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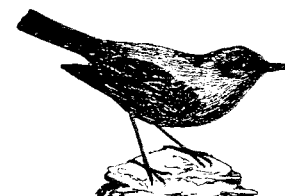
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NOTES ON THE BREEDING BIOLOGY OF THE CORY'S SHEARWATER IN THE MALTESE ISLANDS

RICHARD CACHIA ZAMMIT & JOHN BORG

The Cory's Shearwater *Calonectris diomedea*, is a common breeding visitor to the Maltese Islands, nesting along suitable sea cliffs in Malta and Gozo, and on Filfla. The colony on Filfla breeds in cavities in boulder and rubble slopes, while other colonies are situated mainly along the south and south-western coasts of the islands in sheer cliff faces (Sultana & Gauci 1982). Due to their position it is very difficult to observe the birds at their nesting sites. However, a few accessible nesting areas can be reached in some of the colonies, and the following work was carried out in 16 such localities during the years 1983-1986. These sites vary from single accessible nests situated on the upper parts of cliffs, to whole ledges situated on cliff faces. Along these ledges there is a combination of boulders, crevices, caves and vegetated parts. Each area may hold from 1 to 10 accessible nests as well as other breeding pairs which nest in deeper crevices, making their observations impossible. Altogether an average of about 46 nests were under observation annually.

Method

Observations were carried out regularly (3 times weekly, on average), mainly at night, commencing from the last week of February up to the last week of October, thus covering the whole breeding period. Birds were ringed either as they entered the colonies, or on the nest in the case of accessible ones. All such nests were numbered in the first year of the study period and a record of the breeding success of each nest was kept in consecutive years. The adult birds of most accessible nests were paired each year to investigate whether any displacement in adult birds occurs. Birds were sexed according to bill's length, using the methodology of Ristow & Wink (1980). Pairing was carried out during the incubation period, as it was found out that nests may be occupied at other times by different birds which could be prospective breeders. In 1986, three nests at different sites were under daily observation during incubation. The sample number is low due to various reasons, including constant human activities near colonies as well as the difficulty of visiting the nest daily.

Breeding Sites

The south-western coastline of Malta consists mainly of continuous cliffs stretching for about 25km, while almost 12km of cliffs make up the south-western coast of Gozo. In most areas the cliffs are 'honey-combed' with caves, crags, fissures and ledges situated at various heights and offering ideal nesting sites for shearwaters. In such areas the cliff ledges tend to be vegetated. Few plant species are to be found, but usually these grow into considerable clumps and bushes. *Darniella melitensis* is the dominating plant, growing in thick bushes, while *Centaurea crassifolia* grows in large clumps in some areas. *Capparis spinosa* is also well distributed. In some places large boulders and debris have collected beneath cliffs as well as on cliff ledges, increasing the availability of nesting sites. On the other hand, some cliff faces are very smooth, devoid of crevices or ledges and with little, if any, vegetation.

While in Crete nests are scattered throughout gently sloping areas and around the top of the less sheer parts of the cliff (Round & Swann 1976), most Cory's Shearwaters in the Maltese Islands nest along vertical cliffs. The majority use natural holes and crevices as nesting sites (see Table 1), breeding in every suitable place, from large caves to single small holes and from sea-level up to 130m. This was also the case for nests found on islands in the Marseille area, where 60% of those examined were in natural crevices (Fernandez 1985). Birds nesting in natural holes as well as under boulders and slabs are also found in Crete (Round & Swann 1976). Cory's Shearwaters breed amongst boulders as readily as they would in natural holes or crevices. On Filfla almost all breeding pairs are to be found nesting beneath boulders and the tons of debris which cover its sloped base (Sultana & Gauci 1970). The only reason why nests amongst boulders figure less prominently than

those in natural holes (Table 1), is because adequate areas with boulders are limited throughout the colonies on the main islands.

TABLE 1 : Nesting sites used

Year	Sample number	Percentage from sample			
		Natural holes	Amongst boulders	Beneath vegetation	Self excavated
1983	41	68	15	5	12
1984	36	55.5	25	8.5	11
1985	52	58	29	2	11
1986	55	51	26	5	11
Mean %		58	26	5	11

On Great Salvage in the Atlantic, where *C.d. borealis* breeds, any crevice or hole of sufficient size can shelter a nest. Ruined human habitations are also used, while on the plateau the shearwaters themselves sometimes excavate actual burrows in the soft earth (Roux & Jouanin 1968), while some have also been noted to use rabbit holes (Jones 1986). From the nests examined in the Marseille area, 29% were found in self-excavated holes and 5% in rabbit burrows (Fernandez 1985), while in Crete no self-excavated burrows were noted (Round & Swann 1976). In the Maltese islands, self-excavated burrows are necessarily few due to the rocky terrain where the Cory's Shearwaters breed (see Table 1). Rabbits *Oryctolagus cuniculus* which are fairly common along the cliffs, rarely dig burrows for the same reason. Most self-excavated burrows found are merely depressions dug beneath boulders or stones. Only two actual burrows have been found and these were excavated in the soft earth produced by the weathering of the rocks and which sometimes accumulates on cliff ledges in appreciable amounts. On Filfla only one self-excavated burrow was located and this was in weathered clay (Sultana & Gauci 1970). No nests have been found in rabbit burrows.

A good proportion of the large colony found on Linosa, in the Sicilian Channel, nests beneath scrub which covers a large part of the breeding area. There, birds nest amongst rock and deep in holes covered by the plants, but a good number use only the dense vegetation as a nesting site (Massa, pers. comm.). In the Marseille area, nests under vegetation figured least (3%) and this is also the case for those found in the Maltese Islands (Table 1). This is rather peculiar, as many areas with thick vegetation are available, especially on cliff ledges. The few birds found nesting under vegetation had their nests deep inside clumps of bushes. Such nests are few because they are more vulnerable to human interference and to predation, especially from rats *Rattus sp.* which are common in cliff areas. However, the few known nests beneath vegetation were always successful during the study period. One pair was found nesting in the shade of a small bush, very much exposed. After breeding successfully in 1983, the nest was abandoned the year after due to human disturbance.

Some nests on Linosa were at least 10m underground (Vaughan 1980). In the Marseille area, Fernandez (1985) found an incubating bird 12.5m deep in a narrow crevice. On Great Salvage any crevice and hole of sufficient size can shelter a nest. Sometimes the hole is large enough for the sun to penetrate or for several pairs to take up their abode (Roux & Jouanin 1968).

In the Maltese Islands, incubating birds were found from a few centimetres inside burrows/crevices - exposed to daylight - up to 8.5 m in constant darkness. Other birds were breeding even deeper, in burrows/crevices whose depth could not be estimated. On Filfla, Sultana & Gauci (1970) found some incubating birds barely 30cm from the entrance, exposed to daylight, while others were as deep as 4 m. One pair laid the egg only 20cm from the entrance of a small hole in a vertical cliff face. This nest was used only once during the study period as the egg failed to hatch and was later abandoned.

Some sites have communal entrances. In one area, up to six pairs were noted entering a small hole which led into different chambers. In some areas, a few nests were in close proximity of each other. At two colonies in Gozo, birds were seen sharing the same entrance with Manx Shearwaters *Puffinus puffinus*. Sultana & Gauci (1970) found them breeding close to Storm Petrels *Hydrobates pelagicus* on Filfla.

Nest Structure

No actual nest is built, but many Cory's Shearwaters use various articles to 'decorate' the nest. Most lay the egg on the bare soft earth. Feathers have been noted in nests

mainly at the time of egg laying and are probably produced by the formation of the brood patch of the incubating birds. Plant matter is sometimes also used. On the Great Salvage they frequently decorate the nest with pebbles, shells, bones or vegetable debris (Roux & Jouanin 1968). In Malta a spent shot-gun cartridge was found at one site. This was in a nest 3m deep. In places where small stones are to be found, these are placed at the fringes of the nest, close to each other. This behaviour was also noted on Linosa (pers. obs.). The North Atlantic subspecies *C.d. borealis* was found by Lockley (1942) to make flat nests of small stones in the Berlenja islands off the Portuguese coast. In the Great Salvage it was noted that when the ground slopes steeply, the building of a platform of pebbles assures a horizontal surface for incubation (Jouanin & Roux 1966). It is not entirely necessary that the shearwaters use stones only to make a horizontal surface, as both in Malta and on Linosa the ground where nests with stones were located was sufficiently flat. In Malta, it was noted that nests which were found on soft ground had a sort of depression. This is done by the continuous scraping of the incubating bird, prior to and after egg laying, and in consequence a mound is formed at the entrance of the nest. This mound gives the impression that no nest is in evidence. At times this mound, coupled with the depression, can rise up to an appreciable height. Where these mounds/depressions occur, it is sometimes almost impossible to see the incubating bird and later in the breeding season it is impossible to see the chick until it reaches a certain age.

Fidelity to site and mate

Many seabirds are faithful to the same site and mate in successive breeding attempts (Nelson 1980). Wink, Wink & Ristow (1982) have shown by means of ringing that a high degree of site tenacity and pair bonding exists also amongst Cory's Shearwaters. One bird was noted to have nested in its burrow for 11 seasons and 3 birds for at least 6 years, while one pair stayed together for at least 6 years.

In Table 2, the sample number reflects the number of nests in which both breeding birds were known in year (X) as well as in the following year (X+1). Nests where only one of the partners was known during any one of the years taken in consideration, are not included. For example, in 1983, 49 incubating birds were marked from 30 nests. This left 11 unmarked birds, which correspond to 11 nests where only one of the pair was known and so these could not be taken in consideration when calculating fidelity to mate. However the next year, out of the 19 remaining nests, one was not paired. This leaves a sample of 18 nests which can be analysed. These include also nests which were found abandoned in the following years.

TABLE 2 : Fidelity to site and mate

Year (X)	No. in sample	Per cent of sample in year (X+1), in which					
		♂ & ♀ return to same site	♂ returns ♀ disappears	♂ disappears ♀ returns	♂ disappears ♀ moves	♂ moves ♀ disappears	♂ & ♀ disapp.
1983	18	78	5.5	-	-	5.5	11
1984	24	71	13	4	-	4	8
1985	23	65	13	9	4	-	9

The mean percentage of the sample in which both adults returned to the same site is 71%. In most cases there was no evidence of incompatibility between pairs of which one of the birds was substituted in the following years. So it would seem that the changing of a partner was mainly due to death. In the majority of cases the remaining bird managed to find another partner and bred in the same nest while in a few instances the remaining bird moved to another nest in the vicinity. At one study area in 1983, two pairs (pair A: Male FF00347, Female FF00302 and pair B: Male FF00263, Female FF00262) bred successfully in natural crevices about 1.5m from each other. In 1984, the same pairs were again breeding at the same sites. However during incubation, pair A was disturbed while pair B bred successfully again. In 1985 only the male of pair A (FF00347) turned up at its nesting site while only the female of pair B (FF00262) was retrapped, also in its corresponding nesting site. The male of pair A continued to visit the site up to the beginning of May. On visiting the area during incubation, the nest of pair A was found empty, while the pair breeding in the nest of pair B was made up of the original female of pair B (FF00262) and the male of pair A (FF00347) and they bred successfully in that year as well as in 1986.

Egg laying

Sultana & Gauci (1982) give the laying period as being from mid-May to mid-June. However, during the four-year study period carried out by the present writers, no eggs were found laid before 24 May and none after 1 June. Sultana & Gauci (1970) found an incubating bird at Filfla on 18 May 1969, but this could have been an exception. Egg laying in shearwater colonies is highly synchronized and all were found to lay in the last week of May, with peak days on 27-28 May.

Incubation

During 1986, the incubation period of 3 pairs at different areas was recorded daily, except for one day each. In all three cases, the male took over the first incubation spell, immediately during the first night after egg laying. This was also evident in other nests. The immediate taking over by the male for the first incubation spell had been noted by Zino (1971) on the Salvage Islands, where in the majority of cases (88% of sample), the male was found incubating within 24 hours of laying.

The incubation period for the three above mentioned nests was of 52 days each, laying day inclusive. There was no appreciable difference between the total duration of incubation by males and that by females (see Table 3). Zino (1971) gives a mean 53.8 days for the incubation period of the Cory's Shearwater on the Salvage Islands.

TABLE 3 : Analysis of 3 nests during incubation

	MALE	FEMALE	NEST NOT VISITED	TOTAL
Pair 1	30 days	21 days	1 day	52 days
Pair 2	23 days	28 days	1 day	52 days
Pair 3	21 days	30 days	1 day	52 days
Mean	24.7 days	26.3 days		52 days

Wink et al. (1982) give the average incubation spells of birds in the Aegean as 8.1 days for males and 9.2 days for females, and Zino (1971) gives an average of 6 days for both sexes from the Salvage Islands. In Malta a total of 31 change-overs was noted amongst the three pairs under daily observation. The incubation spells of males lasted from 1-9 days with a mean of 4.6 and a standard deviation of ± 2.49 days, and for females, from 1-10 days with a mean of 4.4 and a standard deviation of ± 2.27 days. Change-overs were more frequent during the last days of incubation (see Fig. 1).

In 1983 an unexplained occurrence was noted in a particular nest where 3 individual birds were found incubating the same egg. On 11 June a female (FF00344) was found incubating beneath a boulder. Two days later the male (FF00348) was sitting on the egg. However on 27 June a new female (FF00557) was found incubating the same egg. The egg hatched and the young fledged successfully. The male (FF00348) and the second female (FF00557) continued to breed successfully in the same nest for the following three years, while the first female (FF00344) was never seen again until two years later, when it was caught at night entering a deep hole about 7m below the original nest. It was caught again in 1986

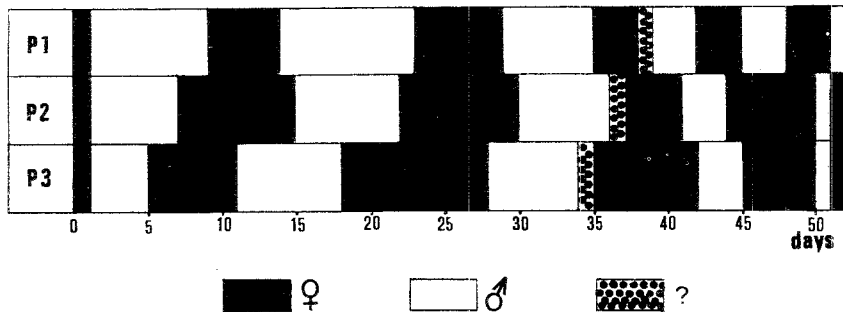


Fig. 1 : Incubation spells of males and females in three pairs.

entering the same hole. Harris (1966a) recounts a similar occurrence on Skokholm Island where three Manx Shearwaters (2 males and a female), were found occupying the same nest in which two eggs were laid. In this case the female might have had different mates for the two eggs laid, whereas in the case of the Cory's Shearwaters there was no evidence that a second egg was laid. On 16 August 1983, a female was found in a nest during the day, still incubating an egg which never hatched.

Feeding of young birds

Vaughan (1980) gave a detailed account of the feeding of young birds by parents. While on a visit to Linosa, he observed that the actual feeding is a lengthy affair. At first, the adult spends most of the time just sitting by the chick inactively. During the feed, the chick starts to point its bill towards the adult, later developing into a violent, almost frenzied motion of pecking and nibbling at the parent's head and bill. These pecks take the form of a rhythmical thrusting to and fro and the chick appears to become frantic. The adult responds in a similar behaviour followed by the opening of the bill, when the chick thrusts its bill inside it, getting more or less liquid rather than solid regurgitations. After the feed, both birds' beaks open and close rapidly for a short time. During the entire feed, the chick keeps calling, with the cries rising to a crescendo during the actual feed. This operation takes a minute or so and is followed by a pause. It is then repeated several times. The whole feed occupies 15-20 minutes. When it is over the chick subsides into inactivity and falls asleep. Similar behaviour was observed by the authors, at colonies in the Maltese Islands.

Vaughan (1980) also questions the possibility that this feeding method may change as the young bird grows, until fledging time, as he quotes observations carried out by Bannerman & Vella-Gaffiero (1976), who stated that in a colony in Malta, they found 4 young Horse-Mackerel *Trachurus trachurus* "fresh enough to have been taken the night before and still untouched by the young". Sultana & Gauci (1982), regard these observations as puzzling and misleading, as they found out that regurgitated food is given up to the time when the adults cease feeding their young. Observations carried out by the authors also confirm this as this method of feeding was noted up to a few days before fledging. Bannerman & Vella-Gaffiero (1976) mention young mullets *Mugil sp.*, as food given to chicks. This is also puzzling as from a number of regurgitations analysed by the authors the contents included Squid *Loligo vulgaris*, Anchovies *Engraulis encrasicolus*, Flying-fish *Cypselurus rondeleti* and Horse-Mackerel, but no sign of *Mugil sp.* Sara (1983), also mentions Eels *Lepidopus caudatus* and young sharks up to 15cm long, as taken by this shearwater, along with other species of fish. He also found no *Mugil sp.* in the regurgitations he analysed. All *Mugil* species are to be found in shallow waters and close to shore (Lythgoe & Lythgoe 1971) and Cory's Shearwaters have always been observed feeding out at sea at least 3-4km offshore.

Breeding Success

On the Great Salvage, Zino (1971) found that 30 out of 42 eggs hatched, i.e. (71% of the eggs laid). 17% of the eggs laid were taken by Yellow-legged Gulls *Larus cachinnans* which constantly patrols the breeding areas and take the exposed unattended eggs.

In the study areas in the Maltese Islands, the mean hatching success was 80%. Although a few pairs of Yellow-legged Gulls *Larus cachinnans* still breed along the cliffs of Malta and Gozo, no predation of eggs was noted to have taken place by these gulls. Most unhatched eggs were found abandoned and on examination were found to be added. In 3 cases the eggs, which were found broken, were sticking firmly to the underside of the incubating birds. In some cases, pairs which had bred successfully together in previous years

TABLE 4 : Breeding success

Year	Sample no.	Percentage per year		
		Unhatched eggs	Unfledged pulli	Successful fledging
1983	41	27	5	68
1984	36	8.5	8.5	83
1985	52	23	8	69
1986	55	22	9	69
Mean	46	20	8	72

failed to hatch the egg in a particular year. Usually this coincided with the total disappearance of one of the birds, probably due to death. Most of the chicks which did not fledge, died in the first two weeks after hatching. At this time they are still quite small and relatively weak, and can be preyed upon by rats. In 1986, in one study area all five known chicks were found dead or missing at the same time. One of the nests was in a narrow natural crevice and although the chick could not be seen or reached by humans, it was found dead at the crevice's entrance. This could have been the work of a Ferret *Putorius putorius furo* which is still used by a few people for hunting rabbits. In some cases the chick died later in the breeding season but again this was often the result of the disappearance of one of the adults.

Survival of Adults

In 1983, 49 incubating birds were ringed on the nest at different study areas. Many were retrapped in the following years while at the same time other breeding birds were ringed. Each year a constant effort to pair breeding birds was made with frequent visits to the study areas during the incubation period, and very few birds were missed. Still the figures in Table 5 can be considered as minimal as there is always the possibility that some birds may have been alive elsewhere.

TABLE 5 : Adult Survival of Cory's Shearwaters between 1983 and 1986

Year (X)	Breeding birds marked in year (X)	Breeding birds alive in year (X+1)	% Survival
1983	49	41	83.7
1984	65	54	83.1
1985	63	45	71.4

The mean survival turns out to be 79.4% which is very low for a sea-bird. Wink et al. (1982) carried out a similar study on Cory's Shearwaters in the Aegean between 1977 and 1980, also covering a period of four years. The survival for the first year was 87%, for the second 85% and for the third 93% giving an average survival of about 88.3%, approximately 9% higher than that for the Maltese Islands. Adult survival has been studied in many other Procellariiformes, all of which gave a survival rate of 89% or over (Nelson 1980). The reason why the survival of adult Cory's Shearwaters in the Maltese Islands is so low can be attributed to direct human persecution. One has to consider that this study is based on somewhat accessible areas of colonies, and though difficult as it might be, some persons, especially fishing enthusiasts manage to descend to these areas. During all four years of the study, several birds were found killed in such areas and many nests were found disturbed. Some fishermen still kill the birds to take some feathers from the underwing to use as fishing tackle, while considerable numbers of shearwaters are shot from sea-crafts for fun. Sultana & Gauci (1982) remark that the numbers shot every summer must be considerably high. Indeed when one considers that shooters do not kill only adults but shoot at random, killing also non-breeders, and considering that in a colony these non-breeders are usually by far more numerous than the breeding birds (Araujo et al. 1976), the number killed by locals has to be extremely high.

Return to colonies of young birds

In his work on the Manx Shearwater, Harris (1966b) remarks that most shearwaters tend to return to their natal colonies, and also that young birds are even faithful to their natal areas within the colonies. The Cory's Shearwater follows the same trend (Jouanin, Roux & Zino 1977). From 1968 up to 1982, seven pulli ringed on Filfla were retrapped there in later years (Sultana & Gauci 1982). Two more have been retrapped in recent years (MOS-Bird-ringing records). Three other pulli have been retrapped from their natal colonies in Malta, one of which was erroneously reported by Sultana & Gauci (1982) as being retrapped after one year, when in fact it should have been two years. Most were retrapped in their 6th and 7th year. This does not necessarily mean that this was the first year that they returned to their natal colonies as both Filfla and the colony in Malta were covered sporadically with an average of only 2-3 yearly visits. All, except one, were caught as they were entering the colonies at night and it was not noted if there was any evidence of breeding or not. However, a bird ringed as a pullus and retrapped after four years, was found incubating. The egg hatched and the young fledged successfully. This is probably the youngest breeding Cory's Shearwater known.

TABLE 6 : Birds ringed as pulli and retrapped in later years

1	2	3	4	5	6	7	8	9	Years
-	1	-	1	1	4	3	1	1	No.

Non-breeders

Vaughan (1980) records large numbers of non-breeders present each night in the colony on the island of Linosa during the time he was there (8-16 Aug. 1978). Massa & Lo Valvo (1986) calculate the population of non-breeders for the same colony as being about 50% of the adults. Wink et al. (1982) also noted in the Aegean, that during the incubation period as well as during the first week after the chicks hatch, one can regularly see that there were up to 50% more shearwaters in the nest area than there were existing breeding pairs. It was supposed that the majority were non-breeders. The number of non-breeders visiting the Cabrera Archipelago in summer was even higher as it was estimated as being approximately three times the number of breeding adults (Araujo et al. 1976). On the other hand Round & Swann (1976) did not identify any non-breeders in the vicinity of the colony they studied in Crete from 17 Jul-4 Aug and from 27 Aug-24 Oct 1974. In the Maltese Islands, non-breeders can be found in the colonies almost throughout the whole breeding season, though numbers have never been estimated. They are less evident as the breeding season approaches the end. The latest date was of a bird ringed on 14 October 1985. The bird's bleached plumage excluded the possibility of it being a fully plumaged fledgling, while its behaviour was that of a non-breeder.

