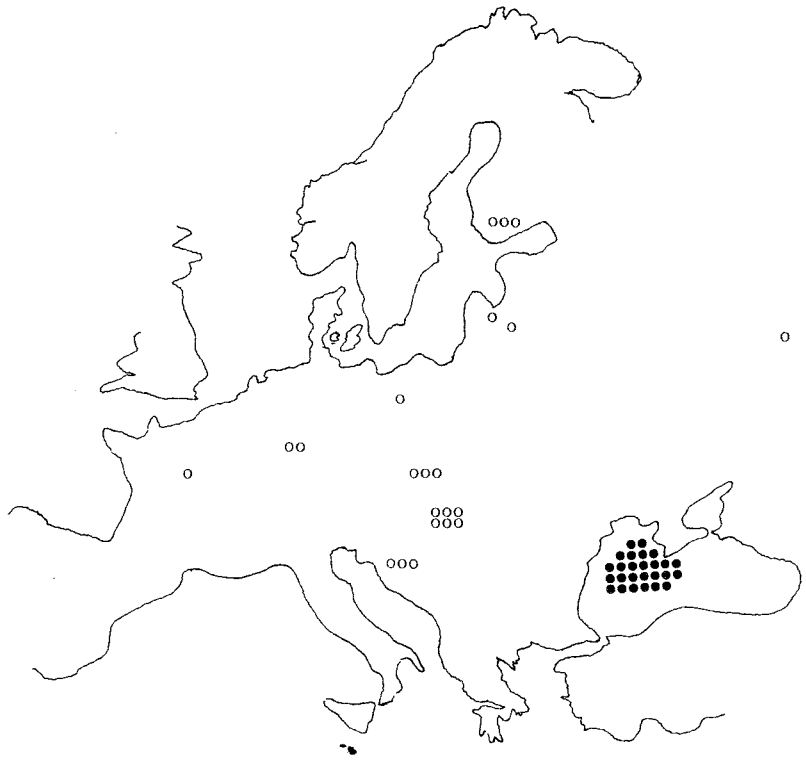
The main ringing sites used during the two-year period were Buskett/Wied il-Luq, Lunzjata Valley, Rabat, Ghadira, Salina/Kennedy Grove, Marsa, Girgenti, Xemxija and Sta. Marija Estate. Other sites used were Wied Znuber, Sta. Lucia, Ramla Valley, L-Ahrax, Chadwick Lakes, Ta' Qali, Tarġa Gap, Balluta, Munxar, Ghajn Barrani, Birzebbuġa, Hal Saflieni and Filfla.

This report comprises three main parts : a list of ringing and recovery totals to 31.12.78; a ringing-recoveries section which deals with 73 recoveries of 23 species occurring during 1977-78; and another section dealing with locally-recovered foreign ringed birds (46 recoveries of 28 species). As usual this last section includes birds which were recovered in earlier years but which came to

our notice during the current period.

The 73 recoveries of Malta-ringed birds listed are those which occurred at least 5 km away from the ringing site. 26 of these were recovered in foreign countries. Pride of place goes to 2 Manx Shearwaters ringed as pulli and recovered in the north east area of the Black Sea. The 2nd Spotted Flycatcher to be recovered overseas was controlled in Finland, while a Wheatear, the first to be recovered abroad, turned up in Gabes, Tunisia, 6 years after ringing. Hirundines provide many foreign recoveries and this two-year period was no exception with 7 Sand Martins, 2 Swallows and 4 House Martins involved. The Robin also figures prominently with singles in Czechoslovakia, Hungary and Italy, and 2 in Algeria. The list also includes the 2nd meadow Pipit in Italy, the 1st Chiffchaff in Czechoslovakia and another Blackcap in Italy. Of the local recoveries the most interesting are those provided by the Fan-tailed Warbler.

The 46 foreign ringed birds recovered in Malta hail from Spain (1), France (2), U.K. (3), Netherlands (3), W.Germany (2), Sweden (7), Finland (2), U.S.S.R. (8), Poland (7), C.S.S.R. (2), Austria (1), Hungary (3), Yugoslavia (2), Italy



All recoveries of Mediterranean Gull Larus melanocephalus (26 solid circles) and of Black-headed Gull Larus ridibundus (22 open circles) in Malta. All birds of both species have been ringed as nestlings or juveniles.

