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BREEDING BIOLOGY OF THE

CRAG MARTIN *HIRUNDO RUPESTRIS*.

ALMO FARINA

The breeding biology of the Crag Martin has been little studied. This south-palearctic species shows a strong tendency to aggressive display towards conspecifics as well as intruders of other species including Man. Breeding pairs on the so called Alpi Apuane (Tuscany Appennines) have been followed throughout the reproductive cycle.

INTRODUCTION

The Crag Martin is a southern palearctic species and, in Europe is found as regular breeder in Spain, Southern France, Switzerland, Bavaria, Austria, Italy and the Balkans (Dement'ev et al. 1954; Cramp 1970.). Information concerning its breeding behaviour is scanty and restricted to the northernmost populations of the Mediterranean range. It seems therefore worthwhile reporting observations done on some breeding Crag Martins watched in a montaneous area of the so-called Alpi Apuane, Tuscany.

MATERIALS AND METHODS

Observations have been registered, for the activity of one breeding pair, on a check-sheet devised for the purpose. The observation time-unit, after careful checking, has been chosen at one minute (1 min.).

I have been able to tell apart the two members of the pair because of different moult conditions of the flight feathers (Stresemann 1969). The observation post was located within a few meters of the base of the "cliff" on which the nest had been built. (see fig. 1). 7 x 30 binoculars were used and a zoom telescope 25 x 60. The nest was inspected with a mirror mounted on a pole. The observation periods lasted from 9-6-1976 to 12-9-1976. After that date the pair, after a second brood, ceased frequenting the cliff under observation. It was presumed that the pair had moved to nearby warmer rock-walls with their young. This seems to be substantiated by the observation, on the same date (12-9-1976) of several Crag Martin adults as well as young, concentrated in an abandoned quarry, facing S-W, not far from the village of Equi Terme. Observations began few days after the hatching of the eggs of the first brood. The observation period has been conventionally divided into three "subperiods". 1st subperiod = caring of the first brood (ca. 2600 observation minutes, from 9-6 till 1-7); 2nd subperiod = egg deposition and incubation of the second brood, (ca. 1800 obser. minutes, from 18 to 29-7); 3rd subperiod = fledging of the second brood (1740 obser. minutes from

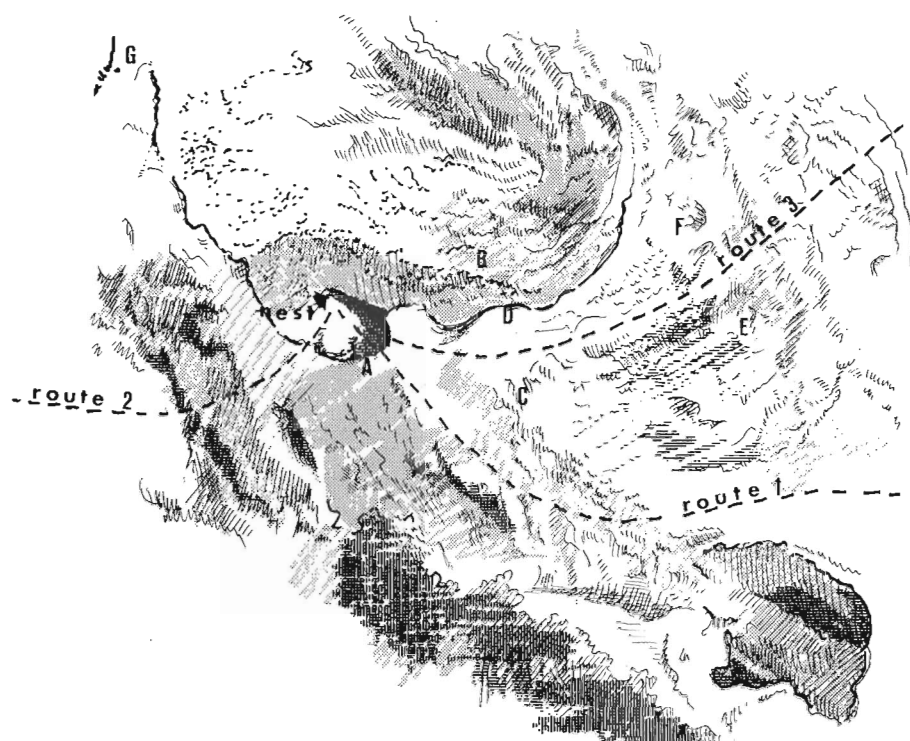


Fig.1 - Schematic representation of the nest site, main perching posts and flight-routes of the Crag Martin pair which was most thoroughly watched by the author. Letters refer to the main perching posts.