The behaviour of these birds in a colony varies a lot, presumably according to their age as they approach breeding maturity. Some can be found sitting at the entrance of nest holes, without venturing to enter. Vaughan (1980) also noted this on Linosa. Very often when approached these birds would rather find another way of escape rather than entering the nest holes, quite unlike the breeding birds which are very quick to do this. This behaviour was also noted with Manx Shearwaters on Skokholm (Harris 1966b). If forced to enter the nest hole they are usually quickly chased out by the occupant of the nest. Other non-breeders land in areas where there are no nests at all and just sit amongst vegetation looking quite lost, while others already show a high degree of breeding behaviour. Very often they return at night to the same area where they occupy a make-shift nest, usually being just a shallow excavation beneath a rock or a very small crevice, too small for actual breeding. Frequently these birds are very faithful to these areas not only during the year of ringing, but also in successive years and this is to be expected as many would be young birds returning to their natal colonies (see Return to colonies of young birds). Some would eventually end up breeding there, occupying suitable vacant nest holes, replacing missing birds or starting a new nest. This was very evident in extensively worked areas where weekly visits were made during most of the breeding season. In such areas vacant nests or missing partners were replaced by birds of unknown age, which had been ringed and consequently retrapped from the same area even up to two years before and which had been judged from their behaviour to be non-breeders.

Some non-breeders are known to form pairs. Paired non-breeders may be found courting in totally unsuitable areas, and these, as described by Fisher & Lockley (1954), are only playing at 'house keeping'. Harris (1966b) wrote that it is not known if immature Manx Shearwaters will retain the same partner until old enough to breed. He also questions the possibility that non-breeding birds of unknown age which remained paired, were actually birds which had bred previously and for some reason were not breeding in the year when they were found. Some Cory's Shearwaters of unknown age, ringed one or two years before from a given area, were retrapped during various nights in different parts of this area, indicating that they were not established breeders. Eventually suitable nesting sites were found and these birds, irrespective of sex, started to try to lure a mate by sitting at the entrance of the nest hole and calling. This is also done by established breeders when their partner turns up missing. When a mate was found these birds visited the place frequently at night and more often than not, they were found courting even though it was too late to breed. However, the following year most pairs were found breeding. These could have been mature birds ready to breed but were hindered from doing so by the lack of a suitable breeding site. Nelson (1980) mentions the importance for shearwaters to spend a pre-breeding period, (in the case of the Cory's Shearwater from March to mid-May), to strengthen pair-bonds by staying for long periods at the nest site. This clearly explains why even though nesting site and mate were established late in the breeding season, yet these birds spend a lot of time courting. This gives the birds an advantage, as in the forth-

coming year they can devote more time to continue to strengthen the pair-bond, which is so important for successful breeding, instead of spending a lot of time and energy to find a mate and build up a pair-bond.

Sometimes paired non-breeders or prospective breeders, may be found courting in nest sites that are known to be occupied by other pairs. This is evident during the pre-breeding period, when the colony is in a somewhat confused state, with new birds trying to establish themselves in the colony or in the case of unpaired, trying to find a mate. Some of these birds which were found courting in established nest sites, were later in the year found breeding in different nest holes and also with different partners.

On 21 March 1985, two birds (Male: FF00706 and female: FF00705) were found courting during the day in a nest hole which had been used successfully by another pair (male: FF00097 and female: FF00560) for at least two years. At night the old male (FF00097) arrived and entered the nest. After a short quarrel, one of the birds flew out of the nest hole. On inspecting the nest, the old male (FF00097) was found to be still there, but the other remaining bird was out of reach, and so it was impossible to determine which bird of the new pair actually left. After that day, only the old pair (FF00097 and FF00560) was found in the nest hole and again they bred successfully. However, the year after, the old pair disappeared completely and their place was taken over by the same new pair (FF00706 and FF00705) which eventually bred there, although without success.

In many procellariids, the cause of noisy skirmishes, is the visiting of occupied burrows by unattached birds, including newcomers to the colony (Nelson 1980). Although short quarrels are quite a frequent event in Cory's Shearwater colonies, especially in the pre-breeding stage, only once was a real fight between two birds witnessed. Arriving at the place of the fight after being attracted by loud screams, two birds entangled together were seen tumbling down the cliff. The fighting birds could still be heard screaming as they dropped down to the sea.

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We are mostly indebted to Joe Sultana who, apart from having corrected this paper, was always foremost in encouraging us in our study. We are also grateful to Joe Mangion to Denis Cachia and to Manuel Mallia, who regularly accompanied us on our visits. A special thanks goes to Pauline Farrugia for translating papers in German text into English, and we also would like to thank all those MOS members and friends who helped us in other ways.

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IMPROVED DECISION MAKING BY MIGRATING DIURNAL RAPTORS DURING MORE INTENSE MIGRATION

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The possibility that decisions made by flocks of animals, including birds, might be the product of a consensus was first stated explicitly by Lorenz (1952), but his comment did not elicit any research effort, although Condorcet (1785 ; see also Grofman et al. 1982) had shown that majority decision making should lead to distinct statistical advantages. There is every reason to believe that majority decision making could evolve in natural populations (Thake 1984-1985b).

In this paper, positive correlation is demonstrated between the accuracy of a decision to migrate made by certain raptors, and the total number of raptors on migration at the time.

Methods

The data used in this paper were obtained during visual watches maintained at Buskett during the autumns of 1976-78. For details of the observation methods, the reader is referred to earlier papers (Thake 1977, 1980). Although the period and duration of observations varied slightly from year to year, coverage during September was very uniform, and data for this month alone were used in the calculations.

Details of local weather were recorded at hourly intervals. Additional data were obtained from the records of the meteorological stations at Luqa and Qrendi. Regional weather maps were supplied by the Deutscher Wetterdienst and by the Hellenic National Meteorological Service.

Results

All calculations were performed on a Casio Fx 801P programmable calculator, using *ad hoc* computer programs devised and tested by the present author.

Wind strength data recorded at hourly intervals at Buskett were used to calculate the mean wind strength during a given watch. Watches were scored for suitability of migration conditions on the basis of wind strength alone. 'Good' conditions were considered to have prevailed on days when mean wind strength during a watch was less than 10 knots, while 'Bad' conditions were characterised by a mean wind strength of more than 10 knots. Data for September of each year were tabulated by date, forming the raw data for the analyses which followed.

Data for each date were grouped, and the fraction of individual birds of each species migrating during 'Bad' conditions calculated as a fraction of the total number of individuals migrating over Buskett on that date over the three years. The correlation of this fraction with the total number of individuals migrating on this date was investigated graphically, and by calculating a correlation coefficient. Data for the three species were then combined, and the analyses performed for all three species together. The results of these analyses are tabulated in Table 1.

TABLE 1 : Correlation of the fraction of individuals migrating during 'Bad' conditions with the total number of individuals sighted. Data for single dates analysed individually.

Species	Correlation Coefficient	Sample Size
Honey Buzzard	-.3172**	30
Hobby	-.3535**	25
Marsh Harrier	-.2341*	25
All species	-.5256***	30

*** p < .01
 ** .05 < p < .10
 * .01 < p

The data were next grouped in periods spanning five dates (e.g. 1st to 5th September; a total of 15 days over three years), and the proportion of birds migrating under each of the two weather categories was calculated for all three years together. The total number of birds seen during this period was also calculated. Linear correlation coefficients were determined for the variation of the fraction of individual birds migrating during 'Bad' conditions with the total number migrating during the period in question. In addition, the mean number of birds migrating during both types of condition, and the ratio of the means sighted per day for each weather category were calculated. Correlation coefficients were calculated for variation of this quantity with the total number of birds migrating during the period in question. The results of these analyses are presented in Table 2.

TABLE 2 : Correlation of the fraction of individuals migrating during 'Bad' conditions with the total number of individuals sighted. Data grouped in intervals spanning five dates (see text).

Species	Fraction in 'Bad'		Mean no. in 'Bad' / Mean no. in 'Good'	
	simple	rank	simple	rank
Honey Buzzard	-.8939**	-.8857**	-.8116**	-.7143
Hobby	-.6715	-.7	-.3882	-.7
Marsh Harrier	-.5069	-.3	-.5877	-.3
All species	-.9108***	-.8857**	-.8696**	-.8857**

** .01 < p < .05
 *** p < .01

A further analysis was performed using the same data. The total proportion of birds seen during 'Bad' conditions during the first n date periods to produce a 'n date moving proportion'. The calculation was performed for n = 1 to n = 25. Correlation between this quantity and the total number of birds seen during the period in question, was investigated for each value of n. Again the analyses were performed for each species in turn, and on all three species combined to produce Figure 1.

Sightings of flocks of Honey Buzzard *Pernis apivorus* were analysed for randomness as follows. Only data collected between 1200 and 1800 CET were used in the analyses. The number of Honey Buzzards migrating over Buskett during this period varied little with time of day during the study period (Thake 1981). Data for the last ten days in September 1976, when weather over Malta was anticyclonic and varied little from day to day, were stored on computer tape. These data were sampled using intervals of variable duration to deter-

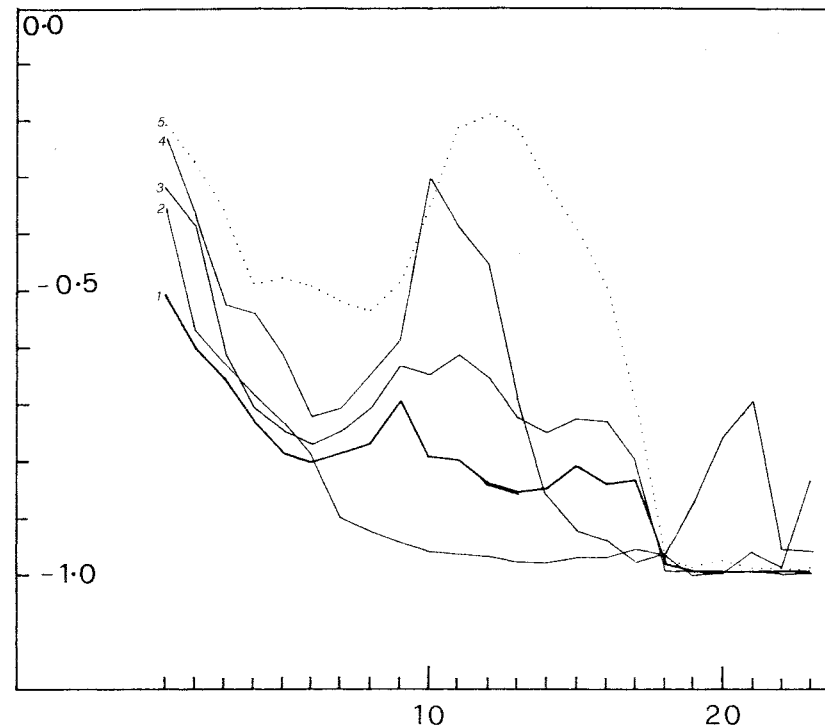


Fig. 1. Correlation of an 'n date moving proportion' of individuals migrating during 'Bad' conditions, with the total number of individuals sighted during the n date interval, plotted against the length of the interval (n) (see text for explanation). At low values of n, all five graphs show a pronounced tendency to become more negative with increasing n. This suggests that a source of variance is being removed by combining data for contiguous dates.

Key 1 All three species totals combined
 2 Honey Buzzard
 3 Hobby
 4 Marsh Harrier
 5 Honey Buzzard flocks consisting of one or two individuals.

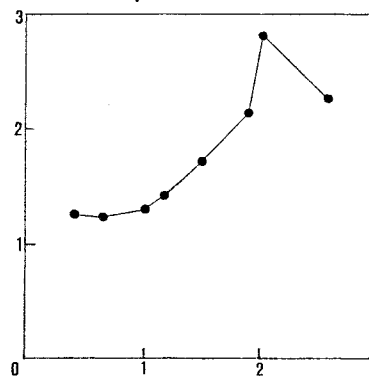


Fig. 2. Coefficient of dispersion (variance/mean) of the number of sightings per interval plotted against Log₁₀ of the length of the sampling interval in minutes.

mine the most suitable sampling interval for detecting patchiness (see Figure 2). A sampling interval having a high coefficient of dispersion (the sixty minute interval) was selected (for rationale, see Sokal & Rohlf 1969). Data for the entire study period were then used to extract two sets of data for Low and for high migration intensity (3 - 6 flocks sighted during each six hour period versus 24 - 37 during high migration intensity). These two sets of data were then analysed separately using a sixty minute sampling interval. The results are tabulated in Table 3.

Table 4 lists the numbers of flocks of various sizes which were seen during 'Bad' and 'Good' conditions respectively.

TABLE 3 : Analysis of Honey Buzzard sightings for randomness.

Number of flocks per interval	Intensity of migration	
	High	Low
0	7	30
1	6	20
2	12	7
3	8	2
4	10	1
5	9	0
6	9	0
7	4	0
8	4	0
9	4	0
10	1	0
11	1	0
12	1	0
13	0	0
14	0	0
15	1	0
16	1	0

Poisson fit : Chi squared = 21.59 .1095
 G = 19.22 .1099

p < .005 .5 < p < .75
 significantly not significantly
 non random different from random

TABLE 4 : Sightings of flocks of various sizes during weather belonging to each of the two classes.

Flock size	1	2	3	4	5	6	7
Number in 'Bad' weather	33	9	3	2	3	1	1
Number in 'Good' weather	298	100	65	31	36	12	6

None of the proportions differ significantly (p > .10). Various combinations of flock size were tested for significant differences. No significant differences were found.

Discussion

Il-Wejba, Buskett, has been used as a watch point for studying raptor migration since 1966 (Galea 1969, Beaman and Galea 1974), and the general features of raptor migration through the islands are well known. Honey Buzzards (Thake 1977, 1981), Marsh Harriers *Circus aeruginosus* (Thake 1983a) and Hobbys *Falco subbuteo* (Thake 1978a) leave Sicily during anticyclonic weather when wind strength at low levels in the early morning is low. Hobbys converge on Buskett throughout the day, apparently to hunt small passerines (Thake 1978a, 1978b). Both Honey Buzzards and Marsh Harriers converge on Buskett in the late afternoon, and Honey Buzzards usually attempt to roost there (Beaman & Galea 1974). A leading line effect due to southeastwards trend of the southern coast of Malta operates to a variable extent depending on wind strength (Thake 1981, 1983b, 1984-85a). High totals of Honey Buzzards coincide with light southerly winds even if these are only sea breezes. The three species discussed in this paper thus decide to make the crossing to Malta on the basis of much the same criteria. Migration of the Kestrels *Falco naumanni* and *Falco tinnunculus* through the islands follows a rather different pattern (Thake 1982), and these species are not considered in this paper.

Consider the following hypothetical situation. On a given day, there are a number of raptors in Sicily deciding whether or not to cross the central Mediterranean on that day. Weather conditions are 'Bad' but some cross nevertheless. The ones which remain are reinforced by new arrivals and decide again on the following day. In such a situation, the number of birds on migration provides an index of the degree of socialisation which the birds may experience before deciding whether to migrate. The various analyses summarised in Table 1 and 2 utilise modifications of this index.

The correlations reported in Tables 1 and 2 clearly indicate a relationship between the accuracy of decision making and the number of birds on migration at the time. The relationship was present in all species examined but only reached significance in the Honey Buzzard (the most numerous species), and when the totals of all three species were combined.

The correlation coefficients calculated for the 'n date moving proportion' show a strong tendency to become more negative as the length of the moving interval employed increases (Figure 1). This suggests that a source of variance is being removed when data from contiguous dates are combined.

The graphs for flocks of size 1 and 2 in figure 1 (line 5), and the results listed in Table 4 strongly suggest that the accuracy of decision making is not being influenced principally by flock size as recorded at Buskett. Previous studies (Thake 1980) had shown that flocks are labile and could not represent the unit which had originally made the decision to migrate.

Besides decision making in flocks, another plausible way in which raptors might interact is by observing one another's migratory behaviour at a distance. This could be done most effectively if the birds showed a clumped distribution in space, and hence in time as recorded at Buskett. Table 3 shows clearly that Honey Buzzards flock sightings were clumped temporally during high intensity of migration, but were not clumped when migration intensity was low. There was thus more scope for visual interaction between birds on days of intense migration.

There are three principal ways in which social decision making might occur.

- (1) The behaviour of superior decision makers might serve as a model for other birds. Experienced adults should be superior decision makers to first autumn birds and a hierarchy based on plumage discrimination might occur.
- (2) Birds might pool information about their environment with other flock members, and then decide individually on the basis of an improved knowledge.
- (3) Birds might evaluate the intentions of other birds and decide on a simple majority basis.

The data available do not allow one to decide confidently which of these methods is being employed by the birds. Indeed, they are not mutually exclusive, and various combinations of the principal methods are conceivable. Nevertheless, it is clear from the data and the analyses that decision making of better quality was produced when many birds were on migration together. The occurrence of some form of social decision making is thus strongly indicated.

Although there are no clear records to date which show that social decision making is advantageous, animals have frequently been observed performing some types of behaviour simultaneously (Birke 1974, Colgan et al. 1979, Dauphine & McClure 1974, Deputie 1979, Kisimoto et al. 1982, Kramer & Graham 1976, Mathieu 1970, Meixner & Shaw 1979, Richman 1978, Sambras 1973, Siegfried et al. 1975, Voisin 1976, Weidmann & Darley 1971), and there is evidence that communication is taking place in at least some such instances (e.g. Clifton 1979, Orcutt 1974, Siegfried et al. 1975, Walker 1969). Much of the extensive literature on socially facilitated behaviour is relevant to this topic. Clayton (1978) provides a recent review of this subject. The investigation of social decision making in animals remains a promising and virgin field of research.

Summary

Previous studies had shown that Honey Buzzards *Fernis apivorus*, Marsh Harrier *Circus aeruginosus*, and Hobbys *Falco subbuteo* make the sea crossing from Sicily to North Africa via Malta during anticyclonic weather. Such behaviour minimises the risk of encountering bad weather while over the sea. Low wind strength is the weather factor which allows the best prediction of daily totals. Data for three years (1976 - 1978) were analysed to determine the relationship between the accuracy of decision making and the number of individuals migrating on migration. The fraction of individuals migrating during bad weather (winds stronger than 10 knots) during intervals of 3 and 15 days (over 3 years)

was negatively correlated with the total number of birds seen during that interval. This relationship was present in all three species, but only reached significance ($r = -.8939$; $p < .05$) in the Honey Buzzard, and when data for all three species were combined ($r = -.9108$; $p < .01$). There was no relationship between the accuracy of decision making and flock size, but flocks are labile, and do not necessarily represent the units which made the decision to migrate. The raptors might have observed one another's migratory behaviour at a distance. The observed clumped distribution of flocks during high migration intensity would facilitate this. The occurrence of decision making of better quality when many birds were on migration simultaneously is a strong indication that some form of social decision making was taking place.

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SHORT NOTES

ARRIVAL DATES OF MANX SHEARWATERS AT COLONIES IN MALTA

The Manx Shearwater *Puffinus puffinus* is the commonest shearwater in the western Palearctic, with two sub-species being found in the Mediterranean. The *Puffinus p. mauretanicus* of the Balearics, and the *Puffinus p. yelkouan* of the eastern Mediterranean, including the Maltese Islands. The Manx Shearwater is a common breeding visitor to the Maltese Islands.

Sultana & Gauci (1982) record that birds start arriving at their colonies from February. Manx Shearwaters had never been recorded locally in the months of November and December, until five were seen off the east coast on 31 December 1974 (Gauci & Sultana, 1975). Prior to this date there had been only one sighting between August and February. This dearth of records was probably due to the lack of sea watching. Forty-three birds were counted in one afternoon off the northern tip of Malta on the 24 November 1976 (Sultana & Gauci 1982). Single birds were noted flying off the south coast of Malta, near Filfla, during December and January in recent years (pers. obs.). As sightings of this shearwater increased during the early winter months, various visits were conducted to the largest breeding colony, situated in the northern part of Malta, to determine whether adult birds started visiting the colonies before January.

The first visit was made on 25 November 1983, when no signs of birds visiting colonies were found. On the second visit on 12 December, birds had already been ashore, as footprints were seen in front of many burrows. Waiting until after dark, we managed to catch one bird which had been ringed in previous years, another was seen, while one was heard calling out at sea. In the following year we again went to the colony on 12 December when two were trapped. In 1985 we visited the colony on an earlier date, on 8 December. Footprints were seen in front of several nest holes. Remaining until after dark we managed to catch one, while another was seen flying close to the cliff. During these visits the weather was calm with clear skies and no moon, except for the night of 12 December 1983 which was calm but with an overcast sky and a light drizzle. A morning visit on 3 December 1986 revealed that birds had already been ashore as fresh footprints were found in front of some burrows.

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AN UNSUCCESSFUL BREEDING ATTEMPT BY THE HOUSE MARTIN

There are three previously documented records of House Martins *Delichon urbica* breeding in the Maltese Islands. The first dates back to June 1981 when two nests were built under the balcony of a building facing Mosta Church (Sultana J. & Gauci C. 1982. A New Guide to the Birds of Malta). The second record was of a pair which built a nest beneath the clock on the right side of the Cathedral at Mdina in June 1982. That same year, in August, a pair of House Martins was found breeding on the islet of Filfla (Sultana J. & Gauci C. 1981-83. House Martin - New Breeding Species for Malta. *Il-Merill* 22: 17-18).

On 17 June 1985 at 1508 hours C.E.T. one House Martin was noticed flying over the bus terminus at Valletta. It approached City Gate and entered into the left arch from the terminus's side. A closer look revealed that the bird had alighted in the saucer-shaped top-most part of a lantern hanging from the ceiling. A little while later the bird left the site, flying away over the ditch on the left side. The next day the bird was also seen. On 19 June one bird was seen entering the lantern. Before alighting it twittered and its partner was heard answering from inside. The House Martins were also present on 20th and 21 June, and on the morning of the 22nd both partners could be seen circling and feeding in the ditch on the right side. At frequent times the birds were observed landing on the ditch sides probably collecting material for the nest, consisting of dust from the eroded ditch sides. Single birds were then recorded on 25th and 28 June. On 4 July twittering was heard in the nest and one of the House Martins was seen on the lantern. The last time that the House Martins were recorded was on 8 July when one was seen entering the nest. Subsequent observations proved fruitless.