(2) and Algeria (1). An interesting recovery, which came to our notice lately, is of the only White Stork so far recovered in Malta. It was ringed in Poland in 1934 and found in Malta in 1951. Other species recovered for the first time are a Turnstone from Poland, single Chiffchaffs from Austria and Czechoslovakia respectively, and a Brambling from the Netherlands. The birds of prey which figure in the section are 2 more Ospreys from Sweden and another from Finland, a Marsh Harrier from Lithuania and a Kestrel from Hungary. Amongst the few waders there is a Sanderling which was ringed in Wales and recovered 6 years later. The 4th Great Skua from Scotland was ringed 9 years earlier on the Shetlands. Amongst other sea birds we find the 25th Mediterranean Gull, the 2nd Slender-billed Gull and the 4th Sandwich tern, all of which hail from the Black Sea. Other birds bearing Moskwa rings are a little Egret, a Black-headed Gull, a Great Reed Warbler and a Pied Flycatcher. The Little Egret and the Great Reed Warbler are the first while the Black-headed Gull and the Pied Flycatcher are the second from the U.S.S.R. The first Squacco Heron from Spain was the second bird to hail from that country. Other interesting recoveries are the 2nd Purple Heron from France, the first Short-eared Owl from Sweden and the first Great Reed Warbler from Poland. Three more Swedish Caspian Terns have been recovered, two of which were ringed 9 and 11 years earlier respectively. Hirundines (2 Sand Martins, 4 Swallows and 1 House Martin) and finches (2 Siskins, 3 Serins and 3 Linnets) also figure in this section. Of the latter group the 2 Siskins, the first from the Netherlands, are the most interesting.

The 1977 ringing programme started with 13 licensed ringers-J Azzopardi, R. Cachia Zammit, V. Cilia, C. Gauci, M.V. Gauci, T. Gauci, B.K. German, J. Grech, M. Grima, R.M. Holman, E. Mackrill, V. Sammut and J. Sultana. During the year the number was augmented by 4 British ringers who visited Malta for a short period - H.E. Axell, V.Cozens, J.A. Hardman and C.A. Pomeroy. At the end of the year E. Mackrill left the islands; however, the number of ringers increased to 15 as three new ringers qualified for a ringing permit - J. Attard Montalto, E. Curmi and R. Testa. The number of ringers remained the same during 1978.

In October 1977 the Ornithological Society was represented at the 5th Euring Conference which was held in Gdansk, Poland.During the conference the Ornithological Society Ringing Scheme was unanimously accepted as a full member of Euring, The European Union for Bird Ringing.

During the two-year period the Ornithological Society continued to expand its scheme by ordering and using more Malta-addressed rings in addition to the BTO rings used. We wish to thank the Ringing and Migration Section of the BTO, in the person of Mr. Robert Spencer, for the help which our scheme has received.

C. Gauci was again responsible for recording and filing all the ringing and recovery data. With this report we prepared a map (Fig.2) showing all recoveries of Mediterranean and Black-headed Gulls in Malta.

JOE SULTANA & CHARLES GAUCI

RINGING AND RECOVERY TOTALS TO 31.12.78

Species	Ringed in 1977	Ringed in 1978	Grand Total ringed 1965-1978	Grand Total recovered 1965-1978
Calonectris diomedea	50	52	640	12
Puffinus puffinus	35	50	266	3
Hydrobates pelagicus	578	1,285	9,800	20
Ixobrychus minutus	3	1	19	1
Falco tinnunculus	1	-	8	1
Falco subbuteo	-	1	1	-
Coturnix coturnix	-	-	3	-
Rallus aquaticus	-	2	17	-
Porzana porzana	1	-	7	1
Porzana parva	1	1	6	-
Gallinula chloropus	8	2	31	2
Charadrius dubius	1	-	28	1
Charadrius hiaticula	-	-	4	-
Vanellus vanellus	-	-	1	-
Calidris minuta	10	4	147	3
Calidris temminckii	1	-	9	-
Calidris ferruginea	-	-	16	2
Calidris alpina	-	-	7	-
Philomacus pugnax	-	-	13	1
Lymnocryptes minimus	2	2	5	1
Gallinago gallinago	1	5	12	1
Gallinago media	-	1	2	1
Tringa ochropus	2	5	16	3
Tringa glareola	5	1	49	8
Actitis hypoleucos	11	4	33	-
Larus melanocephalus	-	-	1	-
Larus ridibundus	-	-	1	1
Larus argentatus	-	1	14	1
Streptopelia turtur	2	1	23	4
Cuculus canorus	2	4	14	-
Otus scops	6	3	79	4
Caprimulgus europaeus	-	-	11	1
Apus apus	-	-	2	-
Alcedo atthis	3	4	37	5
Upupa epops	-	1	7	-
Jynx torquilla	17	14	183	1
Calandrella cinerea	1	5	92	1
Lullula arborea	-	-	2	-
Alauda arvensis	6	-	26	4
Riparia riparia	1,112	538	4,392	24
Hirundo rustica	901	1,727	8,669	60
Hirundo daurica	3	3	25	1
Delichon urbica	406	272	3,066	11
Anthus novaeseelandiae	-	-	1	-
Anthus campestris	-	2	7	-
Anthus hodgsoni	1	-	1	-
Anthus trivialis	97	41	635	1
Anthus pratensis	183	27	457	6
Anthus cervinus	11	1	16	-
Anthus spinoletta	5	-	5	-
Motacilla flava	157	257	1,641	19
Motacilla cinerea	50	25	380	5
Motacilla alba	43	37	261	5
Troglodytes troglodytes	-	-	15	-
Prunella modularis	69	132	573	3

