THE BREEDING OF MARSH AND MONTAGU'S HARRIERS IN NORTH WALES IN 1945

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(Plates 23-30).

MARSH-HARRIERS.

In 1945 the first recorded breeding of Marsh-Harriers (Circus aeruginosus) in recent years outside East Anglia took place in N. Wales, in which region the last known cases of nesting of this species were in Merionethshire in 1869 and 1877 (Forrest, 1907). The male bird was first seen by the writers in early July, when a brief view was obtained in the gathering dusk as it flew by, followed by several mobbing Rooks, and disappeared over a hedge. As a result a search of the neighbourhood was made and on July 10th a visit was paid to a lake about two miles from where the bird was first seen. Where it approached the lake, the path lay close to a large bed of reeds, and it was at this point that the male harrier suddenly flew up from the ground only 20 yards away. It rose almost vertically, uttering a startled, “quek-quek-quek-quek-quek,”—an “alarm” call rather like, though slower than that of the male Montagu’s Harrier. The behaviour of the bird, which circled higher and higher overhead instead of flying away, suggested the possibility of there being a nest nearby.

As soon as the observers were suitably concealed, the harrier, which had been soaring and gliding at a great height for some five minutes, began to descend fairly steeply with wings half-closed, and was soon circling quite close, about 30 feet above the ground. It was now possible for the first time to examine the bird in detail through glasses. The general body-colour was buffish-brown with streaked underparts: outer wing primaries black tipped; secondaries grey; head with creamy patch on crown; rump buff and tail darker buff (not grey). It was soon joined by a second bird, which was a typical female of the species. The body colour in this case was a uniform dark brown, and the cream-coloured crown had a small patch of brown feathers in the middle. The wings seemed to be broader and shorter than those of the male and the central tail-feathers appeared longer than the lateral ones. The absence of two or three secondaries from the right wing, together with the general untidiness of the plumage, suggested that the female bird was already moulting.

It was noticed that in gliding the Marsh-Harriers’ wings were held more horizontally than were those of the Montagu’s Harriers, which the authors had previously been observing (pp.241-243).

Both birds were in view for the greater part of the next three hours. The female remained close by, making short flights about
the reed-bed, and often perching for several minutes on a bush at the edge of the bog. The male flew further afield, and could be seen hunting at the far side of the lake. On two occasions he returned with prey, which the female received from him on the ground. It now became almost certain that the harriers had a nest within 100 yards of the watching position, but the low viewpoint was further limited by the tall reeds at the near edge of the swamp, and it was impossible to mark any particular spot to which the birds descended.

On the following day watching was begun from a good viewpoint about 200 yards from the suspected nesting area. The harriers were seen over the lake, and soon both male and female approached, carrying nesting material, and alighted together in the thickest and tallest part of the reed-bed. The male flew up and away almost immediately, but his mate stayed down. Half an hour later the male brought prey and settled nearby. The female flew from the reeds and received the prey from her mate on the ground. She then glided over the nesting area, calling softly several times before landing again among the reeds.

By further observation from different points, with a careful checking of bearings each time the female harrier landed with food, the position of the nest was soon accurately determined.

The harriers would not visit the nest as long as any humans were visible in the neighbourhood. When men approached within 200 yards the male would fly off across the lake and stay out of sight until the intruders had gone away. If on the wing at the time, the female would do the same, but if at the nest she stayed down. Thus it is unlikely that a watcher on foot would normally have obtained more than a distant glimpse of either bird. The behaviour of the male in allowing so close an approach and betraying the nesting locality on the first day was certainly exceptional.

Great care was taken, therefore, in carrying out observations and all unnecessary movements were avoided when the birds were in sight. When two watchers visited the nest, a third walked about the lake-side in full view, in order that the harriers would stay so far away that they could not see human beings at the nest. This procedure was quite effective, and the birds showed no hesitation in returning as soon as all was still again.

