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Old Bedford: Counter Drain Fisheries Survey Report 2011

FISHERIES MONITORING PROGRAMME CENTRAL AREA – ANGLIAN REGION



Environmental Monitoring Officer Gareth Thomas with a specimen tench from U/s Welney

Fisheries survey report of the Old Bedford: Counter Drain $8^{th} - 21^{st}$ April 2011

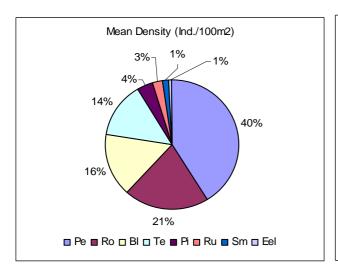
SUMMARY

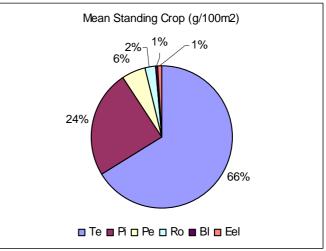
- Five sites were surveyed on the Counter Drain between the 08/04/12011 and 21/04/2011.
- ➤ One site was fished against the flow using Pulsed DC electric fishing gear, whilst the four remaining sites were sampled using standard wrap around seine netting methodology. Fish were measured and scales taken for ageing and growth analysis. Results are reported utilising fish greater than 99mm as this method has been shown to be inefficient below 99mm. Further information can be found at www.environment-agency.gov.uk

> List of all species caught:

Perch [Perca fluviatilis]
Roach [Rutilus rutilus]
Tench [Tinca tinca]
Bleak [Alburnus alburnus]
Spined loach [Cobitis taenia]
Ruffe [Gymnocephalus cernuus]
European eel [Anguilla anguilla]

Common bream [Abramis brama]
Smelt [Osmerus eperlanus]
Rudd [Scardinius erythrophthalmus]
Pike [Esox lucius]
10-spined stickleback [Pungitius pungitius]
3-spined stickleback [Gasterosteus aculeatus]
R x Cb hybrid [Rutilus rutilus x Abramis brama]





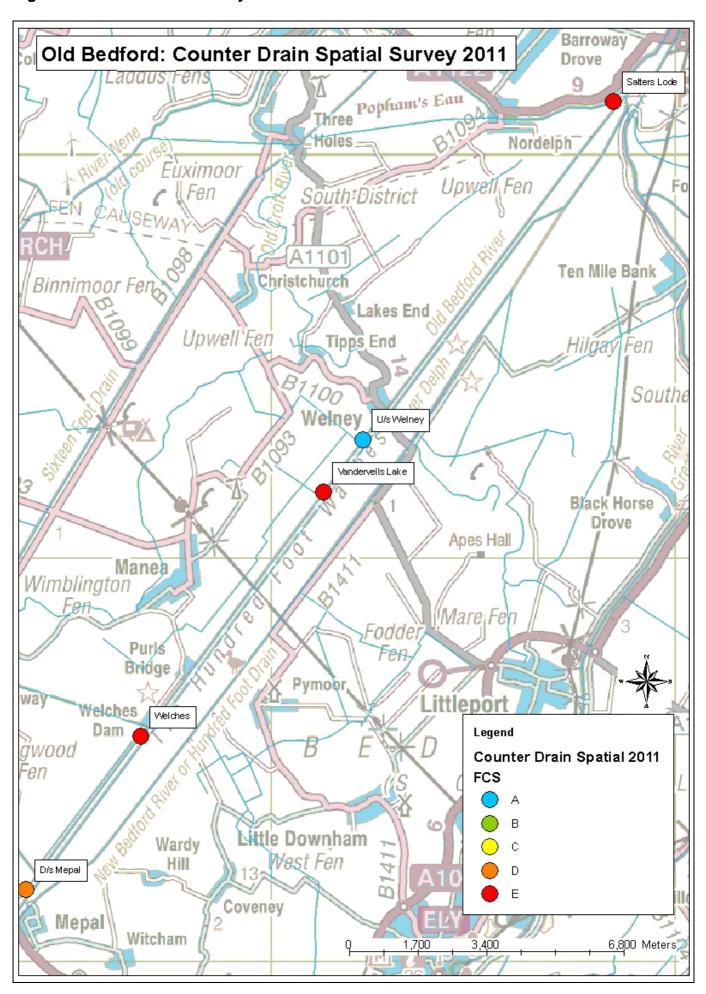
- ➤ The average density (**number of fish in a given area**) of all species (>99mm) over all sites fell from 56.72 Ind./100m² in 2008 to 4.56 Ind.100m² in 2011, a decline of 92%.
- Total average standing crop (weight of fish in a given area) also fell from 2347.6 g/100m² in 2008 to 1920.2 g/100m² in 2011, a decline of 18%.
- ➤ The largest fish from the survey included a 200mm roach from Salters lode (site 153) and a 530mm tench, 390mm perch, 1060mm pike and a 72mm common bream from U/s Welney (site 151).