3-8 till 12-9). (see also Table I). Weather conditions during the observation period were as follows:

clear sky	54 %
overcast	22 %
mist	5 %
stormy, with rain	2 %
variable, partly overcast	15 %
rain, due to more general conditions	2 %

Wind had been blowing on 19 hours (20 % of the whole observation period). Statistical evaluation of data was carried on using the Sign-test (Siegel, 1956).

TABLE I. - Observation schedule(°)

Date	Observation time		
	from	to	
9 June	07.30	11.00	
12 June	05.00	08.59	
14 June	04.00	09.59	
15 June	05.00	11.30	
16 June	06.30	10.30	
19 June	04.00	08.59	First subperiod
22 June	05.00	08.59	
23 June	15.00	20.30	
25 June	04.00	09.59	
25 June	15.30	20.30	
1 July	04.00	08.59	
20 July	07.00	09.59	
22 July	06.00	09.59	
25 July	04.00	04.59	Second subperiod
27 July	13.30	19.30	
29 July	06.00	09.59	
3 August	05.00	08.59	
4 August	07.00	10.59	
5 August	16.00	19.59	
9 August	05.30	08.59	
11 August	13.00	16.59	Third subperiod
18 August	14.00	15.59	
20 August	13.00	14.30	
23 August	06.00	08.59	
25 August	08.00	08.59	

(°) On 18 July, 30 August and 12 September only short visits were paid and non regular observation registered.

HABITAT DESCRIPTION

The pair observed has nested in a "hole" opening, at roughly 15 mts. from entrance, along a rocky wall ab. 100 mts. high belonging to a "cliff-system" (262 mts. a.s.l.) joining south-eastward, from the village of Equi Terme, the slopes of Mount Pizzo d'Uccello located at 44° 10' lat. N.; 2° 18' long. E. (Monte Mario Meridian). The cliffs are almost "vegetationless" and dry. Dry rocks seem to be essential for proper adhesion of the nest (Strahm 1953). Trees in the area are very few and consist mainly of isolated Hornbeam, Ash, Spiny Oak beside shrubs of Juniper (*Juniperus phoenicea*), Heather (*Erica arborea*) and Eu-

phorbia (*Euphorbia dendroides*). A small plot near the nest-site has been planted, since ca. 10 years, with *Pinus sylvestris*. From the soil "shoot", almost everywhere, rock outcrops covered by xerophilous plant-associations. Beyond the hedgerows circling the valley, vegetation consists of Chestnut and Hornbeam woods. The place, because of its general orientation N-W S-E is well protected from northerly and westerly winds. The cliffs facing E. receive direct sunlight only in the early morning. The nest was built inside the "hole", 15 mts. from the entrance, at a height of ca. 10 mts. from the ground. Despite the cliff orientation the nest could never receive direct sunlight as it had been built on the side of a crevice facing W. Two abandoned nests were found few mts. away from the "fresh" one. On the same cliff other Crag Martins nested, most nests being at a considerable height and thus practically inaccessible. The nearest pair had the nest some 80 mts. apart. Strahm (1953) reports the distance between nests ranging from 10 to 80 meters.

