

## **THE IMPORTANCE OF THORNE AND HATFIELD MOORS FOR VERTEBRATE FAUNA**

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The first meaningful vertebrates records from Thorne and Hatfield Moors date from the 18th century, and emanate from the Crowle antiquary George Stovin. He alluded to several game and predatory species, including Red Kite, Grey Partridge, Black Grouse, Curlew, Snipe, Fox and Brown Hare. Subsequent and more continuous vertebrates recording begin in 1821 at Thorne (Ruff, Nightjar) and in 1836 at Hatfield (Marsh Harrier and introduced Red Grouse). From these respective years until the present day, vertebrates documentation has progressed, ranging from incidental records to long-term fieldwork and literature searching. There has always been a perhaps inevitable bias towards birds. The first organised visits were undertaken to Thorne Moors in 1865 by the Sheffield Field Naturalists' Society, and to Hatfield Moors by the Goole Scientific Society in 1878. The formation of both the Goole society and the Yorkshire Naturalists' Union in the 1870s provided a great stimulus to corporate and 'freelance' fieldwork and associated documentation, especially at Thorne. The organisations and individuals concerned were often relatively local, though others were more far-flung.

Until the 1950s, the most useful work on Thorne Moors vertebrates was probably that undertaken by Thos Bunker, a member of the Goole Scientific Society, and J H Verhees, a Thorne egg collector of the present century, and ironically the son of an immigrant Dutch peatworker. On Hatfield Moors and adjacent parts, Ralph Chislett's fieldwork, particularly that from 1929-39, laid the foundations of ornithological documentation there. By the 1950s, an array of data was scattered in historical, topographical and faunal works, journals, the publications of local societies and naturalists' unions, in newspapers, and in unpublished sources. In the years from the 1950s, the recording of vertebrates has been more sustained, with most modern data being synthesised by members of the Doncaster and District Ornithological Society. The society's detailing of Hatfield Moors birds - including those of Lindholme and Lindholme Lake - began in 1951. This has culminated in a published account of the vertebrate fauna, issued in 1989, summarising all available data, historical and modern. The society's interest in Thorne Moors began in 1965, with an ornithological study commenced in the following year. Records of Thorne's other vertebrates have also been kept by the members involved. Resultant published work has included a book on the birds, which appeared in 1985.

In seeking to understand the vertebrate fauna of the moorlands, it must be remembered that both sites comprise not only peat moorland, but a mosaic of other habitats. Nor should it be assumed that peat habitats are uniform. They vary according to the prevalence, type and age of peat workings, the height of the water table, and the occurrence of fires in the recent past. The surface topography of peat workings is also important, particularly in relation to the water table. There are other, often relatively local, human influences on habitat, like the planting of Rhododendrons, or the laying on the peat of tramways based on limestone ballast. The reclamation of former stretches of moorland for agriculture, up to the 1930s, has created areas of adjoining fen and carr where odd parts of this newly-formed land have not been cultivated. Peripheral waters, plantations, hedgerows and pastures extend the diversity. At

Thorne, colliery wasteland adds a specialised habitat; on and around Hatfield Moors, morainic deposits at Lindholme, and the excavation of sand and gravel pits, have augmented the habitat pattern there.

There is a clear correlation between the ages of habitats on the Moors and the diversity of vertebrate life. However, this is not to say that the climax vegetation, if its development was unhindered, would be the richest, and it certainly would not contain the range of species existing even now in the differently-aged habitats currently available. Age correlations and changes in the vertebrate fauna are not clear cut, and there are many variations within, and ill-defined boundaries between, the vertebrate communities of different types and ages of habitats. Most work on this problem has been associated with Thorne Moors birds, which therefore present an example of habitat usage by a large number of related vertebrates.

The barren areas of recent peat working support the least numerous and varied bird populations on Thorne Moors. Extensive cuttings which are still active or only recently abandoned hold a poor diversity of breeding species, including Skylark, Meadow Pipit, Wagtails, a few pairs of Lapwing or Curlew, and sometimes other species in wetter areas, like Redshank and Black-headed Gull. Non-breeding species feature resting gulls, roosting Carrion Crows, and others feeding on invertebrates and seeds, for example occasional passing waders and Wheatears, and resident partridges and Linnets. Extra cover on the edges of these seemingly empty areas encourage other species, like Wren and Reed Bunting, and attract raptors.

