

THE DISTRIBUTION OF BATS IN HAMPSHIRE.

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An enormous number of people in this country can distinguish at least half-a-dozen common birds and name them correctly. Even the most disinterested city dweller knows the sparrow and the pigeon, while there are hundreds of amateur naturalists who can name correctly all the birds they are likely to see upon an afternoon's walk. A bat, however, is simply a bat: and if that is true for the vast majority of country men (and it is true) it is, unfortunately, no less true for the majority of field naturalists. Even those expert naturalists who can place the species correctly from a glance at the skin are all too frequently quite unable to distinguish one from another on the wing. Very, very few people can distinguish between bats on the wing, much less name them correctly. A bat remains a bat irrespective of species. And yet there are twelve species native to the British Isles and most of them are common. Furthermore they differ widely from each other in their habits, modes of flight, flight calls and even in many cases in size. There is really no more excuse for lumping them together as bats than there is for calling all little brown birds sparrows.

I think this widespread inability to distinguish one kind of bat from another on the wing springs mainly from lack of interest, and this lack of interest in turn springs from laziness. Birds are comparatively easy creatures to watch: bats are not. They are crepuscular creatures and they live, as a rule, in rather inaccessible places. In colour they are all much alike, and their rather erratic flight makes them in the failing light anything but easy to follow. The study of bats I have found—and I have been studying them consistently for upwards of twenty years (indeed I have had one or more bats in captivity every year since I was 13)—involves a fair amount of discomfort and the expenditure of a great amount of patience. But it is all very well worth while for I do not think there are any more interesting creatures in all our fauna.

Bats are flying mammals, the arms having changed into wings. A membrane stretches between each of the long fingers and bones of the hand, but the short thumb is free from the wrist and is armed with a claw. The second finger is short and forms the front of the wing, and the third finger is the longest. From the fifth finger the membrane stretches along the arm to the armpit and thence along the flank and leg to the ankle, the exact point on the leg at which it ends varying with the different species. Another membrane (called the interfemoral membrane) stretches between the legs and the tail, and is supported by a spur of bone (called the

calcar) from the heel along or near to its edge. The legs are much smaller than the arms, and are twisted by the shape of the hip bones so that the knees point backwards. Each of the five small toes is clawed. The eyes are very small and the sight is very poor. Hearing is very keen for high-pitched notes, but bats appear to be completely deaf to low-pitched sounds, no matter how loud they may be. I have found that my captive bats will respond at once to the tearing of a thin sheet of paper, but that they are quite unaware of the sound of a big dinner gong even when beaten fiercely immediately below them. But to make up for this rather specialised form of hearing and their very inadequate powers of sight, they have truly remarkable powers of "feeling," which enable them to avoid obstacles in the dark or when they are blind-folded. This additional sense is not properly understood as yet by the scientists, but it seems probable that it is connected with the wing membranes and the "earlets" or "nose-leaves." The hair is long and silky, with an undercoat of finer wool, and is always kept immaculately clean by means of the tongue. Bats wash themselves as frequently and diligently as cats.

Our twelve species fall into two distinct families—the Vespertilionidae, the "earlet," and the Rhinolophidae, "nose-leaf" or "horseshoe" bats. The former, by far the most numerous both in individuals and in species, have a well-developed "earlet" (the tragus) which represents the small prominence in front of the human ear, and the bones around the shoulder are not fused. The latter, comprising but two species, have a most extraordinary development on the face roughly shaped like a horseshoe but resembling at the same time a cluster of rather withered leaves. This excrescence is a sense organ, and since these bats have not got the tragus common to all the others it probably serves the same little-understood function as that organ. Horseshoe bats have a solid ring of bone round the body at the shoulder which is formed by the fusion of the first two ribs with the backbone and the breast-bone.

The young of all our bats (no British bat has more than one young one in a year) are born in summer—round about Midsummer Day would be a good average date—and are quite helpless at birth. They are carried around by the mother until they get too heavy and then are left hanging in the den while she goes out hunting. Towards the middle of August they begin to fly and to fend for themselves. Apparently they fly by instinct. Most people have seen young birds being taught to fly: no one has seen a young bat being taught. The mating season, in all our bats, is in the autumn just before hibernation, usually in late September or early October. There is no courtship or pairing. Bats are promiscuous. All our species are gregarious and all hibernate. Generally they leave their summer retreats and resort to caves or some other suitable situation for this purpose, and there they hang by the feet, upside down,

