Newsletter

Autumn 2015

CRF a Great Success!

The Defra three year CRF (catchment restoration fund) grant for Nine North Norfolk Chalk Rivers ended on the 31st March. On the Glaven this grant made possible the implementation of projects which otherwise would have remained dormant for years, or likely never have happened, in particular the spectacular achievement of the 1.2km of the Bayfield New River. The final CRF project took place at Bayfield Lower Meadow.

This was a relatively modest project, but another valuable addition to the river network mosaic. It enhances the biodiversity of the meadow, which can be viewed from the permissive path. It also provides another meadow which in a heavy rail event will take on flood water for 24-48 hours, so reducing flood risk to properties downstream. The 'hold-up' also means that some of the silt carried by flood water will settle out on the meadow instead of being retained in the river channel and be deposited in the river bed and the estuary.

Recent work by UEA on the Wensum is quantifying what has long been known by observations. A large part of the silt entering a river network arises from water borne soil erosion that occurs in a heavy rain event; a big spike on the baseline levels. Less well recognised is that a heavy rain event will not only bring a new input of unwanted silt, but it shifts also existing silt in ditches and tributaries which feed the main river, perhaps sitting there since the last big rain event. This insight may not be surprising, but the data that UEA are gaining from new in-field indtrumentation provides solid evidence, and should inform best farming practice which should be applied widely in the Wensum catchment and elsewhere. The Wensum, like the Glaven, is a chalk river, albeit very much longer.

By 2004 the RGCG had recognised silt in the river as being high in our 'top ten' issues. It remains so. The other major concern is the threat to native crayfish on the Glaven by invasive signal crayfish. This is a continuing critical issue that the RGCG is actively involved in. Other invasive species such as Himalayan Balsam, I suspect will always be with us and require our vigilance. unlike the recent major new restoration projects, which tend to be a 'one-off' efforts followed by monitoring for some years of the outcome and benefits.

In the last Newsletter we announced that, while the CRF would finish, a substantial study would be starting on the Glaven, the Eel Project, funded over two years by a HLF grant. This is a pilot scheme that could set an example for other community based river groups to follow; and we are trying to ensure that does happen. Those who were able to attend the AGM and hear the talk on the life cycle of the eel will fully realise that it is a fascinating creature, and much remains unknown. The eel is unique in many respects, not least for millennia an important part of the human diet. After a population crash% in recent decades, there are now signs that this might be turning round. Read on for more on eels and our other activities.

Henry Crawley

Elver Monitoring at Glandford Mill

Willie Brownlow

Left: view upstream showing the drain pipe up which the elvers move
Right: water syphoned from upstream flows both down the pipe the young eels come up, and feeds through the 'tank' with gauze patch which lets water run out but retains the elvers.

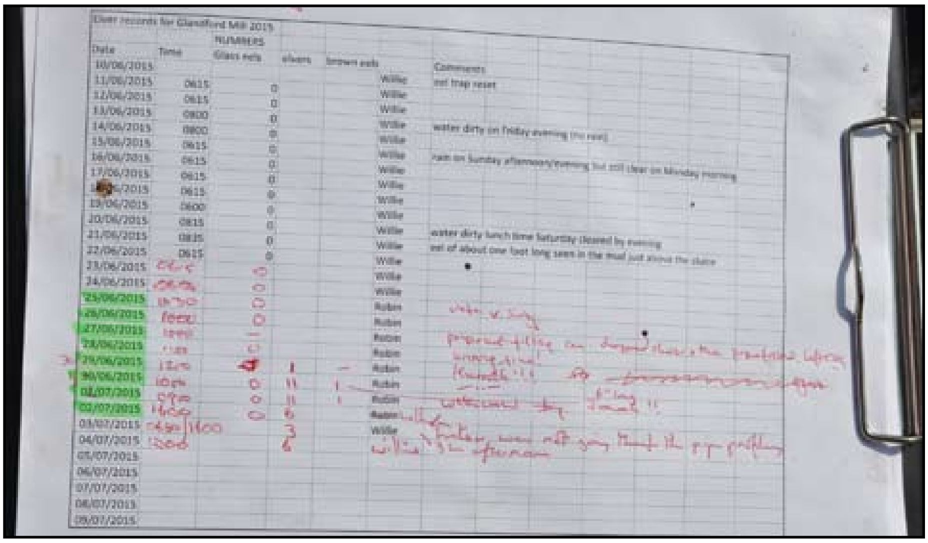
The life cycle of the eel is complex and fascinating, and there are many gaps in our knowledge about its full life cycle. Adult eels migrate to the Sargasso sea to spawn and when the eggs hatch they drift on Gulf stream currents towards Europe and the North East American coast, growing as they move to the north. By the time they reach British shores they measure up to 80mm in length and are known as glass eels. Unlike Salmon they do not return to their 'home' river but tend to head up the first river they reach so it is possible that the parents of elvers heading up the River Glaven this year may have come from the Rhine or the River Severn.