It was impossible to reach the nest by wading, as the bog was deep and treacherous, but the journey was accomplished safely by canoe on July 12th. The nest contained four chicks, ages ranging from about 12-18 days.

The nest was a bulky structure about 24 inches wide, resting on the reeds at water level and built up to a height of 18 inches. It consisted mainly of reed-stems mixed with fairly large twigs at the base, with a saucer-shaped hollow about 12 inches wide lined with finer material at the top. A thick growth of reeds (*Phragmites communis*) six to eight feet tall surrounded it on all sides.

The young birds, as is usual, differed considerably in size. Two were large and about equal in degree of development. The third
was smaller, and the fourth much smaller. They were covered with short down, white on the crown, and buffish over the rest of the body. The smallest bird was relatively scantily covered, its pink flesh showing through the down. The biggest chicks showed the beginnings of feather shafts in the wings and tail. Other features were: bill with upper mandible black, lower mandible pale; tongue flesh coloured; gape pale; cere pale yellow; irides dark; legs flesh-coloured to pale yellow.

These chicks seemed relatively less active than young Montagu’s Harriers at the same stage of development, and they did not adopt the “threatening” attitude readily. When one of them was handled it made the same “angry” twittering sound as had been noted earlier in the case of Montagu’s Harriers. All appeared well fed, and the large distension of their crops was very noticeable.

There was a large amount of excrement on the reed-stems around the nest, and the method of defaecation was witnessed. The smallest chick, despite its relative helplessness, crawled backwards to the edge of the nest, raised its hindquarters, and squirted its faeces up on to the reeds. The nest was quite clean, and contained no eggshells or food debris, though there were a few small feathers evidently shed by the female harrier. These were added to a collection of feathers and food pellets found at perching places around the lakeside from time to time.

At this stage the female remained close to the nesting area when not at the nest itself. The male brought food fairly frequently, but it was always taken to the nest by the female. Usually she would settle on dry ground to “prepare” the prey before taking it to the chicks. It was thought that young Moorhens (Gallinula ch. chloropus) formed the greater part of the food, and the examination of the remains of “kills” in the neighbourhood confirmed this supposition. Exchange of food from male to female took place in the air, from foot to foot or by dropping, as well as on the ground. Sometimes when rising to receive the prey, and often when taking the prey to the nest, the female uttered the “food” call. This was a slightly modified version of the sibilant whining which had been noted in the case of Montagu’s Harriers. The difference may be expressed by writing the “food” call of Marsh-Harriers thus, “psee-oo, psee-oo,” where the “oo” represents rather a drop in pitch than an extra syllable. The male made this call on one occasion as he glided over the reed-bed just after the female had taken the prey to the nest. The “alarm” call of the male described earlier was only noted twice. The female was never heard to make any sound other than the “food” call.

A second visit was paid to the nest on July 17th. The young birds were bigger and more active than when first seen, and assumed the “threatening” attitude when the reeds near the nest were moved. Their down was longer, and the dark brown primaries and secondaries and bastard wings of the two older chicks were over an inch long. The feather-sheaths were just showing in the wings
of the two smaller birds, and their beaks were less developed than those of the larger chicks. The legs of all were now bright yellow. The nest was again quite clean and contained no food remains.

Both adult harriers were frequently mobbed by Lapwings, Rooks, Starlings and Swallows, and a flock of Mallard was once seen to swerve threateningly towards the female as she was flying over the reed-bed. On another occasion, as the male was bringing food towards the nesting area he was mobbed persistently by a Raven. The harrier did not retaliate at first, but as soon as he had dropped the prey to his mate, he turned and chased the Raven, which fled croaking.

On July 28th the female was twice observed to carry food pellets away from the nest. On each occasion she rose from the nest with a pellet in her beak, transferred it to one of her talons in flight, and alighted to deposit it on dry ground about 40 yards away. These and other pellets were collected. Some of them were flattened and had short pieces of straw adhering to them, as if they had been trampled in the nest while still soft.