As the vegetation matures on the peatland areas, the diversity of birdlife increases, though species of open spaces, like Skylark, gradually decline. Breeding Whinchats and Willow Warblers, or wintering Stonechats for example, may occur in these areas as they initially develop, the ensuing bird population structures being largely determined by the height of the water table, which affects the density of birch regeneration and the extent to which other plants can colonise. In the drier areas, progressive population changes include increasing numbers of Willow Warblers, and the appearance of species like Pheasant, Nightjar, Tree Pipit, Grasshopper Warbler, Whitethroat and Yellowhammer, particularly alongside older habitats.

In areas of mature scrub, woodland and carr (on and, marginally, off the peat), thrushes, tree-haunting warblers, titmice and finches are significant breeding birds, occurring with other (breeding, feeding and roosting) species, as varied as Sparrowhawk, Woodcock, Stock Dove, Long-eared Owl, Great Spotted Woodpecker, Dunnock, Spotted Flycatcher, Jay, Starling, Sparrows and Chaffinch. This diversity is extended by the proximity of habitats like hedgerows, pastures and even buildings: for example, Barn Owls hunting along carr edge, or Magpies searching for food along hedgerows and in grasslands.

Flooded derelict peat workings, particularly the wetter, more extensive, well-established (and therefore vegetated) ones, attract breeding species like Little Grebe, Mallard, Teal, Water Rail, Moorhen, Coot, Black-headed Gull, *Acrocephalus* warblers and Reed Bunting. Also, a range of visitors is evident, exemplified by transient wildfowl and waders, feeding Swifts and hirundines, and raptors seeking a variety of prey.

Marginal ponds, reedbeds and drains have some of these species, and hold others whose penetration of the peat moorland is unknown or irregular, and which therefore

tend to be associated with waters on the edge of, or beyond, the peat; species like Heron, Mute Swan, Kingfisher and Grey Wagtail. Colliery wasteland need not be the sterile, homogeneous habitat that it may appear. It combines dry, relatively arid areas, reedbeds and some wetter areas, which support a number of species: passage waders, bathing gulls, breeding *Charadrius* plovers, Skylark and Meadow Pipit, and feeding Goldfinches and Linnets. The wetter and reed-dominated parts have held a number of wetland birds, including Little Grebe and Coot, but are now largely drained or otherwise destroyed.

A factor which must not be overlooked - and this applies equally at Hatfield - is the wide extent of Thorne Moors. This allows the site to be a useful local reservoir of common species. Other Thorne Moors populations are of wider significance, owing to their relative rarity, or geographical location; for example, breeding Nightjars have an important site at Thorne, the nesting Nightingales form a significant outpost, and Hobbies find the moorland a worthwhile feeding site prior to migration and probably have a northerly breeding station.

Other visiting or wintering raptors (especially Hen Harrier and Merlin) exemplify those species which require large, relatively undisturbed feeding territories, a viable food source and a suitable roosting area. In this respect, the moorland has clear advantages for these species over fragmented, often disturbed, areas elsewhere. These and some further species will tolerate only minimal disturbance, or they find themselves subjected to undue human attention: Long-eared Owl and Black-headed Gull are typical species in these respective categories, which therefore again find Thorne Moors a breeding refuge fulfilling their exacting requirements. Direct human persecution through shooting seems to be largely restricted to 'game' species, and some artificial releasing (for example, of Mallard and Pheasant) is helpful in reducing pressure on others. Direct persecution in other ways is not apparently significant.

In studying the habitats on and immediately surrounding both Thorne and Hatfield Moors, an unsuspected variety of vertebrates has been encountered. However, it has to be emphasised that with modern vegetation clearance, drainage and peat milling, especially by Fisons, most populations are, at best, being greatly reduced, and some are already being eliminated altogether.

On both moorlands, a number of wetland species nest on the moorlands and alongside. These include Great Crested Grebe at Lindholme Lake, small populations of Little Grebe, Water Rail and Coot, and larger numbers of Teal, Mallard and Moorhen. The moorlands are also of note for feeding and roosting by some of these species. Counts of Teal have exceptionally reached 200-300. Other nesting ducks have included Shelduck (on a gravel pit on the edge of Hatfield Moors), Garganey, Shoveler and Tufted Duck. Swans and geese are of little direct importance, though odd pairs of Mute Swans nest and Pink-footed Geese occasionally use the area, as they did in far greater numbers in the 19th century at Thorne. Other wetland species seeking refuge have included Bittern, Heron and many species of wildfowl, though not usually in numbers, except sometimes at Lindholme Lake.