It is not known whether any eggs were laid and neither why the House Martins abandoned the area. The House Martins may have easily fallen victims to illegal shooting practices on the island. It is also possible that the House Martins found a more suitable place where to breed. In this respect successful breeding in 1985 by the House Martin rests to be confirmed.

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TWO INTERESTING BREEDING RECORDS DURING 1984

On 8 July 1984 an adult Woodchat Shrike *Lanius senator* was seen carrying food at Tal-Balal, limits of B'Kara. On visiting the same area on 10th both the male and the female were seen. On the following day an adult and two fully fledged young were seen perching on top of a Carob tree *Ceratonia siliqua* in the same area.

Chaffinches *Fringilla coelebs* are recorded every year in summer, mostly at Buskett. Females, caught for ringing in July and August, are often found with brood patches. On 22 July a family party was observed at Wied il-Luq. At least one adult and 3 fully fledged young were observed.

Raymond Galea

SARDINIAN WARBLER TRAPPED IN SPIDER'S WEB

On 24 August 1986 at Wied il-Luq, Buskett, a female Sardinian Warbler *Sylvia melanocephala* was found trapped in an Orb Spider's *Agiope lobata* web. The bird was hanging from its feet. As it was approached it fluttered its wings and escaped. This relatively large web was 80cm above the ground and the Sardinian Warbler was trapped at the lower part of it.

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NECTAR FEEDING BY CHIFFCHAFFS

The purpose of this short note is to amplify the information on nectar feeding by this species which was published in an earlier paper (Thake, M.A. 1980. Nectar : a supplementary food source for wintering Chiffchaffs *Phylloscopus collybita*. *Riv. Ital. Ornitol.* 50: 167-168.).

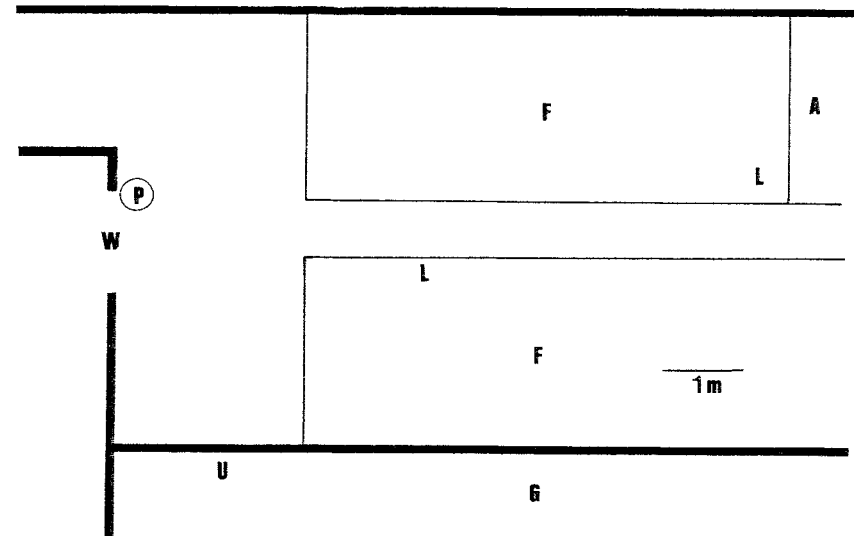
Part of the garden where the Chiffchaffs were observed is shown in Figure 1. Thick black lines are stone walls, three metres high at U. The larger flower beds are marked F. An aviary (A) housing various finches lies towards the end of the garden. The positions of *Lapeyrouisia cruenta* plants are labelled L. The Ponsettia *Euphorbia pulcherrima* plant was held in a large pot (P), three metres below the window (W) from which observations were made. The Ponsettia plant was about three metres high. The gardens (G) nearby contain orange trees *Citrus aurantium* on which Chiffchaffs frequently forage by gleaning insects off the foliage.

Nectar feeding was first noted in 1977 and was observed during every subsequent winter until 1982, when the Ponsettia died. Chiffchaffs were seen feeding on nectar during late afternoon, but observations were not made at other times. No binoculars were used.

Early in the season, the Ponsettia was utilised exclusively. As many as three Chiffchaffs at once were observed perching on the wall at U, from whence they flew to the inflorescences. After alighting singly on the inflorescences, each bird was observed to insert its bill into the flower. Birds visited the plant singly. As observations were made at very close range, 1 to 2m away from the birds behind a closed window, it could be ascertained that the birds were actually taking nectar, and not eating pollen or small insects attracted to the inflorescences. Nectar was seen glistening in the open bill as the birds fed. No bill or tongue movements were noted. Several short bouts, each about one second long, were made before the bird returned to its perch. Each bird generally sampled more than one inflorescence. No obvious aggression between birds was detected. Displacement of one bird by another at the inflorescences was not observed, but instances when more than one bird was present were infrequent.

The Ponsettia was visited by the Chiffchaffs regularly, perhaps daily, as long as the inflorescences remained. When several inflorescences were cut off the plant, Chiffchaffs were observed hovering over the positions formerly occupied by the inflorescences.

Later in the season, flowers of *Lapeyrouisia cruenta* were visited for nectar. These



were further away from the window and observations were necessarily less detailed. Birds alighted singly on the peduncle below the lowermost flower. Nectar was obtained by inserting the bill into the corolla. Nectar would often spill out of the tilted flower onto the Chiffchaff's head. On several occasions, Chiffchaffs pecked at the bottom of the corolla, the flowers often falling off the plant in the process. No attempt was made to recover nectar from fallen flowers. Feeding from *Lapeyrouisia cruenta* involved considerable predation risk. The flowers were all within one metre of the ground, in a garden which harbours several cats. Mature fruits of *L. cruenta* developed from flowers which had been visited by Chiffchaffs, but pollination need not have been due to the Chiffchaffs.

The birds alternated bouts of nectar feeding with hawking for *Chironomidae*. At no time was nectar feeding observed to be the sole mode of feeding.

Ponsettias, and other winter flowering plants whose flowers are rich in nectar are widely cultivated in Maltese gardens. There is no reason to believe that nectar feeding was confined to the neighbourhood in which the observations were made. Elsewhere, nectar feeding from *Aloe arborescens* by Chiffchaffs can be inferred from the observations of Fiteni and Finlayson (Fiteni, J. 1981. Facial stains in the Sardinian and other warblers in Gibraltar. *Il-Merill* 21: 25.). Facial stains on Sardinian Warblers *Sylvia melanocephala* and Blackcaps *Sylvia atricapilla* have also been noted in Malta (editorial note to Fiteni's paper). Besides providing sugars and amino acids, the nectar ought to be a welcome source of water in a relatively xeric environment. The extent to which *Sylviidae* wintering in the Mediterranean region utilise nectar as a supplementary food source has yet to be determined.

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SOME NOTES ON SPOTTED FLYCATCHERS BREEDING AT BUSKETT DURING 1983-86

Records of breeding Spotted Flycatchers *Muscicapastriata* from 1971 to 1982 have already been documented by Sultana and Gauci (*Il-Merill* 10:10, 15:4, 17:29-30, 20:24, 22:21, and A New Guide to the Birds of Malta, page 157).

Following are some notes and records for the years 1983 to 1986:

1983: There were no breeding records, but an adult bird was seen on 28 June and again on 2 July.

1984: A record year. At least 5 pairs were present during June and July. Five nests were found and from four of these, fifteen birds are known to have fledged successfully. The other nest contained 5 eggs which never hatched. One of the nests was built on a lower outer twig of an Aleppo Pine *Pinus halepensis*. This is the first nest to be locally found on such a tree; all other nests had been found on Cypress trees *Cupressus sempervirens* and in a broken sign post hanging from the same type of tree.

1985: Three pairs were present. One raised two broods in the same nest, fledging 5 birds in all. Another pair had a nest with 3 young; on 16 June these were about 7 days old, but two days later the nest was not found and was presumed to have been stolen by man. It was also built on the lower branch of a Pine tree; very low and visible. Nests for the third pair were not found.

1986: A pair raised a brood of four, the young fledging successfully on 20th July. Another female laid two clutches of eggs, one of 4 and the other of 5. This female was presumably unmated as the eggs never hatched. It is to be noted that this bird built its first nest on an old nest from last year, and again the second clutch of eggs was laid in a freshly built one on top of the two other nests. The eggs from the first clutch were still beneath the last one.

It was noted that the same areas are used year after year, and the colour of eggs is exactly the same in such areas. This indicates that some of these Spotted Flycatchers are the same ones year after year.

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ANALYSIS OF YELLOW-LEGGED HERRING GULL PELLETS FROM FILFLA ISLAND

The Yellow-legged Herring Gull *Larus cachinnans* colony on Filfla numbers about 150 pairs, and is mainly restricted to the inaccessible plateau surface. A very few pairs breed on the upper parts of the steepest slopes beneath the cliffs. It is from the latter nests and from among nearby boulders that this sample of pellets was collected.

The aim of this analysis was to find out whether the Storm Petrel *Hydrobates pelagicus* was under threat from the Herring Gull. From 11 samples (10 whole pellets, 2-3 fragments), remains of Storm Petrels were found in only four pellets. However, a much larger sample is needed to determine the extent of Herring Gull predation on Storm Petrels.

Herring Gulls have been noted to be very active at night, especially on moonlit nights, when petrels are most numerous (Sultana & Gauci 1982). This was so on the night of 24 May 1986, when a good number of petrels came ashore. The gulls were seen flying throughout the whole night. The chances of preying on flying petrels during daytime are very remote. Six adult Herring Gulls failed to catch an adult petrel flying off Filfla in broad daylight (Sultana & Gauci 1970). This might indicate that birds taken are probably weak or tired.

Material examined: Ten whole pellets and two to three fragments were dissected. The average weight of each was 3.5gm with a range of 1.5gm to 8.0gm. Weight was measured using a Pesola spring balance.

TABLE 1: Contents in Yellow-legged Herring Gull pellets collected on 24 May 1986 on Filfla.

Pellet	Storm Petrel	Other Birds	Molluscs	Fish	Insects	Others
1	-	1	-	-	-	-
2	1	-	1	-	-	-
3	1	-	-	-	-	-
4	-	2	1	-	-	-
5	-	3	1	-	1	-
6	1	-	-	-	-	-
7	1	1	1	-	-	-
8	-	2	-	-	-	-
9	-	-	2	-	-	-
10	-	-	4-5	-	-	2
11 (frag.)	-	1	4	1	-	1

Contents of pellets

Aves: *Hydrobates pelagicus*: 2 sternums, 2 fused clavicles, 3 tarsi, one with a ring attached, and a large amount of feathers. Pellets with remains of petrels had a strong oily smell. *Passer hispaniolensis*: 2 upper mandibles, 2 pairs of legs and an amount of feathers also in evidence. *Ficedula albicollis*: 1 wing, 1 tail, 1 leg. *Gallinula chloropus*: 1 bill. *Merops apiaster*: 1 wing. *Anthus trivialis*: 1 leg. *Phylloscopus sp.*: 1 leg. *Phoenicurus sp.*: 1 tail, 1 leg.

With the exception of the Spanish Sparrow *Passer hispaniolensis* and the Storm Petrel, all the other species are trans-Saharan migrants which are probably caught as soon as they alight on Filfla, after their long journey, when they are weak and tired. The Spanish Sparrow is sedentary in the Maltese islands, and a few pairs breed also on Filfla. The Storm Petrel is a summer visitor to the Maltese islands where it is found breeding only on Filfla.

Cephalopoda: *Sepia officinalis*: 2 beaks, 2 fragmented backbones. The Cuttlefish is rather common in Maltese waters, coming close to shore from early March to mid-May to breed. *Cirripedia*: *Lepas anatifera*: Shells were found in five of the pellets, one of which was composed entirely of barnacles. The Goose Barnacle is very common, and is found attached to rocks and debris by the shore.

Osteichthyes (Bony fishes) *Trachurus trachurus*: Half end of the fish was present in the fragments. The Horse-Mackerel is one of the most common fishes found in Maltese waters. In size it varies from 20 to 52cm (Lanfranco 1965). This fish is also much favoured by the Cory's Shearwater *Calonectris diomedea*, being frequently found amongst its regurgitations.

Insecta: *Tenebrionidae* (family): One complete specimen was found in pellet 5, along

with remains of birds and crustaceans. This is a large family, the members of which are commonly called nocturnal ground beetles, or darkling beetles, names which reflect their habits and general coloration.

Other material : Three small pieces of nylon thread as used by the local fishermen.

In a colony in Sardinia, marine organisms, predominantly fish, were taken, followed by beetles, plant matter (Olives), and human waste, in that order (Witt 1974). These were found in fifteen pellets collected at the same period as those from Filfla. Herring Gulls are noted scavengers with almost anything forming part of their diet (Cramp & Simmons 1982).

Identification Guide to European Passerines by Lars Svenson (1984) was consulted for the identification of bird remains, while the Flora and Fauna of the Mediterranean Sea by A.C. Campbell (1982) was consulted for the identification of marine organisms.

The authors would like to thank Mr. Louis Cassar for the identification of insect remains.

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FIRST BREEDING RECORDS OF THE MOORHEN IN THE MALTESE ISLANDS

The Moorhen *Gallinula chloropus* is a fairly common passage migrant from March to May and from late August to November (Sultana, J. & Gauci, C. A New Guide to the Birds of Malta, 1982). Adult and immature birds have been occasionally noted at Girgenti Valley in the summer months (V. Cilia, pers. comm.). Since 1982, as many as twenty have been wintering at the newly established Ghadira Nature Reserve and occasional birds have also been seen in summer (C. Gauci, pers. comm.). In 1984, a nest was found in a flooded quarry. Since then three more nests have been found - two in 1985 and one in 1986.

In May 1984, the undersigned were informed by a hunter that he knew of a Moorhen nest in a flooded quarry in the south-eastern part of Malta. The site was visited on 18th May. Four nestlings, about one day old, were observed. An empty nest was later found. This nest was located on an isolated boulder surrounded by water under an overhanging Glaucous Lobacco Shrub *Nicotina glauca*.

On 1st April 1985 a nest containing nine eggs was found in another flooded quarry. The nest was under a shrub of the same species as that under which the 1984 nest had been found. It was lying on a muddy slope, a few centimetres from the water's edge. The nest was visited again on 21st April. One chick was seen swimming near it. On the following day the nest was revisited; it contained four unhatched eggs.

Another nest containing no eggs was found in another flooded quarry on 14th April 1985. On being visited again on 5th May, the nest was found to contain 5 eggs. On 23rd May, an adult bird was disturbed while incubating 7 eggs. This nest was found attached between stems of the Giant Reed *Arundo donax*, a few centimetres above the water surface. On 29th May, seven chicks were seen swimming near the nest.

On 12th June 1986 four birds, about fifteen days old, were seen, accompanied by an adult, swimming in the quarry where the 1984 nest had been found. An empty nest was found lying on muddy ground.

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SYSTEMATIC LIST FOR 1983-84

compiled by
 CHARLES GAUCI

The regular contributors to the daily log kept by the Ringing and Research committee of the Ornithological Society during the two year period under review were: John Attard Montalto, John Borg, Alex Casha, Charles Coleiro, Raymond Galea, Charles Gauci and Joe Suitana. Other contributors were: Guido Bonetti, Hans Bub, Denis Cachia, Richard Cachia Zammit, Victor Cilia, Joe Doublet, D.W. Fell, Freddie Fenech, Natalino Fenech, Mario V. Gauci, John Grech, Joe Grima, John Harflett, Anthony B. Heath, Roy Holliday, Manuel Mallia, Joseph Mangion, Paul Portelli, David Rushford, Martin Thake, Louis Vella and F.J. Walker. Other members may have contributed to the daily log kept at the Ghadira Nature Reserve, which records are subsequently added to the national daily and species logs.

The records for this two year period were entered into the daily log by Charles Gauci and then transferred to the species logs by Charles Coleiro. The systematic list has been compiled by Charles Gauci.

Where only one of the two years is given in the systematic list, it is because there were no records in the other year.

LITTLE GREBE *Tachybaptus ruficollis* Blongun Zahir

1983 : 1 at Ghadira from 13 Nov onwards.
 1984 : 1 at Ghadira from 1 Jan to 19 Feb.

GREAT CRESTED GREBE *Podiceps cristatus* Blongun Prim

1983 : 1 flew over Dragonara Point on 28 Dec.

BLACK-NECKED GREBE *Podiceps nigricollis* Blongun Sekond

1983 : 1 at Ghadira from 1 Jan to 16 Feb. 2-4 at same place from 27 Nov onwards, 4 at Ghadira Bay on 28 Nov and 3 near Manoel Island on 23 Dec.
 1984 : 2 from 1 Jan to 5 Feb and 1 on 10-18 Aug at Ghadira; 1 at Salina on 15 Sep and 1 at Ghadira from 11 Dec onwards.

CORY'S SHEARWATER *Calonectris diomedea* Ciefa

1983 : Highest count 2,000 off Sarraflu on 30 Apr. 1 in Comino Channel on 22nd and 1 on 24th and 2 on 28 Dec off Ghar Lapsi. Bred as usual.
 1984 : First seen on 21 Feb; found ashore in burrows during day on 14 Mar. Highest count 2,000 off Ta' Cenc on 20 Apr. Some young still in burrows on 18 Oct.

MANX SHEARWATER *Puffinus puffinus* Garnija

1983 : Breeding at usual colonies. Some already ashore on 11 Dec.
 1984 : 95 counted off Pembroke on 16 Apr, otherwise very few day sightings.

STORM PETREL *Hydrobates pelagicus* Kanqu ta' Filfla

1983 : Recorded only on Filfla, where bred as usual.
 1984 : No sightings except on Filfla.

GANNET *Sula bassana* Sula

1983 : 1 off Gozo on 26th and 3 off Ghar Lapsi on 28 Dec.
 1984 : 1 on 1st, 4 on 2nd and 1 on 6 Jan, all sighted offshore.

CORMORANT *Phalacrocorax carbo* Marqun

1983 : 9 sightings of 1-3 birds on 6 days from 16 Oct to 10 Dec.
 1984 : 10 at Qammieh on 13th and 2 at Bighi on 27 Oct; then 1 at Ramla Bay on 4 Nov.

BITTERN *Botaurus stellaris* Kappun

1983 : 1 (seen at a taxidermist) was shot in Oct or Nov.

LITTLE BITTERN *Ixobrychus minutus* Russett tas-Siqar

1983 : 1 on 5 Apr, then 16 sightings on 14 days from 27 Apr to 24 May; mostly 1-2 birds but 5 at Ghadira on 7 May. Singles at Ghadira on 2nd and 26 Jun.
 1984 : 5 records of singles on 4 days from 15 Apr to 6 May. 1 at Ghadira on 26 Oct.

NIGHT HERON *Nycticorax nycticorax* Kwakka

1983 : Sightings of 1-12 birds on 6 days from 2 Apr to 13 May. In autumn on 16 days from 16 Aug to 23 Oct; usually in small flocks, highest 30 on first date.
 1984 : Up to 7 on 5 days from 30 Mar to 6 May, then on 19 days from 16 Aug to 29 Oct. Maximum flock size 20 over Ghadira on 11 Oct.

SQUACCO HERON *Ardeola zalloides* Aqrett Isfar
1983 : Singles on 15 Mar and on 27-30 Apr; 3 on 7th and singles on 8-10th and on 15 May, most at Ghadira. Flock of 30 over Sliema on 15 Aug.
1984 : 2 on 12th, then 1 on 13-29 Apr at Ghadira. 10 over Ghallis on 20 Jul, then 1 at Ghadira on 16th and 5 over Sliema on 19 Sep.

WESTERN REEF HERON *Egretta gularis*
1983 : 1 was shot at Marsaxlokk on 22 May. (1st for Maltese Islands).

LITTLE EGRET *Egretta garzetta* Aqrett Abjad
1983 : 1 on 13th, then almost daily from 23 March to 29 May at Ghadira; 43 on 17 Apr, otherwise 1-8. Seven sightings at other places. In autumn 10 records on 9 days from 15 Aug to 25 Oct with max of 25 over Ghadira on 2 Sep, then singles on 2-18 Nov and on 4-5 Dec, also at Ghadira.
1984 : Almost daily from 10 Mar to 15 Apr with max of 6 on last date, 1-4 on 5 days from 22 Apr to 1 May, then 1-5 from 10-30 May, most at Ghadira. 1-3 at the same place on 8-17 Jun. Only on 5 days in autumn from 18 Aug to 30 Sep, with a total of 43 at three sites on 15 Sep highest.

GREAT WHITE EGRET *Egretta alba* Russett Abjad
1984 : 1 flew over Ghadira on 16 Aug.

GREY HERON *Ardea cinerea* Russett Griz
1983 : 1 at Ghadira on 2 Jan. On 9 days from 15 Mar to 7 May with 9 on first date highest. 8 on 21 Jul and 2 on 1 Aug, then 16 sightings on 14 days from 25 Aug to 15 Oct; flocks of over 25 recorded on 5 days, highest 65 over Rabat on 9th and 70 over Zebbug on 21 Sep. 2 on 5th and 1 on 28-30 Nov at Ghadira.
1984 : 1-8 on 16 days from 26 Feb to 24 Apr, then 1-2 daily at Ghadira from 28 Apr to 19 May and 1 on 9-15 Jun. 1 on 27 Jul, then 48 sightings on 38 days from 16 Aug to 18 Nov; usually low single figures with max of 30 over Ta' Qali on 21 Sep. 2 on 4 Dec.

PURPLE HERON *Ardea purpurea* Russett Ahmar
1983 : 8 sightings on 7 days from 30 Mar to 7 May, with max of 11 over Burmarrad on first date. In autumn on 5 days from 31 Aug to 16 Sep, max 10 over Buskett on 13th.
1984 : 1 on 10 Mar, then daily from 29 Mar to 14 Apr and on 24-26 Apr; single figures except for 20 over Ghadira on 31 Mar and 30 at las-Safra on 11 Apr. 1 on 18 May. In autumn 1-3 on 10 widely spaced dates from 23 Aug to 4 Nov.