with wings wrapped around body, fast asleep. Their temperature drops to that of their surroundings and their breathing becomes light and very slow. It is not always easy to distinguish a hibernating bat from a dead bat. On warm winter days some individuals wake and come out to hunt for food, but in a cold winter hibernation is very sound, and with one possible (but by no means certain) exception all our bats may safely be called determined hibernators. In summer most bats sleep throughout the day and most of the night, coming out to hawk for food only in the evening and at dawn. One or two species fly off and on through the night, but I think this is a characteristic of individuals in the species rather than of the species as a whole. The duration of the hunting flight differs, of course, with the various species. Bats are wholly insectivorous and of very great value to man. *And they do not fly into women's hair.*

The twelve species native to the British Isles are the Noctule (*Nyctalus noctula*), Leisler's Bat (*N. leisleri*), the Serotine (*Eptesicus serotinus*), the Pipistrelle (*Pipistrellus pipistrellus*), the Long-eared (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Natterer's Bat (*M. nattereri*), the Whiskered Bat (*M. mysticanus*), Bechstein's Bat (*M. bechsteinii*), the Barbastelle (*Barbastella barbastellus*), the Greater Horseshoe Bat (*Rhinolophus ferrum-equinum insularis*) and the Lesser Horseshoe Bat (*R. hipposideros*). Of these twelve bats I have kept eleven in captivity.

I have not the space in this paper to go fully into the differences in modes of flight and flight calls, but a brief description of the twelve may be useful to those contemplating taking a further interest in these entertaining creatures.

The Noctule. This is the largest of our British bats. There is a good deal of variation in size, but this is rarely noticeable in flight. The wing span is said to range from 13 to 15 inches. The largest specimen I have examined personally had a wing span of 14½ inches, but I have also had an adult female in captivity which measured barely 12½ inches. The Noctule flies fast and, for a bat, remarkably straight. The flight is not altogether unlike that of a Swift, and the animal when hawking of a summer evening can hold its own very well with the bird. Generally speaking, the Noctule flies high (often out of gunshot range), but on nights of cold wind I have found them hawking as low as 10ft. from the ground and in shelter. Capable of long and sustained flight, it covers, I am sure, great distances in the summer, returning in the autumn to its native hibernaculum. It is mainly a woodland bat. During flight it squeals constantly. The cry sounds to me like *wyeee, wyeee, wyeee*.

Leisler's Bat. Very like the Noctule, but much smaller and less thickly built. The wing span is rarely as much as 11 inches. The flight is fast but erratic and the wings come well below the body on the downward stroke. Generally flies at a low altitude, rarely in excess of 30 feet, and is more susceptible to wind than its larger relative. Is, also, mainly a woodland bat. Much less noisy on the wing and the call more of a chatter—*tack, tack, tack*, but very high pitched. The Noctule prefers to hibernate in buildings, but I have found Leisler's hibernating in trees.

The Serotine. A large bat, almost as large as the Noctule. I have had specimens with wing spans in excess of 14 inches, but I have also had them

with spans of only 12 inches. This bat can and does bite. I have been bitten quite severely more than once. It is also of a quarrelsome and indeed belligerent nature. One in my possession killed a Pipistrelle, afterwards attempting to copulate with the dead body. The Serotine lives mainly in buildings, but prefers to hawk in the neighbourhood of trees. The flight is slow and wayery, and generally rather low but getting higher as the evening advances. On the wing is usually silent. The only sound I have heard on the wing, and then rarely, has been a high-pitched squeak of the sort dolls used to give in pre-Great War days. Will chatter with rage when handled. This bat is apparently found only in Southern England.

The Pipistrelle. Our smallest bat. A very good case could be made out for its being our smallest mammal. The wing span is rarely more than 8 inches. The flight is erratic and rarely above 20 feet, but is fast and capable. Drinks on the wing. Is very chatty in flight, uttering a series of short high-pitched *tick-tick, tick-tick* constantly. Hibernation is less profound than in any other British species. Very variable in colour, white or albino examples turning up frequently. Animals with a distinct white or whitish border on the hinder-part of the wing membrane are not uncommon in Hampshire.