Adult eels have been found in the Glaven and ponds in the catchment for time in memorial. However their numbers have not been monitored so we have no idea how many are able to navigate through or around the various obstacles in the river or how the population has stood up to changes in climate over the years. The Eel's life cycle is between fifteen and twenty years so it will take a long time to establish if the much publicised crash in eel numbers over recent years will have a long term impact on the population.

The RGCG undertook to try and monitor the elver population in 2014, and searched the lower river a suitable location to set up an elver trap. The conclusion was to try a trap at Glandford Mill. The Wild Trout Trust had recently completed a new fish ladder under the mill as part of the Anglian Rivers Sea Trout Project and an eel pass had been attached to the side of the fish ladder to aid Eel passage under the culvert and bypassing the fish ladder itself. Various options to try and trap the elvers were considered and it was agreed that trying to monitor the new eel pass would be very difficult as there was no obvious way of catching/counting the elvers/eels at the top of the pass and, while providing sufficient water flow through the eel brushes to make it an attractive route for the eels to ascend.

Henry Crawley, with assistance from Emily Long from the NRT and others set about designing a trap in the other culvert under the mill. When elvers migrate upstream and reach an obstruction such as a mill or weir,they will be attracted and swim up a flow bypassing the obstructionn. Our design (see picture) involved syphoning water over the weir from the mill pool into a long drainpipe which ran under the mill into the river below. The drainpipe has mesh netting within to give the ascending elvers traction. The second syphon tops up the catching tank and ensures that any elvers reaching the bend in the drainpipe, fall into the trap. The latter overflows through a mesh window and thus ensures that any catch is supplied with fresh water until the trap is emptied daily and contents recorded. This may seem complicated but is a modification of previous designs, and it worked!

We started recording the results in May 2014. In the first month or so, we caught an occasional leech and a stone loach (which had been sucked into the syphon pipe from the mill pond above) but no sign of any elvers coming up the pipe until we captured our first on 4th July 2014. We continued to pick up the odd one through the season until 25th August. The total catch for the year was just 8 elvers between 4/7/14 and 25/4/14. This number did not give us confidence there was a sustainable run!



Top: grey wagtail nest built on top of the nest-box.
Lower: sample catch of elvers
Top right: Monitors' log

We could not work out what had gone wrong. Had the elver run up the River Glaven completely collapsed? There were good numbers of elvers running the River Severn and the Ouse, so was the Tidal flap on the Cley Sluice preventing them from entering the river? Had they found a better way around the Mill, or were they using the recently built eel brushes in the other culvert and by passing our splendid trap... We hoped the latter!

The winter took its toll on the pipes and a heavy spate in the early spring of 2015 washed away all our catching apparatus. However I was able to retrieve the various parts that had been washed downstream and I arranged to meet up with Henry Crawley to rebuild the trap in April 2015. Unfortunately a Grey Wagtail built her nest about a metre from where we were going to rehang the pipe so we had to delay the start of the 2015 Elver project until she had fledged her young. We were finally able to complete the re-build after the Wagtail family had fledged and so we commenced monitoring operations a little later than last year on 10th June 2015.

I don't think the reconstructed trap is any different to last year, but right on cue (in fact 4 days early) the first Elver was captured and released upstream, since then there has been a constant stream with daily catches varying from 0 to 26. There have been a number of larger brown eels in the trap too and it is likely that these were last year's elvers that have spent time in the estuary or lower river and are now making their way further upstream. It appears that the peak time on the Glaven run is around the first full moon in July which coincides with high evening tides. I hoped that the August moon would bring a second wave of elvers, but this did not happen. Other rivers seem to have continued success well into August but the Glandford trap went quiet with just a single elver on 1st August then nothing until 10th August when two appeared and a further one on 12th August and 5 on 17th August. The total catch this year to date is 149. There are still more questions than answers. It appears to me that nearly all the elvers have lost the 'glass eel look' and changed colour from mainly transparent to black which I believe indicates that they have been in fresh water and so are not straight off the tide, but most of the elvers have been caught when the tide is over 5.1m. Do they wait in the brackish water below the sluice at Cley for a period before running up the river? Why do the larger brown eels, which must have been in the river for a while, also tend to run on the higher tides?

Many eels/elvers must make use of the eel brushes and are therefore never counted. I have a full log of the catch details with corresponding high tides and moon phases which I would be happy to email to anybody who is interested.