Cercotrichas galactotes	-	1	3	-
Eritachus rubecula	1,843	1,581	11,715	133
Luscinia luscinia	-	-	2	-
Luscinia megarhynchos	79	71	839	1
Luscinia svecica	2	2	33	-
Phoenicurus ochruros	13	8	45	1
Phoenicurus phoenicurus	155	128	1,337	2
Saxicola rubetra	44	26	243	-
Saxicola torquata	119	68	570	2
Oenanthe isabellina	-	-	1	-
Oenanthe oenanthe	12	10	91	1
Oenanthe hispanica	-	-	2	-
Monticola saxatilis	-	-	3	-
Monticola solitarius	6	2	42	3
Turdus torquatus	-	-	3	-
Turdus merula	16	9	124	12
Turdus pilaris	-	-	1	-
Turdus philomelos	63	43	431	26
Turdus iliacus	2	3	24	-
Cettia cetti	43	51	252	8
Cisticola juncidis	159	188	440	17
Locustella naevia	-	-	2	-
Locustella fluviatilis	-	-	1	-
Locustella luscinioides	2	5	23	-
Acrocephalus melanopogon	8	4	45	1
Acrocephalus schoenobaenus	244	200	948	1
Acrocephalus palustris	-	-	3	-
Acrocephalus scirpaceus	94	104	657	-
Acrocephalus arundinaceus	80	75	637	2
Hippolais pallida	-	-	2	-
Hippolais icterina	43	50	476	-
Hippolais polyglotta	-	1	1	-
Sylvia undata	7	1	32	-
Sylvia conspicillata	118	100	572	1
Sylvia cantillans	218	238	2,177	-
Sylvia melanocephala	675	691	3,767	15
Sylvia ruepelli	-	-	2	-
Sylvia hortensis	-	1	4	-
Sylvia nisoria	-	-	1	-
Sylvia curruca	3	2	21	-
Sylvia communis	96	62	992	-
Sylvia borin	283	271	3,683	5
Sylvia atricapilla	625	551	3,290	9
Phylloscopus bonelli	3	4	62	-
Phylloscopus sibilatrix	305	145	1,536	-
Phylloscopus collybita	2,689	984	10,785	29
Phylloscopus trochilus	174	248	1,343	1
Regulus regulus	1	1	49	-
Regulus ignicapillus	13	14	145	1
Muscicapa striata	151	74	620	3
Ficedula parva	9	4	33	-
Ficedula semitorquata	2	-	2	-
Ficedula albicollis	51	5	151	-
Ficedula hypoleuca	310	97	1,023	2
Remiz pendulinus	-	-	2	1
Oriolus oriolus	17	7	77	5
Lanius collurio	7	5	56	-
Lanius senator	8	15	95	-
Sturnus vulgaris	7	3	56	6
Passer hispaniolensis	812	694	6,021	83

Passer montanus	18	7	96	1
P. montanus x hispaniolensis	-	-	1	1
Fringilla coelebs	26	17	272	5
Fringilla montifringilla	-	-	3	-
Sernius serinus	33	2	147	4
Carduelis chloris	3	-	255	18
Carduelis carduelis	5	-	11	1
Carduelis spinus	-	2	5	-
Carduelis cannabina	14	4	869	53
Carpodacus erythrinus	-	-	1	-
Calcarius lapponicus	-	-	1	-
Emberiza citrinella	-	-	1	-
Emberiza hortulana	-	-	2	-
Emberiza rustica	1	-	4	1
Emberiza aureola	-	1	1	-
Emberiza schoeniclus	6	4	35	-
Miliaria calandra	9	35	113	2
Totals	13,511	11,430	89,178	675

RINGING RECOVERIES

This section deals with 73 recoveries of 23 species during 1977-78. Only those recovered at least 5 km away from the ringing site are included. For local recoveries the approximate distance covered and direction are given.

Key to symbols and terms used in the recovery list

Arrangement of entry : recoveries are arranged by species, and within the species usually by date of recovery. Ringing details are given on the firstline and recovery data on the second.

Ring number : where this is followed by an asterisk (*) the ring has been returned.

Age code : 1 = pullus; young bird ringed in the nest.
1J = fledged; but flying so weakly that it is obviously incapable of having travelled far from the nest.
2 = fully grown; year of hatching quite unknown.
3 = definitely hatched during current calendar year.
3J = definitely hatched during current calendar year and still partly or completely in juvenile body plumage.
4 = hatched before current calendar year; exact year unknown.
5 = definitely hatched during last calendar year.
6 = hatched before last calendar year; exact year unknown.
(a number in brackets beside the age code 1 indicates the size of the brood).