Preliminary Assessment:

Since the previous survey in 2008, the Counter Drain has fallen from an FCS class 'B' to a class 'C' status fishery.

It would appear that site 151 (U/s Welney) offers the greatest angling potential with this survey recording an excellent catch of 64 tench, with fish to 530mm in length as well as several large pike and over 290 perch (including 4 over 300mm) with the largest fish weighing 3lb 4oz.

Figure 1. Counter Drain survey sites and FCS classification 2011.



SURVEY RESULTS

Five sites were surveyed on the Counter Drain between the 8th an 21st April 2011, (Figure 1 / Table 1)

Table 1. Site details (measurements in metres)

Site Name	Reference	Survey Date	Length	Width	Area	Midstream	Catch Method
						NGR	
D/s Mepal	CAM148	11/04/2011	330	6	1980	TL4392981783	PDC Electric Fishing
Welches	CAM149	08/04/2011	133	15	1995	TL4677285591	Wrap Around Seine Netting
Vandervells Lake	CAM150	12/04/2011	133	15	1995	TL5130191637	Wrap Around Seine Netting
U/s Welney	CAM151	13/04/2011	118	17	2006	TL5226692943	Wrap Around Seine Netting
Salters Lode	CAM153	21/04/2011	125	18	2250	TF5846001310	Wrap Around Seine Netting

Density and standing crop. 13 species and 1 hybrid were recorded over the 5 sites surveyed.

Since the previous spatial survey in 2008, the number of sites surveyed has been reduced from six to five, with the survey at site 152 (D/s Welney) removed from the spatial survey programme. This site was initially included into the survey programme following a mortality event, as part of additional monitoring to establish the affect the mortality had upon the fish population within the Counter Drain.

Density and standing crop of individual fish species are calculated using the number / weight of fish in each site and then a mean (average) calculated for the reach, in this case 5 sites. Density is reported as the number of individuals of that particular species that might be found in $100m^2$ of the river. Similarly, standing crop is the weight, or grams, of that fish species that might be found in the same area.

The average density (**number of fish in a given area**) of all species (>99mm) over all sites declined significantly from 56.72 Ind./100m² in 2008 to 4.56 Ind.100m² in 2011, a decline of 92%.

Total average standing crop (**weight of fish in a given area**) also declined fell from 2347.6 g/100m² in 2008 to 1920.2 g/100m² in 2011, a decline of 18%.

The largest individual (mm) and estimated number of fish (>99mm) are recorded for roach, tench, perch, pike and common bream at site level, (Table 2).

Table 2. Site specific population estimate (>99mm) and largest length (mm) for selected species.