If was disappointing that during this successful season we encountered another Mitten crab in the trap, we caught one last year too, somehow it managed to climb up the pipe and ended up in the catching tank. The Mitten Crab is an invasive species that is gradually expanding their range along our coast line. The Mitten Crab originally came from China and probably arrived in the UK in the ballast tank of a ship in the 1930s. They now breed in our estuaries and the young drift around with the plankton on currents before migrating up rivers into fresh water where they live feeding on invertebrates, fish eggs and anything else they can find before moving back down stream to the sea/ Estuary to spawn again. Numbers in the Glaven appear to be low at present but they have been very successful in colonising both The Wash and the Thames Estuary, so it looks as though it is only a matter of time before they become established in the North Norfolk Rivers too. Unfortunately they also have the ability to cross land so can bypass just about any obstacle, so their advance and success appears to be almost unstoppable.

We have set two crayfish traps below the mill for a short period to see if we can establish if there is more that is any sign of more crabs but thankfully nothing more to report.

We have also managed to trap a few small fish including a trout fry, six small sticklebacks and in the crab traps a roach and two Gudgeon.

Bayfield Low Meadow Project

Ian Shepherd

The Defra Catchment Restoration Fund (CRF) of £1.3m for Nine Norfolk Chalk Rivers supported the formation of the Norfolk Rivers Trust and a three year programme of major restoration projects on the rivers and their catchment areas. On the Glaven the CRF saw the installation of a fish pass at Glandford Mill and river restoration measures upstream; the creation of 1.2km of New River at Bayfield, rescued from the underground brick tunnel built in the 1890s; and the removal of decades of silt from Bayfield Lake and Selbrigg Pond.

Prior to this, and funded in different ways, the first major project on the Glaven was river and restoration work carried out at Little Thornage in 2006, and followed in 2010 by another at Hunworth. The 2006 project was notable for the removal of historic dredged spoil from the west bank, an early example of river and meadow floodplain reconnection. The Hunworth project was novel in that it created new sections of river channel, woven into parts of the existing channel where retained, giving a sinuous river with shallow riffle and deep pool areas. In both cases there was rapid regeneration and after five years there was no indication at all of the work done other than a beautiful meadow and river, both with much improved biodiversity.

This had provided a good experience base for the CRF projects, and the resource provided by CRF finance enabled further major projects to be implemented in a much shorter timescale. We now have a good balance of very successful projects in the upper, central and lower reaches of the Glaven. The last of these was the final CRF project, carried out on Lower Bayfield Meadow early this year. This was a simpler project than some others, but nevertheless very effective, and again will bring biodiversity benefits to river and meadow floodplain; and in latter case also be part of the chain which gives a reduction in risk to properties near the river when in very high flow.

The project site lies downstream of Natural Surroundings to the stand of poplar trees near Glandford; essentially that part where the river and permissive footpath are in close proximity. The river alignment would have originally been central within the meadow, but moved east to the present position in the early 1800's to present a straight run into Glandford Mill. In doing this a river bank was raised on the west side, no doubt enlarged subsequently by periodic dredging of the river. The river and meadow floodplain, as has happened elsewhere, had been disconnected.

The plan for restoration was in two parts. The creation of three large scrapes/ponds at points in the vicinity of the central drainage ditch, which is where the river would have originally flowed; and secondly river bank lowering on three sections of the bank on the west side of the river. The ponds were dug to a depth of 10-60cm below existing ground level; each had a point of connection or overlap with the central drainage ditch. The first pond to be dug was near the group of poplar trees; second was the central, U shaped pond; and the third near the Natural Surroundings meadow.

The sections of bank removal were roughly in line with the ponds created, and each about 90m long. A tracked digger and dumper truck did this work in March, with the excavated soil being spread along the western edge of the meadow along its whole length. Banks were lowered by the digger pulling soil back from the banks and river, so there was no sedimentation issue. The river itself was not touched. The work was done outside the nesting season, but care was taken with water voles, and a survey carried out to avoid any disturbance to this protected species which are well established on this stretch of river. The selection of sections of bank to be lowered was guided by the survey for presence of water vole burrows and latrines, which were marked off by canes. Within one section where there was some activity this was left untouched and the digger worked to either side.

Water vole breeding is underway in April, with non-overlapping tunnel zones. Second and third litters may be born between July and September. Between October and November there is dispersion into the wider corridor, and by December the territorial system has broken down. There is a low survival rate amongst juveniles who have failed to reach winter-survival weight. Between January and February the population density is low, and most time is spent underground nests feeding on roots and rhizome stores.

The site is a County Wildlife Site, but a survey had shown the meadow to be poor in ecology. This will be improved by combination of the river-meadow reconnection in high flows, and the presence of the ponds which will attract birds, amphibians and invertebrates. A 'wetter' site might see the return of some breeding waders as well as typical flora. The permissive path is on the other side of the river, and so does not cause human disturbance. The openness of the meadow means that raptors and other potential predators are more likely to be detected and 'seen-off' while nestlings are most vulnerable. The lowering of bank sections by up to 0.5 m. means that in a prolonged heavy rain event, which might happen once every year or two, flood water will be held up on the meadow for 24 hours, before running away again through the lowered section of river bank and the existing drainage network.

