

Barbel stocking into the River Wensum, 2009 and 2010

In December 2009, a total of 850 barbel were stocked into the River Wensum at four locations where barbel populations are known to exist. Fish stocked were 2+ years and had an average fork length of 230mm. The purpose of stocking was in order to boost the resident brood stock of barbel within the Wensum as well as monitoring their movement to ascertain whether or not they remain in the stretches where stocked or migrate elsewhere. The stockings were carried out in line with the draft barbel stocking protocol for the River Wensum SAC.



To monitor their movement each barbel was fitted with a Passive Integrated Transponder (PIT) tag to allow the tracking of their movement post stocking. The picture below shows a PIT tag (actual size 23mm x 4mm).

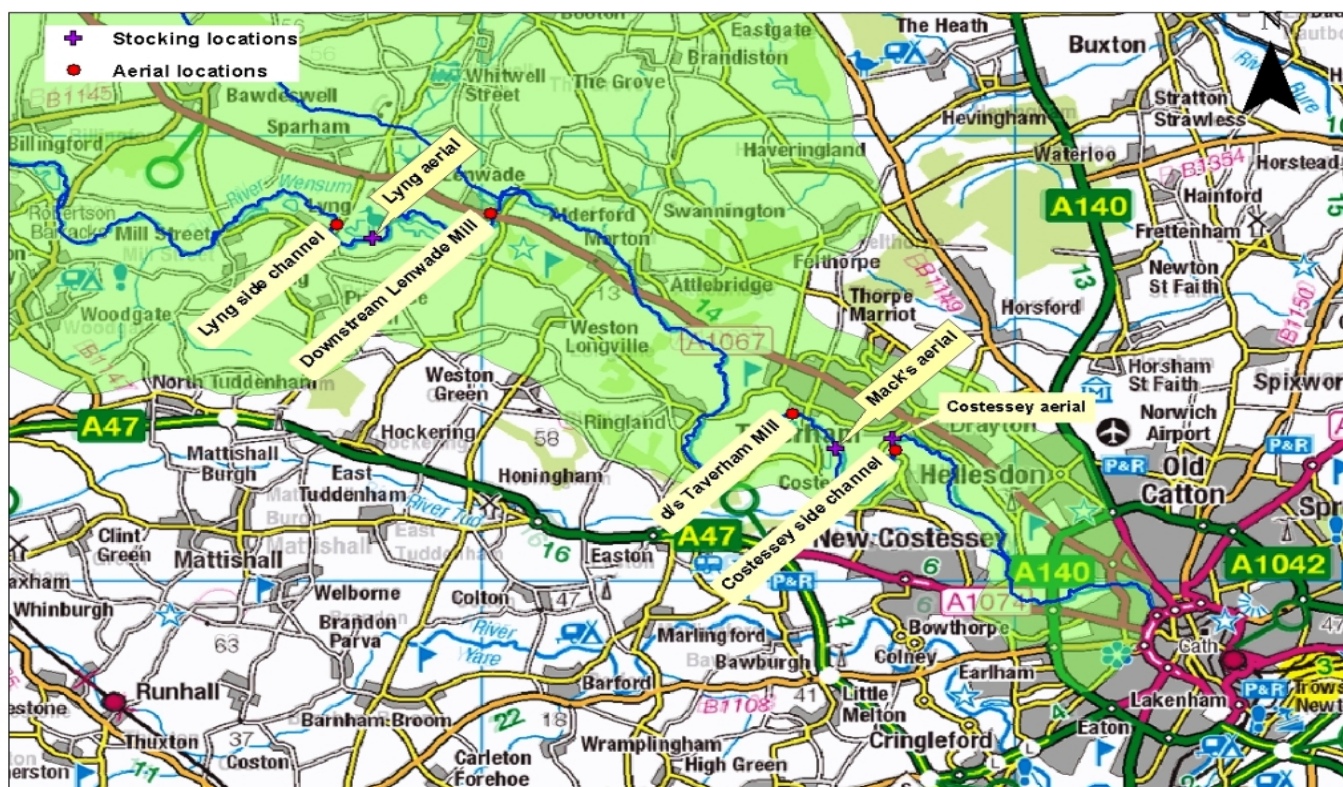


After anaesthesia each fish had a tag inserted into the stomach cavity, through a small incision. This was then covered over with anti-biotic powder which becomes waterproof upon contact with water, sealing the incision. This process was repeated in December 2010 with a further 990 1+ (average fork length 158mm) barbel stocked into the river at the four locations. The table below details stocking location and number.