BLACK STORK *Ciconia nigra* Cikonja Sawda
1984 : 1 over Buskett on 12 Sep.

WHITE STORK *Ciconia ciconia* Cikonja Rajda
1983 : 1 shot at Ghajn Rihana on 15 May; 5 over Rabat on 8th and 1 over Mriehel on 27 Sep.
1984 : Singles over Dwejra on 17th and at Ta' Qali on 28 Oct.

GLOSSY IBIS *Plegadis falcinellus* Velleran
1983 : Singles on 17th and 18th and 3 on 28 April, and 1 on 4 May. 1 on 5 Nov.
1984 : Party of 3 and a single on 11th, flock of ca.100 over Hagar Qim on 16th, 2 on 17th and 1 on 26th, all in April. Singles on 13 Sep and on 22 Nov.

GREATER FLAMINGO *Phoenicopterus ruber* Fjamingu
1983 : 1 flew over Ghadira on 27 Nov.
1984 : On 4 days in Dec: flocks of ca.20 on 9th and ca.30 on 10th offshore, 2 over Qawra on 15th, 4 offshore and 2 at Ghadira on 21st.

MUTE SWAN *Cygnus olor* Cinju Mutu
1984 : Influx in Dec: 12 offshore, 11 over Gzira and 10 over Naxxar on 8th could possibly be the same flock; 2 at Ghadira, 6 at M'Xlokk and singles at Ta' Qali, R'Bugà, Salina and Bahar ic-Cadhaq on 9th; 5 off Filfla, 3 over Marsa and Ta' Qali on 13th; and an injured bird picked up at Marsamxett on 15th. Many of the birds were shot.

GREY LAG GOOSE *Anser anser* Wizza Griza
1983 : 2 flew over Ghadira on 25 Nov.

'GREY' GEESE *Anser sp.*
1983 : 1 over Qalet Marku on 27 Nov.
1984 : 1 off Filfla on 24 Jun.

SHELDUCK *Tadorna tadorna* Kuluvert tas-Salib
1983 : Singles on 8 Jan and 29 Oct. On most days at or over Ghadira from 25 Nov to 12 Dec, with 24 on last day and 14 on 28 Nov and 8 Dec highest. 2 on 23 Dec.
1984 : 1 at Salina on 10 Aug and singles at Ghadira on 22 Nov and on 23rd and 26 Dec.

WIGEON *Anas penelope* Silfjun Ewropew
1983 : 1 at Ghadira from 26 Feb to 4 Mar, then again 1-6 daily from 13 Nov to year end.
1984 : 6 on 1-3 Jan, then 4 till 12 Feb at Ghadira. 1 at Ghadira on 12th and flock of 20 over Xemxija on 30 Oct.

GADWALL *Anas strepera* Kuluvert Griz
1983 : 1 at Salina on 1 Nov.

TEAL *Anas crecca* Sarsella
1983 : Singles at Ghadira on 10 Aug and on 24-28 Sep, and 1 at Salina on 31 Oct, then daily at Ghadira from 16 Nov to year end with max of 10 on 23-24 Nov.
1984 : 4 from 1st to 15 Jan, then 5 from 20 Jan to 19 Feb, 3 on 20th and 1 up to 4 Mar. 1 on 15th, then 1-6 daily from 23 Aug to 16 Sep. ALL records at Ghadira. 1 at Xemxija on 4 Nov, then up to 5 on most days at Ghadira from 27 Nov to year end. Another was shot at Ta' Qali in early Dec.

MALLARD *Anas platyrhynchos* Kuluvert
1983 : 1 at Ghadira on 14 Oct.
1984 : A female at Ghadira from 10 Mar to 24 Dec could have been an escaped farm bird. 12 on 11th and 2 on 12-15 Dec at the same place.

PINTAIL *Anas acuta* Silfjun
1983 : 1 at Ghadira on 8 Feb and 1 seen shot in early Apr. 3 on 9th, then daily from 12th to 22 Nov; mostly 1-2 birds but 12 on 15th, 8 on 20th and flock of 80 on 21st. ALL records, except two, at Ghadira.
1984 : 1 at Ghadira from 17 Feb to 8 Mar. Another was shot in late Feb. Singles on 2 Sep and 19 Oct; 27 on 7th, 10 on 10th, 1 on 16th and 2 on 18 Nov, all at Ghadira or off Qammieh.

GARGANEY *Anas querquedula* Sarsella Hamra
1983 : On 11 days at Ghadira from 20 Feb to 26 Mar, with 10 on last day highest; then 30 off Comino on 13th, 1 at Ghadira on 15-16th and 7 over Qammieh on 22 Apr. In autumn 1 on 25-28th and 2 on 30 Aug, and 1 on 17 Sep at Ghadira.
1984 : 1-6 daily at Ghadira from 13 Feb to 17 Apr; 4 other records elsewhere within same period, including ca.100 at sea on 12th and ca.25 off id-Delli on 8 Apr. 1-2 on 5 days at Ghadira from 16 Aug to 1 Sep.

SHOVELER *Anas clypeata* Palettuna
1983 : 1 on 18-25 Nov and 2 from 8 Dec onwards, at Ghadira.
1984 : 2 at Ghadira from 1 Jan to 7 Feb, 1 at Ta' Qali on 17 Feb, and then again 2 at Ghadira from 18 Feb to 8 Mar. 1 at Salina on 10 Aug and 5 at Ghadira on 22 Nov.

POCHARD *Aythya ferina* Brajmia
1984 : 1 at Salina on 2 Jan.

FERRUGINOUS DUCK *Aythya nyroca* Brajmia t'Ghajnja Rajda
1983 : Singles on 19 Mar, 21-24 Apr and 16 Nov, all at Ghadira.
1984 : Singles at Ghadira on 13-21 Jul and on 13-19 Sep, and at St. Paul's Islands on 17 Oct.

GOLDENEYE *Bucephala clangula* Brajmia ta' l-Ghajjn
1983 : 1 was shot at Ta' Qali on 24 Jan.

RED-BREASTED MERGANSER *Mergus serrator* Serra
1983 : 1 at Ghadira on 25-27 Nov.

Unidentified DUCKS *Anas sp.*
1983 : Singles at Ghadira on 7 May and 15 Aug and up to 40 at various sites on 9 days from 12 Nov to 23 Dec.
1984 : 50 in the Comino Channel on 6 Mar, 2 on 12th and 1 on 20 Apr. 1-3 on 7 dates from 15 Aug to 30 Dec, but ca.50 off Selmun on 10 Nov.

HONEY BUZZARD *Pernis apivorus* Kuccarda
1983 : On 20 days in spring from 7 Apr to 2 Jun. Always 1-5 birds except for 16 over Chadwick Lakes on 11 May. Autumn passage from 2 Sep to 22 Oct with sightings almost daily between 6 Sep and 7 Oct. Low double figures on most days but 'hundreds' reported over Buskett and 60 over Dwejra on 27th and 140 over Dwejra and ca.50 over Buskett on 30 Sep.
1984 : On 18 days in spring from 10 Apr to 26 May. All sightings of 1-15 birds except for exceptionally heavy passage on 9 May when a total of ca.530 was recorded over eleven places, though at least some of the same birds could have been sighted at more than one locality. Singles on 4 Jul and 17 Aug, then on most days from 9 Sep to 27 Oct. Mainly single to low double figures with no heavy passages reported; highest totals were of 35 (3 sites) and 65 (4 sites) on 12th and 13 Oct respectively.

BLACK KITE *Milvus migrans* Astun Iswed
 1983 : A poor year, with singles at Dinqli Cliffs on 8 Apr and over Buskett on 7th and 10 Sep the only records.
 1984 : Another poor year: 1 at Dwejra on 7th and 2 over Gozo on 8 May, and 1 over Dinqli on 16 Sep.

RED KITE *Milvus milvus* Astun Ahmar
 1984 : 1 over Attard on 25 Sep.

EGYPTIAN VULTURE *Neophron percnopterus* Avultun Abjad
 1983 : 1 seen at a taxidermist was shot out of a flock of 8 during Mar. 1 flew over Buskett on 16 Sep.

SHORT-TOED EAGLE *Circus gallicus* Ajkla Rajda
 1983 : 2 were shot in late Sep; then 1 at Dinqli on 26th and 2 at Hal Far on 27 Nov.
 1984 : 3 seen over Dwejra, Rabat and Buskett on 13 Oct were probably the same birds; 1 was also seen over Zebbug on the same day. Then 1 at Bidnija on 14th, 2 at Dwejra on 16th and 1 at Dinqli on 20 Oct. 1 over Zebbug and 1 reported shot at Gormi on 5 Nov were probably the same birds.

MARSH HARRIER *Circus aeruginosus* Bughadam Ahmar
 1983 : 1 on 15 Mar, then 22 sightings on 18 days from 29 Mar to 30 Apr and 1 on 15 May; mostly 1-4, but a total of 15 at three sites on 31 Mar. On most days in autumn from 6th to 30 Sep, with highest totals 23 on 21st and 26 on 27th, otherwise single figures or up to 11. Then 1 on 10th, 2 on 22nd and 1 on 24 Oct.
 1984 : Spring passage from 10 Mar to 9 May when there were 33 sightings of 1-3 birds on 26 days. In autumn recorded from 28 Aug to 26 Oct, with almost daily sightings from 18 Sep to 13 Oct. Highest totals were of 14 on 22 Sep, 18 on 2nd, 11 on 12th and 10 on 13 Oct.

HEN HARRIER *Circus cyaneus* Bughadam Abjad Prim
 1983 : A female was seen shot in late Mar.
 1984 : 1 male over Dwejra on 24 Mar.

PALLID HARRIER *Circus macrourus* Bughadam Abjad
 1983 : 3 males seen shot: in late Mar, on 31 Mar, and in early Sep.

MONTAGU'S HARRIER *Circus pygargus* Bughadam Griz
 1983 : Singles at Buskett on 6 Sep and on 2 Oct.
 1984 : 1 over Gozo on 26 Apr.

'RINGTAIL' HARRIERS *Circus sp.*
 1983 : 1 on 7th and 4 on 18 Apr. Singles on 16th and 19th and ca.50 (over Mriehel) on 21 Sep. Some of the latter could have been Marsh Harriers.
 1984 : A total of 20 sightings of 1-7 birds between 23 Feb and 28 May. A heavy passage was reported over Gozo on 15 Apr. In autumn singles on 7 days from 2 Sep to 6 Oct.

SPARROWHAWK *Accipiter nisus* Sparvier
 1983 : 1 over Mtarfa on 5 Oct.
 1984 : On 4 days in Oct: singles at Lunzjata on 3rd and at Dwejra on 11th, and 2 at Buskett on 14th and 21st.

BUZZARD *Buteo buteo* Kuccarda Prima
 1983 : Singles over Buskett on 7th and 14 Oct.
 1984 : 1 over Buskett on 21 Oct.

BOOTED EAGLE *Hieraaetus pennatus* Ajkla tal-Kalzetti
 1983 : 1 over Buskett on 2 Oct.

OSPREY *Pandion haliaetus* Arpa
 1983 : Singles at Ghadira on 31 Mar, at Lunzjata and at Ramla valley on 22 Apr, and at Ghadira on 1st and at Naxxar on 15 May. In autumn recorded on 9th, 13th, 14th, 16th, 27th and 29 Sep; singles, except for 2 on 14th, most at Buskett.
 1984 : Singles at Ghadira on 6 Apr and over Gozo on 8 May; over Dwejra on 3rd, at Maarr and at Grendi on 16th, and at Ghadira on 22 Sep; at Dinqli Cliffs on 4 Oct and again at Ghadira on 6 Nov.

'BROADWINGS'
 1983 : Singles on 25 Feb, 1 Apr and 21 May. On 12 days in Sep from 3rd to 28th, with 20 on last date highest. One, identified as an eagle species, over Mriehel and Gormi on 2 Oct and singles on 21st and 23 Oct.
 1984 : Singles on 20-21 May and on 29 Aug. On 10 days from 11 Sep to 26 Oct with 13 on 13 Oct highest. Amongst these, singles at Dwejra on 25 Sep and over Zabbar on 13 Oct were identified as *Milvus sp.*

LESSER KESTREL *Falco naumanni* Spanjulett Sekond
 1983 : 6 at Naxxar on 17 May; 1 at Rabat on 27 Aug; 4 at Buskett on 13th, 1 at 'la' Gali on 25th, and 2 at Rabat on 30 Sep.
 1984 : Singles at Sarraflu on 20 Apr; at 'la' Gali on 14th and at L-Ahrax on 17 May; and on Comino on 29 Sep.

KESTREL *Falco tinnunculus* Spanjulett
 1983 : Singles on 8th and 23 Jan, then 3 along the NW coast of Gozo on 9 Feb. 1 on 13 Mar, then 24 records of 1-4 on 20 days from 27 Mar to 1 Jun. In autumn 1 on 26 Aug, then from 13 Sep to 21 Nov, during which period there were 39 records on 29 days. Usually low single figures with max of 12 at Dwejra on 30 Sep. There were 9 sightings of singles in Dec from 8th to 31st.
 1984 : A few wintering, 9 singles recorded in Jan-Feb. Spring passage from 6 Mar to 29 May during which period there were 37 records on 27 days; single figures, but up to 30 were counted in Gozo on 11 Apr and on 8 May. 3 on 9th and 1 on 30 Jun. In autumn 1-2 on 6 days from 17 Aug to 15 Sep, then almost daily from 24 Sep to 15 Nov; never more than 5 in any one locality. In Dec singles on 15th, 16th and 23rd.

RED-FOOTED FALCON *Falco vespertinus* Zumbrell
 1983 : 13 records on 10 days from 1st to 21 May; mainly 1-2, but 7 on 5th, 19 on 11th and 7 on 15th. 1 on 11 Jun.
 1984 : 1 on 24th and 4 on 25 Apr; and 1 on 17 May.

MERLIN *Falco columbarius* Seqer ta' Denbu
 1984 : 1 at Gammieh on 8 Dec.

HOBBY *Falco subbuteo* Seqer tal-Hannieqa
 1983 : 1-3 on 6 days from 15th to 30 Apr. In autumn, 1 on 31 Aug then from 6 Sep to 21 Oct when single figures, max 9, recorded on 20 days.
 1984 : 1-4 on 6 days from 7 Apr to 26 May. On 20 days in autumn from 6 Sep to 26 Oct; Generally low single figures, highest 8 at Dwejra on 3 Oct.

ELEONORA'S FALCON *Falco eleonorae* Bies tar-Regina
 1983 : 1 at 'la' Cenc on 1 May and 1 at Naxxar on 30 Aug, then on 4 days in Sep at Buskett: 1 on 7th, 3 on 10th and 14th, and 1 on 23rd.
 1984 : Singles at Dinqli Cliffs on 6th and at Ghar Ilma on 24 Aug; at Mnajdra on 2nd, at Lunzjata on 3rd, at Dwejra on 11th and at Buskett on 14 Oct.

SAKER *Falco cherrug* Bies Rasu Rajda
 1984 : 1 over Dinqli on 13 Oct.

PEREGRINE *Falco peregrinus* Bies
 1983 : Singles at Dwejra, Gozo on 18 Jun, over Ghadira on 21 Jul, and over Buskett on 7th and 10 Sep.
 1984 : 1 probable near Ghar Lapsi on 12th and 1 at Dwejra, Gozo on 21 Jan; 2 flying north over Victoria on 25 Apr; singles at Dabrani on 3rd and at Dinqli on 20 Oct, and in the Munxar-'la' Cenc area on 15 Dec.

Unidentified FALCONS *Falco sp.*
 1983 : 14 records of 1-6 birds on 11 days from 21 Mar to 13 May, and on 13 days from 6 Sep to 2 Oct when 1-6 birds mainly recorded, but ca.50 on 27th and 'a passage' on 29 Sep at Buskett. Some September sightings refer to Kestrel/Lesser Kestrel.
 1984 : 1 on 15 Jan, then 1-2 on 11 days from 31 Mar to 4 Jun. 1 on 13 Jul, then 1-4 on 8 days from 25 Aug to 21 Oct.

QUAIL *Coturnix coturnix* Summiens
 1983 : Singles on 6 days from 2nd to 15 Apr, on 15 Jun and on 6 Oct.
 1984 : 6 on 15th and 2 on 16 Jan at Xadhra. 1 on 11 Mar, then 1-5 on 5 days from 15th to 26 Apr. Singles on 29 Sep and 11 Oct, then up to 5 at Xaghra throughout Dec.

WATER RAIL *Rallus aquaticus* Gallozz tax-Xitwa
 1983 : 1 at Ghadira throughout Jan and Feb to 16th and up to 4 at the same place from 29 Oct to year end. The only record outside Ghadira was of 1 at Ramla Bay on 13-19 Nov.
 1984 : Recorded only at Ghadira: 1-2 in Jan and Feb to 13th and 1-4 from 28 Oct onwards.

SPOTTED CRAKE *Porzana porzana* Gallozz fat-Tikki
 1983 : Singles at Gnejna on 16th and at Ramla Valley on 26 Apr; and at Ghadira on 7 May, 10 Oct and 5 Nov.
 1984 : Singles at Marsalforn Valley on 6th and at Ghadira on 21 Apr, then 1 at Ghadira on 10 days from 11 Sep to 15 Dec.

LITTLE CRAKE *Porzana parva* Gallozz Zghir
 1983 : Singles at Ghadira on 8th and at Ghajn Rihana on 12 May.

1984 : 1 found dead at Marsalforn Valley on 23 Jul.

CORMORANT *Crex crex* Gallozz Ahmar

1983 : Singles at Il-Qaws on 28 Sep and at Dwejra on 29 Oct.

MOORHEN *Gallinula chloropus* Gallozz Iswed

1983 : On most days at Ghadira from 1 Jan to 28 May with max of 10 on 7 May. Only 3 singles recorded outside Ghadira during same period. 1 seen at Ghadira on 5 days from 5 Jun to 21 Jul, then sighted almost daily from 25 Sep to year end with max of 10 on 17 Dec. Again very few records outside Ghadira.

1984 : Sighted on most days at Ghadira from 1 Jan to 14 May with max of 8 on 5 Jan; 1-2 on 6 days in Apr-May at other localities. 1 on 29-30 Jun and 1-2 on 8 days from 12 Sep to 13 Oct, then daily from 23 Oct onwards with max of 18 counted on 2 days. A pair bred in a quarry in the southern part of Malta.

GOOSE *Fulica atra* Iiqieqa tal-Bahar

1983 : At Ghadira, up to 15 in Jan-Feb, departing gradually between 1-5 Mar, then only injured bird remained but 2 were seen on 30 Jul and on 21 Sep. 1-3 from 1 Oct increasing to 4 on 19 Nov and progressively to 34 by 17 Dec. 1 at Sliema on 22nd and 1 at Chadwick Lakes on 27 Nov were the only records outside Ghadira.

1984 : Up to 37 in Jan-Feb decreased to 28 during the last day of Feb. Gradual decrease continued throughout Mar, only 2 remaining on 27-30th, then usual injured bird until 8 Sep when 2 seen, increasing to 3 on 15th. Then 5 on 11th, increasing to 9 by 15 Dec. All at Ghadira. Only other sighting was of 1 flying over Xemxija on 25 Oct.

CRANE *Grus grus* Grawwa

1983 : 4 over Dwejra on 19th, 1 over Qormi on 23rd and 2 over Ghadira on 30 Oct; 1 at Dinqli on 6th and 9 over Msida on 18 Nov.

1984 : 2 at Luqa and 1 at Fomm ir-Rih on 13 Jan; singles at las-Safra on 10 Apr and at Salina on 16 Sep; over Sliema on 7th and at Buskett on 14 Oct. Then 4 over Dwejra on 14th, 1 over Ghadira on 17-18th, and 5 at Luqa on 19 Nov, and ca.50 over Delimara on 9 Dec.

DEMOISELLE CRANE *Anthropoides virgo* Damigella

1983 : 2 were shot during the last week of Dec.

LITTLE BUSTARD *Tetrax tetrax* Pitarra

1983 : 2 at Hal Far on 15 Dec.

OYSTERCATCHER *Haematopus ostralegus* Gallina tal-Bahar

1983 : Singles at Ghadira from 17-20 Apr and 3-8 Aug.

BLACK-WINGED STILT *Himantopus himantopus* Fras-servjent

1983 : Singles on 4th, 7-13th and 18 Apr; 3 on 6 May and on 20 Jul, 9 on 6 Sep, and 1 on 22 Oct, all at Ghadira.

1984 : 4 off Mellieha on 11th and 1 at Ghadira on 21 Apr; another at Ghadira on 20 May and flock of 11 over Ghallis on 17 Aug.

AVOUCET *Recurvirostra avosetta* Xifa

1983 : 2 on 24th and 1 on 26 Nov; and 1 on 23 Dec at Ghadira. Another was seen shot in late Dec.

1984 : 2 on 25-26th, then 1 from 27 May to 8 Jun, at Ghadira.

STONE CURLEW *Burhinus oedicnemus* Tellerita

1983 : 1 shot in mid-Oct and 1 at Mosta on 13 Nov.

1984 : Singles at las-Safra on 11th and at Penbroke on 26 Apr. 5 at Marfa on 22 Nov.

CREAM-COLOURED COURSER *Cursorius cursor* Nankina

1984 : 1 was shot at the end of Feb or early Mar.

PRALINCOLE *Glareola pratincta* Pernicjotta

1984 : 2 at Ghadira on 20-21st and 2 at Marsa on 23 May.

LITTLE RINGED PLOVER *Charadrius dubius* Monakella

1983 : Almost daily from 13 Mar to 18 May with max of 7 at Ghadira on 27 Apr, then singles on 27 May, 7-8th and 14 Jun. 1 on 1st, then 1-6 on 17 days from 15 Jul to 28 Aug and 1-5 almost daily from 1 Sep to 7 Oct. 2 on 29 Oct and 1 on 14 Nov.

1984 : On most days, mainly at Ghadira, from 1 Mar to 2 May; mainly single figures, but 31 at Ghadira on 22nd and 12 at Marsalforn Valley on 24 Mar. Then singles on 8 days from 12 May to 16 Jun. In autumn 1-3 on most days from 11 Jul to 27 Sep, then 1-4 on 12 days from 13 Oct to 30 Dec at Ghadira.

RINGED PLOVER *Charadrius hiaticula* Monakella Prima

1983 : 1-3 on 8-19 May; 1-4 on 16 days from 19 Jul to 8 Sep, then singles on 2nd and 7 Oct, all at Ghadira.