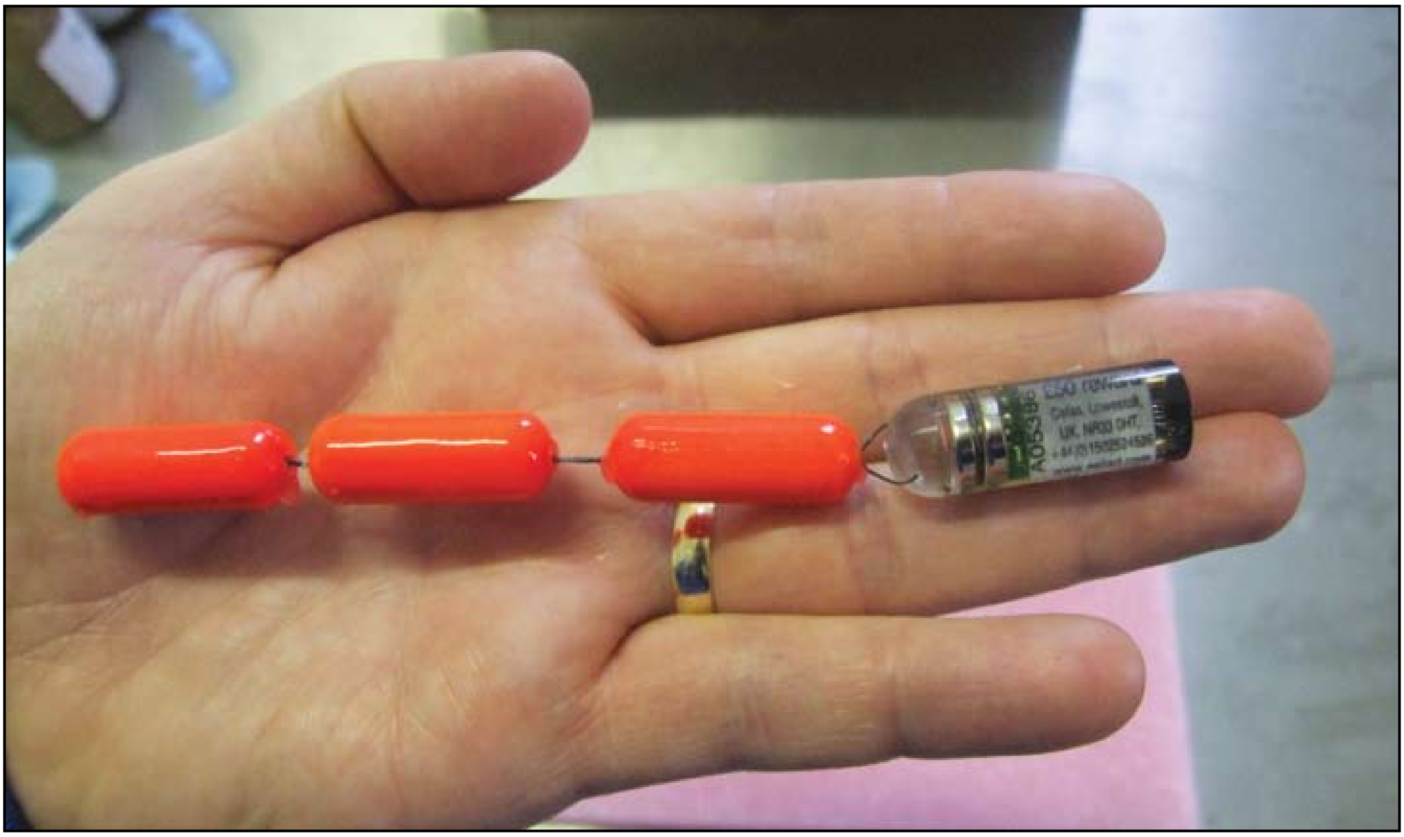
Opposite page: pond 1 being dug (left) and finished (right)
Top: pond 2
Above: lowering of the banks, north (left) and south (right)

Prior to any work taking place the county council archaeology department identified one record of burnt flints on site and expressed no concerns on the project. Computer modelling work took place to obtain Flood Defence Consent from the Environment Agency as regards property risk; and to establish the degree of bank lowering to give the frequency of 'spill-over' of flood water in the river.