Stocking location	Number of barbel	
	2009 (2+)	2010 (1+)
Downstream Lyng Mill, (side channel)	197	240
Downstream Lenwade Mill	258	250
Downstream Taverham Mill	198	250
Downstream Costessey Mill	197	250

In order to track the PIT tagged barbel aerial loops were constructed at three locations along the Wensum. The aerals consist of 3.8mm cable forming a complete loop running across the bed of the river, up the margins and across the surface of the water. Both ends of the cable complete the loop and then connect to the equipment required to power the aerial, enabling the detection of movement of any tagged fish and storage of the information. When a tagged fish swims through the loop a barcode unique to that fish is recorded alongside the date and time at which it swam through.

The aerial loop arrays are located at Lyng, Taverham (Mack's) and Costessey and are positioned downstream of the points where barbel were stocked. Due to the width of the river at Lenwade it was not possible to construct a loop that would have recorded movement effectively.



Since the initial stocking took place in 2009, monitoring has been intermittent due mainly to downtime caused by adverse weather conditions. To try and prevent this happening in future, in the summer of 2010 improvements were made to the aerials to make them more robust during peak flows to reduce the amount of downtime.



The equipment is powered by solar panels to reduce the amount of time taken each week to replace batteries and data is automatically uploaded by telemetry. The photo to the left shows the aerial loop array at Lyng.

What have we found at Lyng?

The date of the first movement picked up at the aerial location was on 30th December 2009, shortly after the initial stocking on 15th December, revealing that barbel had moved downstream. From the period 30th December 2009 to May 2010, a total of 14 barbel passed under the aerial, suggesting that the remaining stocked fish were likely to be residing upstream closer to where they were stocked. During April and May 2011, a total of 41 stocked fish passed through the loop.

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One was a barbel stocked at Lenwade in December 2010 was found upstream at Lyng aerial on 4th April 2011. Multiple readings of certain individuals were recorded indicating that fish were utilising the stretch and that movement was not simply downstream. The electro-fishing riffle survey in October 2010 revealed a total of 6 juvenile barbel downstream of the side-channel. After capture, the barbel were hand scanned to ascertain whether or not the fish had been tagged, (see left). One barbel captured (tag number 3F622F) was stocked in December 2009 at a length of 205mm. In the course of 10 months the fish had grown in length to 285mm. Most encouragingly the other barbel captured were naturally recruited fish ranging from 105 to 140mm.



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What have we found at Taverham (Mack's) aerial?



The next aerial positioned downstream is located opposite Place Farm. The first record of barbel passing under the aerial was on 12th March 2010, approximately 3 months after barbel were stocked at Taverham Mill. The time delay may be due to the stocking location being approximately 1.2km upstream of the aerial location, taking fish longer to disperse downstream, particularly during the cooler water temperatures of these winter months when the fish are less mobile.

From 12th March to 28th June 2010 regular movement of 23 barbel was picked up at this location. From then on until December 2010, very few fish were recorded passing through the aerial. From the 11th December 2010 (two days after the 2nd stocking) to 2nd January 2011, a total of 37 fish passed under Mack's aerial. However, despite the number of fish migrating downstream many of the readings were multiple of the same code revealing movement was not all one way and barbel were residing in Mack's stretch. The 2010 riffle surveys were particularly encouraging recording 8 juvenile barbel within the stretch downstream of Taverham Mill towards the road bridge. Of these 8 fish, 2 were fish stocked in 2009 at 231mm and 254mm, upon capture during October 2010 the same fish were measured at 302mm and 313mm respectively.

What have we found at the Costessey aerial?

The lowermost aerial on the Wensum is located downstream of Costessey Point, approximately 420m downstream from where they were stocked in the side-channel above the point. The first date of barbel movement through the loop was recorded was 1st April 2010, approximately 3.5 months after the initial stocking. This is again most likely due to the increasing water temperatures after the winter period causing the fish to move from their over-wintering locations.

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A total of 21 fish passed through the Costessey aerial from 1st April to 29th July 2010, some with multiple readings of the same code, again indicating that the movement was not purely one way but that individuals were residing in the stretch. The 3 juvenile barbel were captured below Costessey point during the riffle surveys in October 2010 were all naturally recruited fish (all less than 110mm).

Recent regular movement of barbel tagged from both stockings has been recorded at this aerial since mid-July 2011, again highlighting their residency at this location.

Now that the aerials are more robust to high flows we are hopeful that additional stockings of barbel at these locations will boost the information already gathered and fill in any gaps caused by downtime.

We would also like to thank everyone involved for their ongoing help with the project, from maintenance of the aerials to the informing of their condition. This is always greatly appreciated and contributes to the overall collection of this important data.



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