

TAWNY NIGHTS: OBSERVATIONS AT THE NEST SITES OF TAWNY OWLS (*Strix aluco* (L)) IN WYRE FOREST

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Aspects of the Method of Study

Tawny owls (*Strix aluco* (L)) are predominantly sedentary woodland birds and without an established territory are vulnerable to starvation and seldom survive a season. Once in residence, therefore, they defend their domain vigorously against any interlopers of the same species. Tawny owls have evolved to nest in deep holes or clefts in damaged tree trunks but, in the absence of these preferred sites, they will use a large abandoned birds nest for example that of a magpie (*Pica pica* (L)). Failing the presence of these sites a squirrel's (*Sciurus carolinensis* (Gmdin)) drey may be made use of. If nothing else is available in the territory they may nest in a large cavity under the roots of a tree or even in dense cover at ground level. In any occupied territories where ideal natural nest sites are absent, if a dry and comfortable nest box is erected there is a good chance that it will be readily accepted and adopted as the preferred nest site, often in the next breeding season. The provision of nest boxes can often attract new Tawny owls to reside in previously unoccupied tracts of woodland. One suitable nest box, the so called chimney type, could for example measure ten inches square by three feet deep. The base is closed and has a few drainage holes to keep the box free from accumulated water. The chimney type of box is normally suspended below a tree branch, preferably between thirty and forty five degrees to the horizontal, twenty or more feet above the ground. If photographic or visual recording at the nest are to be carried out the nest box can be placed to be both attractive for the owls and convenient for the recorder. For example locating an artificial nest site in suitably chosen surroundings can simplify flight photography and close observation of owl behaviour. Both of these activities can be carried out from an elevated hide sometimes known as a pylon hide, built to be at the same height as the nest box and placed close by.

For those readers unfamiliar with high speed flash photography, in this case of owls on their flight path to the nest, some explanation is due. Essentially the owls photograph themselves. Once the owls are feeding their young the flight path by which they most frequently approach the nest has to be established. One method of determining this is to observe the nest through binoculars from a distant vantage point. The aim is to identify, if possible, the position where the owl in gliding up to the nest will have its wings fully open in the heraldic position. A device projecting an invisible infra red beam from

the ground to a reflector placed above the flight line is installed at the predetermined distance in front of the nest box and sited such that an incoming owl will fly through it and interrupt the beam. When the photographic equipment is in place the breaking of the beam releases a high speed shutter mounted in front of the camera lens and when this is fully open it in turn triggers two high speed flash guns to expose the scene. As the shutter opens in four milliseconds and the duration of the flash is one thirty thousandth of a second the whole process is over very quickly. The short duration of the flash arrests all the motion of the owl. Once the equipment is set up and the camera pre-focused on the infra red beam position, the external shutter is closed and the camera's own shutter opened. At this point the observer has nothing to do but wait and therefore has many hours to observe and note down all the other nocturnal activities going on in the forest. Vision out of the hide is limited to peep holes kept closed with safety pins but as the hide is elevated and is made of thin calico the occupant feels to be a part of the forest and is acutely aware of the tiniest sound both far and near.

Evolutionary Adaptations in the Tawny Owl

Although when necessary the Tawny owl will both hunt and fly in daylight it is equally at home being one of the most truly nocturnal birds. The visual sensitivity of the Tawny owl has, like humans, evolved to be near the theoretical maximum taking into account the nature of light. The owl's eyes are very large in size and are fixed in the skull. The lack of mobility of the eyes is compensated for by a long flexible neck. The almost tubular shape of the eyes allows for a relatively wide aperture, long focal length lens which forms a large image at the back of the eye on the retina where the two kinds of light sensitive cells are to be found. The majority of the visual receptors are of the rod type which work at very low light levels but do not provide colour perception. The cone type visual receptors associated with colour vision require significantly higher light levels to work and are relatively scarce. The Tawny owl's discernment of colour therefore must be relatively poor compared to normal human vision. Overall the result of the adaptations in the eye mean that the Tawny owl's night vision is at least two and a half times better than the average fully dark adapted human eye.