Acknowledgements: The project was managed by Jonah Tosney of the Norfolk Rivers Trust, with the plan developed in collaboration of those mentioned. It was financed by the CRF award from Defra, and the final part of the programme. Our thanks go to Defra for projects carried out on the Glaven. Thanks also go to landowners Mr and Mrs Roger Combe for their support of the project.

The European Eel – its mysterious lifestyle and how we are solving some mysteries

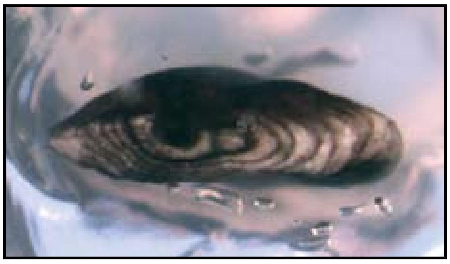
Alan Walker, Cefas



The European eel (Anguilla anguilla) that occupies the River Glaven is one of a global group of about 15-19 Anguillid species around the world. There are other types of fish that are called eels, such as conger and Moray, but these are from different groups.

The European eel starts its life in the Sargasso Sea near the Caribbean, or at least that is what we think! No-one has ever witnessed a European eel spawning in the wild. We believe it occurs in the Sargasso Sea because that is the region where the smallest eel larvae are found. They were first caught and identified as eel larvae about 100 years ago by the Danish scientist Johannes Schmidt. Today, scientists from around Europe and further afield continue to make expeditions to the Sargasso to trawl for eel larvae with very fine mesh plankton nets and to try to capture the spawning adults.

After they hatch, the eels in the form of willow-leaf shaped larvae, called leptocephali, travel across the ocean. We don't know how long this journey of at least 4000 to 6000 km takes, with estimates varying from six to seven months to several years, depending on whether they drift passively with whatever ocean currents they encounter, or they swim and use the most advantageous currents. They arrive at the eastern shores of the north Atlantic, spreading from north Africa up as far as the top of Scandinavia, and throughout the Mediterranean and Baltic Seas. We do know from molecular genetics tools that somewhere during the spawning of the adults or the journey of the larvae across the ocean, they mix together so that they arrive as a single genetic stock. This means that the eels in the Glaven might have had parents that grew up in Morocco or Norway, and their offspring might grow up in France, Spain, or Greece. This is a really important point for eel conservation because it means that all these regions have to contribute together to help the eel stock.



Opposite page upper: the internal data storage tag with flexible orange floats developed specifically by Cefas for tagging eels.
Opposite page lower: the satellite data storage tag as seen in use on this page.

Top: satellite data storage tag being worn by an adult eel.
Photo by Eric Teunteun

Above: an eel otolith (ear stone) that has been stained by "burning and cracking" so that we can see the age rings (the dark bands) just like the rings of a tree trunk

All photos Crown Copyright reserved unless otherwise credited

When the larvae reach continental waters they transform into the familiar eel shape. At first, they have no skin pigments so they appear 'see through' and this is why we call them 'glass eels'. They don't all move into freshwater though. Some of them never even taste freshwater but live all their lives in the sea. We know this by measuring concentrations of the chemical elements Strontium and Calcium in the tiny ear stones, or otoliths, in the eel. The ratio of Strontium to Calcium is high in seawater but very low in freshwater and, because the otoliths grow over time with rings like in a tree trunk, we can relate changes in chemical concentrations to different times in the life of the eel to tell whether and when it moved from the sea to freshwater.

The glass eels soon become darker

and look like small versions of the traditional eel. They are called elvers when they are really small and then yellow eels when they get bigger, although they can be a bit yellow, brown and even green. They spread out into every piece of water they can access, and they feed on almost whatever they can find.

Some stay in freshwater for the whole of this growth stage, and maybe especially those in large rivers or lakes stay in the same areas for many years. Others move around from place to place, and even back into estuaries once, twice or several times, presumably as they seek out locations where they have the best opportunity to grow and the least risk of being eaten.

They are a challenge to follow during this life stage, because they tend to be most active during the dark but hide away during the daylight. To study their behaviour in a local area over months or even years, scientists typically use Passive Integrated Transponders, otherwise known as PIT tags. These are the same microchips that vets put inside dogs and cats so that they have a unique identifier code. The tags don't have a battery so they last for many years, but they are only detected within a few 10s of centimetres from an antenna. This means they are ideal for long term studies of eel behaviour when they eels will repeatedly swim close to certain locations, like weirs or other in-river structures, or they are repeatedly caught in surveys. The EA and Trusts are using this technology to investigate the distribution of eel in the Stiffkey and the effects of various man-made structures.