HUNTING BEHAVIOUR

The Hunting Territory (i.e. the area where the pair usually gets most of its food) is rather wide, varying in size according to the time of day and weather conditions. Some 100 mts. from the nest several pairs could be found "hunting" together. Strahm (1956) called this "neutral zone". During early morning when sunlight has not yet reached the cliffs, the pair patrol the bottom of the valley along the stream. In bringing in food for the young flight "route" 1 and 2 are preferentially followed (see fig. 1). When the sun reaches the cliffs all hunting is "shifted" along the cliffs. Then the birds fly to and fro very close to the rocks, quite often shearing the same spot on the wall, strongly suggesting that they have found a very localised food source. Due to the distance of the birds from the observation-site however I have not been able to gather more detailed information on this type of behaviour. Late in the morning the feeding visits to the nest usually followed the route 3. During early afternoon, when the cliffs are no longer illuminated the hunting territory "drifts" westward and often the birds cannot be followed for long from my observation hide. On windy days the pair hunted very close to the cliff walls, exploiting the thermals and performing true acrobatics. Then the very slow gliding flight is suddenly transformed into speedy "stoops" and "veerings" recalling the performances of swifts and with incredible turns and hoverings. Several times I observed these birds make quick "rollings". During flapping flight rectrices are held close together but when gliding and particularly during "turns" these feathers are spread strikingly showing the white oval spots on the inner web which contrast strongly against the brown-grey background of the rocks.

VOCALIZATIONS

Crag Martins, contrary to what stated in many works, have a wide and varied vocal repertory not restricted to the breeding period (Elkins & Etheridge 1975).

I could identify the following vocalizations:

- 1) Intraspecific Call. Uttered by both adults and young (the latter emitting somewhat higher pitched notes). It may be rendered as a "chrr" frequently repeated. Usually I heard it when one mate approached the other perched nearby before alighting. The same call was also emitted by nestlings during the last day of their permanence at the nest.
- 2) Alarm. Uttered on sighting a potential danger (Kestrel, Jay or Man). It is a loud "chiupì" which can be repeated several times according to the situation.
- 3) Alert Call. Mainly uttered by the female. It is a plaintive call "uuii" often accompanied by a characteristic flight. I named it "swing (or pendulum) flight". It is performed, as far as I could observe, only by the female attempting to bring food to the nestlings during disturbance by the observer (sudden gestures, noise etc.): at every "oscillation" the bird emits the alert call. It has been interpreted as elicited by a conflict situation between feeding and attack "drives". The reaction to the disturbance deliberately provoked by the observer recalls what might be defined a FAP (Fixed Action Pattern): when disturbed on its way to the nest the bird immediately resorts to the "swing flight". After some back and forth oscillations and when there is no more disturbance, the bird feeds the nestlings and, on flying off utters the alarm call.
- 4) Attack Call. Uttered when attacking any intruder. It is a "rrrr" of raising intensity and reaching its peak when the bird is nearest to the attacked object. This call is emitted with the bill open.
- 5) Song. I labelled as "song" a warble which I heard emitted only by "yearlings" perched on the cliffs.

PREFERRED PERCHES

The pair made frequent use of some 10 perching sites within few meters of the nest. These "perches" are in fact small outcrops and were made identifiable with letters A to L (see fig. 1, in which most of the perches are marked). Both male and female have shown different resting times at different perches.

Data are summed up in Table II. Of all the perches used by the pair only those marked A, B, and E have been used in all three subperiods. There is a consistency of perch use during the rearing of the first and the second broods. In both periods 5 perches (A, B, C, E, F) used in the first subperiod and out

TABLE II - Time (in minutes) spent by ♂ and ♀ at each "perch" during the three subperiods. Letters refer to the perches as in fig. 1.

♂	observ. time	A	B	C	D	E	F	G	H	I	L	Totale
first subper.	2600	132 15%	722 80%	19 2%	6 0.7%	2 0.7%	-	-	-	14 1.5%	-	895
second subper.	1080	60 35%	63 37%	-	-	27 15%	8 4%	-	9 5%	-	3 1%	170
third subper.	1740	25 10%	108 45%	2 1%	-	60 25%	31 13%	15 6%	-	-	-	241
♀	observ. time	A	B	C	D	E	F	G	H	I	L	Totale
first subper.	2600	70 10%	595 88%	-	1 0.5%	2 0.5%	8 1%	-	-	-	-	676
second subper.	1080	-	-	-	-	-	-	-	-	-	-	-
third subper.	1740	65 34%	28 14%	2 1%	-	19 10%	30 16%	49 25%	-	-	-	193

