



**T**he **AGM** on the 15th June was well attended, and pleasing to meet each other after a two year gap. Speakers were Carl Sayer on the Glaven and Jonah Tosney on beavers. In addition there were site visits before and after the meeting in Bodham Village Hall. Prior was a visit to a meadow of orchids, and after to beaver site at the headwaters of the Glaven. **The photograph above** shows the setting of the meadow in the background, and arable land in the foreground. The meadow was previously arable, and we know of no other example of this resurrection, and as yet, no explanation on how it has happened.

The beavers are very much at home

on their enclosed site since the arrival of a pair in September 2021. They are exceeding our expectations on how quickly their activities create the hold-up of water and the wetland areas, all shaded in woodland.

The article on the historic Glaven at Little Thornage illustrates the changes in the river there, and also the nature of the surrounding land which made this the main east-west route crossing of the of the Glaven in the area. From the earliest of times this saw many local travellers and pilgrims to Binham and Walsingham to the west. In 1820 William Hardy junior built the stone bridge we see today on the A148, replacing the wood footbridge. From then on there was a decline of a thriving

hamlet centred around the Little Thornage crossroads. Three buildings in Little Thornage illustrate both the versatility of vernacular brick and flint buildings, and provide evidence of their early existence.

The fourth article deals with the pressures on our wildlife in prolonged heat and drought. We link this to an edict issued by Natural England on Nutrient Neutrality. In effect no house building in the catchment areas of the River Wensum and the Broads, which lasted from March to June before the inevitable fudge. Government lacks a long term strategy for the recovery of nature, such as we propose.

*Henry Crawley*

# Sayer's Old Meadow: A Resurrection From Decades Of Arable Use

Ian Shepherd



**W**e are fortunate on the Glaven in having some river meadows which are still rich in flower species along with diverse grasses and sedges. Those at Little Thornage are perhaps the best example. The biodiversity comes from centuries of being summer grazed by cattle. The most notable and recognised are orchids raising the erect flower in June and July. The sequence through the season is Marsh Marigold, Lady's Smock, Ragged Robin, Yellow Rattle, Common Spotted Orchid, Birds Foot Trefoil, Meadow Thistle, Fleabane and Purple Loosestrife; and in the wettest areas the high standing Teasel.



Permanent meadows on drier land in both upland and lowland regions can be species rich. In this case the interaction with man is different. In late summer the grass is cut and gathered for fodder and use through the winter months. Mark Cocker in his 2018 book *Our Place* considers that this pattern between nature and man can be traced back to Neolithic times. Flower rich meadows in the British landscape were an iconic feature, but are now a prime example in illustrating the changes brought about by farming. There were losses with the World War 1 Dig for Victory movement. In the 1920s there were still 4.2 million acres. Within



another thirty years another two fifths were lost. By 1960 another 1.75 million acres had gone. In 1984 just 3% remained, and today it is 1%. However not all the loss should be placed on farming. Between World Wars 1 and 2 roughly 750,000 acres, about 12% of England and Wales had been built over. This came from piecemeal development of new housing estates and suburban sprawl, roads and airports, industry and public works.

It is within this context that, as part of the 18th June AGM programme, RGCG members had a visit to a field in the village of Bodham, to see what seems like a bit of a meadow miracle. Carl Sayer's father has a meadow crowded with orchids (Common Spotted Orchid and Southern Marsh Orchid) and many other wild flowers. In fact the meadow is spectacularly diverse and attractive, yet just 16 years ago it was intensive arable. The field was permanent pasture for milking cows until the 1950s, and over the 1950s-1970s it was ploughed up and used, on rotation, for crops such as wheat, barley, mangles and swedes, followed by sowing with Perennial Ryegrass and grazing by a small bovine herd. The field was never subject to fertiliser



application in this period. After the early 1970s the meadow became a permanent arable field used for growing wheat, barley, oats, sugar beet and oil seed rape. In 2005, following harvest of a rape crop, the field was left fallow for five years. Conservation management of the majority of the meadow then commenced in September 2010 and since this time, on an annual ba-

sis, the field has been used as a hay meadow with cutting and removal of material as bales in August-September. Importantly no plants or seeds have ever been introduced to the meadow. Thus, remarkably the Sayer meadow has been transformed from arable to species-rich meadow via natural processes. The nearest sites for some of the species found in the meadow (such as Yellow Rattle and Greater Tussock Sedge) is several kilometres. Is it possible that, as well as dispersal of plants to the meadow via wildlife and wind, that some species came back from dormant seeds waiting for the right conditions in the soil? It is hard to know, but on-going surveys are showing that, every year, more species that are scarce in the local area are arriving in the meadow. The project shows the huge potential for nature to recover the ground if we are prepared to be patient and resist the temptation of reaching for a generic seed mix!