In bigger waters where the eels are less likely to come close to PIT antennae, scientists use tags that transmit radio or sound signals to detect eels at ranges up to several hundred metres. This extended range allows the study of eels in large rivers, lakes and estuaries, but the transmitters need a lot of battery power and so only last a few weeks or months, and they are much larger than PIT tags so cannot be used on elvers. These transmitters were originally used to register when migrating eels passed certain locations in a river or estuary, but the technology and mathematics have developed to the point now where they can be used to triangulate the position of an eel to within a few metres every few minutes over several months, allowing scientists to investigate how the eels interact with their surroundings and with each other.

Eventually, the eels must return to the ocean to spawn, which can be at any age from 3 to 60 years or even older, depending on whether the eel is a male or a female, and on the growth conditions it has experienced. Eels don't start life as male or female, they become one or other depending on environmental conditions. Typically, faster growing eels are more likely to become males, while slower growing ones are more likely to become females. As eels grow faster in warmer waters, those growing in southern Europe are more likely to be males whereas those in the colder waters of northern Europe are more likely to become females. This is another reason why you can imagine it is important to consider eels all across Europe – as we don't know the natural ratio of males and females at spawning, it would be risky to focus conservation on only part of their range.

Males typically migrate when they are between 35 and 45 cm, whereas very few females migrate before they are at least 45 cm long. Typically, silver eels have at least 15% of their body weight made up of fat. They need this fat to live on as they cross the ocean because they don't feed during this journey. On top of that, the number of eggs that a female can produce is determined by her size and her fat stores – the bigger and fatter she is, the more eggs she can produce. But there is a balance to be made because as the eels get bigger they need to eat more but it takes more energy to find and catch food. And the longer they stay as yellow eels the more chance some predator or disease will kill them. So there comes a point where the benefits of staying to grow bigger and fatter, are not as big as the risks that they won't be able to spawn.

During the early stages of their journey back to the spawning area, the eels change appearance again, becoming darker blue on their back and paler, even white on their belly, and their eyes get much wider. At this stage they are called "silver eels".

They move quickly out to sea, certainly in UK rivers they probably reach the sea within a few nights at most, providing there are no barriers in the way. Then they head out into coastal waters and the ocean. That was the last anyone knew for a long time, but new technologies have allowed scientists to follow them part of the way and learn about their journey. This is achieved using tags that measure the depth and water temperatures that the eels experience over several months at sea, and then crucially either transmit that information back to the scientists via satellites or store it until someone finds a tag years later and returns it to the scientist (for a reward!).

Scientists have used these techniques to tag eels from Ireland, France, Sweden and Spain, and the resulting data provide two very interesting pieces of the spawning migration puzzle.

First, they showed that the eels don't stay at one depth all the time, they swim at around 300-400 m during the dark, and then dive down to about 800-1000 m when the sun comes up and stay there all day before coming back up closer to the surface at dusk. The regularity with which they make these depth changes has allowed scientists to estimate their location in the ocean, even though the tags cannot record location itself.

The second fact is just how often the eels get eaten, and what eats them. The scientists found that a number of the tagged eels were eaten, and they recognised this because the depth pattern information would suddenly change from 'normal' eel behaviour, and in some cases the temperature of the tag suddenly changes. Through a combination of these clues, scientists can say with confidence that some of the eels were eaten by warm-blooded whales whereas others were eaten by fish.

This ocean tracking investigation has now ended, but these tags are still out there in the ocean and will get washed up on beaches, so the scientists hope to keep getting more eel data for years to come. To date, the furthest they have tracked a silver eel is to waters around the Azores, so the mystery of that final part of the journey to the Sargasso Sea and how the eels gather together to spawn remains to be solved.

Volunteer opportunity

In connection with our monitoring of fish migration on the Glaven, we are looking for some technical assistance with data handling. The fish pass at Glandford mill now has a 24hr video recording of the fish pass and we need help in handling and recording the data. We hope to find someone who can help package the data for distribution to any willing volunteers who may want to count fish on speeded up videos. If you are interested in either the technical element to this work or would like to help the monitoring please contact *henrycrawley53@gmail.com.* We imagine data could be distributed as usb or suchlike, and then viewed at home as an alternative to watching Eastenders.

Bayfield New River
One Year On

Ian Shepherd/Jonah Tosney/Len Bentley

The New River runs alongside the Lake at Bayfield and the heavy plant work was completed on the 22nd September 2014, and christened Robin's Reach. The river had been taken into a brick tunnel in the 1890's and the new channel was carved out along the meadow to give a new sinuous length of 1.2 km of river with a series of high set gravel riffles and deep pools. There was an immediate interest in it from grey wagtails, and more unexpectedly from brown trout.

The shiny new gravel after a few weeks had gathered a light coating of fine silt particles. In early November small cleaner circles in the riffles had appeared. This is the time of year when brown trout start to spawn. The female 'wiggles' a depression into the gravel, lays her eggs, and then smooths over the gravel again. In disturbing the gravel, the silt coating was getting washed away, to leave the telltale clear patches.