1984 : 1-5 on 11 days from 6 May to 16 Jun; singles on 28 Jul and on 4-6 Aug, then 1-2 on 14 days from 21 Aug to 17 Oct; most at Ghadira.

KENTISH PLOVER *Charadrius alexandrinus* Monakella Saqajha Suwed

1983 : Singles on 22 May and on 25-27 Jun at Ghadira.

1984 : Singles on 18 May, 13 Jun, 14 Jul and 4-5 Aug, then 1-3 on most days from 27 Aug to 27 Sep, all at Ghadira. Also 1 killed by an aircraft at Luqa Airfield on 29 Sep.

GREATER SAND PLOVER *Charadrius leschenaultii* Birwina tad-Dezert

1984 : 1 at Ghadira on 9 Aug.

DOTTIEREL *Charadrius morinellus* Birwina

1983 : 1-2 on 5 days from 5 Sep to 16 Nov.

1984 : 1-4 on 4 days from 31 Aug to 20 Oct.

GOLDEN PLOVER *Pluvialis apricaria* Pluviera

1983 : Singles on Gozo on 9 Feb and seen shot in mid-Oct; then on 5 days from 13th to 26 Oct with 10 at Fiddien on first date highest.

1984 : Recorded on 4 days from 7th to 15 Nov with ca.50 counted over Gozo on 12th and 80 over San Martin on 14th.

GREY PLOVER *Pluvialis squatarola* Pluviera Pastarda

1983 : 1 on 19th and 2 on 21 May at Ghadira.

1984 : 2 on 11-16th and 1 on 19 May at Ghadira.

LAPWING *Vanellus vanellus* Venewwa

1983 : 1 on 22 Oct, then 14 sightings on 12 days from 13 Nov to 15 Dec; often low double figures with max of 35 over Mistra on 27 Nov.

1984 : 12 on 13th and 26 on 15 Jan at Luqa, 1 on 11 Feb and 3 on 12 Mar. 4 on 17 Oct, then 1-6 on 10 days from 9 Nov to 19 Dec.

KNOW *Calidris canutus* Girwiel Saqajh Qosra

1983 : 1, in breeding plumage, at Ghadira from 11th to 18 May.

SANDERLING *Calidris alba* Pispisella Bajda

1983 : On 14 days at Ghadira from 28 Apr to 28 May; singles, but 2 on 18th and 3 on 19th. Also singles at Salina on 29 Apr and on 18 Sep.

1984 : Singles on 18 Apr, 11 May, 31 Aug and 20 Sep, at Ghadira.

LITTLE STINT *Calidris minuta* Tertuxa

1983 : 1 on 18-19 Mar, then daily at Ghadira from 24 Mar to 3 Jun when also often recorded in several other localities. Double figures on a few days in Apr and throughout most of May, with max of 30 on 3 days. In autumn again almost daily from 31 Jul to 8 Nov, but usually in single figures; max 16 on 30 Aug. 1 on 4 Dec.

1984 : 1 at Marsa on 17 Jan. 1-2 on 4 days from 16th to 23 Mar, then almost daily from 1 Apr to 14 Jun; double figures, max 15, on only 5 days in May. In autumn almost daily from 18 Jul to 2 Nov with max of 10 at Ghadira and at Salina on 5 days.

TEMMINCK'S STINT *Calidris temminckii* Tertuxa Griza

1983 : 1 at Ghadira on 13 days from 19 Apr to 17 May and 3 at Ghajn Rihana on 6 May.

In autumn, singles on 19-21st and 28 Jul, 20-21 Aug and 1 Sep at Ghadira.

1984 : 1-2 at Ghadira on 6 days from 25 Apr to 2 May, then 1 at Ta' Qali on 29 May. In autumn singles at Ghadira on 16th, 22nd and 28-29 Aug, and on 16-18 Sep.

CURLEW SANDPIPER *Calidris ferruginea* Beggazzina Hamra

1983 : 1 on 31 Mar-1 Apr, then daily in varying numbers from 20 Apr to 28 May, mostly at Ghadira; peak on 14-22 May when 15-20 daily. 1 on 14-16 Jun and 1 on 3-4 Jul; 1-8 daily on 3-7 Aug, 1 on 17 Sep and 1 on 17 Oct.

1984 : 1-5 daily from 9-18 Apr, then 1-7 on most days from 28 Apr to 19 May, most at Ghadira. 1 on 2 Jun; 1-2 on 22-28 Jul, 7-13th and 21 Aug. Then 1-4 daily from 25 Aug to 12 Sep and on 20-22 Sep.

DUNLIN *Calidris alpina* Beggazzina fat-lizz

1983 : 1-3 on 9 days from 15 Apr to 4 May. 1 on 17th followed by 1-6 almost daily from 30 Jul to 8 Sep, 18 Sep to 6 Oct, and 21 Oct to 1 Nov. Then 1 on 13-14 Nov and on 14th, 27th and 30 Dec.

1984 : Singles on 1-3 Jan, 8 Apr and 3 May, then present on most days from 21 Jul to 31 Dec; max 7 on 6 Oct but usually 1-2. Most at Ghadira.

RUFF *Philomachus pugnax* Girwiel

1983 : 10 sightings on 7 days in Mar from 5th, with 20 at Luqa on 22nd highest, then 1-7 almost daily, mainly at Ghadira, from 3 Apr to 31 May. Singles at Ta' Qali on 9-10 Jun and at Ghadira on 18 Jul and 17 Nov.

1984 : 3 on 24 Jan and singles on 15th and 17 Feb, then single figures, max 5, on most days from 2 Mar to 30 May, followed by singles on 6 days from 2nd to 21 Jun. In autumn on 10 days from 15 Aug to 10 Oct with 5 at Salina on 21 Aug and 5 at Ta'

- Gali on 21 Sep highest.
- JACK SNIFE *Lymnocyptes minimus* Cinkonja
 1983 : Singles at Ghadira on 6th, 9th and 23 Feb, then on 6 days from 23 Oct to 17 Dec.
 1984 : Singles on 26 Jan, 13 Feb, 4 Mar, 4 Apr, 25 Oct (found dead at Ghadira), and on 5 Nov.
- SNIFE *Gallinago gallinago* Rekkacc
 1983 : 1-2 on 13 days from 6 Feb to 26 Apr. On several days from 15 Aug to 31 Dec with longest gap between sightings from 15th to 28 Nov. Max 5 at Xemxija on 12th and at Fiddien on 13 Nov.
 1984 : Present on most days at Ghadira from 1 Jan to 21 Apr with odd sightings in other places; usually 1-3 but 5 on 10 Mar. Again 1 on most days from 18 Sep to 4 Nov, then 2 on 11 Nov and singles on 17th and 30 Dec.
- GREAT SNIFE *Gallinago media* Rekkacc ta' Mejju
 1983 : Singles at Lunzjata on 10th and at Ramla Valley on 24 Apr; at Rabat on 8th, at Ghadira on 9th and at Ghajn Rihana on 11-12 May. 1 at Ghadira on 30-31 Dec was probably this species.
 1984 : Singles at Ghadira on 24th and 30 Jan, 19-20 Sep and on 18 Oct.
- WOODCOCK *Scolopax rusticola* Gallina
 1983 : 11 sightings of 1-2 birds on 9 days from 22 Oct to 21 Nov, then singles at different places on 28-29 Dec.
 1984 : 1 on 26 Feb, 1 on 11 Oct, then 10 records on 8 days from 30 Oct to 24 Nov, with ca.10 at Binemma on 2 Nov highest.
- BLACK-TAILED GODWIT *Limosa limosa* Girwiel Prim
 1983 : Singles at Ghadira on 3rd and 5 Mar.
 1984 : Singles on 13-20th and on 29 Feb, and on 8-13 Mar, 2 on 15-17 Mar; 4 on 5th and 1 on 8 Apr; and 1 on 6 May. All at Ghadira.
- BAP-TAILED GODWIT *Limosa lapponica* Girwiel Denbu bl-Istrixxi
 1984 : 1 at Ghadira from 8th to 18 Jun.
- CURLEW *Numenius arguata* Gurlin
 1984 : 1 flew over Comino on 1 Apr.
- SPOTTED REDSHANK *Tringa erythropus* Cuvett
 1983 : Daily at Ghadira on 9-19 Apr with 3 on 14th and 2 on 15th, otherwise singles. In autumn singles on 28 Aug, 5 Sep, 1-2nc and 9-10 Oct, and on 14 Nov.
 1984 : Singles daily from 4th to 18 Mar except for 5 on 13th. 2 on 18 Jun, then singles on 25th and 29-31 Jul; 12-17 Sep; 7th, 15th and 17-26 Oct. All at Ghadira.
- REDSHANK *Tringa totanus* Pluverott
 1983 : 1 on 1st-3rd and on 10-15 Apr, then on 20 days from 16 May to 3 Sep with most between mid-Jun and mid-Aug; 20 over Chacwick Lakes on 3 Aug, otherwise 1-7 at Ghadira, where singles also on 20th and 30 Oct, and on 12 Nov.
 1984 : 1-4 from 4th to 13 Mar, 1 on 31 Mar, and 1-3 on 4-15 Apr, most at Ghadira. On most days at Ghadira from 14 Jun to 16 Jul, then singles on 11th and 18 Aug, and on 9th and 21 Sep.
- MARSH SANDPIPER *Tringa stagnatilis* Cewcewwa Zohira
 1983 : 2 on 23 Mar and 1 on 19 Apr at Ghadira.
 1984 : 4 on 31 Mar, then 1 until 20 Apr, with 2 on 17th and 19th. In autumn 2 on 7 Oct. All at Ghadira.
- GREENSHANK *Tringa nebularia* Cewcewwa
 1983 : 1 on 3-5 Apr, then 1-4 on most days from 15 Apr to 10 May and 1-2 on 17-18th and on 28-31 May. 1 on 26 Jun, 1-2 on 10-22 Jul, and on 4 Aug, then daily from 15 Aug to 20 Oct; usually singles but 2 or a few days. Only one spring sighting outside Ghadira.
 1984 : 1 on 22 Mar then 1-2 on most days from 5 Apr to 5 May. In autumn singles on 8th and 11-16 Jul, then on most days from 17 Aug to 28 Sep; mostly singles, with max of 3 on 31 Aug. Most sightings at Ghadira.
- GREEN SANDPIPER *Tringa ochropus* Swejda
 1983 : 1-3 on 9 scattered days from 13 Mar to 17 May. In autumn 30 sightings on 29 days from 1 Jul to 28 Sep with 4 at Ghadira on first day highest. Singles at Ghadira on 27 Nov and on 17-18 Dec.
 1984 : Singles at Ghadira on 15th and at Ghajn Rihana on 21 Jan. In spring 18 sightings of 1-2 on 16 days from 11 Mar to 24 Apr, then singles on 11th and 13 Jun. In autumn 24 records on 1-7 birds on 21 days from 4 Jul to 20 Sep; then 1 on 26 Oct, 2 on 11th and 1 on 23 Nov.
- WOOD SANDPIPER *Tringa glareola* Pespup tal-Bahar
 1983 : Almost daily at various sites from 4 Apr to 21 May with 12 at 1a' Gali on 5 May highest. 8 at Ghadira on 26 Jun. Again on several days from 9 Jul to 28 Aug; usually low single figures but 24 at Ghadira on 22 Jul. Singles on 18 Sep, 1st-2nd and 14 Oct.
 1984 : 1 on 19th, then on most days from 28 Mar to 4 May; max of 15 at Ghadira on 15 Apr, otherwise single figures. 15 at Ghadira on 28 Jun, then on several days from 4 Jul to 1 Sep; usually single figures but 100 on 5 Jul, 14 on 18 Jul and 25 on 24 Aug, at Ghadira.
- COMMON SANDPIPER *Actitis hypoleucos* Beqqazzina tar-Rokka
 1983 : 1 at Ghadira on 4 days from 4-13 Mar, then almost daily at various sites from 31 Mar to 27 May; always in single figures except for 21 at 1a' Gali on 29 Apr. 1 on 27 Jun, then on several days from 9 Jul to 1 Oct with most from mid-Jul to end Aug when almost daily; max was 6 at Ghadira on 20 Jul.
 1984 : From 16 Mar to 8 Jun in spring with daily sightings between end Mar and early May; always single figures with a total of 25 at three sites on 15 Apr. In autumn on most days from 30 Jun to 2 Sep, then occasional singles to 11 Oct; single figures except for 15 at B'Bugha on 15 Aug.
- TURNSTONE *Arenaria interpres* Monakella Imperjali
 1983 : 1 at Ghadira on 6 May.
 1984 : 1 at Ghadira on 19-23 May.
- GREAT SKUA *Stercorarius skua* Ciefa Kbira
 1984 : 1 was shot near Comino on 1 Mar.
- MEDITERRANEAN GULL *Larus melanocephalus* Gawwija Rasha Sewda
 1983 : On 4 days between 16 Jan and 13 Mar with 20 in Grand Harbour on first day highest. 1 at Ghadira on 31 Jul and on 24 Nov followed by 3 at St. Julian's and 2 at Ghadira on 28 Dec.
 1984 : Singles on 4 days from 16 Jan to 5 Feb, then on 5 days from 30 Oct to 26 Dec, with 6 at Ghadira on 22 Nov highest.
- LITTLE GULL *Larus minutus* Gawwija Zohira
 1983 : 1 on 16 Jan. Small influx in Dec with 1 on 18th, 4 (3 sightings of 1,1,2) on 28th, 2 singles on 29th and 1 on 31st.
 1984 : Singles on 3rd, 12th and 30 Jan. In Dec, 1 on 9th and 1-2 at Ghadira on 23-26th.
- BLACK-HEADED GULL *Larus ridibundus* Gawwija Rasha Kannella
 1983 : Daily, mainly in Sliema Creek and Grand Harbour, from 1 Jan to 25 Mar, then 1 on 31 Mar and 2 on 26 Apr. Double to low treble figures on most days with max of 280 on 2 Feb. 4 on 12th and 3 on 13 Nov, then daily from 19 Nov to year end with max of 170 on 24 Dec.
 1984 : Daily from 1 Jan to mid-Mar, then less regular to 8 Apr; max was 855 on 9 Feb. 1 was frequently seen at Sliema Creek to 24 May. Singles on 15th and 22 Jul, 2 on 18 Oct and 4 on 2 Nov, then daily from 17 Nov onwards with max of 200 on 3 days in Dec.
- SLENDER-BILLED GULL *Larus genei* Gawwija Geddumha Rqiq
 1983 : Singles at Ghadira on 31 Jul and at St. Julian's on 28 Dec.
 1984 : 1 at Ghadira on 19 Aug.
- AUDOUIN'S GULL *Larus audouinii* Gawwija Geddumha Ahmar
 1984 : 1 at Ghadira on 19 Feb.
- LESSER BLACK-BACKED GULL *Larus fuscus* Gawwija Dahrha Iswed
 1983 : 1 on 22 Jan then 1-3 on 6 days from 27 Mar to 20 May. Singles on 7th and 25 Dec.
 1984 : Singles on 14 Mar, 21-22 Apr, 4 Oct and on 26 Dec.
- HERRING GULL *Larus argentatus* Gawwija Prima
 1983 : Breeding population appears stable. Single figures in harbours and coastal waters on most days but very few sightings between early Jul and mid-Nov.
 1984 : Much in usual numbers with max count away from breeding colonies being 50 off Pembroke on 4 May. As usual fewer sightings in Jul-Oct.
- KILLIWAKE *Rissa tridactyla* Gawwija ta' l-Inqilferra
 1984 : 1 in the north Comino Channel on 6th and 1 found dead at Ghadira Bay on 8 Mar; and 1 at Ghadira on 24 Dec.
- GULL-BILLED TERN *Gelochelidon nilotica* Cirlewwa Geddumha Ohxon
 1983 : 2 on 11-12 Jun and 1 on 24 Jul at Ghadira.
 1984 : 1 at Ghadira on 28 Jul.
- CASPIAN TERN *Sterna caspia* Cirlewwa Prima
 1983 : 1 at Ghadira on 8-10 Nov.

- SANDWICH TERN *Sterna sandvicensis* Cirklewwa tax-Xitwa
 1983 : 1 at Sliema Creek on 6 days from 1 Jan to 3 Feb, then on 6 days from 30 Nov to 26 Dec; always 1-2 but 78 were counted passing off Dragonara Pt. on 23 Dec.
 1984 : Singles on 8 days from 8 Jan to 19 Feb, mostly at Sliema, then 2 on 7 Apr, 1 on 29 Jul and 1 on 5 Dec.
- WHISKERED TERN *Chlidonias hybridus* Cirklewwa bil-Mustacci
 1984 : Singles at Ghadira on 21-24 Apr and on 23 May.
- BLACK TERN *Chlidonias niger* Cirklewwa Sewda
 1983 : 1-3 on 4 days from 4-14 Aug, most at Ghadira.
 1984 : 2 on 21 Sep and 1 on 2 Oct, at Ghadira.
- WHITE-WINGED BLACK TERN *Chlidonias leucopterus* Cirklewwa tal-Gewnah Abjad
 1983 : 1 on 27 Apr and 4 on 7 May at Ghadira; 1 was found dead at la' Qali on 20 May.
 1984 : 1 at Salina on 20 May.
- ROCK DOVE *Columba livia* Tudun tal-Gebel
 1983 : 1 along the NW coast of Gozo on 9 Feb.
- WOODPIGEON *Columba palumbus* Tudun tas-Sinar
 1984 : 1 at Xemxija on 23 Oct.
- THRIFLE DOVE *Streptopelia turtur* Gamiema
 1983 : 1 on 3rd then almost daily from 9 Apr to the end of May; double figures on several days between mid-Apr and mid-May and treble figures on a few days with peak of ca.1200 on 26 Apr. 1-3 at various sites throughout Jun then fewer in Jul-Aug. Autumn passage from 28 Aug to 1 Oct with most in the first half of Sep; mostly single figures with max of 19 at Buskett on 6th.
 1984 : Odd singles from 24 Mar, then almost daily from 10 Apr to 3 Jun with double figures on several days. A few at various sites in Jun-Jul with max of 6 at Buskett on 22 Jul, then on most days from 26 Aug to 14 Oct; always in single figures. Late bird on 24 Nov.
- LAUGHING DOVE *Streptopelia senegalensis* Gamiema ta' L-llwien
 1984 : 1 at Sliema on 22 Feb.
- GREAT SPOTTED CUCKOO *Clamator glandarius* Sultan il-Gamiem tat-Toppu
 1984 : 1 at Ghaxaq on 30 Jun.
- CUCKOO *Cuculus canorus* Daqqqa Kahla
 1983 : 1-2 on 11 days from 12 Apr to 6 May, then singles on 12 Jul, in early Aug, and on 21 Oct.
 1984 : 12 sightings of singles on 10 days from 4th to 29 Apr. In autumn singles on 8th and 15 Jul and on 18 Aug.
- BARN OWL *Tyto alba* Barbaqann
 1983 : Sightings of singles at three sites in Sep-Nov in Gozo.
 1984 : Sightings of 1-2 on single dates in Feb, Apr, Jul and Oct at various sites in Gozo.
- SCOPS OWL *Otus scops* Kokka
 1983 : Singles on 2nd, 4th, 27th and 28 Apr and on 11th and 20 Sep.
 1984 : Singles on 14th, 20th and 25 Apr. In autumn 1 on 10th, 4 on 14th and singles on 20th and 31 Oct.
- LONG-EARED OWL *Asio otus* Qattus
 1983 : 1 seen shot on 30 Oct.
- SHORT-EARED OWL *Asio flammeus* Kokka tax-Xaghri
 1983 : 1 seen shot in Apr and singles on 21st, 22nd and 29 Oct, 6 Nov, and in early Dec.
 1984 : Singles on 7th and 18 Mar and on 7 days from 7 Oct to 8 Nov.
- NIGHTJAR *Caprimulgus europaeus* Buqrajq
 1983 : Sightings of 9 singles on 7 days from 18 Apr to 17 May. In autumn singles on 4 days from 7 Sep to 5 Oct.
 1984 : 1-4 on 4 days from 16 Apr to 1 May and 1-2 on 4 days from 14th to 20 Oct.
- SWIFT *Apus apus* Rundun
 1983 : On most days from 1 Apr to 18 Aug, then less regular to 27 Sep. Highest numbers between mid-May and mid-Jun and early to mid-Aug when often in treble figures with max of 500 on 2 Jun. Unusually late bird on 6 Dec.
 1984 : On most days from 19 Mar to 10 Oct with short gaps between sightings from mid-Jun onwards. Treble figures, max 600, frequently between Apr and Aug. 3 late birds on 20 Nov.
- PALLID SWIFT *Apus pallidus* Rundun Kannelli
 1984 : Singles on 15 Apr and on 22nd and 23 May, then 3 on 30 Jun.
- ALPINE SWIFT *Apus melba* Rundun Zaqqu Bajda
 1983 : 5 sightings of 1-2 birds on 4 days from 17 Apr to 2 Jun, then 1 on 8 Sep.
 1984 : 1-3 on 10 days from 9 Apr to 7 Jul, then 10 sightings on 9 days from 26 Aug to 27 Oct; usually 1-3 but 13 at Dwejra on 2 Oct.
- KINGFISHER *Alcedo atthis* Ghasfur ta' San Martin
 1983 : 1-2 at Ghadira from 1 Jan to 3 Apr. 13 sightings of singles at various places on 12 days between 2 Aug and 11 Sep, then on most days from 1 Oct to 28 Dec with most at Ghadira, where max of 3 on 9-10 Oct.
 1984 : 1-2, mostly at Ghadira, on 19 days from 16 Aug to 11 Oct, then 1-3 daily from 25 Oct to year end.
- BEE-EATER *Merops apiaster* Qerd in-Nahal
 1983 : 1-2 on 4 days from 21 Apr to 26 May and 9 on 18 Sep.
 1984 : 2 on 2 Apr, then 8 sightings on 7 days from 24 Apr to 25 May with up to 20 on each occasion. In autumn 1 on 13 Sep and 3 on 5 Oct.
- ROLLER *Coracias garrulus* Farrug
 1983 : Singles on 15 May and on 29 Aug.
 1984 : 1 at Dwejra on 1 May.
- HOOPOE *Upupa epops* Daqqqa tat-Toppu
 1983 : 16 sightings of 1-4 on 10 days from 28 Mar to 17 Apr, then singles on 27th and 30 May. 1 on 29 Jun. In autumn 9 records of 1-2 on 8 days from 2 Aug to 15 Sep.
 1984 : 20 sightings of 1-2 on 18 days from 4 Mar to 29 Apr, then 1-2 on 16 days from 11 Aug to 8 Oct.
- WRYNECK *Jynx torquilla* Bulebbiet
 1983 : 1 on 12 Jan. In spring recorded from 1 Apr to 5 May when there were 16 sightings of 1-2 on 11 days. Singles on 21st and 30 Aug, then from 6 Sep to 19 Nov when there were 37 sightings with a concentration between 1-9 Oct and 11-19 Nov. Max 6 at Lunzjata on 1 Oct. 1 on 18 Dec.
 1984 : 1 at Ghadira on 3-5 Jan. Poor spring passage, with 1 on 19 Mar and 2-4 Apr and sightings of 7 singles on 5 days from 22-28 Apr. In autumn 1-2 on 10-13 Sep, then 1-3 at various places almost daily from 3 Oct to 30 Dec.
- HOOPOE LARK *Alaemon alaudipes* Alwetta Bumunqar
 1984 : 1 at id-Delli on 1-2 Aug; shot on last day.
- CALANDRA LARK *Melanocorypha calandra* Kalandra
 1983 : 1 at Hal Far on 24 Oct.
- SHORT-TOED LARK *Calandrella brachydactyla* Bilbla
 1983 : Present from 4 Apr to 20 Sep with most passage birds in Apr and from mid-Aug to Sep. Max counts were of 200 at la' Cenc on 1 May and 250 at Sarrafllu on 26 Aug. Bred in usual numbers.
 1984 : Few irregularly from 11 Mar, then in double figures from 10 Apr. First signs of autumn passage on 15 Aug and last recorded on 8 Oct.
- WOODLARK *Lullula arborea* Cuqlajta
 1983 : 1 on 17 Oct, 3 on 14th and 1 on 19 Nov.
 1984 : 1 at Dwejra on 25 Oct.
- SKYLARK *Alauda arvensis* Alwetta
 1983 : Small numbers, max 10, in Jan-Mar to 23rd, then 2 on 1 Apr. Few from 7 Oct, reaching double figures, max 85, by 14th; only up to 15 after mid-Nov.
 1984 : Up to 11 in a few areas in Jan-Mar to 21st, then again from 9 Oct onwards, with most from 18 Oct to 10 Nov when in double or low treble figures, max 165 at Dwejra on 25 Oct.
- SAND MARTIN *Riparia riparia* Hawwiefia tax-Xtut
 1983 : Spring passage from 30 Mar to 29 May with a peak between mid-Apr and mid-May; highest total 1000 at Ghajn Rihana on 11 May. 1 on 19 Jun. In autumn on most days from 30 Aug to 7 Oct; usually single or low double figures, but 100 at Lunzjata on 26 Sep.
 1984 : 3 on 4 Mar and up to 10 on 7 days from 24 Mar to 14 Apr, then on most days from 17 Apr to 10 Jun but not daily after mid-May. Mainly high double figures but 3000 at Lunzjata and 600 at Marsalforn on 8 May. From 29 Aug to 15 Oct in autumn when single or low double figures on most days; max 50 at Ghadira on 30 Sep.
- SWALLOW *Hirundo rustica* Huttafa
 1983 : A few from 23rd, then daily in double to medium treble figures from 30 Mar to 31 May, followed by 1-2 on 6 days from 2-23 Jun. Max was 575 on 27 Apr. In July 1-2 sighted on 3rd, 12th, 20th and 24th. Autumn passage from 23 Aug to 5 Nov with double-treble figures frequently and up to 5000 at Lunzjata on 3 days. Late birds