Sex : M = male.
F = female.

Manner of recovery : v = caught or trapped, and released with ring.
+ = shot or killed by man.
x = found dead or dying.
( ) = caught or trapped alive and not released, or released but with ring removed.
/?/ = manner of recovery unknown.

Date of recovery : where this is unknown the date of the reporting letter is given instead and is and is shown in brackets. An 00 in the date indicates that the exact day or month are unknown.

Co-ordinates of ringing sites omitted from text :

Wied il-Luq/Buskett : 35.51 N,14.26 E
Xemxija : 35.57 N,14.23 E
Lunzjata Valley (Gozo) : 36.03 N,14.14 E
Marsa : 35.53 N,14.30 E
Wied Znuber/Hal Far : 35.49 N,14.31 E
Ramla Valley (Gozo) : 36.03 N,14.17 E

Cory's Shearwater Calonectris diomedea

FV05.207	4	26.06.76	Filfla.
	x	13.06.77	Attard (13 km N).

Manx Shearwater Puffinus puffinus

ED96.747*	1	24.06.72	L-Ahrax Pt.,Mellieha : 35.59 N,14.21 E.
	x	00.08.75	nr.Sochi,Black Sea : 43.34 N,39.44 E (Krasnodar) U.S.S.R.
ED46.085	1	07.07.77	L-Ahrax Pt.
	x	30.06.78	nr.Alushta : 44.42 N,34.24 E Black Sea (Crimea) UKRAINE S.S.R.

Wood Sandpiper Tringa glareola

BV52.104	4	24.04.77	Marsa.
	+	24.04.77	L-Iklin (5 km WNW).

Scops Owl Otus scops

ED46.086*	4	02.11.77	Lunzjata Valley.
	/?/	(05.10.78)	Mosta (17 km SE).

Kingfisher Alcedo atthis

SA44.708	3M	06.09.78	Wied-il-Luq, Buskett.
	v	17.09.78	Marsa (8 km ENE).

Sand Martin Riparia riparia

JK32.962*	4	12.05.73	Ramla Valley.
	x	20.05.76	nr.Gatchina : 59.33 N,30.07 E (Leningrad) U.S.S.R.
JV15.480	4	21.04.74	Lunzjata Valley.
	v=F	15.05.77	Dėlegyhåza : 47.15 N,19.05 E (Pest) HUNGARY.
KH83.052*	4	23.04.77	Marsa.
	/?/	31.05.77	Beleno : 43.39 N,25.07 E (Pleven) BULGARIA.
KP62.272	4	13.05.77	Targa Gap : 35.55 N,14.25 E.
	v	17.08.77	Siemionki, Wlostowa : 52.35 N,18.20 E (Bydgoszez) POLAND.
(Gdańsk MA46.094 added)			
KP65.336*	4	09.04.78	Lunzjata Valley.
	xA	mid.05.78	Massa Lombarda : 44.27 N,11.49 E (Ravenna) ITALY.
AO33.367	4	30.04.78	Lunzjata Valley.
	v	20.05.78	Gzira (37 km SE).
KH82.675	4	30.04.77	Ramla Valley.
	v	16.07.78	Upplanda, Vetlanda : 57.25 N,15.)7 E (Jønkøping) SWEDEN.
KC31.855	4	02.04.77	Marsa.
	v	24.07.78	Tahitótfalu : 47.45 N,19.05 E (Budapest) HUNGARY.

Swallow Hirundo rustica

KH82.074	4	10.04.77	Marsa
	+	29.04.77	Zurrieq (6 km SSW).
KP63.976	4F	02.04.78	Lunzjata Valley
	v	08.04.78	Ripatransone : 43.00 N,13.46 E (Ascoli Piceno) ITALY.
	v	15.08.78	Ripatransone.
KP65.488*	4F	12.04.78	Lunzjata Valley.
	x	16.04.78	Attard (24 km SE).
KP65.637	4M	15.04.78	Lunzjata Valley.
	v	19.04.78	Gudja (30 km SE).
KP65.553	4F	15.04.78	Lunzjata Valley.
	()	23.04.78	Ghaxaq (31 km SE).
KP65.102*	4M	06.04.78	Lunzjata Valley.
	()=B	00.07.78	nr.Bytów : 54.10 N,17.29 E (Koszalin) POLAND.

House Martin Delichon urbica

KH82.822*	4	09.05.77	Ramla Valley.
	()	15.07.77	nr.Volokolamsk : 56.00 N,35.56 E (Moscow) U.S.S.R
KH84.343	4	10.05.77	Lunzjata Valley.
	/?/	(05.04.78)	Orosháza : 46.33 N,20.40 E (Békés) HUNGARY.
KP65.335*	4	09.04.78	Lunzjata Valley.
	x	15.06.78	Aprilia :41.36 N, 12.39 E (Litina) ITALY.
KC30.751*	4	18.05.76	Lunzjata Valley.
	x	20.07.78	nr.Kropki ; 54.20 N,29.16 E (Minsk) BELORUSSIYA S.S.R.