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The Tawny owl's ears are hidden by the feathering of the facial disc. The ear openings are large and vary considerably in size, shape and position between the left and right hand sides. This asymmetry is probably an evolutionary adaptation to improve the discernment of direction and range of a sound source whilst still limiting the ears to a sensible distance apart consistent with all the other restraints imposed by flight. The owl's auditory sensitivity has probably evolved to be close to the limit of the method of detection as it has in man and in most other mammals. In respect of the auditory frequency spectrum however there are almost certainly variations due to the different evolutionary paths taken by man and owl. Much of the communication between small mammals is at high and ultrasonic frequencies. Rustles among dry leaves are rich in high frequencies. It is conceivable therefore that at a frequency of perhaps ten kilohertz, where the sensitivity of human hearing is falling rapidly, the sensitivity of the Tawny owl's hearing is still rising. However the overall ability of any animal to detect a sound is limited by the level of the ambient noise present. In the woodland environment the abilities of the Tawny owl and man to isolate sounds at middle frequencies are probably closer than might at first be assumed. However the Tawny owl is tuned into the range of sounds it needs to hear in order to locate and capture its prey. In this respect its ability to detect these sounds, among those of the general background noise of the woodland, is almost certainly superior to that of man.

In common with the majority of birds the olfactory sense of the Tawny owl is not used and consequently remains undeveloped. This has at least one benefit as by the time the young are well grown the smell issuing from a Tawny owl's nest, due to the accumulation of droppings and the decaying remains of rats (*Rattus norvegicus* (*Berkenhaut*)) and other rodents, defies description.

In keeping with a nocturnal hunter where surprise is part of its prey capture strategy the Tawny owl has adaptations to promote silent flight. The wings are very large and broad to reduce the wing loading. Both the leading and trailing edges of the flight feathers are fringed and their upper surface is covered with a fine soft pile. In normal flight and when gliding, no sound can be detected at all. Near the nest, where landing manoeuvres require sudden changes in flight direction, the rapid wing beats are clearly audible producing a subdued thudding sound. The hunting technique of the Tawny owl is principally one of "perch and pounce". At advantageous elevated sites around the territory where prey is to be found, regular favourite perches are used. At these the owl sits and observes the surrounding scene. When prey is located by sight or by sound the owl glides down to capture it using

themselves strongly on their

talons which are held out well in front of it. A willingness to fly fearlessly into complete darkness is often demonstrated in their prey captures. While occupying different perches, which in the territory may be considerable distances apart, the pair of owls keep in touch and can be heard calling to one another at regular intervals. As already mentioned the Tawny owl's territory is of paramount importance for their survival. Some nights can be almost completely dark under the woodland canopy with visual cues virtually absent. In order to fly under these conditions the owls must be able to memorise the topography of their territory in great detail, especially the well defined flight lines they use regularly. As a further indication that Tawny owls are possibly relying on memory and not vision alone to fly through the woodlands I have observed that on such truly "black velvet" nights if one accidentally disturbs an owl in its territory it may panic and deviate from its normal flight line causing it to collide with a branch or some other obstacle. Because of its normally silent flight the clatter made by the collision is usually the first sign one gets of the owl's presence and it can certainly be startling when passing through dark and otherwise silent woodlands. Although rogue owls that will attack humans if their nest sites are approached are rare I always take the simple precaution of wearing a hard hat and goggles when circumstances dictate.

Observers have recorded that Tawny owls at nest will lay between two and five of their almost spherical white eggs. However in my nest boxes in Wyre Forest the most I have ever seen has been three. The eggs have usually been laid at two day intervals and as they are incubated from the laying of the first egg the young normally hatch two days apart. This gives the first hatched a survival advantage over its siblings particularly when food is scarce.

Mention has already been made of evolutionary adaptations to nesting in deep holes. Principal among these is the rate of development in the young of the legs and feet at the expense of the wings. Usually there is no room for the young to exercise their wings in the restricted nest and the fledging period of the Tawny owl can therefore be divided into two distinct phases. A limited period spent in the nest which may vary from three to six weeks depending on the abundance of food and how many young survive. This is followed by a longer period away from the nest when the young are fed by the parents until they are fully fledged and independent. At the end of phase one, the young owlets jump out of the nest and down on to the ground where they are of course very vulnerable to predation. Their wings have only the beginnings of feathering and their bodies are covered in fluffy down feathers. They immediately start to move across the forest floor using a half step and half hop gait. They propel

well developed long legs towards a tree, by choice one that is not quite vertical but slopes upwards. With astonishing ease using their long talons for grip and flapping their stumpy wings to balance themselves they sidle up the trunk of the tree until they reach a high branch where they remain silent until nightfall. Once it begins to get dark each young owl commences its incessant calling to enable its parents to locate it. The two syllable call is hoarse and lisping sounding like chee-zeez, not at all musical in its quality but timed as though it were imitating the early beginnings of what will be a sharp "Kee-wick" call they will use as adults. At a nest site on 15th June 1979 I found the three owlets out of the nest and in the nearby trees. Each could be distinguished from the other not only by their size and appearance due to the difference in their ages but also by the varying maturity of their voices from the youngest to the oldest.