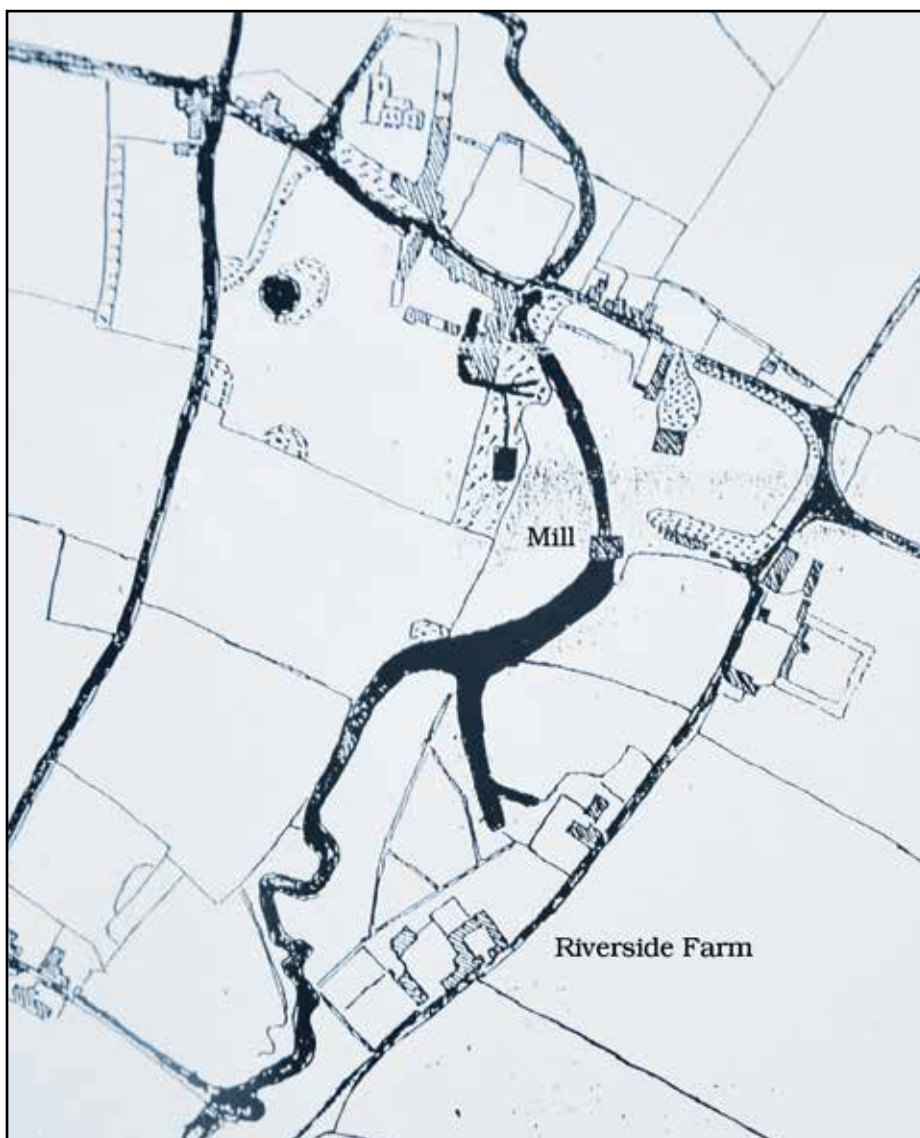
Acknowledgement: Many thanks to the Sayer family for the information on cropping history of the land and to pages 113, 114 in the Mark Cocker book *Our Place* on meadow decline. Thanks are also due to RGCG member Peter Robinson for meadow surveys. Main photo on p2 courtesy Carl Sayer.

# The River Glaven at Little Thornage: Historic Changes to the River, the Settlement, and the decline of a Medieval Highway