On the same day the male was again seen to take building material to the nest. As on the earlier occasion, he flew up and away from the nest immediately afterwards. The female was also seen carrying straw later in the day, but whether she took it to the nest is uncertain. Weis (1923), one of the best-known authorities on Marsh-Harriers, stated that he never observed a male taking material to the female’s nest, and in general he considered that most males were very loth to set foot in it at any time. In the present case it may be said that though the male would land at the nest readily enough when carrying straw or prey, he was never known to stay there for more than a few seconds.

The behaviour of the female appeared quite normal on July 28th. She was receiving prey from the male as usual, and taking it to the nest, where she would stay as a rule for about 10-15 minutes. The belief that all was well is supported by the fact that the female was carrying pellets from the nest, and that she was also seen carrying straw. In spite of this, however, she was never seen to visit the nest after that date.

It had been increasingly obvious from the first day of watching that the female harrier was moulting, and by this time there were conspicuous gaps in her wings and tail. Several of her badly-worn primaries and secondaries and many of her smaller feathers had been found near her perching places.

On July 31st the male was landing at the nest and delivering the prey directly to the young. He did not stay to share out the food, but flew off immediately. The female was not seen at all, and this occasioned anxiety as to the welfare of the young birds, even though they were heard calling lustily each time the male arrived with food. It was felt that this case might prove similar to that described by Hosking (1943), but since the chicks were by this time about four to
five weeks old, they must have been fairly well feathered and quite able to help themselves to the food brought by the male.

To make certain of this, it was decided to pay a third visit to the nest on August 5th. As the nest was approached, at least two of the young birds fluttered away among the reeds, and one stayed in the nest. This remaining chick was a big, strong-looking bird, appearing almost twice the size of a young Montagu's Harrier of the same age. Its bulging crop probably accounted for its relative lack of concern at the sight of intruders. It made no attempt to flee, nor did it gape or assume the "threatening" attitude. As had been expected, the feathering was almost complete, except that small patches of down were still present on the breast and crown. The main features were: wing and body feathers of a uniform chocolate-brown, those on the breast with buff edges; wing coverts not appreciably lighter than primaries; chin creamy-buff; ear-coverts dark brown; legs and cere bright yellow. A rather striking difference from the figures and descriptions in The Handbook (1939) was in the colouring of the crown and nape. The small feathers showing through the down on these parts were of a bright rich orange. Whether the other young birds had this colouring was never ascertained.

The nest was much flattened and very untidy, and contained remnants of two birds and the half-picked leg of a rabbit. The presence of down and faeces not only in and around the nest, but in runways up to a radius of 5 yards away, showed that the young birds had been in the habit of straying from the nest for some time past. They were quite safe in doing this, as the surface of the bog was now drier and firmer than formerly.

During the following week the female was often seen quartering the reedy areas near the lake, accompanied occasionally by the male. She spent long periods at a point only about 60 yards from the watching position, and sometimes approached to within half that distance, but she showed no further interest in the nest or young, though the calls of the latter must frequently have been quite audible to her. The female was last seen on August 6th.

It had been noticeable for some time that bigger items of prey were being brought to the nest. Moorhens continued to form a large proportion of the food, but the male harrier was now tending to hunt farther afield over the drier ground, and young rabbits and pheasants began to figure prominently in the diet. Small rabbits and parts of rabbits were carried with ease, but a whole half-grown rabbit appeared to tax the harrier's lifting capacity to the utmost. There was a warren about 500 yards away from the nest, and he was often watched as he hunted there. On one occasion, a few minutes after stooping at this spot, he appeared flying very low, at times almost trailing the prey on the ground. His progress towards the nest was very slow, as he settled on the ground for a few minutes rest after each short laboured flight. After half an hour's effort he had brought the rabbit to within 40 yards of the nest, and then left it lying while he circled the reed bed. Next he flew back to the prey
and brought it a few yards nearer, and then settled on a bush near it for a more lengthy rest. The last and most difficult stage of the harrier's journey to the nest lay over tall dense reeds, but unfortunately the watchers were unable to stay long enough to see if it was accomplished.