The success for trout and other fish species was shown by an electro-fish survey carried out on the 29th June 2015 by the Norfolk Rivers Trust senior Projects Manager Jonah Tosney and colleagues. The technique is regularly used by the Environment Agency at selected fixed points on the river, and the results over a period of years record fluctuations in the populations of fish species, but are also an indicator of the general 'health' of the river. Jonah is licenced to electro-fish and carried out the survey to gather evidence of how quickly the new river would be colonised and used by wildlife.

The survey was carried out on two 90m sections on the upper part of the new river, being accessible for vehicles and heavy gear from the southern entrance gate. The first 90m length was set up with 'stop-nets' at either end, and a first sweep made along the length. The fish were measured and results recorded. This was repeated for a second sweep. The equipment was moved some 100m downstream and a repeat to this exercise was carried out on the second 90m length of river. The work required the involvement of 4 or 5 people.

Top: the stop net at the beginning of the 90m long search area.

Lower: making a sweep along the river

Later in the day Jonah wrote to RGCG committee members, and the new channel creators Richard Hey and Tim Jacklin (see Autumn 2014 Newsletter) on what they had found: We electro-fished two sites in the new river at Bayfield today and I'm absolutely delighted with what we caught. We had something like 90 trout, probably one fifth fish of spawning size and four fifths fry that must have been spawned in there last winter, so great result for the trout. Eels were pretty good too, with several young eels caught, probably ones that have come in this year, then a few more older ones, maybe 15 or 20 overall. (Brook) Lamprey were the big surprise

as I didn't think that they were very mobile but we had a lot of "transformers" in there, somewhere on the road between juvenile filter feeders and adults. These will be ready to spawn next spring.

Fish diversity overall was excellent as we also had a lot of bullhead (these had also spawned, we caught a lot of tiny juveniles) and just a single stone loach and stickleback. I've already told you the invertebrates are looking very good too, so it's already in very good order. The plant life has been a bit slower taking off than I hoped but that will come pretty quickly now. Excellent news!

Len Bentley has studied the bird life at Bayfield for many years, and we abstract sections of his report on the new river as follows. A pair of Grey Wagtails has bred at Bayfield since 2002 but in in 2014 they used a different site, which was never found. However immatures were seen on the lake margins and up to four of these started to hunt within the banks of the new section almost immediately and continued to do so for some weeks. Would they breed in 2015?

They did. A pair raised two broods in close proximity to the river in airshafts, ventilating the brick tunnel which still carries some small flow from a spillway of the river. Two of the three airshafts, each within 40m of the river, were the chosen nest sites. Each airshaft is protected by an iron railing within which is a tangle of scrub providing some seclusion, but no sign of a nest could be found. It is possible the nest site was somewhere in the wall of the shaft. The first brood of four hatched around 20thMay and were fed by the parent birds to independence after about a week but they remained in a loose group for longer. The second brood hatched on or around 2nd July but counting them was difficult as they mingled with the first brood and scattered into several groups. For a couple of weeks there were always grey wagtails in the vicinity of the river or lake and they then dispersed more widely.

Other bird species were using the river to feed. Grey Heron (one seen with a half pound trout) and Little Egret were regularly seen in the river, but prey item not identified; and a Kingfisher on a post staring into the river. The recovery of the meadow and plant life was impeded by the cold dry spring, but nevertheless it has naturalised well.

Top: one of the Grey Wagtails that successfully bred close to the river in 2015. *Photo by Alan Bennett*

Middle and lower: measuring and recording the captured eels

Right: the 'gubbins' required to generate the electricity for electrofishing

Soil Erosion

Ian Shepherd

Water borne soil entering a river network can arise from two sources, either from roadside verges eroded by vehicles, or from arable land 'run-off'. The biggest source is from arable land, but that from vehicles can also be significant, particularly in the upper reaches of the river. For some years RGCG, and now more so the Norfolk Rivers Trust, have worked with farmers to reduce silt levels entering the river network and the smothering of gravel areas so important to river ecology.

To illustrate the importance of this project we describe what happened in two rain events, one in 2012 and the other in 2015; coincidentally both on a 24th June. In 2012 there was heavy rain for some four hours, and in 2015 intermittent showers after a dry spell – but with spray irrigation also running. In both cases the crop in place was potatoes, two different but adjacent fields, on a sloping valley hillside, next to a surfaced lane with 'fast track' of some 600 yards into the river at a ford.

So in this situation we have a 'high risk' field with a 'high risk' crop. High risk crops include potatoes, sugar beet and maize. Potatoes in the vicinity of water bodies are the greatest risk of all, with the furrows carrying a fast flow of rain, which can converge to one corner of the field, and have the power to cut out a deep gorge. This happened in the 2012 event, the water pouring through the hedge and onto the lane, forming a soil-laden torrent entering the river.