Ian Shepherd

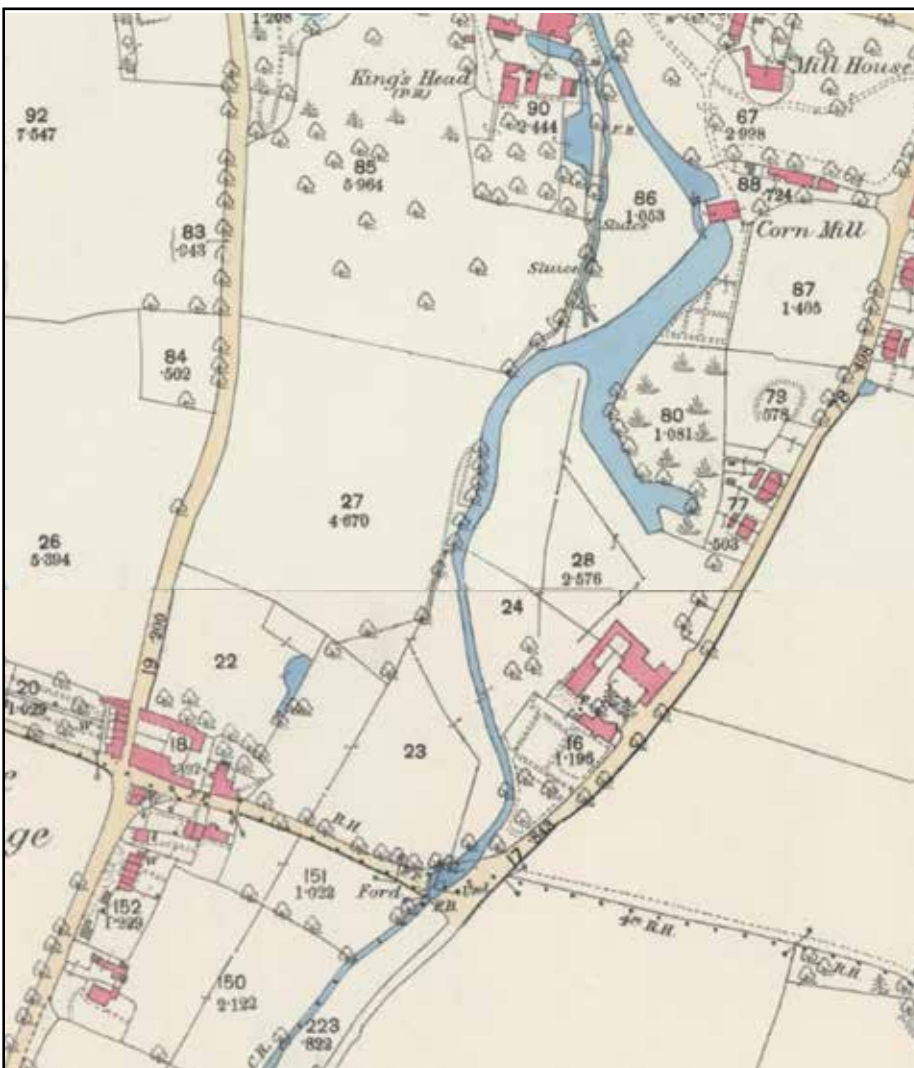
**T**he planning system couples Letheringsett and Little Thornage as a defined Conservation Area. While they are in close proximity, they are separate through a long history going back to the Domesday Book. You could say they have gone on different pathways, and what determined that was the River Glaven and the land around it. As regards new development there was much due to William Hardy jnr in the case of Letheringsett, and little new for Little Thornage. You can broadly say that Letheringsett from around 1780 to 1830 was a rural example of the Industrial Revolution. Little Thornage had from very early on been on an important highway for east to west crossing of the Glaven for both local medieval travellers and pilgrims walking to Little Walsingham. It remained rural and agricultural, with small farms, with river meadows valued more than arable land. By the 1600s there was innovation with the use of winter water irrigation of the meadows for an early flush of grass for grazing cattle. The buildings were and are vernacular brick and flint. Homes are notable for some major changes over time, re-use of building materials, and conversion of barns to housing.

There is a unique amount of historical information on the two settlements to draw upon from three sources. The pioneer, and still much read, Basil Cozens Hardy in his 1957 *History of Letheringsett*; as well discussing excerpts from Mary Hardy's diary, his legal mind takes him back both into the history of his own family but into archive sources back to 1088 *Domesday Book*. Margaret Bird, a very well respected historian in academic circles, published a set of four books in 2013 on *The Diary of Mary Hardy* 1-4, for period 1773-1809. This was followed in April 2020 with Volumes 1-4 on *Mary Hardy and her World*, which expanded greatly the breadth and context as 'The World of in-fers'. The third



**Extract of 1811 Inclosure Map. Basil Cozens-Hardy copied. He argues (as do NIAS) that the river U-bend adjacent to Mill Holm field was the site of an earlier mill. As shown by the map the 1798 mill was moved a long way downstream. The owners of Glaven Farm and Riverside Farm were unhappy with the 1765 water level on the earlier mill being transferred to the new mill.**

source is a booklet by the Norfolk Industrial Archaeological Society (NIAS) entitled *LEATHERINGSETT; the Industrial History of a Norfolk Village*. This deals with Watermill and the Brewery, but also the Sawmill at Hall Farm, Water Systems and Ram Pumps in great technical detail. It was published in 2013. Our interest here centres on the river, the surrounding land, and vernacular buildings at Little Thornage,



and from recent renovation work on some buildings with evidence on their age and indicating their importance as as a group for medieval travellers as an east-west highway. Little Thornage and Letheringsett from medieval times developed on two different pathways.