Meadow Pipit Anthus pratensis

KH80.869*	4	26.02.77	Lunzjata Valley.
	+	01.11.78	Torre del Greco : 40.47 N,14.22 E (Napoli) ITALY.

Robin Eritachus rubecula

01.280	3	23.10.76	Buskett
	v	24.10.76	Xemxija (9km NNW).
KB85.679	3	24.10.75	Rabat.
	+	00.12.76	Cospicua (11 km E).
KC27.150	3	12.10.76	Girgenti Valley.
	v	02.01.77	Bidnija (8 km N).
KH8C.195	4	11.10.76	Xemxija.
	v	20.03.77	Lesnice, Sumperk : 49.53 N,16.57 E (Olomouc) C.S.S.R.
(re-ringed Praha M735.585)			
00.750	2	16.10.77	Salina.
	v=3	21.10.77	Rabat (7 km SSW).
KP62.878	2	19.10.77	Wied Znuber, Hal Far.
	()	22.10.77	Naxxar (19 km NW).
KB85.891	2	26.10.75	Wied Znuber, Hal Far.
	+	early 11.77	Bou-Ismail, Blida : 36.38 N,02.41 E (Alger) ALGERIA.

03.489	4	29.10.77	Xemxija.
	v	13.11.77	Buskett (9 km SSE).
KB84.544	3	09.10.75	Xemxija.
	v	04.11.77	Buskett (9 km SSE).
KC31.927*	3	10.10.76	Buskett.
	x	(23.02.78)	Ain Tahamimime, Medjez-sfa, Bône : 36.24 N,07.48E (Constantine) ALGERIA.
KC31.918*	2	10.10.76	Buskett.
	x	20.07.78	Somosköujfalu : 48.10 N,19.50 E (Nógrád) HUNGARY.
JX60.317*	4	01.11.74	Lunzjata Valley.
	+	25.10.78	Ventoso-Borgo Maggiore : 43.56 N,12.25 E (San Marino) ITALY.
AO33.880	3	18.10.78	Girgenti Valley.
	( )	06.11.78	Zurrieq (6 km SE).

Wheatear Oenanthe oenanthe

JH84.697	4M	08.04.72	Hal Far.
	( )	26.03.78	Matmatah : 33.35 N,10.00 mE (Gabès) TUNISIA.

Song Thrush Turdus philomelos

CH89.936	3	10.10.76	Wied Znuber, Hal Far.
	v	17.10.76	Salina (15 km NNW).

Cetti's Warbler Cettia cetti

KC26.996	3M	10.09.76	Girgenti Valley.
	v	30.10.76	Ghajn Barrani, Gozo (25 km NW).
	v	05.09.77	Ghajn Barrani.

Fan-tailed Warbler Cisticola juncidis

1A8.164	1(6/6)	17.06.77	Targa Gap.
	v	25.08.77	Marsa (10 km SE).
	v	10.09.77	Marsa.
952.962	3	25.08.77	Marsa.
	v	06.09.77	Targa Gap (10 km NW).
AO.017	1(4/4)	24.07.77	Targa Gap.
	v	13.09.77	Ghadira (8 km NW).
014.999	3	01.05.77	Ghadira.
	v	08.10.77	Marsa (17 km SE).
1A8.188	1(5/5)	25.06.77	Wied il-Luq, Buskett.
	+	02.11.77	Il-Qaws (5 km W).
AO.001	1(2/2)	11.07.77	Salina.
	vB=M	15.04.78	Ghadira (6 km NW).
	v	14.09.78	Ghadira.
1A8.194	1(4/4)	26.06.77	Chadwick Lakes.
	v=F	16.07.78	Wied il-Luq, Buskett (5 km S).
	v	23.07.78	Wied il-Luq.
AO.033	3F	19.09.77	Ghadira.
	vB	23.07.78	Girgenti Valley (25 km SE).
1A8.200	3	21.07.77	Targa Gap.
	v=M	25.07.78	Ghadira (8 km NW).
	v	21.08.78	Ghadira.

A1.863	3	12.07.78	Targa Gap.
	v	08.08.78	Ghadira (8 km NW).
952.121	2	04.08.76	Targa Gap.
	v=F	21.08.78	Ghadira (8 km NW).

Moustached Warbler Acrocephalus melanopogon

03.639	2	04.11.77	Ghadira.
	v	09.11.77	Lunzjata Valley, Gozo (12 km WNW).
	v	20.11.77	Lunzjata Valley.