- on 15 Nov and on 3 Dec.
 1984 : 3 on 12th, then daily from 17 Mar to 12 Jun followed by 1-4 on 8 days from 17 Jun to 24 Jul. Treble figures on several days and 2400 on 8 May. In autumn daily from 26 Aug to 3 Nov then less regular to 24th. Treble figures frequent from mid-Sep to late Oct with max of 1000 at Ghadira on 23 Sep. 1 on 4th and 3 on 9 Dec.
- RED-RUMPED SWALLOW *Hirundo daurica* Regina tal-Huttaf
 1983 : 1 on 21st, 5 on 27th, 4 on 28th and 1 on 29 Apr, all in Gozo.
- HOUSE MARTIN *Delichon urbica* Hawwiefa
 1983 : 1-4 on 11 days from 16 Feb to 31 Mar, then on several days from 1 April to 4 Jun with a peak in late Apr to mid-May, max 1000 at Ghajn Rihana on 11 May. 1 on 11th and 2 on 18 Jun, and 1 on 22 Jul. Only a few in autumn when up to 15 on 13 days from 9 Sep to 17 Oct. 3 on 19 Nov.
 1984 : Spring passage from 2 Mar to 11 Jun, then singles on 25th and 30 Jun. Peak between mid-Apr and mid-May when treble figures (up to 400) almost daily. In autumn singles on 4 days from 25 Aug to 16 Sep then on most days, max 65, from 22 Sep to 27 Oct. 1-3 on 5 days from 16-25 Nov.
- RICHARD'S PIPIT *Anthus novaeseelandiae* Bilblun Prim
 1984 : 2, probably this species, at Dwejra, Gozo on 15 Mar and 1 at Ghadira on 11 Oct.
- LAWNY PIPIT *Anthus campestris* Bilblun
 1983 : 9 sightings of 1-6 birds on 7 days from 2-24 Apr, then 1 on 9 Jun. In autumn 15 records of 1-3 birds on 10 days from 29 Aug to 25 Sep, then singles on 20th and 30 Oct.
 1984 : 1-4 on 9 days from 3 Apr to 1 May. In autumn 15 sightings of 1-2 birds on 13 days from 28 Aug to 8 Oct.
- OLIVE-BACKED PIPIT *Anthus hodgsoni* Dizz tal-Lvant
 1983 : 1 ringed at Xemxija on 2 Nov.
 1984 : 1 ringed at Lunzjata on 3 Nov.
- TREE PIPIT *Anthus trivialis* Dizz
 1983 : 1 on 2 Jan. 1 on 15th, then on most days from 27 Mar to 14 May with double figures, max 45, in the latter half of Apr. In autumn 1 on 15th, then on most days from 29 Aug to 20 Oct; mostly high single figures and occasionally up to 20.
 1984 : 1 on 3rd, then daily from 17 Mar to 5 May, always in single to low double figures. In autumn on most days from 28 Aug to 29 Oct but never more than 10 in any one place.
- MEADOW PIPIT *Anthus pratensis* Pespup
 1983 : Up to 15 in several places in Jan-Mar to 25th, then 1-5 on most days up to 14 Apr. Again from 14 Oct onwards with medium double figures on most days from the end of Oct.
 1984 : Widespread in Jan-Mar with up to 50 in some areas; a few till 10 Apr. Again from 14 Oct onwards, reaching double figures by 18th. Max 100 at Hal Far on 9 Nov.
- RED-THROATED PIPIT *Anthus cervinus* Dizz Ahmar
 1983 : 21 sightings on 14 days from 1 Apr to 1 May with 10 at Munxar on 24-25 Apr highest. In autumn 1-2 on 4 days from 2-23 Oct.
 1984 : Sightings of 5 singles on 4 days from 23-28 Apr were the only spring records. In autumn on most days from 10th to 25 Oct with 10 at Munxar on 15-16th highest.
- WATER/ROCK PIPIT *Anthus spinoletta* Dizz ta' l-Ilma
 1983 : up to 5 at Ghadira from 10 Nov to 31 Dec.
 1984 : 5 at Ghadira from 1st up to 8 Jan, then 1-2 daily to 27 Mar. Singles at the same place on 28 Oct and 5 Nov.
- YELLOW WAGTAIL *Motacilla flava* Isfar
 1983 : 1 on 13th, then daily from 19 Mar to 30 May with double-treble figures between 28 Mar and 10 May, max 320 on 1 Apr. 1-2 on 7 days from 9 Jun to 23 Jul with 3 of the sightings at Ghajn Rihana. In autumn few from 6 Aug, then in double figures (but up to 250 roosting at Lunzjata) from 28 Aug to 7 Oct, with a few to 22 Oct. Late singles on 1st and 17 Nov.
 1984 : From 13 Mar to 26 May in spring, mostly in low double figures, max 70 at Ta' Gali on 30 Apr. 1-3 on 8 days from 8 Jun to 4 Aug; once again 5 of the sightings being at Ghajn Rihana. In autumn daily from 18 Aug to 23 Oct, mostly in low to medium double figures, max 100 at Lunzjata on 8 Sep and on 4 Oct.
- GREY WAGTAIL *Motacilla cinerea* Zakak tad-Dell
 1983 : Low single figures in several places in Jan-Mar to 10th, max 6 at Ghadira on 28 Feb. In autumn from 23 Sep onwards, with highest numbers in Oct to mid-Nov, max 10 at Lunzjata on 6 Oct.

- 1984 : 1-3 in many areas in Jan-Mar to 10th, then 1 at San Gwann on 26-27 Mar. Again from 22 Sep onwards, with up to 10 at Lunzjata on several days in Oct to mid-Nov.
- WHITE WAGTAIL *Motacilla alba* Zakak Abjad
 1983 : Up to 15 in many places in Jan-Mar, then a few till 8 Apr. First in autumn on 7 Oct, reaching double figures by 14th. Smaller numbers in Dec. Up to 150 were roosting at Lunzjata in Nov. No counts at the Valletta roost.
 1984 : Single to low double figures in Jan-Mar, but 150 at Marsa on 16-17 Jan. A few irregularly till 23 Apr. In rapidly increasing numbers from 11 Oct in autumn, with medium double figures even in Dec.
- WREN *Troglodytes troglodytes* Bumistur
 1983 : Singles at Ghadira on 29 Oct and on 4 Dec.
 1984 : 1 at Binqemma on 1-8 Dec.
- DIUNNOCK *Prunella modularis* Ziemel
 1983 : Medium double figures (max 40) at Buskett in Jan, with smaller numbers in other areas. Fewer in Feb and Mar to 20th. From 14 Oct onwards in autumn, with a peak in late Oct to mid-Nov. Max was 50 at Lunzjata on 30 Oct.
 1984 : Single figures in most places and up to 15 at Buskett in Jan-Mar to 11th. Again single figures from 17 Oct, reaching low double figures by 29th. Max was 25 at Buskett on 13 Dec.
- RUFIOUS BUSH CHAT *Cercotrichas galactotes* Rozinjol tax-Xaghri
 1983 : Singles at Sarraflu on 24 Apr and on 8 May.
- ROBIN *Erithacus rubecula* Pifirross
 1983 : Single to low double figures in Jan-Mar but with up to 70 at Buskett. A few in Apr to 24th. 1 at Buskett on 24 Jun and 1-4 at a few places in Aug-Sep. First autumn migrants from 24 Sep with a peak between mid-Oct and mid-Nov when medium double figures in many places. Smaller numbers in Dec.
 1984 : Single to low double figures in Jan-Mar with slightly higher numbers in Mar, max 50 at Buskett on 4th. 1-3 on most days in Apr to 24th, then 1 on 8 May. 1 on 18 Jul, then singles - mainly at Buskett and at Chadwick Lakes - in Aug-Sep. From 10 Oct in autumn, reaching double figures two days later. Low treble figures, max 200, widespread in late Oct to mid-Nov.
- NIGHTINGALE *Luscinia megarhynchos* Rozinjol
 1983 : 1-5 in most places from 1 Apr to 5 May. In autumn daily from 22 Aug to 14 Sep with max of 10 at Buskett and at Chadwick Lakes on 4 days, then singles on 4 days from 18 Sep to 5 Oct.
 1984 : 1 on 18th, then on most days from 29 Mar to 29 Apr, with max of 10 at Buskett on 7 Apr. 1 on 19 May. Singles on 14-15 Aug, then 1-5 irregularly from 26 Aug to 15 Sep and 1-4 on most days from 1-19 Oct. Late bird on 5 Nov.
- BLUE-THROAT *Luscinia svecica* Kudirross Blu
 1983 : Singles at Lunzjata on 5th, 11th and 20 Apr, 22 Oct and 9 Nov.
 1984 : 1 at Lunzjata on 6th, 2 at Munxar on 17th and 1 at Marsalforn on 23-25 Mar. In autumn singles at Dwejra (Gozo) on 5th, at Chadwick Lakes on 12th, at Xemxija on 12-14th, at Lunzjata on 20th, and at Xemxija and at Dwejra (Malta) on 21st, all in Oct.
- BLACK REDSTART *Phoenicurus ochruros* Kudirross Iswed
 1983 : 1-3 in several places in Jan-Mar to 13th; 20 were counted along the NW coast of Gozo on 9 Feb. 1 on 6 Oct, then from 3 Nov onwards with max of 10 at Manoel Isle on 4 Dec.
 1984 : Single figures in Jan-Mar to 18th with max of 7 at Mistra/Selmun on 7 Jan. Again from 23 Oct onwards; usually in high single figures but ca.25 were counted in the Mellieha area on 18 Nov, and 120 at Munxar/Ta' Cenc and 20 at Ramla Bay on 15 Dec.
- REDSTART *Phoenicurus phoenicurus* Kudirross
 1983 : Spring passage from 29 Mar to 1 May when 1-2 in many places on most days. From 31 Aug to 20 Oct on return passage with single figures, max 5 on 3 days, present on many days.
 1984 : 1-3 on 22 days from 28 Mar to 14 May, most after mid-Apr, then 2 on 1st and 1 on 9 Jun. In autumn singles on 5 days from 10-23 Sep, then daily, with up to 10 in some places, from 28 Sep to 25 Oct.
- WHINCHAT *Saxicola rubetra* Bucagg tas-Silla
 1983 : 1 on 1 Apr, then daily from 14 Apr to 7 May and less regular till 21 May. Mainly single to low double figures but up to 100 along the Marfa Ridge on 23 Apr. In autumn 9 sightings of 1-5 birds on 8 days from 10 Sep to 1 Oct.
 1984 : Spring passage from 2 Apr to 13 May with most from 20 Apr to 3 May when up to 12 daily in many places. Singles on 8 days from 9 Sep to 14 Oct.

STONECHAT *Saxicola torquata* Bucaqq tax-Xitwa
 1983 : Single figures, and sometimes up to 10, in Jan-Mar to 15th. First in autumn on 28 Sep, reaching double figures by 1 Oct, max 60 on 22 Oct at Ghadira. Mainly single figures after mid-Nov.
 1984 : Up to 10 in most places in Jan, then single figures till 23 Mar. Late bird on 5 Apr. A few singles from 26 Sep, then double figures from 12 Oct, with max of 40 in several places on many days. Smaller numbers in Dec but low double figures still present in some places.

ISABELLINE WHEATEAR *Oenanthe isabellina* Kuda Izabellina
 1984 : 1 at l-Ahrax on 3 May.

WHEATEAR *Oenanthe oenanthe* Kuda
 1983 : Singles on 18th and 29 Mar then up to 25 on several days in Apr and a few singles in May to 17th. 1 on 3 Jul. In autumn almost daily from 11 Aug to 2 Oct, then odd singles to 18th. Always in single figures.
 1984 : 1 at Mistra on 6-7 Jan. Spring passage from 5 Mar to 29 Apr, but there were several days without sightings; max was 8 at Dwejra on 25 Apr. Almost daily in autumn from 18 Aug to 1 Nov; in single or low double figures, max 20 at Ta' Gali on 30 Aug.

BLACK-EARED WHEATEAR *Oenanthe hispanica* Kuda Dumnikana
 1983 : 1-3 on 6 days from 2-27 Apr.
 1984 : 1-2 on 5 days from 2-28 Apr and singles on 29 Aug and on 1-2 Sep.

ROCK THRUSH *Monticola saxatilis* Ganbublu
 1983 : 2 at Gharb on 3 Apr.
 1984 : 1 at Zebbug on 24 Apr.

BLUE ROCK THRUSH *Monticola solitarius* Merill
 1983 : Good numbers along most cliff breeding sites with max of 10 in some areas. A few in other places in Jan-Mar and Sep-Dec.
 1984 : Much the same numbers as previous year but slightly higher numbers in Sep.

RING OUZEL *Turdus torquatus* Malvizz tas-Sidra Bajda
 1983 : 1 at Ramla Bay on 13 Nov.

BLACKBIRD *Turdus merula* Malvizz lswed
 1983 : Singles on 12 Jan and 25 Feb, and on 5 days from 13 Nov to 4 Dec.
 1984 : Singles on 22 Jan and on 3 days from 24 Nov to 13 Dec.

FIELDFARE *Turdus pilaris* Malvizzun tal-Qtajja'
 1983 : 1 at Ghadira on 3rd and 11 Dec.
 1984 : 1 at l-Ahrax on 22 Dec.

SONG THRUSH *Turdus philomelos* Malvizz
 1983 : Low single figures in some places in Jan-Mar to 20th, with max of 10 at Buskett on 6 Mar. Singles on 1st and 9 Apr. Main autumn passage from 8 Oct to 16 Nov when low double figures daily, max 40 at Xemxija on 16 Oct. Low single figures to year end.
 1984 : Low single figures in a few places in Jan-Feb with a slight increase in Mar, max 15 on 25th. 1-2 on 3 days in Apr to 15th. 1 on 8th, then daily from 11 Oct to year end, but with highest numbers between mid-Oct and mid-Nov, when in double figures, max 225 at a total of 4 sites on 26 Oct.

REDWING *Turdus iliacus* Malvizz Ahmar
 1983 : 3 at Buskett on 28 Jan and singles at Ghadira on 27 Nov, 4th and 13 Dec.
 1984 : 10 on 15th and 2 on 22 Jan at Buskett. Singles on 23rd, 27th and 29 Oct, and on 23 Nov.

MISTLE THRUSH *Turdus viscivorus* Malvizzun Prim
 1983 : 1 at Ghadira on 16 Oct.

CEILL'S WARBLER *Cettia cetti* Baghal ta' l-Ghoilliq
 1983 : Breeding in usual numbers in suitable areas. Several sightings in other places from Aug. Max count 20 at Buskett on several days in Jun-Aug.
 1984 : Present in usual numbers. Max count 25 at Buskett in Jul-Aug.

FAN-TAILED WARBLER *Cisticola juncidis* Baghal ta' l-Imrewha
 1983 : Breeding commonly everywhere. Double figures in many places with up to 40 at Ghadira in Jul-Oct. Birds much less in evidence in Jan and Dec.
 1984 : Further increase in numbers apparent, with highest numbers in evidence in May-Oct when up to 80 in some places.

SAVI'S WARBLER *Locustella luscinioides* Baghal Ahmar
 1983 : Singles at Ghadira on 30 Mar and 3 Apr.

1984 : 1 at Ghadira on 2 Apr.

MOUSTACHED WARBLER *Acrocephalus melanopogon* Baghal Gastni
 1983 : 1 at Xemxija on 23 Oct, then records of 6 singles on 4 days from 12-20 Nov, most at Lunzjata and Ghadira.
 1984 : Singles at Ramla Bay on 4th, at Xemxija on 10th and at Ghadira on 18 Nov, and again at Xemxija on 6 Dec.

SEEDGE WARBLER *Acrocephalus schoenobaenus* Baghal tas-Simar
 1983 : 1 on 5th and 2 on 14th, then on most days from 20 Apr to 14 May; in single to low double figures, max 15 at Lunzjata and 10 at Ramla Valley on 28 Apr. 2 on 27th and 1 on 28 May. In autumn singles on 3rd and 8 Aug, and on 13th and 27 Sep, then small influx on 1 Oct when a total of 12 recorded at 3 sites, and 2 on 9 Oct.
 1984 : Spring passage from 17 Mar to 26 May, but there were many days without any sightings. Totals of 7 on 1st and 9 on 2 May, otherwise 1-3. In autumn singles on 29 Aug and 4 Sep, then 1-3 daily at Xemxija from 12-26 Oct.

MARSH WARBLER *Acrocephalus palustris* Baghal ta' l-Aghdajjar
 1983 : Singles at Chadwick Lakes on 29 Aug and 9 Sep, and at Lunzjata on 3rd and 13 Sep.
 1984 : Singles ringed at Chadwick Lakes on 31 Aug and at Wied il-Luq on 17 Oct.

REED WARBLER *Acrocephalus scirpaceus* Baghal tal-Qasab
 1983 : 1 on 14 Apr, then singles on 8 days from 21 May to 21 Jun. In autumn singles on 5 days from 15 Jul to 10 Aug, then on most days from 18 Aug to 14 Oct, when single figures in many places, with max of 10 at Lunzjata on 24 Sep.
 1984 : 1 at Ghadira on 26 Jan. Singles on 2nd, 18th and 31 May were the only spring sightings. In autumn single figures on most days from 2 Aug to 7 Nov with max of 10 at Lunzjata on 9 Sep.

GREAT REED WARBLER *Acrocephalus arundinaceus* Baghal Prim
 1983 : From 9 Apr to 29 May in spring, with a peak from 23 Apr to 8 May when recorded daily, with max of 7 at Ramla Valley on 26 Apr. Singles on 15th and 26 Jun and on 22 Jul. In autumn singles on 6 days from 10 Aug to 3 Sep, on 2 Oct and on 12 Nov.
 1984 : 1-5 on most days from 8 Apr to 13 May. In autumn 1 on 16 Aug, then 1-2 on 11 days from 12 Oct to 1 Nov.

OLIVACEOUS WARBLER *Hippolais pallida* Bekkafik Griz
 1984 : 1 singing at Buskett on 23 Jun.

ICTERINE WARBLER *Hippolais icterina* Bekkafik Isfar
 1983 : 12 sightings of 1-3 birds from 28 Apr to 1 Jun and 1-2 on 9 days from 23 Aug to 19 Oct.
 1984 : 1-4 on most days from 1-13 May, then singles on 23 May and 2 Jun. In autumn 1-2 on 9 days from 19 Aug to 18 Oct.

MELODIOUS WARBLER *Hippolais polyglotta* Bekkafik ta' l-Ghana
 1984 : 1 at Mellieha on 7 May.

SPECTACLED WARBLER *Sylvia conspicillata* Bufula Hamra
 1983 : Present in small numbers in many places throughout the year. Max counts were 10 at Gharb on 3 Apr and at Pembroke on 15 May.
 1984 : Numbers still low, though slight increase apparent over previous year. Max count 20 at Pembroke on 24 Apr.