The Forest by Night

In this section I want to try to convey to the reader something of the happenings taking place around a Tawny owl nest and in the surrounding woodlands. Studies of the events were made mainly in the period between nightfall, when darkness envelopes the forest, and dawn when the first dim grey light heralds the following day. The observations which reflect the accumulation of many years of study were made from the inside of a photographic hide made of unbleached calico raised 15 feet or so above the ground on a stand. As by nature this material was very thin it formed no barrier to the slightest sounds. The roof was covered with a layer of heavy gauge polythene sheet in order to keep out the rain.

I shall not describe the setting up of photographic equipment as this has no bearing on the following observations. Suffice to say that this has to be done without disturbing the owls in residence. In May and early June when the observations are made the aim is to be comfortably installed in the hide by 7.00pm while it is still daylight. The hides used were sited under almost closed canopies in sessile oak woods on high ground at the Button Oak side of the forest. As will become clear the elevated position of the observer allows sounds from miles distant to be heard on a still night.

As the evening progresses the occasional barking of dogs near and far dies down. The volume of road traffic grows less and less until at around 10.00pm there are long intervals of quietness. Sounds from the forest however are becoming more noticeable. Attention must be drawn here to the difference between dry and wet nights. On still dry nights the leaves which cover the ground around the hide transmit every tiny rustle. On wet nights this source of sound is deadened and the air is filled instead with

the wide variety of sounds made by the rain as it percolates down through the trees. These sounds rise and fall in volume and quality as they are modulated by any wind which is blowing. Periods of absolute silence in the forest regularly occur and often accompany any large drop in temperature. These low temperatures frequently develop in the forest at around 2.30am and coincide with the middle of the darkest part of the night. While it is still light the faint sounds the wood ants make as they scurry among the dry leaves can be heard and this continues until darkness falls and they suspend their activities. Another faint but readily audible sound comes from the polythene cover on top of the hide. Like the sound of tiny raindrops pieces of frass, expelled by the legions of insect larvae which are eating the freshly emerging oak leaves above, fall incessantly by day and by night. Air movements due to thermal gradients sometimes stir the leaves of the canopy even on otherwise still nights. These movements cause accumulations of frass particles on the open leaves to drop down in cascades and can be heard falling not only on the roof of the hide but on the dry leaves on the ground below. Subsequent examination of plants on the forest floor shows everything to be covered in these black particles. The only times the frass ceases to fall, because the larvae have stopped eating, is on the occasions when the temperature falls to near zero.

The owlets in the nest box have been calling for food since the light began to fail. In the distance the calls of the parent Tawny owls can be heard. Suddenly without warning there is a blinding flash as one of the parents, returning to the nest with food breaks the infra red beam producing hopefully a photograph of itself in flight. In the nest box an excited commotion breaks out as the young receive the food. While the owlets are small and weak one parent usually remains in attendance to tear up food for them while the other parent hunts. If the owls intend to enter the box on returning to it they need their feet free to grasp the front edge of the opening as they land. Prey is therefore of necessity carried in the beak. Later when the young are stronger and more active they begin to swallow even large prey items whole. Parents arrive at the nest carrying the prey in either their talons or their beaks and drop it into the box often without even landing. The arrival of food is accompanied by much commotion and beak snapping in the box if there is more than one owl present. The items brought as food reflect the opportunistic nature of the Tawny owl as a species. The prey most frequently brought to the Wyre Forest nests were yellow necked mice (*Apodemus flavicollis* (Melchior)) and wood mice (*Apodemus sylvaticus* (L)). Birds and other small mammals up to the size of rats (*Rattus norvegicus* (L)) made up much of the remainder of the diet but frogs and fish were brought

to various nest sites on occasions probably from Dowles Brook which ran through several Tawny owl territories. When hunting was good parent owls might bring prey back to the nest up to eleven times during the night although five or six visits in a night would be nearer the average. For example at a nest site on the 5th June 1976 parents brought back prey at 10.15pm, 10.45pm, 12.05am, 1.00am 3.00am and 4.00am. On wet nights when the conditions made their normal hunting methods unproductive the owls might not return to the nest at all during the hours of darkness. If they did return it was usually with small items like earthworms, cockchafers or large moths.