Both moorlands are well-known for their birds of prey. Harriers have always been particularly prominent in the records. Marsh Harriers, though a long-banished breeding species, still quarter the levels on occasion, with records of one or two birds on a large number of dates in virtually everyone of the past 24 years. Except in the breeding season, Hen Harriers are frequently observed. Daily counts on each Moor

have reached six, especially when associated with roosts, whose sites have now been destroyed. Much rarer is Montagu's Harrier, a former breeding species, though a female did linger at Thorne in Spring, 1968. Goshawks have been logged in winter, and several pairs of Sparrowhawks are augmented by extra non-breeding birds. Both Buzzard and Rough-legged Buzzard have occurred and sometimes stayed: most notably, up to eight Rough-legged Buzzards were in the Thorne-Blacktoft Sands region in the winter of 1974-75. At least five species of falcon have been identified. kestrels nest, and Hobbies almost certainly do: extended summer records, the observation of display, and the appearance of family parties, are all strong circumstantial evidence. Mainly outside the breeding season, birdwatching may be enlivened by Peregrine or Merlin; counts of the latter, especially in pre-roost gatherings, have reached eight at Thorne, though they are now comparatively rare. Other raptors - feeding and roosting - have featured vagrants and visitors, including Black Kite, Honey Buzzard, White-tailed Eagle, Osprey and Red-footed Falcon.

Setting aside the regrettably extinct Black Grouse, three species of gamebird nest, and are artificially augmented by releases for shooting. The moorlands are particularly notable for their populations of partridges throughout the year. Quail have also occurred, particularly in fields at Lindholme. Although 25 species of wader have been observed, many are, at best, scarce migrants. Breeding species have comprised Lapwing, Dunlin, Ruff, Snipe, Woodcock, Black-tailed Godwit, Curlew and Redshank. Dunlin, Ruff and Black-tailed Godwit are long gone, but Thorne Colliery and the Hatfield gravel pits have added *Charadrius* plovers and Common Sandpiper between them. The drains on and around Thorne Moors in particular have also been important for Green Sandpipers on passage: daily counts have reached 25.

Amongst the gulls and terns, the only species of note is the Black-headed Gull, for which a colony has been known on Thorne Moors, though not continuously, since before 1844. Nesting in flooded peat workings, the maximum modern count of breeding birds is 3,000, in May 1968. Now, suitable wet areas are reduced to one site, where counts rarely exceed 250 adult gulls.

Pigeon and doves may breed, feed and roost in large numbers, the counts of Turtle Dove and Stock Dove being, at times, especially notable. The moorlands also provide year-round refuge for owls. Barn Owls still hunt the moors and nest in buildings alongside. Populations of Little, Tawny and Long-eared Owl remain, the latter being locally important; and Short-eared Owls have bred in the past, and still occur in winter. Of international merit are the breeding numbers of Nightjar, which are becoming increasingly salient as declines occur elsewhere; the counts at Thorne and Hatfield suggest a combined total still over 80 pairs. Green and Great Spotted Woodpeckers are resident, with Lesser Spotted an increasing visitor. Cuckoos are familiar summer visitors, Kingfishers occur and have nested, and numbers of feeding Swifts and hirundines can be impressive; Sand Martins and Swallows also nest.

Skylark, Tree and Meadows Pipits, Yellow and Pied Wagtails all utilise the moorlands, sometimes in large numbers. Grey Wagtails are recorded on passage, and Woodlarks bred in the 1950s. Of the seven species of chat seen, four have nested: Robin, Nightingale, Redstart and Whinchat. Only the Redstart has ceased to do so, and conversely, Nightingales have their northerly stronghold on the moorlands; maximum counts have been of up to 15 males on Thorne Moors and nine on Hatfield Moors, though not all of these will necessarily have been breeding birds. Migrant Wheatears appear, and Stonechats are irregular - though mainly winter - visitors; both

these species formerly bred, and a juvenile Stonechat occurred at Thorne in autumn 1977. For the larger thrushes, the moors can provide valuable roost sites, and they hold many Blackbirds in summer. Passage and summer counts of warblers have long been a feature of the avifauna, particularly Grasshopper, Sedge, Reed and Willow Warblers and Whitethroats, with fewer numbers of remaining species; Goldcrests arrive outside the breeding season.