Sardinian Warbler Sylvia melanocephala

KH82.921	3M	03.09.77	Ramla Valley.
	v	05.12.77	L-Ahrax (10 km SE).
	v	28.01.78	L-Ahrax.
00.800	2	25.06.78	Salina.
	v=3M	02.09.78	Buskett.

Blackcap Sylvia atricapilla

00.323	2F	26.12.76	Sta.Lucia.
	v	27.02.77	Buskett (10 km W).
KH80.340*	4M	29.01.77	Buskett.
	x	ca.23.10.77	Cetraro : 39.31 N,15.56 E (Cosenza) ITALY.

Chiffchaff Phylloscopus collybita

962.734	2	01.11.76	Lunzjata Valley.
	v	02.11.76	Sta.Lucia (30 km SE).
866.786	2	03.12.76	Xemxija.
	v	14.01.77	Rabat (8 km S).
014.175	4	08.02.77	Salina.
	v	20.02.77	L-Ahrax (6 km NW).
826.414	2	13.11.74	Lunzjata Valley.
	v	06.03.77	L-Ahrax (8 km SE).
962.271*	2	16.11.76	Lunzjata Valley.
	v	17.04.77	Praha-Bránik : 50.02 N,14.25 E (Praha) C.S.S.R.
	re-ringed Praha S77.186		
962.785	2	27.11.76	Lunzjata Valley.
	v	04.12.77	Marsa (29 km SE).
1A8.286	2	04.12.77	Salina.
	v	10.12.77	Marsa (9 km SE).
962.951	4	06.01.77	Lunzjata Valley.
	+	08.01.78	Rabat (23 km SE).
AO.086	2	05.11.77	Lunzjata Valley.
	v	11.02.78	nr.Paola (30 km SE).
AO.666	2	13.12.77	Marsa.
	v	24.02.78	Salina (9 km NW).

Spotted Flycatcher Muscicapa striata

KC29.605	4	16.05.76	Xemxija.
	v	13.08.77	Lågskär, Lemland : 59.50 N,19.56 E (Åland) FINLAND.

Golden Oriole Oriolus oriolus

XA99.129	6M	16.04.77	Xemxija.
	x	(31.05.77)	Mgarr, Gozo (12 km NW).

Starling Sturnus vulgaris

XA99.231	3F	12.11.76	Rabat.
	( )	(28.02.77)	St.Paul's Bay (7 km N).
XA99.076	4F	28.10.77	Luqa.
	+	04.12.77	Rabat (7 km WNW).

Spanish Sparrow Passer hispaniolensis

BJ55.621	2M	10.02.74	Salina.
	x	24.02.77	Ghadira Bay (5 km WNW).

Goldfinch Carduelis carduelis

KH80.090	2M	08.12.76	Rabat.
	( )	end 02.77	Marsaxlokk (13 km SE).

FOREIGN RINGED BIRDS RECOVERED IN MALTA

This section deals with 46 foreign ringed birds of 28 species recovered in Malta. Some of these were recovered previous to the two-year period (1977-78) covered by this report, but they only came to our notice lately. The symbols and terms are the same as those used in the Ringing Recoveries.

Squacco Heron Ardeola ralloides

Seville	1	17.06.69	Coto Donana : 37.02 N,06.37 W (Huelva) SPAIN.
D8.148	+	25.06.72	Malta.

Little Egret Egretta garzetta

Moskwa	1	23.06.75	Crimea Region : 45.52 N,33.29 E Karkinitskii,
D-810.970			Black Sea, U.S.S.R.
	+	17.05.77	Marsaxlokk : 35.50 N,14.33 E.

Purple Heron Ardea purpurea

Paris	1	28.05.71	Tour du Valat : 43.30 N,04,40 E (Bouches-du-Rhône)
CJ8.524			FRANCE.
	+	09.04.77	Benghisa : 35.49 N,14.31 E.

White Stork Ciconia ciconia

Varsavia	3	27.07.34	Bielewo : 51.57 N,16.56 E (Woj.Poznan) POLAND.
B2.484	/?/	19.10.51	Malta.

Marsh Harrier Circus aeruginosus

Lituania	1	03.07.78	Žuvintas : 54.28 N,23.38 E LITHUANIA.
145.007	+	20.09.78	Delimara : 35.39 N,14.33 E.

Osprey Pandion haliaetus

Stockholm	1	30.06.62	Skokloster : 59.42 N,17.37 E (Uppland) SWEDEN.
9.202.414	+	28.09.62	Bidnija : 35.54 N,14.25 E.
Helsinki	1	05.07.78	Hollola, Hämeen, FINLAND
M-5323	+	15.09.78	Salib tal-Gholja : 35.51 N, 14.26 E.
Stockholm	1	02.07.78	Lake Hurven : 57.08 N, 13.08 E Smålands Burseryd,
9.219.293			(Småland) SWEDEN.
	+	30.09.78	Salib tal-Gholja 35.51 N,14.26 E.