Throughout the 1800s there was an upsurge in the number and quality of maps; tithe, estate, and enclosures maps. The peak in terms of scale, detail and accuracy came with a national initiative and the first edition OS Survey Map, May 1886 and available in colour, was never matched again in scale, detail and accuracy. As such the 1886 map can be taken as a marker to compare with earlier and later maps. The first question to answer is how the two settlements so close together originated separately, and have essentially stayed that way. The answer lies with the Glaven, and the nature of the land when crossing the river to travel in an east-west direction. The 1811 *Tithe Map of Letheringsett* was copied by Basil Cozens-Hardy to show the area of interest to us. The oblong field opposite the U bend in the river, and the bend itself, are of particular interest. These are close to and direct west to Riverside Farm, and some distance to the south west of Glaven Farm, shown as being an L-shape building. Old place names are very helpful, and the oblong field, now called Four Acres, had the historic name Mill Holm. Both Basil Cozens-Hardy and Norfolk Industrial Archaeological Society (NIAS) consider that the U bulge in the river at Mill Holm field marks the earlier site for the Mill. There is a further indication in that there appeared to be a metaled causeway from what is now Riverside road to the river U bend. Margaret Bird informs us that the historic word Holm is derived from old Danish. It is seen as an island arising from the marsh (another example being St Benet-at-Holm, on Carholm, beside the River Bure). The relocation of the mill site from near the Ford to the new location downstream at 1798 to the present site had major

***The 1834 Estate Map (top) shows that the river alignment is unchanged from 1811. Note the buildings at Little Thornage hamlet, and are marshy areas. The 1886 First Edition OS Map (bottom) shows that the river has been straightened. It gives more detail on the fields ditch system. Also more detail on the drainage ditches, better shows Mill Holm (27), and the brick culvert at the north end, than the 1834 map.***

advantages. Firstly, as pointed out by the Rector who owned Glaven Farm, it was built to near twice the size and capacity as the old mill. Secondly the mill pond, the water reservoir to drive the water wheel, was greatly extended by much increasing the river frontage between the mill and Ford. The Rector's note to parishioners was no doubt motivated in part that his adjacent grazing meadow was at risk of flooding, and fishing affected by the river flow being changed to a variable depth pond.

Mill Holm field is a good description of what is now called Four Acres, with the spreading smooth slope down to the river on all sides, and flanked either side by the continuation into Glaven Farm land to the south, and the land facing the Kings Head pub to the north. As said, it indicates that in medieval times the land then was far wetter than what we see now, much in fact marsh. This did not change until there was significant land drainage, and following much later the huge rise in water consumption by abstraction from our rivers and aquifers. There was an exponential increase taking off from around 1885. The growth of Holt is a good local example to demonstrate this (RGCG Newsletter 2018, pages 5-7). A second surge came after WWII and has grown steadily to this day.

The most direct and important evidence is from the researches of Basil Cozens-Hardy. The first east-west crossing of the Glaven was the Little Thornage Ford, and it was part of a pilgrimage route to Little Walsingham. (The revised Pevsner tells us that in medieval times visits to Walsingham were second only to Canterbury, but today with a revival of interest the positions are reversed). The route from the approach to the Ford to the Little Thornage crossroads was called in early times Long Water Walsingham Way. In some tithe and estate maps this is abbreviated to Long Water. There was a Pack Horse stone bridge at the Ford, and to the south, away from Long Water, the first part on the way to Hunworth was called Stone Brig Lane. See also the earliest known map of the area at 1793, an excerpt copied in the RGCG Autumn Newsletter 2020, page 9.

The Letheringsett crossing of the Glaven was secondary to that at Little Thornage, this wooden structure constantly needed repair, and was a source of anxiety to inhabitants and wayfarers, and Basil quotes the Rector: "As early as 1478 we finde William Harde of this parish – a name curiously like that of the subsequent builder –

*bequeathing 6s. 8d. for the repair of the bridge in Lerinsete*". It stayed that way until 1820, when William Hardy jnr built what still exists as the A148 road bridge.

The meadows to the south of the lane to the Ford at Little Thornage extend south to abut Astley estate land. They are botanically rich, the whole is a County Wildlife Site, and 97% of such meadows have gone. Those at Little Thornage have much historic interest in the use of winter irrigation, going back to 1600, when in the ownership of Thomas Pettus, along with Glaven Farm, Sheriff of Norwich. At the same time his elder brother Alderman John Pettus then owned the mill and Mill Holm. There is historical evidence, both written and more so 'on the ground', on how the irrigation was done and the pathway, see RGCG Newsletter Autumn 2020. Winter covering of the meadow with water gave an early flush of grass in March for the grazing of cattle. This may have lasted intermittently and did not fade out until 1900-05. Margaret Bird quotes from Gresham's School Archives (Reference 2007.31) an English grammar exercise at Holt Free School, a Mother to Son exchange of letters at 1798. The mother expresses much concern on being told that her son has been skating on the ice, and pray God to protect him from deep waters. The son replies: It is a meadow where we skate that's overflowed, and not the river. The meadows had also been used for other purposes, most notably by the Hardy's from 1784 to 1798 for water power by a diversion of water from the river, but discarded at 1798 as milling corn was no longer financially viable; and soft water from meadows drainage ditches for the premier porter beer. The latter continued to 1895 when the brewery was sold by the Cozens-Hardy owner.