The young harriers received food less frequently, but despite the relative irregularity of his food visits, the male was seldom away from the nesting area for more than an hour. Between spells of hunting, he would fly back to the reed-bed and glide slowly to and fro above the nest as if to satisfy himself that all was well with the chicks. Thus, during one six-hour watch, the male brought prey at all, but he came over the nest seven times at fairly frequent intervals.

The young harriers were quite noisy at this stage, and would call at any large bird passing within 50 yards. Perched well up on the reed stems, they were able to see the male as he approached from the lake, and their loud clamour of “food” calls was often the first indication that he was at hand. After the male had delivered prey and had flown away again, the cries of the young general subsided, but sometimes the “food” calls gave way to shrill “ick-erick-erick-erick,” a more vigorous version of the “angry twitter” noted earlier. Experience with other young birds of prey suggests that this cry was uttered by the young harriers as they contended for possession of the food. Bickering among young Marsh-Harriers has been noted by Weis, and he describes how the recipient of the prey guards the booty with outspread wings, uttering angry cries, and keeping its brothers and sisters at a distance while it satisfies its own hunger.

One of the young birds was seen flapping at reed-top level on August 6th and subsequently. The first actual flight was witnessed on August 11th, when a young harrier rose from the nest fluttered about 30 yards on a circular course, and landed back on the nest. This was repeated at intervals, the bird returning to the nest each time. After a while the male arrived, carrying a Moorhen. As he circled overhead, this young bird rose to meet him, and the male dropped the Moorhen. However, the young harrier failed to catch it, and followed the prey down among the reeds. The male settled at the nest, and, contrary to his usual custom, stayed there for several minutes. The chick seen in flight on this date had a white down-covered head, and no orange colour was visible on the crown.

On the afternoon of August 15th, the male delivered part of a rabbit to the nest and flew away over the lake immediately. A minute later, a young bird rose from the nest, calling loudly and excitedly as it hovered and circled above the reed-bed, apparently much concerned about something at the nest. Attracted by the young one’s cries, the male came straight back from the lake, flying at great speed, and wheeled around above the nest. The young bird, which had been flying expertly for fully two minutes in
strong wind, now settled at the nest, and the male flew away again. The nest and its immediate surroundings were quite invisible from the watching position 40 yards away, and nothing was seen that might have accounted for the harriers' behaviour on this occasion. In view of later events, however, it may be noted here that rats, weasels and stoats were very abundant in the neighbourhood and that otters were said to be numerous.

So far only one young harrier, and never more than one, had been seen in flight at one time. The bird flying on August 15th had an orange-coloured head, but it may have been the same bird as seen on August 11th, since by this time it could have shed its remaining down. Strict attention was now being paid to the calls of the young in order to count the number of separate voices. It was not easy to distinguish more than two voices when the young were close together at the nest, but when their cries came from different points among the reeds, the number of birds calling was more readily known. Thus, on the evening of August 15th, one young harrier had flown to a point 20 yards away from the nest. When the male approached with food shortly afterwards, three distinct voices were identified, two of them from the nest, and the third from the point where the other bird had settled among the reeds. It is certain, therefore, that three of the young were alive on August 15th. Whether any more than one learned to fly is not known, as other business made it impossible to watch the birds during the following week.

On August 22nd and 25th one young harrier was flying strongly for long distances around the lakeside, but it generally returned to the nesting area to rest, often perching on a bush to await the male. Exchange of food took place in mid-air, the young bird now being well able to catch the prey dropped by the parent. Just after sunset the young harrier would settle down for the night on the ground at the edge of the reed-bed about 40 yards from the nest. It soon became quite clear that all the food was being delivered to this single young bird, and nothing was to be seen or heard of the other young harriers. There was no longer any sign of life at the nest itself, and neither the male nor the surviving chick was seen to go there.