The Long-Eared Bat. Easily recognisable by its very long ears, which are capable of independent movement. Wing span 10—10½ inches, and very constant. In direct flight the ears are held straight in front of the body. In flight a high-pitched chirrup is uttered almost continually. The food is not as a rule taken on the wing as with other bats, but picked from the leaves of trees and bushes. The flight when moving from one hunting-ground to another is fast and direct and generally conducted at only a few inches from the ground, but when feeding is moth-like—and there is a good deal of very adept hovering. The Long-Eared Bat makes an excellent, cheerful and docile pet, and can be trained to answer calls. But it cannot be kept in the company of other bats as it is extremely quarrelsome. When handled at first it complains in a very child-like querulous tone, but if kept in captivity any length of time likes being handled and comes to be stroked and petted. I used to carry one around with me in my pocket and let it out in my study and my office. It once took itself for a little exercise round a very fashionable London restaurant at lunch time, causing a small sensation among the female diners.

Daubenton's Bat. Also known as the Water Bat. Wing span, 10 to 11 inches. Is very common along all our rivers, streams, and ponds. In summer frequents old trees, but in winter hibernates in buildings. The flight is low over the water—the animal often breaks the surface to take floating insects—and a good deal faster than it seems. This is the bat generally taken on fisherman's flies. On the wing chirps a good deal. The sound is lower-pitched than in most bats and is soft and not unmusical. It sounds to me like *po-ep, po-ep*.

Natterer's Bat. Also found in the vicinity of water, but quite definitely *not* a water bat. Wing span 11-12 inches. The wings appear light when the animal is flying. Hibernates in buildings but hunts always in the neighbourhood of trees. The flight is slow and steady and *as the tail is carried straight out behind* this bat is easy to recognise on the wing. Also it is noisy and makes loud squeaks that can be heard by anyone of normal hearing. Like the Long-Eared, it takes most of its food from the hedges and trees, but will also hover over water.

The Whiskered Bat. Only a little bigger than the Pipistrelle. Wing span rarely exceeds 8½ inches. Is probably often mistaken for the Pipistrelle, though the white under-body should be sufficient to distinguish it in flight. Furthermore, the flight is silent (I have never heard a Whiskered Bat make a sound on the wing) and the flight is steady. Again the Pipistrelle captures its prey on the wing, the Whiskered takes it from leaves, posts and so on. Is very fond of spiders. Unlike most bats, grunts rather than squeaks when handled.

Bechstein's Bat. This species has not been sufficiently studied to warrant even the briefest of notes. The wing span of the only one I have handled was approximately 11½ inches. This individual was active, quarrelsome and noisy. The flight of the few I have watched has been slow and rather ponderous and conducted only a few feet (three or four) from the ground around apple trees. They were silent on the wing. The colony lived in a hole in a beech tree. The ears are large and flight is ponderous and slow, but *not* erratic.

The Barbastelle. A black bat, *appearing jet black on the wing*. Wing span about 10 inches, but the bat seems slender in build when seen in flight, which is low and uncertain and never far from the resting-place. Rests during the day in holes in trees, walls and in thatch of buildings or ricks. Hibernates in buildings. Solitary in disposition, this bat is hard to keep in captivity and is very bellicose towards other species. Does not squeak in flight, and when handled buzzes rather like an angry hornet. All the ones I have had have bitten me, but the bites are not severe.

The Greater Horseshoe Bat. A large bat with wing span 13-14 inches. Is very gregarious and large colonies have been found in caves and buildings. The flight is very graceful, a compound of sailing and gliding in the manner of a gull with quick rather fluttery butterfly-like wing strokes. Almost invariably it flies low, in and out of the undergrowth in woods and so on. On the wing it is silent, and those I have had in captivity have never been talkative. A very faint *peep-peep* is uttered occasionally and seems to be a sign of pleasure. When quarreling the voice is still very soft and faint, but the sound is more like *chicka-chicka*. It is comparatively easy to keep in captivity and soon becomes tame and friendly, but it is by no means easy to keep one alive through the winter and I have come to the conclusion that they must hibernate in company.

The Lesser Horseshoe Bat. A much smaller edition of the above, the wing span rarely exceeding 8½ inches. The flight is quite different. The sailing and gliding are absent and the wing beats are very quick, much quicker than in any other bat, too quick indeed to follow accurately. The voice is low and rather gruff for a bat—*check-check*—and is used on the wing. And the animal has an extensive vocabulary of small chattering squeaks which are uttered while at rest. Lesser Horseshoe Bats are very susceptible to wind. Personally I have found very difficult to keep in captivity. They come tame rapidly, but they die on the slightest excuse and sometimes apparently without excuse.