The 2015 incident saw a relative trickle coming off the field entrance on to the lane, viscous and orange-brown in colour. This went into the open road drain some 50 yards from the river, but then slowly entered as a brown stain. Perhaps half the flow was due to the spray irrigation. After the event two low earth bunds were made in parallel inside the field entrance and were sufficient to contain this level of flow from running out of the field.

These are just two events over the period of time, but do illustrate the impact 'run-off' can have, and practices can improve. In saying this we all recognise the pressures on farming not just on costs but in some cases being at the front-end of a 'just-in-time' food processing operation, be it potato crisps or sugar; or vegetables to a supermarket chain. This can mean harvesting in adverse weather, or producing a crop where both timing and specification is critical. Unfortunately with the 2015 CAP reform the agri-environment funding has been cut by 40% for the next five years, which can be used to reduce the levels of soil entering our rivers. But we have collectively to find ways of achieving this.

Top left: potato field with bunds failing to prevent run-off, 2012
Top right: gully scoured by run-off from potato field 2012
Centre:irrigation continues after rainstorm 2015
Bottom: run-off soil staining the river water 2015

Himalayan Balsam Control 2015

This year did not see the hoped for decline in prevalence on the banks of the Glaven and its tributaries. RGCG volunteers have been pulling up this annual but prolific seeding invasive for 10 years or so. It is not a losing battle. Compared with many river banks about the country which have been overrun and damaged by Balsam, the Glaven is lightly affected, but without continued control it is easy to see how this could happen on our river. The main river now has no permanent stands of Balsam, after recent years of volunteer Balsam pulling days. However new patches continue to appear, and this year two areas in Bayfield Park appeared and were tackled. There were also a few seedlings on the banks of the new river, which has been closely monitored for the revegetation process.

New patches on the main river point to upstream sources of seeding into the watercourses. Balsam can shoot it seeds 5m or more and so any growth within sight of the river needs to be controlled, otherwise it will sooner or later get to the banks. This can be testing work in high summer when the flowers are out and the Balsam can be identified in deep nettle or scrub. Surveys last year to identify and remove sources at the upper tributaries found new sites at Briningham and Melton that were reviewed this year and are much improved. No growth has been found on the main river upstream of the Stody beck at Hunworth (with the exception of an largely isolated pond in Hempstead that we think is not seeding downstream).

I remain confident that we have Balsam under control and my hope is that with continued monitoring and the hard work of volunteers we can still aim at eradication in the coming years. Many thanks to the RGCG volunteers who helped this year. Please let me know if you come across of any Balsam on the river next summer.

Henry Crawley

Natural Surroundings

After completion of the Lower Meadow work, the digger moved to the Natural Surroundings site for a couple of hours. There it greatly extended the area of open water running across the site, and spread the excavated material across the fen. The wetness of the site, and the seed stock and roots in the soil, resulted in a very rapid regeneration of the wetland plants. Compare photographs some time after the work was done on 9th May with how it looked on the 11th September.

Eel Survey in the Glaven Catchment

The Glaven Eel Project began in April this year. It is managed by the Norfolk Rivers Trust. In the next two years we aim to find out more about the eel population in the Glaven catchment, work to improve their habitat and also raise awareness with local communities. Initial work has focussed on trying to assess eel populations in and around the river, and in particular trying to record the spring influx of young (glass) eels.

The elver trap at Glandford Mill has been a particular success this year, as have surveys at Blakeney Freshes and in the new river at Bayfield. Through the summer we have found adult eels in various locations, notably in ponds high up in the catchment, and with electro-fishing at Wiveton. Other survey techniques include netting, trapping, torching and observation and we have been delighted to find glass eels and the slightly older elvers at various locations in the valley. Given that across the catchment we have observed hundreds of young eels this year we can guess that tens of thousands must have entered the river; and the data collected can now give us a baseline against which to compare future years. So far the numbers of eels coming into the catchment give grounds for hope in recovery in eel numbers.

Jonah Tosney,
NRT Senior Projects Manager

National Trust Neptune Campaign

This year, National Trust are celebrating the 50 year anniversary of the Neptune Coastline Campaign. Set up in 1965, the campaign has raised over £65 million to help acquire and look after over 740 miles of coastline in England, Wales and Northern Ireland.

The campaign has helped with the management of Blakeney National Nature Reserve, and funding the purchase of land, including Stiffkey Saltmarshes in 1976 and Gramborough Hill in 1981.

George Baldock
NT Coastal Ranger

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

River Glaven Conservation Group

Henry Crawley Chairman 01263 713306

Ian Shepherd Secretary 01263 7113370

Anne Rolfe Treasurer & Membership Secretary

Web site www.riverglaven.co.uk