SUBALPINE WARBLER *Sylvia cantillans* Bufula Passajra
 1983 : Up to 5 in many places from 15 Mar to 10 Apr, then singles on 4 days from 17 Apr to 13 May. In autumn almost daily from 29 Jul to 10 Oct, with low double figures in many places in Aug-Sep. Max 20 in various places on several days.
 1984 : Single figures on several days from 17 Mar to 28 Apr, then 2 on 6 May. 1 on 30 Jun. Autumn passage from 18 Jul to 12 Oct with a peak from late Jul to mid-Sep, max 30 at Wied il-Luq on 12 Aug.

SARDINIAN WARBLER *Sylvia melanocephala* Bufula Sewda
 1983 : Common everywhere all through the year.
 1984 : Present and breeding in usual numbers.

LESSER WHITETHROAT *Sylvia curruca* Bekkafik Irmied
 1983 : Singles at Lunzjata on 4 Jan; at Buskett on 26 Aug; at Ghadira on 7th and at Chadwick Lakes on 12 Sep; and at Ghadira on 16 Oct and on 29 Oct-3 Nov.
 1984 : 1 at Ghadira on 1-2 Apr.

WHITETHROAT *Sylvia communis* Bekkafik Ahmar
 1983 : 1 on 10th and 14th, then single figures daily from 17 Apr to 3 May, with a few singles till 29 May. Max 6 at Lunzjata on 28 Apr. In autumn singles on 19 Aug, 1st and 5 Sep, and 6 Oct.

- 1984 : Up to 10 on most days from 10 Apr to 3 May, then singles on 11th and 26 May. Singles on 29 Aug, 8th and 12 Sep, and 13-14 Oct.
- GARDEN WARBLER *Sylvia borin* Bekkafik
1983 : On most days from 18 Apr to 21 May; single figures, with max of 10 at Ghadira on 23 Apr. 1 at Buskett on 11 Jun. In autumn 1 on 10th, then almost daily from 19 Aug to 5 Oct; double figures on most days in late Aug and throughout Sep, with max of 30 at Wied Il-Luq on 11 Sep.
- 1984 : Single figures on most days from 10 Apr to 16 May with 10 at Sarraflu on 23 Apr highest. 1 at Ghajn Rihana on 15 Jun. Autumn passage from 16 Aug to 9 Nov, but in smaller numbers than usual, max being 10 at Chadwick Lakes on 10 Sep and at Xemxija on 21 Oct.
- BLACKCAP *Sylvia atricapilla* Kapinera
1983 : Double figures in suitable areas in Jan-Apr to 10th, but treble figures at Buskett where max count 1,000 on 20 Mar. Singles on 13th and 28 Apr. 1 on 8 Sep, then low single figures from 9 Oct onwards.
- 1984 : Double figures at Buskett and single figures elsewhere in Jan-Feb, numbers increasing in Mar, reaching max of 500 at Buskett on 25th. Smaller numbers in Apr to 21st. In high single figures from 12 Oct, reaching double figures by mid-Nov, max 55 at Bingemma on 28 Dec.
- YELLOW-BROWED WARBLER *Phylloscopus inornatus* Vjolin tal-Faxx
1984 : Singles at Xemxija on 26 Oct and on 10 Nov.
- BONELLI'S WARBLER *Phylloscopus bonelli* Vjolin Bajdani
1983 : Singles at Xemxija on 19 Mar; at Chadwick Lakes on 9th and at Ghadira on 10 Sep.
- WOOD WARBLER *Phylloscopus sibilatrix* Vjolin Hadrani
1983 : Almost daily from 4 Apr to 15 May with a peak between 23 Apr and 7 May when often in medium double figures, max 60 at Ramla Valley on 25 Apr. In autumn 1-2 on 7 days from 16 Aug to 7 Sep, then up to 10 at Ghadira on 28 Sep-1 Oct.
- 1984 : Spring passage from 29 Mar to 16 May with most from 11 Apr to 2 May. Low double figures on most days, with max of 30 at Ghadira on 28 Apr. In autumn 17 sightings of 1-4 birds on 13 days from 23 Aug to 13 Oct, with most in late Aug-early Sep.
- CHIFFCHAFF *Phylloscopus collybita* Vjolin tax-Xitwa
1983 : Low double figures, max 30, in most places in Jan-Mar, then single figures in Apr to 8th. Late bird on 9 May. Odd singles from 28 Sep, then daily from 14 Oct onwards, reaching double figures, max 50, by 29th.
- 1984 : Medium double figures in Jan-Mar with a few singles in Apr to 23rd. 1 at Chadwick Lakes on 4 Jul. Singles on 6th and 11th, then daily from 15 Oct onwards, already in double figures by 20th. Max was 100 at Lunjata on 2 Nov.
- WILLOW WARBLER *Phylloscopus trochilus* Vjolin Pastard
1983 : On most days from 25 Mar to 30 Apr, then a few till 14 May; often in low double figures, max 30 at Buskett and 20 at Ghadira on 2 Apr. In autumn almost daily from 8 Aug to 23 Oct with double figures from late Aug to mid-Oct, max 30 at Ghadira on 18 Sep. Late bird on 12 Nov.
- 1984 : Daily from 10 Mar to 9 May, then singles on 3 days to 26th. Max was 30 at Ghadira on 19 Mar. Again daily from 15 Aug to 23 Oct; max 15 at Munxar on 15 Oct, otherwise up to 10. Late bird on 19 Nov.
- GOLDCREST *Regulus regulus* Bufula tal-Qamar
1983 : Singles on 12 Jan and 25 Mar. Regular sightings from 23 Oct onwards, with max of 10 at Ramla Bay on 13 Nov and at Mizieb on 31 Dec.
- 1984 : Singles in several places in Jan-Feb to 15th. Late bird at Sarraflu on 20 Apr.
- FIRECREST *Regulus ignicapillus* Bufula tal-Toppu Ahmar
1983 : 1 on 25 Feb, then 1-2 on 5 days from 1 Nov to 31 Dec.
- 1984 : 1 on 12 Feb, then 1-2 on 5 days from 28 Oct to 19 Nov.
- GOLD/FIRECREST *Regulus regulus/ignicapillus*
1983 : 10 at Mizieb on 2 Jan and 1 at Rabat on 1 Apr. Regular sightings from 16 Oct to year end with max of 20 at Xemxija on 12 Nov.
- 1984 : Regular sightings of single figures, max 10 at Buskett, in Jan-Mar to 19th and again from 21 Oct to 20 Dec.
- SPOTTED FLYCATCHER *Muscicapa striata* Zanzarell tal-Ikiki
1983 : Spring passage from 14 Apr to 27 May when single or occasionally low double figures present in many places on most days. 1 at Buskett on 28 Jun. In autumn singles on 6 days from 23 Aug to 24 Sep, then small influx on 29 Sep-1 Oct with max of 10 at Ghadira.

1984 : On most days from 20 Apr to 14 May, mainly in single figures but up to 32 at Dwejra (Malta) on 25-28 Apr. Up to 5 pairs at Buskett in Jun-Aug. Autumn migrants recorded on 19 days from 4 Aug to 23 Oct with max of 5 at Chadwick Lakes on 10 Oct.

RED-BREASTED FLYCATCHER *Ficedula parva* Zanzarell Sidru Ahmar
1983 : 2 at Lunjata on 14th and 1 at Ghadira on 17-18 Oct, and 1 at Xemxija on 2 Nov.

1984 : 1 at Sarraflu on 1 Oct, then present at Xemxija on 15th, 17th, 25th, 26th and 28 Oct; singles except for 2 on 26th.

COLLARED FLYCATCHER *Ficedula albicollis* Zanzarell tal-Kuller
1983 : 18 sightings on 12 days from 9 Apr to 13 May; singles or twos, except for 3 on Comino on 17th and 5 at Xemxija on 22 Apr.

1984 : 1 on 29 Mar and singles on 5 days from 19th to 28 Apr. 1 on 24 Oct.

PIED FLYCATCHER *Ficedula hypoleuca* Zanzarell Iswed
1983 : Daily from 9 Apr to 6 May and occasionally to 13th. Max was 20 at Ramla Valley on 25 Apr. Singles at Chadwick Lakes on 29-31 Aug and at Lunjata on 5th and 18 Sep.

1984 : On most days from 11 Apr to 7 May; only single figures, max 6 on Comino on 15 Apr. 1 on 17 Sep.

PENDULINE 111 *Remiz pendulinus* Pendulin
1983 : 2 at Lunjata on 2nd, then same two birds at Ramla Bay on 16-18 Nov.

1984 : 3 at Ghadira on 11 Mar.

GOLDEN ORIOLE *Oriolus oriolus* Tajra Safra
1983 : Single figures on most days from 14 Apr to 20 May, but up to 15 on 27 Apr and 2 May. In autumn 5 sightings on 4 days from 24 Aug to 11 Sep; singles, except for 12 at Lunjata on 6 Sep.

1984 : Spring passage from 13 Apr to 24 May but not daily; max 10 at Dwejra (Malta) on 22 Apr. 1 at Buskett on 8 Jul, then 10 sightings of 1-3 on 9 days from 20 Aug to 15 Oct.

RED-BACKED SHRIKE *Lanius collurio* Kaccamendula Hamra
1983 : Singles at Ghadira on 30 Sep-1 Oct and at Ramla Valley on 8 Oct.

1984 : Singles at Ghadira on 2nd and 12th, and at Sarraflu on 14 Oct.

WOODCHAT SHRIKE *Lanius senator* Kaccamendula
1983 : Singles or twos frequently from 1 Apr to 15 May. Singles near Chadwick Lakes on 4 Jun, at L-Ahrax on 7th and at Xemxija on 15 Jul. 1-2 on 3 days from 27-31 Aug were the only autumn migrants recorded.

1984 : 1-2 in many areas on several days from 15 Apr to 26 May (daily from 22 Apr to 9 May). 1-2 were at Xemxija from 26 Jun to 15 Jul and 3 (family party) at tal-Balal on 8-11 Jul. In autumn 1-2 on 6 days from 15 Aug to 17 Sep.

STARLING *Sturnus vulgaris* Sturnell
1983 : Double to low treble figures in some areas in Jan-early Mar, with 200 at Luqa on 5 Mar highest. A few till 2 Apr. 1 at B'Kara on 20 Jul. 1 on 25 Sep, then daily from 1 Oct onwards, with main period of passage in Oct-Nov. Max was 5000 at Luqa on 25 Nov. Smaller numbers in Dec.

1984 : Up to 100 in some places in Jan-Mar to 17th, then singles irregularly to 17 Apr. 1 on Comino on 23 Jun and 2 at Buskett on 15 Jul. 1 on 22 Sep, then from 7 Oct onwards. Highest counts 2000 at Marsa on 5 Nov and 2500 at Luqa on 19 Dec.

RED-EYED VIREO *Vireo olivaceus*
1983 : 1 trapped and ringed at Mellieha on 29 Oct. (1st for Maltese Islands).

SPANISH SPARROW *Passer hispaniolensis* Ghammiel tal-Bejt
1983-84 : Abundant as usual.

TREE SPARROW *Passer montanus* Ghammiel tas-Sigar
1983 : Breeding in usual areas, with max counts 30 at Chadwick Lakes and at Lunjata. Evidence of migrants in Oct-Nov.

1984 : Up to 40 at Chadwick Lakes in Jul-Sep highest at breeding sites. Passage and wintering birds elsewhere in Jan-Mar and Oct-Dec, max 10 at Ghadira on 29 Feb and at Xemxija on 15 Oct.

CHAFFINCH *Fringilla coelebs* Sponsun
1983 : Single figures in Jan-Apr but up to 20 at Buskett in Jan. 1-3 at Buskett in May-Sep during which period occasional sightings also at Chadwick Lakes and at Ghadira. First autumn migrants on 9 Oct, then in low double figures till year end.

1984 : Single figures in Jan-Mar, then scattered singles in Apr-May. In Jun-Sep up to 8 at Buskett and 1-3 sporadically in a few other places. From 9 Oct onwards in

autumn, often in high double figures, max 80 at Dwejra, Malta on 8 Nov. Smaller numbers in Dec.

SERIN *Serinus serinus* Apparell

1983 : Low single figures in a few areas in Jan-Mar to 20th. 1 on 18 Apr. 1-2 on 29-30 Oct, then single figures on most days from 8 Dec onwards, max 10 at Mizieb on 26 Dec.

1984 : 1-3 on a few days in Jan-Mar to 11th. Singles on 8 days from 20 Apr to 18 Aug, most at Ghadira and at Buskett. 1 on 11 Oct, then single figures sporadically from 1 Nov, becoming more regular after 9 Dec.

GREENFINCH *Carduelis chloris* Verdun

1983 : 1-3 on 3 days from 1 Jan to 23 Feb, then 1-6 on 12 days from 20 Mar to 29 Apr. 1 frequently at Ghadira in May-Aug, 1 at Chadwick Lakes on 8-12 Jul, 1 near Lija on 17 Jul, and 5 at Lunzjata on 6 Aug. Singles on 4 days from 16 Sep to 17 Oct, then low single figures frequently in Nov and a few singles in Dec.

1984 : 2 on 3 Jan, then 1-2 on 12 days from 6 Mar to 5 May. Singles recorded from 6 areas between late May and mid-Sep but 5, probably a family party, were at Ghadira on 9 Jun. Frequently recorded from 12 Oct to year end, often in low double figures and with max of 200 at Lunzjata on 8 Nov.

GOLDFINCH *Carduelis carduelis* Gardell

1983 : Singles on 8th and 27 Apr, and on 11th and 31 Dec.

1984 : 1-3 on 3 days from 11 Mar to 10 Apr. 1 at Chadwick Lakes on 23-26 Jul, then singles on 4 days from 3 Nov to 9 Dec.

SISKIN *Carduelis spinus* Ekru

1983 : Singles at Ghadira on 2nd and 26 Nov.

1984 : A female at Buskett on 17 Jun.

LINNET *Carduelis cannabina* Gojjin

1983 : Single figures in Jan-Apr, then scattered sightings of 1-3 birds in various places in May-Sep. In autumn on most days from 9 Oct onwards; mainly single figures but 200 (roosting) at Floriana on 17 Nov.

1984 : Single to low double figures in Jan-Apr, with 50 at Marsalforn on 31 Mar highest. 1-3 on 5 days in May-Jul. On most days from 10 Oct onwards, often in low to medium double figures.

SCARLET ROSEFINCH *Carpodacus erythrinus* Rumunqar

1984 : 1 was trapped at Bugibba on 10 Jun.

HAWFINCH *Coccothraustes coccothraustes* Taz-Zeobuc

1983 : Singles on 14th and 26 Oct and on 17 Dec.

1984 : Passage during the first week of Apr with up to 10 in Gozo. Singles on 11 Oct and on 20 Nov.

ORTOLAN BUNTING *Emberiza hortulana* Orfolan

1983 : 2 at Rabat on 8 May.

1984 : 3 at Zurrieq on 11th and 5 at Buskett on 21 Apr.

RUSTIC BUNTING *Emberiza rustica* Durrajsa Qastnija

1983 : 1 at Lunzjata on 29 Oct.

LITTLE BUNTING *Emberiza pusilla* Durrajsa Qerqniija

1983 : 1 at Lunzjata on 29-30 Oct.

CHESTNUT BUNTING *Emberiza rutila*

1983 : A first year male was ringed at Lunzjata on 12 Nov. (1st for Maltese Islands).

REED BUNTING *Emberiza schoeniclus* Durrajsa tal-Qasab

1983 : 1 on 5th, then daily from 22 Oct to 1 Dec, followed by 1-2 on 13-19 Dec. Recorded from Ghadira, Xemxija, Lunzjata and Munxar, with 8 at Ghadira on 14 Nov highest.

1984 : Singles on 1-7 Jan and on 11-23 Mar at Ghadira. 1-5 on most days at the same place from 18 Oct to 30 Dec, and singles at Xemxija on 31 Oct and at Lunzjata on 2 Nov.

CORN BUNTING *Miliaria calandra* Durrajsa

1983 : Breeding in usual numbers. Max flock count was of 200 at Dwejra, Gozo, on 29 Aug.

1984 : Largest summer flock recorded was of only 50 at Dwejra, Gozo on 1 Sep. Flocks of up to 30 in Sep-Nov probably migrants.

RINGING REPORT FOR 1984-85

This report covers the two-year period from 1st January 1984 to 31st December 1985. During 1984, 8,718 birds of 84 species were ringed. The figure for 1985 was of 12,143 belonging to 89 species, bringing the grand total ringed since September 1965 to 153,369 birds of 149 species and two hybrids. Only one new species was added to the ringing list during the period under review - a Woodcock mist-netted at Rabat in February 1985.

During 1984 the scheme was composed of fourteen ringers, these being J. Attard Montalto, J. Borg, S. Balzan, V. Cilia, G. Cachia, R. Cachia Zammit, R. Gatea, Br. Edmund, C. Gauci, M.V. Gauci, B.K. German, J. Grech, J. Sultana and R. Testa. The permits of S. Balzan and R. Testa were withdrawn in 1985 after a long period of inactivity. No new permits were issued during the two years but in 1985 three trainees were regularly attending ringing sessions.

1984 was a rather poor year. There were few wintering birds in January-March when only 667 were ringed. On the credit side, several interesting species were ringed, including a few vagrants such as Olive-backed Pipit, Marsh Warbler, and Penduline Tit. Robins, with 1,593, topped the list of birds ringed, followed by Swallows with 1,001. With 509 ringed, the Fan-tailed Warbler was the sixth most ringed species.

1985 proved to be a much better year. Record monthly totals were obtained in February July and November. There were hardly any hirundines in April but fair numbers were ringed in May. Vagrants ringed included 3 Yellow-browed Warblers and a Semi-collared Flycatcher. Robin totals reached a record figure with 2,765 ringed. Other record totals were those for Dunnock (253), Sardinian Warbler (913) and Blackcap (925).

As usual, this report consists of a list of ringing and recovery totals to the end of 1985, a section dealing with recoveries of locally-ringed birds, as well as a section listing foreign-ringed birds recovered in the Maltese Islands.

As in past years, C. Gauci, the Ringing Secretary, has been responsible for the recording and filing of ringing and recovery data and retrap cards, as well as for the issue of a bi-monthly ringing newsletter for ringers.

Joe Sultana & Charles Gauci
Ringing Officer Ringing Secretary

RINGING AND RECOVERY TOTALS TO 31.12.85

Species	Ringed	Ringed	Grand Total	Recovered	
	in 1984	in 1985		1965-1985	1984-85
Little Grebe <i>Tachybaptus ruficollis</i>	-	-	1	-	-
Black-necked Grebe <i>Podiceps nigricollis</i>	1	1	3	-	1
Cory's Shearwater <i>Calonectris diomedea</i>	219	181	1,483	5	25
Manx Shearwater <i>Puffinus puffinus</i>	24	2	447	1	5
Storm Petrel <i>Hydrobates pelagicus</i>	285	499	13,347	1	25
Little Bittern <i>Ixobrychus minutus</i>	2	2	37	-	1
Night Heron <i>Nycticorax nycticorax</i>	-	1	3	-	-
Kestrel <i>Falco tinnunculus</i>	-	-	9	-	1
Hobby <i>Falco subbuteo</i>	-	-	1	-	-
Quail <i>Coturnix coturnix</i>	-	1	6	-	-
Water Rail <i>Rallus aquaticus</i>	1	5	27	-	1
Spotted Crane <i>Porzana porzana</i>	-	1	9	-	1
Little Crane <i>Porzana parva</i>	-	1	6	-	-

Baillon's Crane <i>Porzana pusilla</i>	-	-	1	-	-
Moorhen <i>Gallinula chloropus</i>	4	2	52	-	2
Coot <i>Fulica atra</i>	1	-	2	-	-
Stone Curlew <i>Burhinus oediconemus</i>	-	-	1	-	-
Little Ringed Plover <i>Charadrius dubius</i>	4	-	41	-	1
Ringed Plover <i>Charadrius hiaticula</i>	-	-	4	-	-
Lapwing <i>Vanellus vanellus</i>	-	-	1	-	-
Little Stint <i>Calidris minuta</i>	12	4	366	-	4
Temminck's Stint <i>Calidris temminckii</i>	3	-	26	-	-
Curlew Sandpiper <i>Calidris ferruginea</i>	1	-	33	-	3
Dunlin <i>Calidris alpina</i>	-	1	30	-	-
Ruff <i>Philomachus pugnax</i>	-	1	33	-	1
Jack Snipe <i>Lymnocyptes minimus</i>	-	2	18	-	1
Snipe <i>Gallinago gallinago</i>	3	1	35	-	3
Great Snipe <i>Gallinago media</i>	-	1	7	-	1
Woodcock <i>Scolopax rusticola</i>	-	1	1	-	-
Spotted Redshank <i>Tringa erythropus</i>	1	-	2	-	-
Redshank <i>Tringa totanus</i>	-	-	2	-	-
Marsh Sandpiper <i>Tringa stagnatilis</i>	-	-	1	-	-
Greenshank <i>Tringa nebularia</i>	-	-	1	-	-
Green Sandpiper <i>Tringa ochropus</i>	1	-	20	-	3
Wood Sandpiper <i>Tringa glareola</i>	1	-	85	-	8
Common Sandpiper <i>Actitis hypoleucos</i>	11	2	148	-	-
Mediterranean Gull <i>Larus melanocephalus</i>	-	-	1	-	-
Black-headed Gull <i>Larus ridibundus</i>	-	-	1	-	1
Yellow-legged Herring Gull <i>Larus cachinnans</i>	62	2	162	4	6
Sandwich Tern <i>Sterna sandvicensis</i>	-	-	1	-	-
Turtle Dove <i>Streptopelia turtur</i>	1	-	40	-	4
Cuckoo <i>Cuculus canorus</i>	1	-	18	-	-
Scops Owl <i>Otus scops</i>	2	2	99	-	5
Short-eared Owl <i>Asio flammeus</i>	-	1	2	-	-
Nightjar <i>Caprimulgus europaeus</i>	-	-	12	-	1
Swift <i>Apus apus</i>	2	1	6	-	-
Kingfisher <i>Alcedo atthis</i>	6	7	78	1	8