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When these circumstances prevailed the owls would continue to hunt long into the daylight hours. There were of course times when the equipment was triggered by other creatures flying through the beam. On three or more occasions the culprits were bats and on another a very persistent moth hovered over the infra red device as though it was being attracted by the light. After a period of time the commotion in the nest box initiated by the arrival of food subsides and for a while comparative peace returns to the forest. The observer is left to listen to the rest of the sounds of the night. Deer (*Dama dama* (L)) seem to be restless creatures and the steady tread of their feet along the well worn deer paths, sounding I used to think like the marching feet of Roman soldiers, can be heard at intervals all through the night. Occasionally one or more deer would give a deep rough bark and the steady march would break into a trot. On the 29th May 1982 at 1.00am about twenty fallow does assembled near to the hide and after milling around for fifteen minutes simply marched off. Sometimes a hedgehog (*Erinaceus europaeus* (L)) on its nightly foray would pass by, snuffling and making a great deal of noise as it rooted among dry leaves. Numerous other slight rustles indicated the presence of small mammals as they carried out their nightly activities. On the 30th May 1982 a

badger

(*Meles meles* (L)) investigated the area around the hide. Being of course unable to see anything in the darkness, I could not identify what kind of animal it was as the noises it made were unlike any sounds I had become used to. Several quick heavy footsteps followed by a period of silence, were repeated time and time again. Although loath to give away my presence in the hide, eventually I had to shine a torch through an opening to check the identity of the visitor in case it might have been a human intruder.



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At another nest site in a subsequent year at 2.30am the young in the box having consumed their latest meal had resumed calling. The other forest sounds including the distant calls of the parent owls indicated that all was normal when nearby the peace was shattered by the bark of a fox (*Vulpes vulpes* (L)). This piercing two syllable scream started a chain reaction from near to far, sweeping like a wave across the countryside, every dog began to bark in reply. A good twenty minutes passed before the last dog settled down and quietness returned. Long periods of time frequently elapsed between the visits of the parent owls to the nest. There was plenty of time to be lulled into an only half awake state. The silent return of each owl of course was a startling event as it was accompanied by the sharp mechanical sounds from the photographic equipment and a blinding flash. Light is reflected from the owl and from nearby leaves and branches and for the brief period

illuminates the hide. This appeared all the

another owl is usually met with loud beak snapping

brighter because of ones fully dark adapted eyes and rapidly restored wakefulness. On the subject of unexpected startling events both natural and man made, these sometimes occurred. One night like "a strange encounter of the third kind" in the dead of night something very large flew over. From the complex whining and throbbing sounds it made I guessed that it was a Hercules transport plane on a low altitude night flying exercise. Apart from the horrendous noises it made, it flew so low over the forest above my hide that the wash its propellers generated shook the nearby trees, the hide and the photographic equipment.

On another occasion one really quiet night the forest had taken on an air of serenity and nothing had happened at the nest for two hours or more when suddenly without warning from a branch two feet from my right ear "Wuu-Wooo-Wooo-Wooo" an owl shouted. At this distance the unexpected voice of a Tawny owl can be very loud and in all my years of study at these various nest sites this remains the event which startled me the most. The parent owls occasionally return to the nest even when they are not bringing food. Sometimes there is the scrape of a talon on a branch or on the nest box to indicate their arrival. When an owl has been heard to land nearby and to sit there for a length of time, I have speculated long and often as to whether or not they could see my silhouette perhaps against a moonlit background or hear me. I was always sure they knew something or someone was in the hide and not just strange inanimate photographic devices.

Having returned without food they communicate with the young using subdued "yelps". I have always assumed that these visits are for keeping an eye on the nest site in case other Tawny owls are attracted by the calls of the young and interfere. Of all the British owls the Tawny in parts of its repertoire demonstrates the most beautiful voice. When heard at close quarters the quality can be like a woodwind instrument perhaps a flute or an oboe. Calls include the well known "Tuwit-Tuwooo", tremulous hoots of widely varying length, the sharp "Kee-wick", a variety of "yelps" and "yips" and a number of subdued "Huu-wit" contact calls used between male and female when close to each other. Combinations of all these calls are used but it is the tremulous hoots varied in pitch, volume and length which seem to convey the most information between owls. The voice of the female Tawny owl is said to be higher pitched and hoarser than that of the male and there certainly can be a detectable difference in timbre between the pair when they are in "conversation" with each other. However from my hidden observation point I was never able to identify for certain which voice belonged to which owl. Annoyance or alarm caused by an intruder that is not