Site	Ro	oach	To	ench	Pe	erch	F	Pike	Commo	on Bream
Site	No.	Largest	No.	Largest	No.	Largest	No.	Largest	No.	Largest
D/s Mepal	25	100	1	456	2	72	6	638	2	42
Welches	13	118	3	455	65	162	2	142	68	68
Vandervells Lake	1	55	2	86	48	185	1	224	-	-
U/s Welney	31	127	64	530	293	390	11	1060	29	72
Salters Lode	124	200	4	128	24	144	5	252	137	66

The largest fish from the survey included a 200mm roach from Salters lode (site 153) and a 530mm tench, 390mm perch, 1060mm pike and a 72mm common bream from U/s Welney (site 151).

Table 3. Species specific density of fish (>99mm) at site level from the Counter Drain 2011.

		Sur	rvey Site Reference Numb	per		
Species	D/s Mepal	Welches	Vandervells Lake	U/s Welney	Salters Lode	Mean
	CAM148 (11/04/2011)	CAM149 (08/04/2011)	CAM150 (12/04/2011)	CAM151 (13/04/2011)	CAM153 (21/04/2011)	
Perch	-	0.75	1.15	8.08	0.36	2.58
Roach	0.05	0.05	-	0.10	4.98	1.29
Bleak	-	-	-	1.80	0.18	0.99
Tench	0.05	0.10	-	3.24	0.09	0.87
Pike	0.30	0.10	0.05	0.55	0.22	0.24
Rudd	0.05	-	-	-	0.27	0.16
R x Cb hybrid	-	-	-	-	0.09	0.09
Smelt	-	-	-	-	0.09	0.09
European eel	0.05	-	-	-	-	0.05
Ruffe	-	-	-	-	0.04	0.04
10-spined stickleback	-	-	-	-	-	-
3-spined stickleback	-	-	-	-	-	-
Common bream	-	-	-	-	-	-
Spined loach	-	-	-	-	-	-
Total	0.51	1.00	1.20	13.76	6.31	4.56

Table 3a. Species specific standing crop of fish (>99mm) at site level from the Counter Drain 2011.

		Sui	rvey Site Reference Numb	per		
Species	D/s Mepal CAM148 (11/04/2011)	Welches CAM149 (08/04/2011)	Vandervells Lake CAM150 (12/04/2011)	U/s Welney CAM151 (13/04/2011)	Salters Lode CAM153 (21/04/2011)	Mean
Tench	87.3	157.1	-	5808.1	3.1	1513.9
Pike	311.0	1.6	4.0	2406.9	18.2	548.4
Perch	-	19.2	40.2	452.8	13.0	131.3
Roach	0.8	1.2	-	2.4	205.0	52.3
Bleak	-	-	-	30.5	4.6	17.5
European eel	17.3	-	-	-	-	17.3
Rudd	1.5	-	-	-	8.0	4.8
R x Cb hybrid	-	-	-	-	4.7	4.7
Ruffe	-	-	-	-	1.9	1.9
Smelt	-	-	-	-	0.9	0.9
10-spined stickleback	-	-	-	-	-	-
3-spined stickleback	-	-	-	-	-	-
Common bream	-	-	-	-	-	-
Spined loach	-	-	-	-	-	-
Total	417.9	179.1	44.2	8700.5	259.4	1920.2

Table 4. Species specific density results for all fish at site level from the Counter Drain 2011.

		Sui	vey Site Reference Numb	oer		
Species	D/s Mepal CAM148 (11/04/2011)	Welches CAM149 (08/04/2011)	Vandervells Lake CAM150 (12/04/2011)	U/s Welney CAM151 (13/04/2011)	Salters Lode CAM153 (21/04/2011)	Mean
Perch	0.10	4.96	4.41	21.54	1.07	6.42
Common bream	0.10	8.02	-	1.75	12.36	5.56
Roach	1.26	1.00	0.05	2.04	7.33	2.34
Smelt	-	-	-	-	4.09	4.09
Tench	0.05	0.15	0.10	3.24	0.18	0.74
Rudd	0.30	1.50	-	0.15	0.89	0.71
Bleak	-	-	-	1.94	0.18	1.06
Pike	0.30	0.10	0.05	0.55	0.22	0.24
Spined loach	-	0.05	0.10	0.15	0.09	0.10
10-spined stickleback	-	-	-	0.05	0.18	0.11
Ruffe	-	0.05	-	0.05	0.09	0.06
R x Cb hybrid	-	-	-	-	0.09	0.09
European eel	0.05	-	-	-	-	0.05
3-spined stickleback	-	-	0.05	-	-	0.05
Total	2.17	15.84	4.76	31.46	26.76	16.20

Table 4a. Species specific standing crop results for all fish at site level from the Counter Drain 2011.