Hoopoe <i>Upupa epops</i>	-	3	11	-	-
Wryneck <i>Jynx torquilla</i>	24	25	310	-	1
Short-toed Lark <i>Calandrella brachydactyla</i>	-	2	136	-	1
Woodlark <i>Lullula arborea</i>	-	-	2	-	-
Skylark <i>Alauda arvensis</i>	1	-	27	1	5
Sand Martin <i>Riparia riparia</i>	208	271	7,361	2	33
Swallow <i>Hirundo rustica</i>	1,001	302	15,384	2	83
Red-rumped Swallow <i>Hirundo daurica</i>	-	-	32	-	1
House Martin <i>Delichon urbica</i>	261	363	4,929	1	13
Richard's Pipit <i>Anthus novaeseelandiae</i>	-	-	1	-	-
Tawny Pipit <i>Anthus campestris</i>	-	-	9	-	-
Olive-backed Pipit <i>Anthus hodgsoni</i>	1	-	3	-	-
Tree Pipit <i>Anthus trivialis</i>	41	59	931	-	1
Meadow Pipit <i>Anthus pratensis</i>	35	37	883	-	7
Red-throated Pipit <i>Anthus cervinus</i>	5	5	55	-	-
Rock/Water Pipit <i>Anthus spinoletta</i>	2	-	12	-	-
Yellow Wagtail <i>Motacilla flava</i>	43	14	2,291	-	19
Grey Wagtail <i>Motacilla cinerea</i>	27	21	533	-	7
White Wagtail <i>Motacilla alba</i>	20	38	468	-	5
Wren <i>Troglodytes troglodytes</i>	-	1	18	-	-
Dunnock <i>Fringilla modularis</i>	84	253	1,234	3	8
Rufous Bush Chat <i>Cercotrichas galactotes</i>	-	-	7	-	-
Robin <i>Erithacus rubecula</i>	1,593	2,765	21,117	10	158
Thrush Nightingale <i>Luscinia luscinia</i>	-	-	4	-	-
Nightingale <i>Luscinia megarhynchos</i>	48	46	1,217	-	2
Bluethroat <i>Luscinia svecica</i>	4	6	57	-	-
Black Redstart <i>Phoenicurus ochruros</i>	17	24	126	-	1
Redstart <i>Phoenicurus phoenicurus</i>	82	50	1,781	-	3
Whinchat <i>Saxicola rubetra</i>	18	37	417	-	-
Stonechat <i>Saxicola torquata</i>	85	118	1,187	-	2
Isabelline Wheatear <i>Oenanthe isabellina</i>	-	-	1	-	-
Wheatear <i>Oenanthe oenanthe</i>	9	4	132	-	1
Black-eared Wheatear <i>Oenanthe hispanica</i>	1	-	3	-	-
Rock Thrush <i>Monticola saxatilis</i>	-	-	3	-	-
Blue Rock Thrush <i>Monticola solitarius</i>	2	1	62	-	3

Ring Ouzel <i>Turdus torquatus</i>	-	-	3	-	-	Firecrest <i>Regulus ignicapillus</i>	13	62	265	2	3
Blackbird <i>Turdus merula</i>	2	6	147	-	12	Spotted Flycatcher <i>Muscicapa striata</i>	55	58	942	2	5
Fieldfare <i>Turdus pilaris</i>	-	-	2	-	-	Red-breasted Flycatcher <i>Ficedula parva</i>	4	4	49	-	-
Song Thrush <i>Turdus philomelos</i>	66	82	719	1	29	Semi-collared Flycatcher <i>Ficedula semitorquata</i>	-	1	5	-	-
Redwing <i>Turdus iliacus</i>	-	-	24	-	-	Collared Flycatcher <i>Ficedula albicollis</i>	4	5	205	-	-
Cetti's Warbler <i>Cettia cetti</i>	74	79	714	7	26	Pied Flycatcher <i>Ficedula hypoleuca</i>	68	80	1,563	-	2
Fan-tailed Warbler <i>Cisticola juncidis</i>	509	685	2,793	4	30	Penduline Tit <i>Remiz pendulinus</i>	3	-	7	-	2
Grasshopper Warbler <i>Locustella naevia</i>	-	-	3	-	-	Golden Oriole <i>Oriolus oriolus</i>	5	2	116	-	6
River Warbler <i>Locustella fluviatilis</i>	-	-	1	-	-	Red-backed Shrike <i>Lanius collurio</i>	4	4	77	-	-
Savi's Warbler <i>Locustella luscinioides</i>	-	3	35	-	-	Woodchat Shrike <i>Lanius senator</i>	3	4	142	-	-
Moustached Warbler <i>Acrocephalus melanopogon</i>	4	6	69	-	1	Starling <i>Sturnus vulgaris</i>	1	1	67	-	6
Sedge Warbler <i>Acrocephalus schoenobaenus</i>	38	47	1,399	-	1	Spanish Sparrow <i>Passer hispaniolensis</i>	620	797	10,464	8	114
Marsh Warbler <i>Acrocephalus palustris</i>	2	2	11	-	-	Tree Sparrow <i>Passer montanus</i>	13	54	283	-	1
Reed Warbler <i>Acrocephalus scirpaceus</i>	76	65	1,104	-	-	Red-eyed Vireo <i>Vireo olivaceus</i>	-	-	1	-	-
Great Reed Warbler <i>Acrocephalus arundinaceus</i>	23	26	864	-	3	Chaffinch <i>Fringilla coelebs</i>	28	42	457	-	6
Olivaceous Warbler <i>Hippodamia pallida</i>	-	-	3	-	-	Brambling <i>Fringilla montifringilla</i>	-	-	4	-	-
Icterine Warbler <i>Hippodamia icterina</i>	46	91	803	-	-	Serin <i>Serinus serinus</i>	-	25	219	-	4
Melodious Warbler <i>Hippodamia polyglotta</i>	-	-	2	-	-	Greenfinch <i>Carduelis chloris</i>	-	3	269	-	18
Dartford Warbler <i>Sylvia undata</i>	-	-	35	-	-	Goldfinch <i>Carduelis carduelis</i>	-	-	14	-	1
Spectacular Warbler <i>Sylvia conspicillata</i>	38	15	1,225	1	3	Siskin <i>Carduelis spinus</i>	-	-	6	-	-
Subalpine Warbler <i>Sylvia cantillans</i>	146	355	3,730	-	1	Linnet <i>Carduelis cannabina</i>	2	5	901	-	53
Sardinian Warbler <i>Sylvia melanocephala</i>	743	913	8,843	-	29	Scarlet Rosefinch <i>Carpodacus erythrinus</i>	-	-	3	-	-
Ruppell's Warbler <i>Sylvia ruppelli</i>	-	-	2	-	-	Hawfinch <i>Coccothraustes coccothraustes</i>	-	-	1	-	-
Orphean Warbler <i>Sylvia hortensis</i>	-	-	4	-	-	Lapland Bunting <i>Calcarius lapponicus</i>	-	-	1	-	-
Barred Warbler <i>Sylvia nisoria</i>	-	-	1	-	-	Yellowhammer <i>Emberiza citrinella</i>	-	-	1	-	-
Lesser Whitethroat <i>Sylvia curruca</i>	1	3	40	-	-	Ortolan Bunting <i>Emberiza hortulana</i>	-	-	2	-	-
Whitethroat <i>Sylvia communis</i>	49	63	1,336	-	1	Rustic Bunting <i>Emberiza rustica</i>	-	-	5	-	1
Garden Warbler <i>Sylvia borin</i>	198	282	5,505	-	8	Little Bunting <i>Emberiza pusilla</i>	-	-	2	-	-
Blackcap <i>Sylvia atricapilla</i>	308	925	6,852	4	17	Chestnut Bunting <i>Emberiza rutila</i>	-	-	1	-	-
Yellow-browed Warbler <i>Phylloscopus inornatus</i>	-	3	9	-	-	Yellow-breasted Bunting <i>Emberiza aureola</i>	-	-	1	-	-
Bonelli's Warbler <i>Phylloscopus bonelli</i>	-	4	111	-	-	Reed Bunting <i>Emberiza schoeniclus</i>	8	13	114	-	-
Wood Warbler <i>Phylloscopus sibilatrix</i>	359	315	3,432	-	-	Corn Bunting <i>Miliaria calandra</i>	17	17	322	-	5
Chiffchaff <i>Phylloscopus collybita</i>	723	1,546	16,847	6	44	Swallow X House Martin <i>Hirundo rustica X Delichon urbica</i>	-	-	1	-	-
Willow Warbler <i>Phylloscopus trochilus</i>	278	272	2,702	1	3	Tree Sparrow x Spanish Sparrow <i>Passer montanus x hispaniolensis</i>	-	-	1	-	1
Goldcrest <i>Regulus regulus</i>	7	11	160	-	-						
		42									
totals							8,718	12,143	153,369	67	900
								43			

RINGING RECOVERIES

This section deals with 31 recoveries of 16 species reported during 1984-85. Only those found at least 5km away from the ringing site are included. The co-ordinates of the localities are given once when these are first mentioned.

Key to symbols and terms used in the recovery list :

Arrangement of entry : recoveries are arranged by species, and within species usually by date of the recovery letter. Ringing details are given on the first line 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.
2 = fully grown; year of hatching quite unknown.
3 = definitely hatched during current calendar year.
3J = as above, but bird still partly or completely in juvenile body plumage.
4 = hatched before current calendar year; exact year unknown.
5 = definitely hatched during last calendar year.
(A number in brackets beside the age code 1 indicates the size of the brood).

Sex : M = male; F = female.

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

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.

Yellow-legged Herring Gull *Larus cachinnans*

GP27.677 1 30.05.83 Filfla : 35.47 N, 14.25 E.
+ (17.03.85) nr. Gozo : 36.00 N, 14.20 E.

Kingfisher *Alcedo atthis*

SA44.741 3 05.10.85 Ghadira : 35.58 N, 14.21 E.
+ 10.11.85 Ghajn Iuffieha : 35.55 N, 14.21 E.

Sand Martin *Riparia riparia*

40.411 4 08.05.85 Lunjata Valley : 36.03 N, 14.14 E, Gozo.
v 10.05.85 Ghadira : 35.58 N, 14.21 E.

Swallow *Hirundo rustica*

24.840 * 4M 17.04.82 Lunjata Valley.
x 08.05.84 Struhare : 49.35 N, 13.36 E (Plzen), CZECHOSLOVAKIA.
24.262 4F 15.04.82 Lunjata Valley.
/?/ spring 1985 Badriane : 26.03 N, 00.18 E (Timimoun), ALGERIA.

House Martin *Delichon urbica*

18.190 4 16.05.81 Lunjata Valley.
v 11.07.83 Ostrava-Antosovice : 49.54 N, 18.19 E (Ostrava), CZECHOSLOVAKIA.

Dunnock *Prunella modularis*

37.697 3 16.11.84 Ghajn Zejtuna : 35.58 N, 14.22 E.
v 02.12.84 Rabat : 35.53 N, 14.24 E.
43.775 2 30.10.85 Lunjata Valley.
() 26.11.85 Zurrieq : 35.50 N, 14.28 E.

Robin *Erithacus rubecula*

35.218 4 15.10.84 Munxar : 36.02 N, 14.14 E, Gozo.
v 21.10.84 Xemxija : 35.57 N, 14.23 E.
35.790 * 3 24.10.84 Sarraflu : 36.05 N, 14.13 E, Gozo.
x 11.05.85 Otalampi, Vihti : 60.24 N, 24.30 E (Uusimaa), FINLAND.
35.882 * 3 30.10.84 Sarraflu, Gozo.
x 00.04.85 Rantsevo vil : 56.56 N, 34.12 E Kalinin O Kuvshinovsk reg., U.S.S.R.
38.626 3 20.12.84 nr. Chadwick Lakes : 35.54 N, 14.24 E.
v 24.02.85 Buskett : 35.51 N, 14.25 E.
43.250 3 29.10.85 Buskett.
v 01.11.85 Ghadira.

Cetti's Warbler *Cettia cetti*

36.930 3F 03.09.84 Chadwick Lakes.
v 18.07.85 Birzebuga : 35.49 N, 14.31 E.
06.368 3F 22.07.85 Chadwick Lakes.
v 04.11.85 Ghajn Zejtuna.
35.060 1(3/3) 20.05.84 Girgenti Valley : 35.51 N, 14.25 E.
v=F 20.11.85 Ghajn Zejtuna.

Fan-tailed Warbler *Cisticola juncidis*

2A.064 3 09.07.84 nr. Chadwick Lakes.
() 10.10.84 Nigret (Zurrieq) : 35.49 N, 14.28 E.
2A.176 3M 04.08.84 Ghadira.
v 31.07.85 Chadwick Lakes.
2A.159 3F 03.08.84 Ghajn Rihana : 35.55 N, 14.24 E.
v 09.09.85 Lunjata Valley, Gozo.

Subalpine Warbler *Sylvia cantillans*

27.013 3J 01.08.83 Birzebuga.
v=4F 18.08.84 Chadwick Lakes.

Blackcap *Sylvia atricapilla*

33.060 3M 11.11.83 Ghajn Zejtuna.
v 25.03.84 Buskett.
29.247 4F 15.01.85 Ghadira.
v 24.02.85 Buskett.
08.659 4F 23.02.80 Sfa. Lucia : 35.52 N, 14.31 E.
v 02.03.85 Buskett.

Chiffchaff *Phylloscopus collybita*

A9.380 2 30.10.83 Xemxija.
v 12.02.84 Buskett.
3A.524 2 13.11.85 Ghadira.
v 22.11.85 Ta' Pinu : 36.04 N, 14.13 E, Gozo.
4A.650 2 13.11.85 Ta' Pinu, Gozo.
v 27.12.85 Ghajn Zejtuna.

Willow Warbler *Phylloscopus trochilus*

A7.597 3 02.10.82 Lunjata Valley.
v 07.05.85 Ottenby : 56.12 N, 16.24 E (Oland), SWEDEN.

Firecrest *Regulus ignicapillus*

0A.544 3M 04.11.84 Xemxija.
v 19.11.84 Has-Saptan : 35.50 N, 14.31 E.
0A.623 3M 10.11.85 Xemxija.
v 07.12.85 Mosta : 35.55 N, 14.26 E.

Spotted Flycatcher *Muscicapa striata*

A036.790 3 28.09.79 Ghadira.
x 23.05.82 Gutfaring :46.54 N, 14.31 E (Karnten), AUSTRIA.

Spanish Sparrow *Passer hispaniolensis*

B00.747 2M 23.12.84 Xemxija.
() 23.01.85 Rabat.

FOREIGN RINGED BIRDS RECOVERED IN MALTA

This section deals with 20 foreign ringed birds of 19 species recovered in Malta. Some of these were recovered previous to the two-year period covered by this report but either recovery or ringing details only reached us during the two-year period under review. The symbols and terms used are the same as those in the previous section.

Honey Buzzard *Pernis apivorus*

Helsinki 1 10.08.81 Nurmo, Vaasan 62.41 N, 23.04 E (Lääni), FINLAND.
9-85.226 + 15.10.81 Buskeft : 35.51 N, 14.25 E.

Marsh Harrier *Circus aeruginosus*

Riga 4M 17.05.78 Lake Engure : 57.15 N, 23.07 E, LATVIAN S.S.R.
C-13.155 + 07.10.84 Dingli Cliffs : 35.51 N, 14.23 E.

Osprey *Pandion haliaetus*

Helsinki 1 10.07.84 Jousa, Keski-Soumen Lääni, FINLAND.
M-21.371 + 16.09.84 Qrendi : 35.50 N, 14.27 E.

Kestrel *Falco tinnunculus*

Praha 1 03.07.77 Náchod : 50.25 N, 16.10 E, CZECHOSLOVAKIA.
E 241.220 () 00.11.81 St. Patrick's : 35.55 N, 14.29 E.
(found with jessies, entangled on T.V. antenna).

Hobby *Falco subbuteo*

Praha 1 17.07.82 Horní Krupá : 49.40 N, 15.35 E (Havtičkov Brod),
H 69.041 CZECHOSLOVAKIA.
+ 00.09.83 'Gozo' : ca. 36.03 N, 14.15 E.

Kentish Plover *Charadrius alexandrinus*

Sofia 1 24.05.83 Atanasovsko ezero : 42.30 N, 27.29 E (Burgas), BULGARIA.
2-25.331 x 29.09.84 Luqa : 35.51 N, 14.29 E.
(hit by aircraft).

Curlew Sandpiper *Calidris ferruginea*

Stockholm 3 30.08.78 Ottenby : 56.12 N 16.24 E (Öland), SWEDEN.
3.328.582 v(!) 01.04.85 Birzebuga : 35.49 N, 14.31 E.
(reported as controlled !)

Ruff *Philomachus pugnax*

Helsinki 3M 29.08.84 Salo, Turun Ja Porin : 60.22 N, 23.06 E (Lääni),
B1 11.228 FINLAND.
+ 10.04.85 Salina : 35.55 N, 14.25 E.

Great Skua *Stercorarius skua*

London 1 15.07.80 Foula : 60.08 N, 02.05 W (Shetland), SCOTLAND.
HW 81.746 + 01.03.84 nr. Comino : 36.00 N, 14.18 E.

Caspian Tern *Sterna caspia*

Stockholm 1 10.06.80 Danaflööt : 56.04 N, 15.43 E, Blekinge, SWEDEN.
7.078.012 + 22.10.80 Salina : 35.55 N, 14.25 E.
Stockholm 1 15.06.78 Stenarna, Hållnäs : 60.38 N, 17.56 E (Uppland), SWEDEN.
7.064.383 x 05.04.85 Delimara : 35.49 N, 14.34 E.

Turtle Dove *Streptopelia turtur*

Praha 1(2/2) 10.06.82 Kamenica nad Hronom : 47.50 N, 18.46 E (Nové Zámky),
H 44.986 CZECHOSLOVAKIA.
() 10.05.85 Qammieh : 35.58 N, 14.20 E.

Sand Martin *Riparia riparia*

Praha 3 22.07.81 Sedlec, pond Nesyť : 48.47 N, 16.42 E (Břeclav),
T 168.978 CZECHOSLOVAKIA.
v 24.04.82 Sta. Lucia : 35.52 N, 14.31 E.

Swallow *Hirundo rustica*

Arnhem 1M 12.06.82 Nunspeet : 52.23 N, 05.47 E (Gelderland), NETHERLANDS.
A 542.546 v 18.04.84 Sta. Lucia : 35.52 N, 14.31 E.
Ljubljana 3 24.08.85 Koseze : 46.04 N, 14.27 E (Ljubljana), Slovenija,
A 155.494 YUGOSLAVIA.
+ 23.09.85 Zurrieq : 35.50 N, 14.29 E.

Tree Pipit *Anthus trivialis*

Budapest 3 28.08.83 Budakeszi : 47.31 N, 18.56 E, HUNGARY.
953.793 v 31.03.85 Mfahleb : 35.52 N, 14.21 E.

White Wagtail *Motacilla alba*

Praha 1(5/5) 08.05.81 Dlouhá Loučka : 49.49 N 17.11 E (Olomouc),
T 189.861 CZECHOSLOVAKIA.
x 00.11.81 'Malta' : ca. 35.55 N, 14.30 E.

Sedge Warbler *Acrocephalus schoenobaenus*

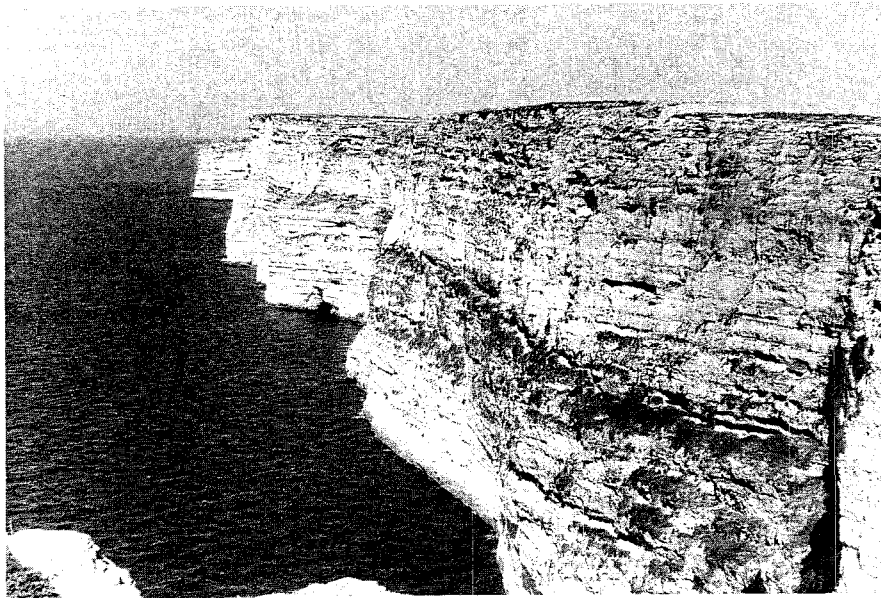
Helsinki 3 16.09.84 Helsinki Helsingfors : 60.13 N, 25.00 E, Uudenmaan
V 94.840 Lääni, FINLAND.
v 13.10.84 Xemxija, St. Paul's Bay : 35.57 N, 14.23 E.

Goldfinch *Carduelis carduelis*

London 5F 07.05.85 Tangham Farm, Hollesley : 52.05 N, 01.26 E (Suffolk),
C 280.419 ENGLAND.
+ (03.12.85) Mosta : 35.55 N, 14.26 E.

Siskin *Carduelis spinus*

Sempach 2 24.10.84 Gleiterspitz : 47.10 N, 09.03 E (St. Gallen),
A 415.954 SWITZERLAND.
() 29.11.85 Ghaxaq : 35.51 N, 14.32 E.



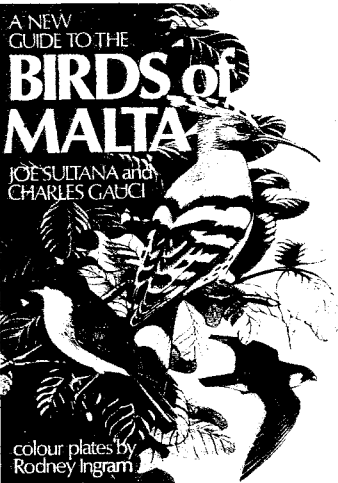
Colonies of Cory's Shearwaters in Malta are found in such limestone cliffs. This makes it very difficult to carry out studies on their breeding biology. (Photo : Joe Sultana).



Nest of Moorhen, a new breeding species for Malta, see page 20. (Photo : Joe A. Doublet)

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