“Rug-

both by adults and by owlets even when they are very young and still in the nest. On three nights I was lucky enough to witness remarkable vocal interchanges between Tawny owls. The first was on 28th May 1982 and seemed to involve three pairs of owls. The “chorus” consisting entirely of tremulous hoots lasted with varying intensity from 9.00pm until 11.30pm and led me to think that it may have contained some social content. On the 29th May 1985 the second of these great performances occurred. The tranquillity of the forest had already been shattered by what sounded like a fox murdering either a crow or a pheasant. Three or more owls were involved this time and it seemed to develop into a competition to see who could hoot the loudest and longest. The third took place on 11th June 1988 and was the most noteworthy. Four and possibly five owls were involved and the vocalisations were combined with a good deal of flying around in the nest area with clearly audible wing beats. No words of mine can convey to the reader the volume and complexity of the vocalisations. Loud lengthy tremulous hoots and yelps came from some owls. Others owls replied and interrupted with aggressive “Tuwit-Tuwooo” and “Kee-wick” calls the whole sounding as though a good deal of animosity was being expressed in the voices. This performance lasted for ten minutes and then gradually subsided into absolute silence as some of the owls moved away. Although I have no evidence to support it I believe that the additional owls that came into the nesting pair’s territory and promoted these vocal responses were non breeding birds.

Other Birds Nesting in the Forest

In addition to the Tawny owls which have been discussed above, there are of course all the other forest birds particularly ground nesting species which inhabit the area. Although these are mainly silent during the hours of darkness interesting exceptions do occur. On 27th May 1981 at 1.20am the forest was enjoying a quiet period when in the far distance in the direction of Upper Arley the faint call of a Cuckoo (*Cuculus canorus (L)*) could be heard. The cuckoo’s calls became gradually louder as the bird, flying in complete darkness and “cuckooing” at intervals, flew over the forest heading in the direction of Clows Top. As it passed over the site of the hide for some reason it gave the coarse “Whaa Whaa” call and then continued “cuckooing” on into the distance. Without exception at each of the owl territories I investigated, as soon as the light was beginning to fail in the evening, male woodcocks (*Scolopax rusticola (L)*) began their rather purposeful roding flights over their woodland territories. Their unusual grunting calls ending with a sharp whistle advertised their presence as they seemed to be saying

Rug-Rug-Rug-Siss-ooo". With so many woodcocks nesting in Wyre, their territories often overlapped and so there were regular meetings at the boundaries during the roding flights which gave rise each time to an excited display accompanied by a burst of whistling and grunting. Between 3.00am and 4.00am as soon as it began to get light in the forest the dawn chorus would begin. This was a good opportunity to hear which birds were present and to some extent estimate how many there were. Among the early risers the Redstart (*Phoenicurus phoenicurus (L)*) vied with the Robin (*Erithacus rubecula (L)*) to start the chorus. On the 29th May 1981 for example I noted that within earshot of the hide there were six singing Redstarts. On 10th June 1988 the forest dawn chorus was notable for the number of Turtledoves (*Streptopelia turtur (L)*) and Cuckoos present.

The single most unusual occurrence during the years of my studies I recorded as "The Ghost Wind". Although this must have been a metrological freak condition, for example a tiny whirlwind a few metres wide, caused perhaps by the rising sun it was none the less alarming at the time. Apart from the owl vocalisations discussed above the night of 10th June 1988 and the morning of the 11th June 1988 had been still and had contained several of the periods of absolute silence referred to previously. At 3.30am in the distance I could hear a strange murmuring sound like a crowd of people and the noise of branches creaking and of leaves and twigs being brushed together. The sound came steadily nearer and as it arrived at my site a wind twisted and shook the hide violently for some seconds and then was gone and could be heard travelling on. The forest then returned again to absolute silence.

Epilogue

The occurrences discussed in this article refer to a period in the forest's history fourteen years or more ago. Many of the sites I studied then are changed beyond recognition now by forestry and other activities. Sadly the wildlife in general, and the nesting birds in particular, already becoming noticeably scarcer at that time has continued to decline. The late nineteen eighties appeared to mark a turning point after which many more people began to explore the forest. During this period for the first time owl boxes were broken into and the young taken. Once this vandalism had begun to take place I ceased using this method of study of the Wyre Forest Tawny owls.