The watchers visited the nest again on August 26th and as expected, found it completely deserted. Food remains, chiefly the bones and feathers of Moorhens and young Pheasants, and the leg bones of rabbits, littered the nest and its immediate surroundings. A small heap of feathers in one of the runways close to the nest was thought to be the remains of one of the young harriers, and these were collected. They were very dark brown, tipped with rufous buff, the larger primaries being about 10 inches long. All the large feathers had two to three inches of ensheathing quill at the base. Nothing at all remained of the skeleton or fleshy parts. The feathers, which were later definitely identified by the British Museum as those of a juvenile Marsh-Harrier, had not been pulled out entire, but
systematically ripped or bitten off at their bases. There was no other clue to indicate by what agency the young bird had met its death, and it was thought that rats or otters might have been responsible. On the other hand it is noteworthy that harriers themselves often pluck their feathered prey in precisely this manner, tearing off the large wing and tail feathers, but leaving little else. No trace was found of the other missing young.

In discussing the factors governing survival in Marsh-Harriers, Weis has shown that fratricide among the young in the nest is very prevalent, even in cases where the female feeds and tends them well. He goes on to say: "There is, however, considerable individual difference in the degree of care devoted by the females to their business. Some seem more inclined to enjoy a free and careless hunter's life as soon as the young no longer need warming, only returning home now and then to feed them. As a result, if the male troubles to bring anything in the way of food to the nest, the young will at an early stage learn to help themselves, when the strongest will naturally have the advantage, and it is more especially in such nests as these that fratricide is likely to occur." It is clear therefore that all the conditions liable to emphasize the tendency towards fratricide were present in the case under consideration. In addition, the male's food visits to the nest had become noticeably less frequent. This may have been due in some measure to the fact that he was moulting from early August onwards.

On August 27th the male harrier and the surviving young one were still at the lake, but during the following week they appeared to be ranging farther afield. The young bird was not seen any more, but the male continued to pay occasional visits to the nesting neighbourhood, being last seen there on September 8th.

Weis states that female Marsh-Harriers will breed when one year of age, but that the males are not sexually mature until two years old. He also indicates that older birds tend to settle down to nesting earlier in the season than do those breeding for the first time. The Keeper of Ornithology at the British Museum, to whom feathers were sent for checking, expressed the view that neither of the birds was fully mature. The lateness of nesting tends to support this conclusion.

It is thought that the male harrier was a second summer bird. Although a good deal of grey showed in the wings, one of his secondaries, picked up near a perching place, was brown with a large white patch, and entirely devoid of grey colouring. The tail was plain buff, without any visible trace of grey or of brown bars. This divergence from the Handbook (1939) description may have been due to the fact that the plumage was worn. It may be noted that another buff-tailed Marsh-Harrier was reported at Hornsea Mere, Yorkshire, in September, 1945 (antea Vol. xxxix, p. 27).

It is hoped that the analysis of the food pellets of these birds will form the subject of a later paper.
Montagu's Harrier.

In the same season the authors found Montagu's Harriers (Circus pygargus) breeding in North Wales for, so far as is known, the first time since 1900 (Forrest, 1907). Males of this species were seen frequenting an area of common land on June 9th and 16th, 1945. These were kept under observation, and a nest was found on June 23rd. It contained three young, about 10 to 14 days old, and one infertile egg. Subsequent watching in the neighbourhood of the nest established that there were two males but only one female. The two males were often seen flying together, and although both were in normal adult plumage, slight differences made it possible to recognize them individually. The “odd” bird was much in evidence throughout June and July, but he was never seen carrying prey, and there was nothing in his behaviour to suggest that he had a mate. He seemed to share the “territory” of the nesting pair, and was tolerated by both male and female even in the vicinity of the nest.

The nest was on firm ground among rushes, and consisted of a thin flattened layer of Juncus stems lining a space about twelve inches in diameter. The egg was of normal type, 42.3 mm. x 33.0 mm, green internally, and white without markings externally. Its weight (blown) was 2.095 gms. When first found the young were clothed in fairly long creamy down, which later turned buffish. Other features were: legs and cere yellow; irides dark; tongue, gape and mandibles almost black.