		Sur	vey Site Reference Numb	per		
Species	D/s Mepal	Welches	Vandervells Lake	U/s Welney	Salters Lode	Mean
	CAM148 (11/04/2011)	CAM149 (08/04/2011)	CAM150 (12/04/2011)	CAM151 (13/04/2011)	CAM153 (21/04/2011)	
Tench	87.3	157.6	1.0	5808.1	3.3	1211.4
Pike	311.0	1.6	4.0	2406.9	18.2	548.4
Perch	0.4	34.4	80.7	547.4	17.7	136.1
Roach	5.0	6.1	0.1	15.3	236.9	52.7
Common bream	0.1	15.5	-	3.7	18.6	9.5
Bleak	-	-	-	31.6	4.6	18.1
Rudd	2.8	8.0	-	1.8	16.0	7.1
Smelt	-	-	-	-	19.6	19.6
European eel	17.3	-	-	-	-	17.3
R x Cb hybrid	-	-	-	-	4.7	4.7
Ruffe	-	0.2	-	0.5	2.1	0.9
Spined loach	-	0.1	0.3	0.3	0.1	0.2
0-spined stickleback	-	-	-	0.1	0.3	0.2
3-spined stickleback	-	-	0.1	-	-	0.1
Total	423.9	223.5	86.2	8815.8	341.9	1978.3

Figure 2 indicates that perch were the most numerous fish (>99mm) over the five sites surveyed with a mean density estimate of 2.58 individuals for every 100m² of river surveyed; equivalent to a 40% share of the total population. Roach were subdominant with bleak ranked third with 21 and 16% shares of the population respectively.

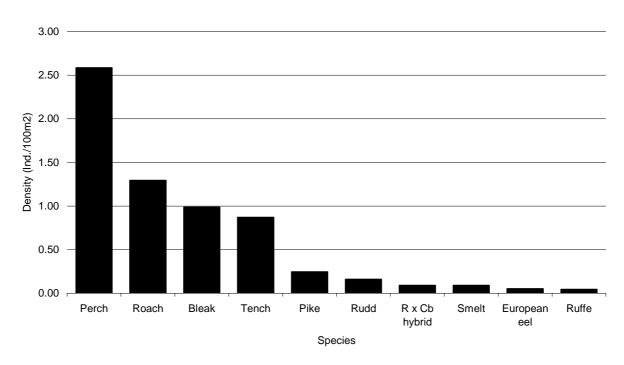


Figure 2. Mean density of fish (>99mm) from the Counter Drain 2011

Figure 2a shows tench as the dominant species' by weight with a mean standing crop estimate of 1513.9g for every 100m² of the river; equating to a 66% share of the total standing crop present. Pike were subdominant with a population estimate of 548.4 g/100m with perch ranked third with a 24% and 6% share of the total biomass recorded respectively.

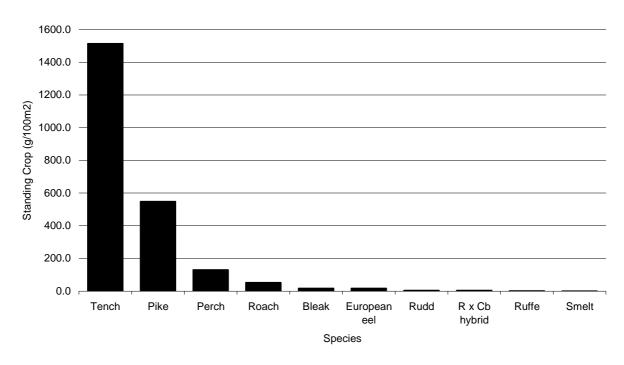


Figure 2. Mean standing crop of fish (>99mm) from the Counter Drain 2011

Figure 3 and 3a display density and standing crop for individual species at site level.