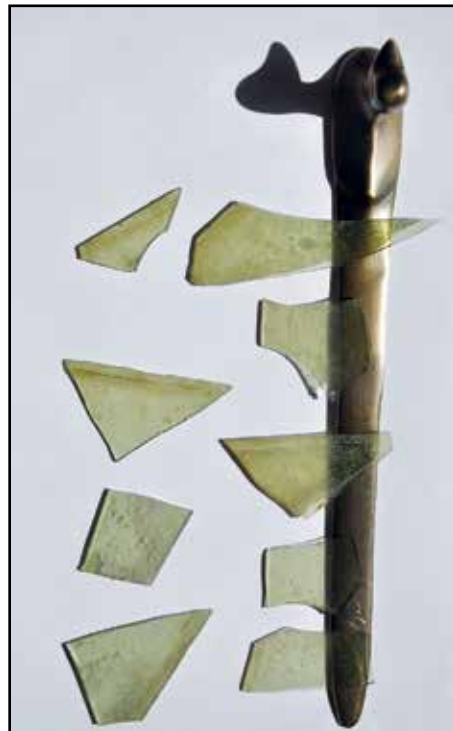
There are three vernacular building in Little Thornage where restoration or change of use which indicate the importance Little Thornage when on the east-west travellers and pilgrims route. They are Glaven Farm, Barn Cottage both near the crossroads, and the row of cottages along the Thornage Road, historic name Friday Street, perhaps because it was the inland route for fish landed in the Glaven Ports. Basil Cozens-Hardy's chapter on some topographical and ownership notes describes Glaven Farm: *This is one of the oldest dwellings in the parish and must have been a farmstead from the earliest times. Many wayfarers must have passed it as they went along Long Water Walsingham Way to the monastic houses to the west. In the reign of Queen Elizabeth it belonged*

*to Thomas Pettus of Norwich, a much trusted and assiduous alderman, Sheriff in 1600 and Mayor in 1614. It then passed by purchase to Jeoffrey Might, the squire of Gunthorpe, whose son sold it to Samuel Lynn about 1658. The next sale was to was forty years later to Richard Girdlestone*". Then follows a list of other owners and or occupiers, the last being Frank Ellis who died in 1976. The farmhouse and outbuildings were sold, but the four acres of meadow adjacent to the house were retained, and the rest of the land went to the Ellis estate.

There is an interesting item which expands on the Pettus family. At page 31 on Manorial Records we have at 1599: *Clement Sheppard, the tenant of John Pettus, citizen and alderman of Norwich, enclosed certain land called Milholme in Letheringsett with fences so that the tenants in autumn and winter, ie shack time, could not feed their animals on the common pasture that is shack as they ought to have of right. Amerced 5s*. The Pettus's were a powerful family at this time, but then the line died out. However a younger son killed a man in a pub brawl, was found not guilty, but sent to Virginia. That branch of the family survived, and a USAF serviceman picked up the baton and traced the family history. He published a book some two years ago, much researched from afar and by accessing Norwich Record Office through the internet, and some visits.

More directly relevant to Glaven Farm and other houses was Basil Cozens-Hardy's list of those paying the Hearth Tax assessment of 1666. As Basil says from the point of view of village history it is useful in giving nearly all the inhabitants with the number of fireplaces in their houses and this gives an idea of the size of their homes and helps to identify them. Those at the top of the list were 8 at Old Hall; 7 at Bygotts; 4 at Glaven Farm with Sam Lynn, and another unknown with 4. Those with 3 were the present Hall, The Lodge, a Margaret Sheppard, Riverside Farm, Glavenside and one other. Meadow Farm had 2, and also another twenty-two at 2, but mainly all 1. Basil concludes: *Of course some in the nature of hovels may have been exempt. It is notable how many of the thirty-one dwelling houses had only one hearth. On the other hand Robert Jerermy for Bayfield Hall was charged for 22 hearths*.

Glaven Farm retains its four hearths. The two at the north gable end are the oldest. A Jacobean inglenook fireplace was revealed after the removal of other inserts which had narrowed it down to a small fire



place. On the floor above something older, perhaps Queen Anne, but faced off likely because a chimney fire had broken the brick work separating the two chimney outlets. There are some notable major changes, in particular the house has been turned round. It is clear from the external plinth that it originally faced east to the river, but was later reversed to face the existing outbuildings, converted to three dwellings in the late 1980s. What were the stable and bullock yard were set in a rectangular block, which became popular following the lead of Holkham Hall for farmyard design ca 1850. A radical change came with a series of additions along the lane, starting from part of an existing building at the south end, with a series of additions and ending with a hip cut into the gable end. It would be fascinating to know what was the use for each section.