Kestrel Falco tinnunculus

Budapest	1	01.06.72	Palmonostora : 46.38 N,19.56 E HUNGARY.
167.505	+	25.10.73	Malta.

Sanderling Calidris alba

London	4	24.05.71	Point of Air, Prestatyn : 53.21 N,03.19 W
BB74.442			(Flintshire) WALES.
	x	ca.15.05.77	nr.Nadur (Gozo) : 36.02 N,14.18 E.

Wood Sandpiper Tringa glareola

Stockholm	4	30.07.76	Kvismaren : 59.11 N,15.24 E Norrbyås (Närke)
4.121.396			SWEDEN.
	+	19.04.77	Wied Ghajn Rihana : 35.55 N,14.25 E.

Turnstone Arenaria interpres

Gdansk	3	02.09.78	Ujście Wisły : 54.21 N,18.57 E Mikoszewo
HC30.214			(Elblag) POLAND.
	+	(09.10.78)	Benghisa Pt. : 35.49 N,14.32 E.

Great Skua Stercorarius skua

London	1	08.07.69	Foula : 60.08 N,02.05 W (Shetland) SCOTLAND.
HW19.169	x=F	23.02.78	14 km east of Malta : ca.35.55 N,14.45 E.

Mediterranean Gull Larus melanocephalus

Moskwa	1	24.06.76	Chernomorsk Reserve : 46.15 N,32.00 E
M-272.094			Tendra Bay, Smalenyi Island, Black Sea, U.S.S.R.
	+	00.01.77	Marsaxlokk : 35.50 N,14.33 E.

Black-headed Gull Larus ridibundus

Moskwa	1	19.05.76	Ryazan' Region : 54.33 N,40.44 E nr. Izhevskoe,
M-110.518			U.S.S.R.
	+	00.12.76	Marsa : 35.53 N,14.30 E.

Slender-billed Gull Larus genei

Moskwa	1	10.06.75	Kherson Region : 46.17 N,31.45 E Chernomorsk
E-995.302			Reserve, Orlov Island, Tendra Bay, Black Sea,
			U.S.S.R.
	x	23.09.75	nr. Filfla : 35.48 N,14.25 E.

Caspian Tern Sterna caspia

Stockholm 7.016.938	1	23.06.65	Älgsbådarna : 57.41 N,16.48 E Vestrum (Småland) SWEDEN
	+	02.09.76	Zongor Pt. : 35.53 N,14.34 E.
Stockholm 7.041.418	1	15.07.67	Gunnarstenarna : 58.47 N,18.02 E SE Nynäshamn (Södermanland) SWEDEN.
	v	12.06.76	Älgsbådarna : 57.41 N,16.48 E (Småland) SWEDEN.
	+	06.11.76	nr. Tarxien : 35.52 N,14.32 E.
Stockholm 7.062.390	1	05.06.78	Stenarna : 60.38 N,17.56 E Hållnäs (Uppland) SWEDEN.
	+	13.09.78	off Delimara : 35.49 N,14.34 E.

Sandwich Tern **Sterna** sandvincensis

Moskwa P-548.168	1	24.06.76	Chernomorsk reserve : 46.15 N,32.00 E Tendra Bay, Black Sea, U.S.S.R.
	+	19.09.76	Marsascala : 35.52 N,14.34 E.

Short-eared Owl Asio flammeus

Stockholm 8.033.605	1	11.07.77	Buddbyn : 65.52 N,21.41 E Boden (Norbotten) SWEDEN.
	+	28.10.77	Birkirkara : 35.53 N,14.29 E.

Sand Martin Riparia riparia

London KJ75.283	4	15.08.76	Frodsham : 53.18 N,02.46 W (Cheshire) ENGLAND.
	v	02.04.77	Lunzjata Valley:36.03 N,14.14 E.
Gdansk NA44.707	4	03.08.76	Siemionki : 52.35 N, 18.20 E Wlostowo (Bydgoszez) POLAND.
	v	21.04.77	Lunzjata Valley : 36.03 N,14.14 E.
Gdansk KB04.855	3	05.08.76	Lake Druzno, Stankowo : 54.02 N,19.28 E (Elblag) POLAND.
	v	10.05.77	Targa Gap, Mosta : 35.55 N,14.25 E.
Helsinki Y-36.262	4F	12.06.77	Janakkala, Hämeen : 60,53 N,24.39 E (Lääni) FINLAND.
	v	15.04.78	Lunzjata Valley : 36.03 N,14.14 E.
Bruxelles 561.685	3	12.10.77	Reghaia : 36.44 N,03.21 E (Alger) ALGERIA.
	v	29.04.78	Lunzjata Valley 36.03 N,14.14 E.