Figure 3 displays density at site level for the key species present within the Counter Drain during 2011. In terms of number of fish species present, both U/s Welney and Salters Lode offer the greatest angling potential.

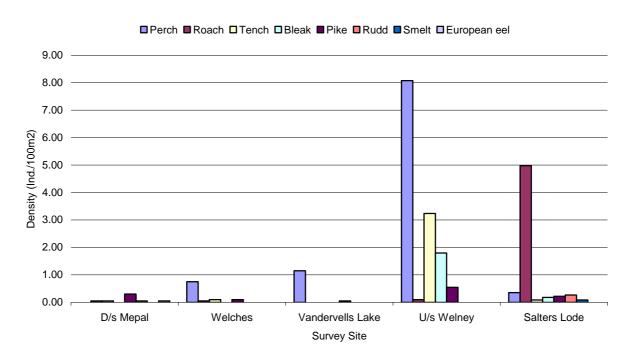


Figure 3. Density of fish (>99mm) at site level from the Counter Drain 2011

Figure 3a shows a similar graph, however this time displaying standing crop estimates at site level from the Counter Drain 2011. Immediately apparent is the excellent catch of tench, pike and perch recorded at Welney, with tench comprising of 67% of the overall catch. In total 64 fish caught, with the largest specimen measuring 530mm and weighing 7lb 4oz.

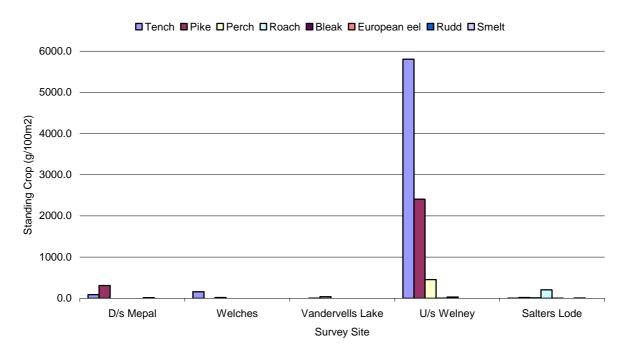


Figure 3a. Standing crop of fish (>99mm) at site level from the Counter Drain 2011

Trends in density and standing crop. Data has been collated from all the surveys between 1988 and 2011 to identify potential long-term trends in fish density and standing crop on the Counter Drain.

Figure 4 displays the mean standing crop and density data-set for the last seven spatial surveys from the Counter Drain between Mepal and Salters Lode. It should be noted, that the 2004 spatial survey consisted of an unusually large catch of over 35,900 roach recorded at Welney which has severely skewed the data-set in favour of this survey year.

At present it is difficult to accurately ascertain the reasoning behind this exceptional catch, however it maybe associated with fish choosing to congregate in preparation for spawning as the survey occurred during mid April or more likely due to habitat requirements.

Since 1995 several significant fish mortalities have occurred along this watercourse usually associated with a sudden decline in dissolved oxygen levels, with the worst affected areas generally between Welney and Salters Lode. It is difficult to calculate the exact number of fish lost during these combined mortality events, however estimates have been over 100,000 fish. Since 1995, to help restore a sustainable fish population and regenerate the fishery a number of significant re-stockings have been carried out by the Environment Agency. In total approximately 43,000 fish comprising of roach, rudd, tench and both silver and common bream have been stocked at several locations in and around Welney.

Large sections of the Counter Drain offer very little habitat for fish to utilise, particularly overhead cover for protection from predation. It seems likely that there is a close correlation between variation of habitat and catches throughout this watercourse, with areas of complex habitat holding consistently higher fish stocks than areas of lower quality.