On the extension's east side and facing the river there was an area covered with plaster and lath, work done perhaps around 1850 with the house reversal of front and back. Under that area was an oak mullion framework. In the crack below were some small pieces of thin green glass. Old thin

**Left upper: this is the Glaven Farm along the lane, starting from part of a building at the south end, and progressed up the lane and with a hip joint connected to the main building in a series of steps to form an L-shaped building. A puzzle to know the functions and uses of each addition along the lane.**

**Right upper: field adjacent to four acres, formerly Mill Holm. This field indicates earlier mill not far downstream of the Ford, and land around was marsh. See text.**

**Left lower: an oak framed mullion window at Glaven Farm. This, and another taken out completely, faced the river, as did the house itself until turned front to back, guess ca 1850 (see text). The mullion window had been covered by lath and plaster, after old bricks had been stuffed into the glass spaces. The blocking bricks were used at restoration to face off the spaces and display the oak frame.**

**Right lower: a few pieces of a thin and greenish glass were found at the bottom of the oak frame.**

bricks had been stuffed into the frame to be closed. This is on the left hand side when viewed, and on the first floor. There had been a matching one on the right hand side, but the oak mullion had gone.

In addition to the building along the lane to give the L-shape, there is another unknown. Glaven Farm was thought to have replaced a timber frame house. If so, when that might have happened is not recorded. In this context Barn Cottage had some surprises. There is a spiral staircase which had at the top a semi-circular enclosure of plaster and reed, not wood. Supporting the old front extension to support above the staircase is a very old beam. This was found under plaster to be a squared at 8" beam, with five grooves for the tongue inserts, and five holes for the pegs to lock. Re-used from the building opposite? In a period when roads were rutted muddy tracks it seems re-using building materials would be a common practise.

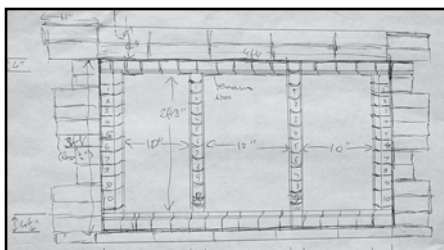
The biggest surprise was a knock through at Barn Cottage into the Victorian addition to enter an earth floored barn for a horse and cart which delivered milk and coal to Holt

(this spent a lot of time standing outside the Holt Carpenter Arms pub), and a third bedroom upstairs. Again hidden was a brick mullion window, old carved brick. It took some time to realise the significance of this facing inwards. The addition must surely have used the end wall of a much older building, when the hamlet was on the pilgrims' route. The two cottages adjoining Barn Cottage have been converted from what was a barn, as the brickwork above the flint indicates. Barn Cottage was locally known as Cottage End Barn.

The Post Yard cottages which line the narrowing road to the Little Thornage crossroads were created from a large barn, with conversion to housing around 1830. The south end of the barn was revealed when number 1 was gutted during a renovation ten years ago. This revealed the barn south wall. On the other walls are blocked-in red brick vents, and at the north west corner of the building the threshing entrance walled up in a large area of flint work. The 1830 date is significant as when the A148 bridge was built in 1820 the importance of the Little Thornage hamlet faded away.

We give the last word to Basil and the 1834 map. Honeysuckle Cottage is on the triangle of land by then, and the building just south west of the crossroads was a blacksmith. The building has now gone. Basil had a document in his collection which stated: *On the 20 April 1784 Sir Edward Astley Bart Lord of the Manor of the parish of Thornage gave Richard Starling a parishioner of the parish to hereby permit and erect a Cottage upon the Waste Land belonging to the parish of Thornage.* Basil notes in his neat but very small handwritten note: "This relates to the isolated double cottage at Little Thornage on the Letheringsett boundary. Later going in 1966 to 'Tramper' Neal.

There is on another document, an agreement dated on the 9th Day of March 1826 between George Dunton of Thursford and Sarah Ann his wife Sarah Ann Starling Spinster and Edward Lee. Lee purchases for Eighty three pounds a Messuage or tenement at Thornage with a stable, firing house and other edifices, yards and gardens to the same adjoining belonging late estate of Samuel Starling. Edward Lee was clearly buying not just a blacksmith business but a small holding. This purchase takes place six years after the building of the road bridge at Letheringsett, which raises a question of how long did it flourish. Perhaps not long after the conversion of the nearby barn to housing in about 1830.