Throughout the time that the young were in the nest, the female remained close at hand. At first she spent much time at the nest between meals, but as the young grew less dependent on her for warmth, she often took short flights about the nesting area, appearing to hunt. She was never seen to catch anything, and it appeared to be her mate who supplied all the food. The male never settled at the nest, but was generally met in the air by the female. Food exchange occurred mostly by dropping, but sometimes the prey was passed from foot to foot. When bringing prey the male generally approached the nesting area flying only 10 to 20 feet above ground level. Once, however, he appeared at a very great height and dived steeply with half-closed wings. As he dived, the female rose to meet him and the prey was exchanged from foot to foot fairly high in the air.

One of the young made a flight of nearly 100 yards on July 8th, and all had left the nest by July 14th. The whole family was still in evidence near the nesting area on July 31st, but the birds were not seen by the watchers after this date. During the latter part of July the female was in moult, and though she remained close at hand, she was not very active and did not appear to take any further part in the feeding of the young.

It is impossible to calculate the dates of egg-laying and hatching, especially where the young birds differ appreciably in age, but if
the incubation-period was about 28 days for each egg, and the
fledging-period about four to five weeks, it is certain, even allowing
a wide margin of error, that egg-laying began appreciably earlier
than is indicated by Witherby et al. (1939) for this country.

Voice.
At the approach of humans and sometimes when mobbed near
the nest by Lapwings or Curlews, the female made the “alarm” call,
a repeated “ick-ick-ick,” averaging from seven to ten syllables.
Even a few days after the young had left the nest and could fly
strongly, the female circled above, calling very concernedly as long
as men were in the neighbourhood. Once, when the returning male
cought sight of watchers in the nesting area, he joined his mate
overhead and made an “alarm” call essentially like, though harsher,
rouder and slower than that of the female. This may be expressed
by “yeck-yeck-yeck.”

Occasionally the female did not rise immediately from the nest
when the male approached with food, and he was heard to make a
soft mewing sound to call her up. Often, when rising to receive the
prey, and sometimes immediately before she left the ground, the
female made the “food” call, a thin, long-drawn, whining,
“psee—, psee—.”

At the age of two to three weeks the young were able to scramble
out of the nest when men approached. One, which had to be
captured and brought back, struck savagely with its talons on
being handled, and uttered an “angry” twittering sound.

A few days after the family had left the nest, one of the young
birds, flying near the female, was heard to give a weak imitation
of the “alarm” note that had just been uttered by the parent. As
soon as they were strong on the wing the young would all rise from
the ground and race upwards to meet the returning male with an
excited chorus of “food” calls, which were in this case shriller and
more hurried than that of the female.

The calls of Montagu’s Harriers associated by the writers with
food, alarm and anger, were later heard in only slightly modified
form in those of Marsh-Harriers.

Nest Sanitation.
There were no food remains nor other debris in the nest itself
when first discovered, and it was kept quite clean as long as the
young were helpless and confined to it. The young birds projected
their faeces clear of its edges, and these could be seen adhering to
the surrounding Juncus stems to a height of six inches. During
this period the female generally “prepared” food away from the
nest before taking it to the chicks. Since no pellets were found
at the nest, it is presumed that these and other refuse were carried
away by the female.

Later, however, as the young became stronger and began to
assume their feathers, they often strayed a few yards from the nest,
making down-strewn runways among the rushes. Faeces were now dropped indiscriminately on the nest and in the runways.

The female continued to feed the young until they could fly, and as long as she attended them, the nest was kept free of pellets and food remains. When all were able to fly well, they received their food direct from the male, remaining meanwhile close to the nesting area in the daytime and roosting at or near the nest at night. At this stage a few pellets were found at the nest.

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YOUNG MONTAGU'S HARRIERS: N. Wales, June 30th, 1945.
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