of 6 used in the second subperiod have been frequented. Perch B and then A, and E has been the preferred one by the male, while the female preferred R perch in the first subperiod and perch A in the third subperiod. It must be noted that during the second subperiod the female was incubating and made no use of any perch. R perch is also preferentially used for maintenance activities. A perch is used for nest-watching or nest-defence against other Crag Martins or heterospecific "intruder" (including the observer). It must be stressed that during the third subperiod B perch was frequently occupied by juveniles causing adults to "shift" their choice to other perches. Juveniles perched nearby caused the female to attack more frequently and thus use more and more A perch. Perches are mostly frequented on early morning and late afternoon with a minimum around midday. Early in the morning perched birds (both adults and juveniles) fluff their feathers, displaying the "keel" of their breastbone and the darker base of the feather-shafts. Young birds sometime "close" their eyes. During "feather cleaning" Crag Martins rotate by 180° or even 360° on themselves. I observed this occurring in adults as well as in juveniles (1st year) and it is possible that in so doing Crag Martins can spread their wings in succession without falling off the quite narrow "perches". I have sometimes seen parasites of the family Hyppoboscidae crawling among the feathers of perched birds. This same parasitic fly might also cause the "fluffing" of feathers in flight (similar to what happens in swifts) as I observed when the female flew off the nest during incubation and in 1st year birds. I have also watched "toilette" in flight: the birds bend the head backwards or on the breast while performing strange acrobatics on straight wings.

NEST-SITE DEFENCE

Crag Martins displayed defence actions towards isospecific individuals but also against members of different species (Kestrel, Swift, Robin, Black Redstart, White Wagtail, Tree Sparrow, Jay, Jackdaw etc.). Defence behaviour varied according to species. I was able to identify the following:

Interspecific Defence. On the same cliff, not far from Crag Martins' nests bred several other species like jackdaws, swifts, kestrels, tree-sparrows, robins and black redstart. All these species have been subjected to attacks by the Crag Martins. Kestrels were the most frequently mobbed. As soon as a kestrel was located the pair uttered the alarm call in repetition then performed the attack and even pursuit if the raptor remained nearby. The attack proper consists in several "dives" with bill opened and emitting the attack call once reached the nearest distance. The very presence of a "falcon" make Crag Martins gather at the spot. I have witnessed several martins assembling in this way and once saw two

young kestrels "squat" against the rocks to avoid being attacked by crag martins. Kestrels are pursued for several hundred meters away from the martins' nest, in the pursuit young participating as well. Frequent attacks are also launched to swifts but only when these birds, in their evening and/or morning gatherings come too close to the nest-site: a brief pursuit while emitting the alarm call. Quite often there were actual contacts with the swifts. 90% of these attacks were performed by the male.

-Intraspecific Defence. During the first subperiod this occurred only once: an adult Crag Martin approached within a hundred feet of the nest and was immediately chased by the pair. During the third subperiod the presence of young belonging to other clutches caused attack only when the unfamiliar juveniles came too near. Pursue flight lasted only few meters and there was no utterance by the adults.

Defence behaviour is also triggered by man which is attacked "aiming" at the head. Actually the bird(s) gets so close that the air turbulence caused by wing-beats is felt on the face. There is a very strong resemblance between this and the behaviour displayed towards kestrels. I have been mostly attacked when approaching and/or leaving the observation spot. On most occasions (90 %) attacks were performed by the female while the male circled a little higher. During the first subperiod on leaving I was "escorted" with repeated attacks to the stream some hundred meters away. In the same subperiod the female attacked regularly me at the observation spot on leaving the nest after having fed the nestlings and before resuming foraging flights. To stop these attacks it has proved sufficient erecting a "fence" with twigs and leaves: the female passed by with no hostile reactions. During the second subperiod no such behaviour was performed by neither mate even though I made repeated disturbances when inspecting the nest. Only when I used a mirror to "look inside" the nest both parents attacked the object uttering the alarm call., being joined by young from the previous brood which appeared very excited. During the third subperiod, aggressions never reached the levels attained previously.