Swallow Hirundo rustica

Paris 2.455.350	4F	31.08.76	Mothern : 48.56 N,08.09 E Bas-Rhin FRANCE.
	x	09.04.77	Hal Far : 35.49 N,14.31 E.
Helgoland 9R77.232	3	25.08.74	Neuhof : 51.35 N,10.34 E Kr.Osterode/Bez. Hildesheim, Neidersachsen, W. GERMANY.
	v=4F	11.04.77	Ramla Valley (Gozo) : 36.04 N,14.17 E.
	v	15.04.77	Lunzjata Valley (Gozo) : 36.03 N,14.14 E.

Helgoland 9R65.944	4F	06.09.76	Gundernhausen/0.5 km W Bez. Darmstadt : 49.52 N,08.47 E (Hessen) W. GERMANY.
	v	06.04.78	Lunzjata Valley : 36.03 N,14.14 E.
Gdansk KA26.140	3	15.08.77	Siemionki : 52.35 N,18.20 E Wlostowo (Bydgoszez) POLAND.
	v	02.05.78	Gudja : 35.51 N,14.31 E.

House Martin Delichon urbica

Varsovia HA332.582	1	12.07.76	Brynek : 50.31 N,18.44 E Tworog, (Katowice) POLAND.
	v	08.05.77	Salina : 35.57 N,14.25 E.

Yellow Wagtail Motacilla flava

Bologna L610.794	4	14.04.76	Contrada Castellano : 43.16 N,13.45 E Porto S. Elpidio (Ascoli PicenO) ITALY.
	+	05.04.77	Marsaxlokk : 35.51 N,14.33 E.

Great Reed Warbler Acrocephalus arundinaceus

Gdansk JA24.415	3	04.09.76	Ujscie Wisly : 54.21 N,18.57 E Mikoszewo, (Elblag) POLAND.
	+	18.10.76	Chadwick Lakes : 35.54 N,14.23 E.
Moskwa XA020.741	4	29.07.77	Engure Lake : 57.17 N,23.07 E LATVIAN S.S.R.
	v	14.04.78	Lunzjata Valley : 36.03 N,14.14 E.

Chiffchaff Phylloscopus collybita

Praha S79.078	4	17.06.76	Úvaly : 50.05 N,14.43 E (Praha) C.S.S.R.
	v	10.01.77	Marsa : 35.53 N,14.30 E.
Radolfzell BP36.701	4	27.09.77	Ebenthal :46.36 N,14.22 E Bez. Klagenfurt, Kärnten, AUSTRIA.
	v	24.03.78	Mellieha : 35.58 N,14.22 E.

Pied Flycatcher Ficedula hypoleuca

Moskwa XA429.387	4M	16.06.76	Voronezh Reserve : 51.55 N,52.00 E 40 km NNW Voronezh, U.S.S.R.
	v	19.04.77	Luqa : 35.52 N,14.29 E.
Re-ringed London KH83.501			

Brambling Fringilla montifringilla

Arnhem B-386.742	3F	23.11.77	Castricum : 52.33 N,04.37 E NETHERLANDS.
	( )	00.02.78	Ta' Cenc (Gozo) :36.01 N,14.14 E.

Siskin Carduelis spinus

Arnhem A-213.891	3M	08.10.77	Wassenaars Slag : 52.10 N,04.21 E NETHERLANDS.
	( )	00.01.78	Ta' Cenc (Gozo) : 36.01 N,14.14 E.

Arnhem	3M	11.12.77	Haarlem : 52.23 N,04.38 E NETHERLANDS.
A-141.130	( )	00.02.78	Ta' Cenc (Gozo) : 36.01 N,14.14 E.

Serin Serinus serinus

Praha	4M	06.07.76	Lednice : 48.48 N,16.48 E (Breclav) C.S.S.R.
S99.074	( )	01.01.77	Lunzjata Valley : 36.03 N,14.14 E.
Ljubljana	2F	05.09.74	Brinje : 45.59 N,15.05 E (Šentrupert) YUGOSLAVIA.
X471	( )	28.01.77	Ta' Cenc (Gozo) : 36.01 N,14.14 E.
Ljubljana	2M	18.10.75	Ljubljana : 46.03 N,14.30 E YUGOSLAVIA.
71.566	( )	28.12.76	Safi : 35.50 N,14.29 E.

Linnet Carduelis cannabina

Budapest	3	26.09.76	Budapest : 47.29 N,19.03 E HUNGARY.
703.572	( )	04.01.77	Sannat : 36.01 N,14.14 E.
Bologna	2	08.04.73	S. Benedetto del Tronto : 42.57 N,13.53 E (Ascoli Piceno) ITALY.
L350.074	( )=4F	27.02.77	Sarraflu (Gozo) : 36.03 N,14.12 E.
Budapest	2M	02.09.77	Budakeszi : 47.31 N,18.56 E HUNGARY.
730.552	( )	24.03.78	Dingli Cliffs : 35.51 N,14.23 E.