Allowing for the exceptional catch recorded in 2004, the data-set would seem to suggest that over the seven survey years, standing crop and density estimates have shown some degree of fluctuation. The 2011 survey recorded the lowest density estimate to date, with the primary reason being a significant decline in the number of roach and both common and silver bream caught.

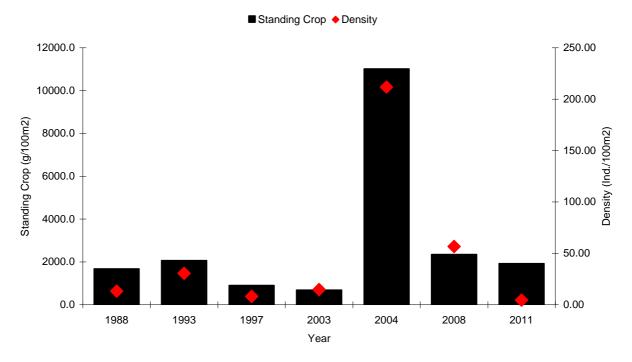


Figure 4. Mean standing crop and density recorded on the Counter Drain 1988 – 2011

Figure 5 and 5a show density and standing crop for individual species 1988 – 2011.

Figure 5 shows density estimates for the major fish species present within the Counter Drain between 1988 and 2011. Roach are dominant by density for six of the seven surveys, the exception being 2011 when perch are dominant and roach sub-dominant. **Figure 5** also shows that the number of perch present within the Counter Drain appear to be gradually increasing.

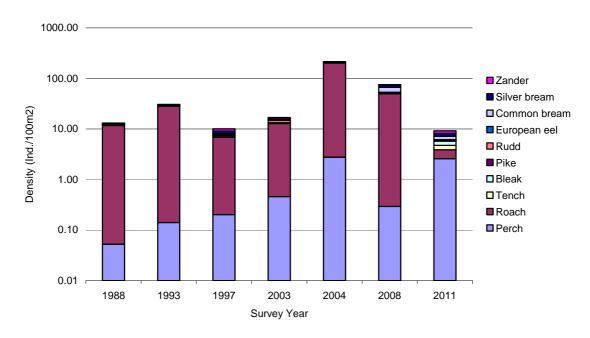


Figure 5. Density of fish (>99mm) from the Counter Drain 1988 – 2011 (Note the use of a logarithmic scale)

Figure 5a shows a similar graph displaying the individual standing crop estimates for the key species present within the Counter drain between 1988 and 2011. Immediately apparent is the dominance of roach and the steady increase in perch standing crop since 1988, to its highest recorded level in 2011. **Figure 5a** also shows the excellent catch of tench caught in 2011 with the bulk of these fish caught at Welney.

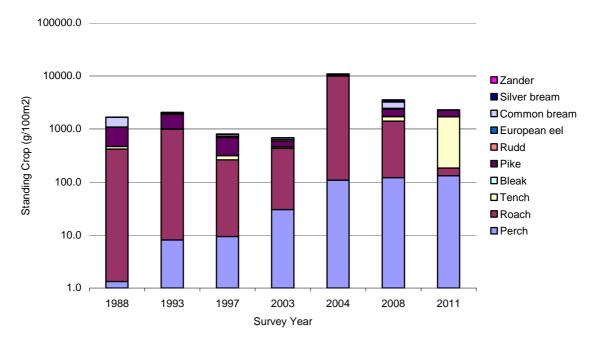


Figure 5a. Standing crop of fish (>99mm) from the Counter Drain 1988 – 2011 (Note the use of a logarithmic scale)

Length frequency distributions. The lengths of fish measured during the survey programme can be collated to produce a frequency distribution. These can be used to identify population age structure and potential strong year classes (Figure 5, 5a, 5b, 5c, 5d, 5e). Scales from 3 fish for every 1cm length band were collected (where possible) from chub, dace and roach and mean length at age is provided where available. This report has concentrated on fish above 99mm but these distributions encompass all fish caught. The fishing method used has been shown to be inefficient at catching fish below 99mm in length. The mesh sizes on the landing and stop nets are also too large to allow efficient catches below this 99mm band. Therefore small fish <99mm are under represented and their distributions should be looked at with caution.