INCUBATION

Laying of the first clutch began, according to my observations, around May 23d, while for the second brood the approx. date of the first egg layed was around July 18th. On that day I visited the nest between 6 and 7 a.m. and found the female sitting. The male, with young from the previous brood roosted nearby. On June 22nd 4 eggs were in the nest and the clutch was complete. Female alone incubates even though some nest relief by male actually occurred and was observed: "male fli-

es to the nest making the female take off. She, however, does not always leave but repels her mate with bill open and sleek posture. Even when actually dislodged she will fly back almost immediately displacing her mate. During 980 minutes of observation, in daytime, eggs were incubated for 96 % of the time (i.e. 925 minutes). For 875 minutes the female was sitting on the eggs. The maximum incubation spell was 100 minutes by the female and 24 minutes for the male. On average the female left the nest 1 to 6 times each hour returning after 5 to 9 minutes. The maximum unattended period for the eggs has been 28 minutes on June 29th (from 13.30 to 13.58).

After remaining for long into the nest the female showed a fluffed plumage. After leaving the nest often she fluffed actively her feathers in flight, clapped the wings and defecated. During the whole incubation period the young of the previous brood, often accompanied by others from different pairs, flew around the nesting site. The male often chased them seldom uttering the alarm call. During incubation the male hunted far away and roosted with other crag martins on some rocks out of sight. The first egg hatched around July 31st. After complete "eclosion" nestlings were brooded at irregular intervals for some ten to eleven days. During 1740 observation minutes (from hatching to fledging of the first of two nestlings) the pair stayed at the nest for 247 minutes (or 14% of the time). The female brooded the nestlings for 153 minutes and the male for 62 minutes with maximum spells of respectively 2, 5 and 9 minutes. Day after day brooding by the parents was less and less as can be inferred by measurements taken between 07.00 and 09.00 hrs. on August 3d, August 4th and August 9th when altogether the adults stayed at the nest 81, 37 and 23 minutes respectively.

REARING OF THE YOUNG

The young (4 at each brood) remained at the nest for about 25 days. Nestlings are fed by both parents. My observations have shown no significative difference in the number of feeding visits for the two broods by male and female. On average nestlings are fed every 4 minutes. Strahm calculated an average 5 minutes interval.

TABLE III - Feeding visits by ♀ and ♂ during first and second broods.

Observation minutes	FEMALE			MALE			Tot
	visits	%	visits/hr	visits	%	visits/hr	
First Brood 2370	372	64	9	204	36	5	576
Second Brood 1620	252	51	9	235	49	8	487

When perched Crag Martins often perform "pecking" actions, and once I observed an adult picking up a piece of grit and bring it to the nestlings. The observation was subsequently confirmed by the analysis of droppings collected under the nest. With chitinous remains of arthropods preyed upon smooth and round "pebbles" of minute size were found.

Feeding activities began quite early in the morning and ceased at dusk with a tendency to rise in frequency towards noon and then decrease from early afternoon onwards.

Disposal of foecal sacs has been performed in 9 cases out of 10 by female. Quite often both parents caught plumes in flight or picked them out of the nest. The plume was often dropped for short distance and picked up again and again in rapid succession. These "acrobatics" can be repeated on sequence giving the observer the impression of "play". The same behaviour has been observed by Strahm (1953) who named it "le jeu de la plume" and interpreted it as part of the courtship display.

FLEDGING

Only the nestlings of the second brood were followed till fledging. The first two young flew off the nest on August 23d while the remaining two did it on August 25th. On Aug. 23d, ca. at 07.00 hs the "yearlings" (i.e. young of the first brood) came flying very close to the nest disturbing both parents which were bringing food. Yearlings were apparently attracted by the nestlings sitting on the "rim". I named this phase "sabaraband" because of the great confusion caused by yearlings which did not leave even when purposefully chased by adults, trying instead to alight close to the nest. Adults quite often perched on perch A a vantage point for attacking yearlings whenever they came flying too close. Just prior to alighting adults called at each other. On that occasion around the nest was a "mess" of youngsters and adults. The first nestling took off at 07.48: it flew for about a hundred mts. with rapid and straight flight, then veered back towards the nest and alighted on the cliff. It could be easily told apart from other juveniles by the "round" contour of the wings and the bright yellow rim of the mouth. The second nestling took off at 08.02 with the same "flight performance" as its sibling. Soon afterwards both fledglings fly away but after some "mock chasing" by yearlings and parents they come back to the nest. The whole "community" gets quite excited. At 08.40 the fledglings take off again and alight on the rock-wall. Adults are very aggressive and try to chase me away. Fledging of the other two nestlings followed the same "routine", on August 25th with the first take off at 08.15. Several authors state that under favorable conditions Crag Martins are double-brooded and Strahm assures that, where he studied these birds, two broods seems the rule.