**Top: in putting the frontage in at Barn Cottage an old squared beam had been used, with mortice and tenon joinery. Glaven Farm is thought to have replaced a timber farm building. Nothing wasted, use what is lying about when heavy materials and poor road surfaces make transport difficult.**

**Above: Photo and dimensioned sketch of the brick mullion window frame at Barn Cottage. In re-using the wall the glass spaces had been blocked up with bricks.**

**Right: about ten years ago, No1 Post Yard, on the cross roads was gutted for renovation and revealed the south end of the barn. Inspection of the other external walls shows blocked up air vents.**



# The Impact of Drought and Heat on our Rivers and Wetlands

Ian Shepherd



**J**uly was the driest since the Met Office records began in 1836, especially in East Anglia, with rainfall below 5mm. August 20% of the average. Our natural environment is not high in media profile, but has this year seen some publicity. The most notable occurred in March, with Natural England putting in place a ruling that new housing and overnight accommodation would not be permitted unless it could be clearly established that it would not bring with it any nutrients pollution. This was applied to the very large catchment areas of the River Wensum and the Broads, these being internationally important sites for nature conservation. They are both designated as Special Area of Conservation (SAC), and the Broads also a Ramsar wetland site. As such

***Bayfield Lake 2 September 2011 after a hot summer covered in algae. In 2012 water quality was restored by suction dredging of silt and nutrients. Evaporation loss compensated by feed from river.***

they come under the Habitats Regulation, originated in EU law, that development would not be permitted if it would worsen the ecology of the area. Natural England put this edict in place because of the damage caused by the high levels of the nutrients phosphate and nitrate, arising from sewage discharged into water systems, and named the act Nutrient Neutrality. This act was applied in nine other areas in England. Algae growth can cover the whole water surface and the deoxygenation creates havoc with the whole ecology,

the most obvious being dead fish.

Algae growth has been endemic in the Broads since the 1960s, but the problem has escalated with both population increases and a greater average usage per head, but also the increasing frequency of drought events and high air temperatures with climate change. Less water in rivers and lakes results in a greater concentration of nutrients, and so does evaporation loss, to which lakes and the Broads are most prone; plus in these the flow through is much slower than in a river. The changes can be rapid and the risk of crossing the thresholds beyond which natural ecosystems shift in their functioning. For example, above a water temperature of 17°C lakes are likely to suffer from algal blooms, leading to a deterioration in water quality.

In 2011 Bayfield Lake was suffering with algal bloom, albeit this was after some decades with some river flow going through it. In this case the nutrients had been largely due to arable run-off, resulting also in a high level of silt deposited in the lake. The restoration came from part of a competitive Defra award for Catchment Restoration Fund finance. The weed was first removed by a digger floating on a pontoon, and working with a pronged claw shaped bucket. This was followed by suction pumping for some five months, taking the wet mud out of the lake and pumping further onto an arable field. This had been tiered in steps, to dry out the mud slurry, and later ploughed in. The contractor who did this work had developed his modified equipment and the technique through some years in operating on the Broads. This has been a successful project, but has required careful management to keep it that way.

The year 2018 was also a drought year, and good example of wildlife disruption was a lake at West Acre which was drying out fast. Eels spend many years in a fresh water body. They start their journey of 3,000 miles to return to their birthplace in the Sargasso Sea in the Caribbean on a wet night late in the year. However in a lake at West Acre near the River Nar some four or five large eels were moving on a September bright sunny day. A very large one was caught by a heron, but the eel was too big to swallow, and died some hours after the long battle with the heron. Nature had been totally disrupted. In the same year flow on the Glaven had fallen, as elsewhere. At the Little Thornage Ford the river flow meets the Mill 'pond' of some 1360 cubic metres, and this creates an area of 'still' water and deoxygenation. Some five or six mature crayfish were found dead in the area, presumably being suffocated, as less mobile than fish in moving away. The river immediately upstream was covered by duckweed, which only develops in still water. In that year many dead fish photographed in lakes and rivers were surrounded by duckweed, which at night soaks up the dissolved oxygen in the water.

The Environment Agency initiated a project in 2012 to keep rivers cool by shading small streams by the planting of trees, 160,000 to date. Shading can reduce water temperature by an average of 2°C to 4°C. The Glaven would benefit where meadows have no trees on the banks. The greatest benefit would come if the former fish farm



***There was a heat wave in 2018. At Little Thornage Ford the slowing down of water flow caused duckweed growth, and loss of dissolved oxygen. Some mature crayfish died. A large pond at West Acre dried out and forced movement of some large eels. Heron was unable to swallow this one.***

lake at Edgefield Hall was restored to river. It was created as an online lake ca1935, and abandoned in the 1960s when it could no longer rear fish. The lake acts as a silt and nutrient trap in the middle stretch of the river. It is shallow and will heat up quickly, and be prone to algae growth. This polluted lake should be seen as a major and much needed restoration project for the Glaven. Otherwise with climate change a bad situation will become worse and affect river temperatures downstream to the sea.

On the 22 June the Nutrient Neutrality stand-off ended as expected in the inevitable fudge. It had put the planning system in limbo, delaying the progression of councils' Local Plans, and all house building in limbo. On the 18 July the Home Builders Federation had called for the removal of environmental red tape. The deal was that development could continue if there was mitigation elsewhere, by creating wetlands and woodlands. Natural England has described this as an interim measure. In effect the Broads will suffer from continuing pollution, and scattering some new wetlands and woodlands in a number of random sites will have a dubious biodiversity value.