So little work has been done on these British bats that we do not even know their distribution in England properly. Bechstein's bat, for example, has (according to the books) been recorded from only three places—the Isle of Wight, the New Forest, and a single example from Henley-on-Thames—and is generally regarded as extremely rare. I am by no means sure that it is as rare as all that, and the example from Henley-on-Thames seems to indicate a rather wider distribution. Just before the war I watched this bat in the Harewood Forest area, but I have not been able to get to the place again since. Similarly Leisler's bat is officially regarded as occurring only in the Avon Valley in Warwickshire, in one or two restricted localities in Cheshire, and still more locally in Yorkshire. That is the information given in Barrett-Hamilton (information acquired in and prior to 1910) and it has been slavishly followed by one compiler of handbooks to our fauna after another ever since. Recently a friend of mine, who is thoroughly knowledgeable

about our bats; has found it far beyond its accepted range in Yorkshire, and I have found it in the Punchbowl at Hindhead and in the Meon Valley, where it is indeed fairly frequent. It is very likely that even those people in the South who are well acquainted with the Noctule mistake Leisler's for that bat, thinking it a small or immature specimen. But for so long as the vast majority of our naturalists are content to lump all bats together, for so long will our knowledge of their distribution remain vague and incomplete. It is high time in fact that we ceased regarding the data on distribution given by Barrett-Hamilton as final, and commenced to compile County lists of the Cheiroptera in the excellent and thorough manner of our County lists of birds. In the hope that it may stimulate naturalists in other counties to work on the distribution of the Cheiroptera within their boundaries, I give here the distribution of the British bats in Hampshire so far as my knowledge allows. I would stress the words "personal knowledge." I make no claim that this list is a complete one—there are many gaps which I hope naturalists in the County will help to fill. I do not even claim that this is an up-to-date list—I have done little or no work on bats in Hampshire since December 1940, and there have been, of course, many changes in the topography of the County—especially in the distribution of timber—since then. But I do claim, in all modesty, that it is the most complete list yet published. I should make it clear that when, in the list below, I mention places I do so, with one exception, only when I have personally secured specimens there, have personally seen the species there, or have had specimens sent to me from there, which last has occurred only rarely. The exception is Bechstein's bat which has been recorded so infrequently that I have listed at the records. I give dates only for two species—Bechstein's and Leisler's—and I do this because both are regarded as very rare in England, and also as some guide to other workers in view of actual or possible changes in the topography of the area.

The Noctule. Common and widespread throughout the County in well-wooded districts. Scarce and local in the Headley district, though common just over the Surrey border. Plentiful, but local, in the New Forest. The New Forest distribution so far as I have been able to work it out is interesting. The species is common around Godshill Inclosure, but does not seem to occur anywhere between that Inclosure and the Cadnam—Ringwood Road. Just outside the boundary it occurs in Franchises Wood, but I have never seen it at No Man's Land or in Bramshaw Wood. I have taken examples at Brook (outside the boundary) and at Cadnam (also outside the boundary) but I have never seen it in the woods immediately across the boundary not in the neighbourhood of the Rufus Stone. It is very common at Fritham (my happy hunting-ground for this species in peace-time) but is only occasional at Linwood. It is common at Minstead—there used to be a big colony at the back of a cottage in the grounds of Minstead House—and it is common around the Kennels on the Lyndhurst—Cadnam Road, but at Lyndhurst itself is only occasional. In the woods between the Lyndhurst—Bournemouth Road and the Cadnam—Ringwood Road (Bolderwood Walk, Mark Ash, Oakley, Knightswood

Inclosure, etc.) it is very scarce indeed but in the woods between Lyndhurst and Brockenhurst it is plentiful. It is very common at Burley and very common at Brockenhurst. I have never seen it at Boldre or at East Boldre, but it is common at Beaulieu (outside the boundary) and I have taken examples from the Abbey ruins in winter. To the human eye there seems to be no reason why the animal should not occur in those woods it avoids. Possibly entomologists on the spot could help here. Why, for example, should it occur plentifully in the Vinney Ridge Inclosure and only rarely or not at all in the Knightswood Inclosure just across the road?

Leisler's Bat. Rare. Meon Valley only (so far as present observation goes). Warnford (1935), Clair's Farm (1935), Mislingsford (August 30th, 1939).