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SUMMARY

During 1976 detailed observations have been conducted on Crag Martins (*Hirundo rupestris*) breeding in a narrow valley of the so-called Alipi Apuane in northern Tuscany. Most data concern one pair followed throughout its entire breeding cycle with two broods. The nest was built some 10 mts. from the ground in a "hole" of an almost bare cliff where more Crag Martins as well as other species (Kestrel, Jackdaw, Swift, Black Redstart, Tree Sparrow etc.) were nesting. Hunting territory shifted somewhat and varied in size according to the time of the day. Most foraging flights were very close to the cliff-walls. The author has been able to identify several vocalizations: an intraspecific call; alarm, alert, and attack calls besides what has been termed actual "song".

There was a strong tendency to use selected "perches" for territory control and maintenance activities. Aggressive displays were directed against conspecifics as well as heterospecifics. There was almost invariably a peculiar "attack call" uttered on these occasions and which attracted other Crag Martins on the spot to "mob" intruders (of other species) including man. Incubation is by female alone even though occasional "male spells" have occurred. Feeding and brooding of nestlings however is done by both parents. Brooding seemed to be rather irregular and tended to decrease after the first week.

RIASSUNTO

Nella primavera-estate del 1976 sono state condotte dettagliate osservazioni sul comportamento della Rondine montana (*Hirundo rupestris*) nidificante sulle falesie di una stretta valle delle Alpi Apuane. La maggior parte delle osservazioni riguarda una coppia che ha allevato due covate e il cui nido era stato costruito, a circa dieci metri da terra, al riparo di una cavità della parete (fig. 1). Vicino a questa hanno nidificato altre coppie di rondini montane oltre al gheppio, taccola, rondone, codirosso spazza camino, passera mattugia ecc. Il territorio di caccia aveva ampiezza variabile a seconda dell'ora della giornata. Le rondini montane cacciano di solito vicino alle pareti, con voli planati alternati a tratti di volo battuto. Sono stati individuati un richiamo intraspecifico, uno d'allarme, un richiamo d'allerta e uno d'attacco oltre a quello che è stato interpretato come "canto" vero e proprio. La rondine montana si posa volentieri sulle rocce e l'autore ha potuto osservare che la coppia studiata usava un certo numero di posatoi preferenziali (10), a pochi metri dal nido e dai quali gli adulti controllavano il territorio e indulgevano nelle attività di mantenimento, quali la toilette. Il comportamento di difesa e quello aggressivo era rivolto non solo ai conspecifici ma anche agli intrusi di altre specie, in particolare ai gheppi ai rondoni e all'uomo. L'attacco è sempre preceduto dal caratteristico richiamo che funge anche da segnale di raccolta, sul luogo della disputa, di altre rondini montane che operano un

attacco "di gruppo". E' quasi unicamente la femmina a covare mentre sono entrambi i genitori a "coprire" e imbeccare i piccoli al nido per circa 25 giorni a un ritmo di imbeccata, nelle ore diurne, di circa 4 minuti.