Thorne and Hatfield Moors were once regarded as the Yorkshire stronghold of the Willow Tit. The population is still relatively large, and the species remains the most noteworthy of the five breeding titmice. Flock counts of these birds may also be high. Jay, Jackdaw, Rook and Carrion Crow all nest on or around Hatfield Moors, with populations of two of these species (Jay and Carrion Crow) on Thorne Moors. Carrion Crow roosts may also be evident. A number of species of finches and buntings breed, with Linnet, Redpoll and Bullfinch evincing most comment. Winter counts and roosts may also be significant, though now generally diminished. Brambling records, for example, include a roost of 2,000 in April 1974 on Thorne Moors, and singing territorial males in May 1980 on Hatfield Moors. On Thorne Moors, Twite bred in the nineteenth century and perhaps the early years of the present century. From 1978-85 a small nesting colony was established on Hatfield Moors, the only known modern lowland English breeding station. A wintering population on Lindholme airfield alongside may have been the catalyst for this. The airfield is now disused and ploughed, and the peat 'walls' favoured by the breeding Twites are superseded by peat milling. Other breeding passerines include Wren, Dunnock, Spotted Flycatcher and Starling, though roosts of the latter at Thorne have been more spectacular: 1,438,000 is the largest estimate in 1962. Treecreepers occasionally appear, and a pair may have bred on Hatfield Moors in 1978. Bearded Tits are periodically encountered, all but one record being obtained from Thorne Moors, including a hopeful June record. Great Grey Shrikes can be a highlight of otherwise quiet winter days, though recent records are generally scarce. In addition, the Red-backed Shrike exemplifies those passerines which are occasionally present, often as migrant visitors or vagrants. Others in this group include Ring Ouzel, Firecrest and Snow Bunting, all finding food or temporary refuge.

As with passerines birds, many species of common mammals exist on and around the moors. Of the mammals and other non-avian vertebrate, a species listing is available for all orders except bats. Pipistrelle is confirmed, but others are conjectural, though Noctule and Brown Long-eared Bat are likely components of the fauna. There are records of five species of insectivores and 10 species of rodents, including populations of Water Shrew, Water Vole and Harvest Mouse. Although Rabbits rarely penetrate far on to the peat, Brown Hares roam widely and are relatively common residents. Of the carnivores, the Fox has the highest profile, despite persecution, though Stoat and Weasel are also reasonably frequent. No Otters have been seen since the early 1970s, but Badgers still persist, with at least three sets known at Thorne. Although Red Deer have appeared enigmatically from time to time, observed deer are usually Roe, which seemingly breed in some of the most densely vegetated areas.

The moorland populations of reptiles are regionally important, particularly Adders, but all are now increasingly elusive. Common Lizards are still relatively widespread, though Adders have markedly decreased. The remaining species, Grass Snake, occurs most frequently off the peat, being more closely associated with dykes, pastures and fenland suvivals.

Detailed fieldwork, especially on Thorne Moors, has revealed that as with the Grass Snake, amphibian distribution is often peripheral, though Common Toad, Common Frog

and Smooth Newt may also be found on the peat. The latter two have been confirmed as breeding in peat workings and dyke backwaters which have been subjected to mineral enrichment. Durham's Warping Drain was a site for Great Crested Newt, which probably once occurred more widely around the peat of Thorne Moors. A surviving length of the drain, close to the moorland, still harbours a residual colony.

There are no fish in the acidic moorland waters themselves, but the dykes and waterbodies on and around the edges have, in total, about 12 species recorded. However, some of these are known to have been introduced, like Brown Trout and Rudd, especially at Lindholme Lake, Stainforth Moor Pond (both close to Hatfield Moors), and Inkle Moor Pond, adjacent to Thorne Moors. Pike, Roach, Three-spined Stickleback and perhaps Eel are the most widespread species. The only scarce fish is the Ten-spined Stickleback, which certainly persists in dykes on the edge of Thorne Moors, though now in very small numbers.

The basic resources of information on the birds of Thorne and Hatfield Moors are Limbert *et al* (1986), Limbert (1990) and Marshall *et al* (1989). This latter reference also provides a summary overview of the other Hatfield Moors vertebrate. Similar data from Thorne Moors can be gleaned from Limbert (1979-80, 1985, 1987). Recording histories are available for Hatfield Moors (Limbert 1985, 1986) and aspects of Thorne Moors ornithology (Limbert 1988). Stroud (1989) gives a useful broader appraisal of the birds of raised and cut-over raised mires.

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