The Serotine. Locally plentiful. Havant, Hayling, Warblington, Waterloo-ville, Bedhampton, Portchester, Fareham, Alverstoke, Titchfield, Hamble, Fawley, Exbury, Buckler's Hard, Boldre, Bransgore, Sway, Lyndhurst, Linwood, Brockenhurst, Ringwood, Sopley, East Dean, Chilworth (plentiful), Timsbury, Upham, Curdridge, Clanfield, Buriton (plentiful), Petersfield, Medstead (plentiful 1938: have seen none since), Itchen Abbas, King's Worthy, Winchester (at foot of Sleeper's Hill), King's Somborne, Stockbridge, Over Wallop, Leckford, Bullington, Penton Mewsey (locally plentiful, 1937), Freefolk, Laverstoke, Basing, Crondall, Bentley, Alton, Froyle. In the Isle of Wight: Binstead, Godshill, Newchurch, Gatcombe, Shalfleet, Thorley.

The Pipistrelle. Extremely common everywhere.

The Long-Eared Bat. Very common. Probably more common than the Pipistrelle in the New Forest as a whole. Occasionally congregates in great numbers. I counted 301 at one roost in Oakley Inclosure in 1935.

Daubenton's Bat. Very common in Avon, Test, Itchen, Hamble, Meon, Lymington, Beaulieu, Bullington, Anton, Loddon and Wey valleys. Common along all the small streams of the New Forest, and on all the Forest ponds. Very common on Fleet Pond until it was drained—now apparently absent. Common wherever there is water.

Natterer's Bat. Plentiful in south-western Hampshire and the Isle of Wight. Plentiful locally in western and north-western Hampshire. Local in small numbers elsewhere. Excluding the New Forest and south-western Hampshire and the Isle of Wight, I have records for this species from Mottisfont, Stockbridge, King's Somborne, Little Somborne, Over Wallop, Nether Wallop, Grateley, Quarley, Ampport, Thruxton, Kimpton, Abbot's Ann, Fyfield, Weyhill, Andover, Knight's Enham, St. Mary Bourne, Hurstbourne Priors, Hurstbourne Tarrant, Tangley, Vernham Dean, Ashmansworth, Facombe, East Woodhay, Highclere, Burghclere, Litchfield, Freefolk, Whitchurch, Longparish, Wherwell, Leckford, Barton Stacey, Chilbolton, Bullington, Crawley, Sparsholt, Ashley, Hursley, Ampfield, Romsey, Cadnam, Bitterne, Chilworth, Chandler's Ford, Otterbourne, Compton, Winchester, King's Worthy, Martyr Worthy, Alresford, Medstead, Ropley, Alton, Bramdean, Titchborne, Cheriton, Froyle, Alton, Bentley, Preston Candover, Basing, Odiham, Overton, Wootton St. Lawrence, Monk Sherborne, Sherborne St. John, Weston Patrick, Upton Grey, Crookham, Crondall, Yateley, Droxford, East Meon, Steep.

The Whiskered Bat. Common and widespread. Not so common as the Pipistrelle or the Long-eared, but locally (e.g., Crawley, Compton, Winchfield) may outnumber either species.

Bechstein's Bat. Very rare. Newport, Isle of Wight (two records, 1909). New Forest (Burley, prior to 1837). New Forest (near Brockenhurst, 1886, a colony). New Forest (Burley, 1934). Harewood Forest (in Upping Copse close to road B 3420 where the first ride—coming from Wherwell—crosses the road, August 26th, 1939).

The Barbastelle. Not uncommon, but nowhere plentiful, in the South of the County. Less common in the centre and north. Locally plentiful in

neighbourhood of Enham Place in 1936. Most of my records are for the South and the Isle of Wight. For the centre and north I have records from Brown Candover, North Waltham, Dummer, Herriard, Wolverton, Heckfield, Mattingley, Elvetham, Hartley Wespall.

The Greater Horseshoe Bat. Uncommon and very local. Boscombe, Christchurch, Southampton, Portsmouth, Romsey, Winchester. The last was an adult female in advanced pregnancy found dead in the cloisters of the Cathedral on June 17th, 1943, and brought to me by a soldier.

The Lesser Horseshoe Bat. Uncommon but widely distributed. Most of my records are for the south-western corner of the County and the Lyndhurst area. I have other records from Bishop's Waltham, Horndean, Farrington, Oakley, Steventon, Easton, Stoke Charity, Crawley, Lockerley, Netley, Empshott, and in the Isle of Wight, Yarmouth.

I very much hope that the above will lead to a much more complete record of our Hampshire bats. If anyone should secure specimens they cannot identify I hope they will be kind enough to send them to me.