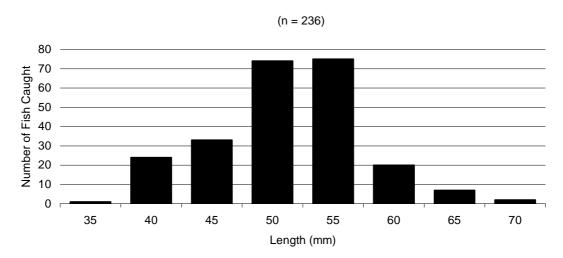


Figure 5: Length frequency distribution for common bream from the Counter Drain 2011.

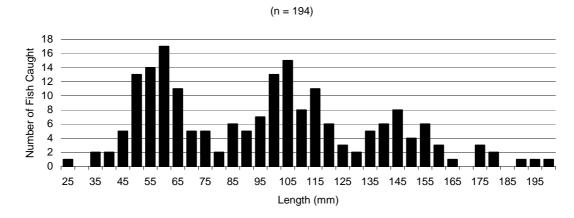


Figure 5a: Length frequency distribution for roach from the Counter Drain 2011, note the three distinct year classes present.

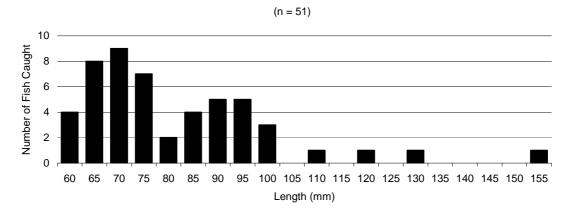


Figure 5b: Length frequency distribution for rudd from the Counter Drain 2011.



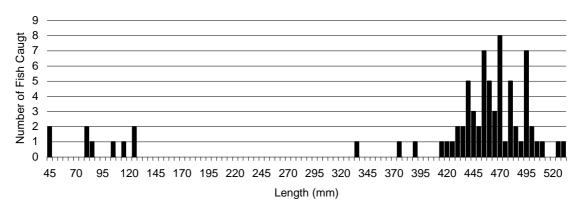


Figure 5c: Length frequency distribution for tench from the Counter Drain 2011, note that the bulk of fish caught comprised of mature fish, with very few juveniles present.

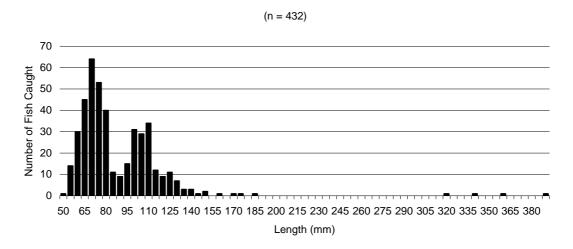


Figure 5d: Length frequency distribution for perch from the Counter Drain 2011, note the large number of juvenile fish caught and the four mature specimen fish over 310mm.

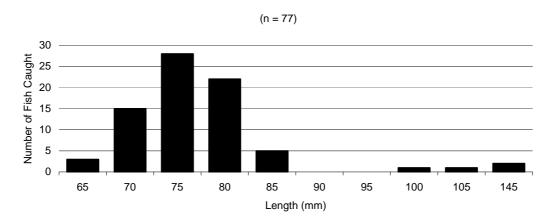


Figure 5e: Length frequency distribution for smelt from the Counter Drain 2011.

DISCUSSION

Under the Fisheries Classification Scheme (FCS), the Counter Drain has fallen from a class 'B' to a class 'C' status fishery in 2011, with tench and perch dominating standing crop and density estimates.