What is missing from Government is any long term strategic approach to restore our natural environment. We refer back to our article in the RGCG Autumn 2021 Newsletter, pages 4-7. Here we call for a Nature Recovery Network from the North Norfolk Coast inland to East Coast. The separate pathways are the rivers Glaven and Bure, and Stiffkey and Wensum/Yare, with both corridors continuing through the Broads. At both ends there are lagoons for the sea connection, Blakeney Lagoon (the Pit) and Breydon Water. The flow of Glaven and Stiffkey is to the north; the Bure and Wensum to the east. The headwaters of all four rivers are close to each other, and should be designated Local Nature Recovery Strategies. As such they support the Nature Recovery Network, and the connectivity between many high designated nature conservation sites with each other and the wider countryside.

# Glaven Beavers Helping to Combat Drought

Henry Crawley



**T**he headwaters of the Glaven have been transformed by the introduction of two beavers last autumn. Secure in their large fenced enclosure in a wooded headwater of the River Glaven, they have lost no time in creating small and large ponds, with numerous dams.

As previously described by Dr Jonah Tosney, in our Newsletter and at our AGM, the purpose of the re-introduction was to demonstrate how beavers can regenerate wetland habitats that have been greatly lost, largely as a result of our agricultural drainage practices.

The site was part ancient woodland, part plantation, and part nature-reclaimed WW2 radar operators' camp. Transected by drainage ditches, the tiny headwater stream was little more than a trickle even in winter. Surrounded by arable fields, it is an area prone to silt run off and nutrient load into the watercourse.

***Largest beaver pond in June, showing extensive flooded woodland. This is held up by the photo showing the sinuous dam.***

Beavers are natural water engineers and can redress the balance of wetland loss. Their motivation, if that can be imagined, is to create deep water, safe from predators, to encourage wetland plant growth for their summer food, and to harvest bark and leaves from trees at other times. The logs and offcuts which they can manoeuvre, are used to create the dams with copious mud puddling as the matrix.

At least twenty separate dams have been created in the last year, raising the water level throughout the site. The hive of activity can only be captured on webcams at night, as they spend their days resting up in their lodge.

This year's drought has had drastic effects on plant growth locally. The

Glaven is running as low as I can remember. The beaver enclosure is a comforting exception to the desiccation all around.

I would like to quote from an article in the *Guardian* 12th August by Tony Juniper, chair of Natural England, who visited recently.

"Wetlands can help keep our rivers flowing, even when rain is scarce, thereby protecting the living shimmering threads that bring life to the landscape. Water standing on the land also helps recharge the aquifers that underpin our public water supply.

Holding more water in the environment through the restoration of wet ecosystems can reduce flood peaks and protect us from the misery of flooding that periodically affects communities across the country.

During a recent visit to Norfolk, I saw a newly created beaver pond...A tiny stream had been impounded by



**Top left:** Shows step-like felling of willow for bark and building material, with technique of laying the tree to access upper foliage but letting the tree survive and grow on.

**Top right:** One of many small beaver dams in the upper stream, May 2022, showing leaky mud and wood construction.

**Lower left:** Mud and wood beaver lodge built under tree roots with underwater access. This was an early priority build for the beavers. Shows lowish August water level.

**Lower right:** Sinuous dam of largest pond, creating extensive wetland area. This enlarges the existing lowest wettest part of the site.

the animals to create a quite substantial body of water topped up with winter rain. Since the rain stopped earlier this year, that pond has been sustaining a headwater stream of the Glaven, one of England's precious chalk rivers. The new beaver pond has helped that wonderful watercourse remain in better shape than it would otherwise have been. When it does rain, that stream will flow more evenly than if there were no beavers, therefore reducing the risk of floods.

Beaver ponds and wetlands are also

excellent at catching carbon and other pollutants such as agricultural fertilisers, so they can help meet water quality targets. That beaver pond was also a reminder of how wetlands can bring vibrant life back into otherwise degraded landscapes. Frogspawn, fish, birds and wetland plants had all found a home there."

Thanks to the support of the Landowner, and the enthusiasm and hard work of the Norfolk Rivers Trust with the support of the EA, the beavers have found a new home in North Nor-

folk, and have busily set about putting their house in order – though perhaps not in the conventional sense.

We await to see whether the pair may be breeding, and look forward to the further monitoring of the site for positive developments in nutrient and silt loading, and wildlife regeneration.

I would like to thank all the RGCG volunteers who have helped to prepare the site, removing wartime debris, and clearing the spreading rhododendron patches.

We aim to work in friendly collaboration with landowners and farmers, conservation organisations and relevant public bodies.

## River Glaven Conservation Group

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