RESUME

On a observé la biologie de la reproduction de l'Hirondelle de Rochers (*Hirundo rupestris*) dans une étroite vallée des Alpes "Apuane" en Toscane. Maintes observations ont été effectuées sur une couple et ses deux portés. Le nid été bâti dans une niche de la falaise sur laquelle des autres Hirondelles de Rochers, des Faucons crègerelles, des Choucas, les Martintes noirs, des Moineaux friquet etc. avaient niché du même. Le territoire de chasse était variable selon la période de la journée. Les vols de pâturage effleurent les rochers. On a pu noter plusieurs expressions vocales: un cri intraspécifique; un cri d'alarme, un d'alerte et un d'attaque et même un vrai chant. On a aussi constaté l'usage des perchoirs préférentiels pour la défense du territoire aussi que pour la toilette. Le comportement agressif est déclenché par les conspécifiques aussi bien que par les hétérospécifiques, y compris l'homme. Le cri d'attaque aurait aussi la fonction de cri d'houspillage. L'incubation est affaire presque uniquement de la femelle quand le nourrissage et la couvaison des oisillons est effectuée par les deux parents.

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IL GABBIANO CORALLINO (*Larus melanocephalus*) NIDIFICA IN ITALIA

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Fino a non molto tempo fa il Gabbiano corallino (*Larus melanocephalus*) era ritenuta una specie "probabilmente vicina all'estinzione" (Voous 1962). Successivamente questo laride ha conosciuto un lento ma costante incremento nell'area circostante il Mediterraneo occidentale (Anderegg 1969; Johnson & Isenmann 1971; Vaucher & Roux 1974). Nell'ambito di questa espansione si inserisce l'insediamento di una nuova colonia in una estensione palustre delle Valli di Comacchio (Emilia Romagna).

La colonia nidificante (25-27 coppie) è la prima accertata in Italia e stando alla bibliografia consultata costituisce la più grande colonia di questo laride in tutto il Mediterraneo occidentale. Questa breve comunicazione vuole essere solo una nota preliminare in vista di un lavoro più vasto in cui sarà data notizia dell'esito della nidificazione - che pare avviarsi a risultati assai promettenti - e verranno inoltre forniti i dati raccolti sulla biologia e l'alimentazione del Gabbiano corallino.

Il criterio con cui sono stati raccolti dati e osservazioni è stato concepito in maniera da ridurre al minimo possibile il disturbo arrecato alla colonia nidificante. Di conseguenza le osservazioni sono state effettuate da una barca e, soprattutto da un capanno mimetico precedentemente di spostato a circa 80 metri dal sito dei nidi. Soltanto il 6 giugno 1978 è stato compiuto, per una decina di minuti, un rilevamento all'interno della colonia per alcune indispensabili osservazioni "in situ".

Il Gabbiano corallino si è insediato, per riprodursi, all'estremità di un dosso occupato da una colonia costituita in larga maggioranza da individui di Gabbiano comune (*Larus ridibundus*) e Sterna comune (*Sterna hirundo*). In misura minore (1-3 coppie) hanno nidificato il Cavalier d'Italia (*Himantopus himantopus*), l'Avocetta (*Recurvirostra avosetta*) e il Gabbiano reale (*Larus argentatus michaellis*). I nidi del Gabbiano corallino erano ripartiti in tre zone coperte esclusivamente da *Salicornia fruticosa* e da *Obione portulacoides*, mentre in larghi tratti il terreno è completamente spoglio.

Per limitare il disturbo si è controllato il contenuto dei nidi solo nell'area di nidificazione principale, mentre le coppie nidificanti nelle altre due zone sono state censite con un binocolo dal capanno mimetico.

La zona controllata direttamente conteneva i nidi di Gabbiano corallino con 3 uova, 7 nidi con 2 uova, un altro nido con un pullus probabilmente uscito dal nido da meno di ventiquattrore. Era presente inoltre un nido senza uova che il materiale e il tipo di costruzione potevano fare attribuire più facilmente al Gabbiano corallino che al Gabbiano comune.

Nelle altre due zone hanno nidificato complessivamente altre 6 - 7 coppie. Si può concludere quindi che ai primi di giugno 1978 era presente una colonia di 25-27 coppie di questo gabbiano.

Non avrei potuto compiere questa indagine senza l'indispensabile aiuto dell'ing. Sergio Tesei, di suo figlio Giovanni e dei sigg. Silvana ed Ermes Garavaglia. Per i numerosi consigli sono grato anche all'amico Francesco Petretti.

SUMMARY - The Mediterranean Black-headed Gull, in way of expanding its bre