Since the previous spatial survey in 2008, both standing crop and density have declined, with standing crop falling by 18% from 2347.6g to 1920.2 g/100m² and density by 92% from 56.72 individuals to 4.56 individuals for every 100m² of channel, the lowest recorded density estimate to date. These declines are primarily due to a reduction in the number of silver fish caught from U/s Welney and Salters Lode.

It should be noted, that this is only one year's data and as such, may not represent the true status of the current fish population within the Counter Drain. Further spatial surveys should reveal whether the 2011 result is due to a general downturn in fish stocks, or, as is possible simply the result of a poor survey year brought about by environmental factors such as clear water conditions and stock aggregation.

2011 has been an exceptionally dry year to date, with very little rainfall experienced during spring and summer and this has resulted in low and clear water conditions throughout the Great Ouse catchment. It was noted at the time of the surveys that four of the five sites on the Counter Drain were carrying very little colour, the exception being Salters Lode where the water was noticeably turbid.

This turbidity was likely to have been caused by water transfer between the Tidal River Great Ouse and the Counter Drain. These transfers are essential during periods of low flows as they maintain water levels to protect ecology and maintain water levels lost through irrigation. Water is only transferred when salinity is below 1500 μ s/cm to protect crops and wildlife.



Image 1. Water being transferred from the Tidal River Great Ouse into the Counter Drain 2011.

There are two key issues associated with surveys undertaken during clear water conditions, firstly this can encourage excessive macrophyte growth due to sunlight penetration into the water column creating optimum growing conditions. Macrophytes create difficulties when surveying fish populations as lead lines on seine nets become lifted creating escape routes and fish become difficult to draw out of cover using electric fishing, resulting in missed fish. However as the survey sites were sampled using depletion methodology the number of fish missed is minimal.

Clear water can also affect both fish behaviour and distribution with stocks often preferring to aggregate in areas where they feel less vulnerable. Fish in clear water may show a tendency to shoal around features which provide the most cover and protection from predators with areas such as bridges, pumping stations and overhanging trees often utilised. The "fixed" nature of our survey sites mean we cannot move sites to accommodate shoaling behaviour and even if we chose to, these areas of refuge are, by their nature, generally not suitable for sampling with our survey techniques.

Welches Dam Pumping Station is a known fish holding feature, the channel immediately in front of the pump station is deeper than the surrounding watercourse as systematic water transfers have lead to the soft, silt substrate becoming scoured away creating a deep pool. The large pump chambers also offer fish, notable silver fish, an area of refuge from predators.



Image 2. Welches Dam Pumping Station.

During 2011 work began on refurbishing Welches Dam Pumping Station replacing the two diesel powered water pumps, which transfer water between the Counter Drain an the Delph and vice versa, with four energy efficient electric pumps. Prior to the initial test run, the Fisheries, Recreation and Biodiversity Team (FRB), installed DIDSON monitoring equipment to establish how many fish were utilising the pump chambers and to gauge fish behaviour once the pumps have been initiated.

DIDSON (Dual Frequency Identification Sonar) is an underwater acoustic camera system which transmits pulsed sound waves and converts the returning echoes into near video quality images. This equipment is often utilised by FRB for observing fish behaviour in natural environments and around man made structures, identifying fish species, sizing fish and calculating numbers present.

There is a risk that fish stocks utilising pumping stations as cover, become entrained within the pumps' machinery once water transfers begin, which may result in serious damage or mortality. To help minimise this risk powerful strobe lights have recently been retrofitted to Welches Dam above the pump chambers. These lights have been programmed to activate prior to any water transfers, to scare fish out of the chambers and act as a deterrent to those individuals against entry until the pumping has ceased.



Image 3. Strobe lights.

Image 4 shows a large aggregation of fish, the bulk of which are roach and rudd, on the outside of Welches Dam Weed Screen. Stop logs are in place to prevent fish from passing through the weed screen and into the pump chambers.

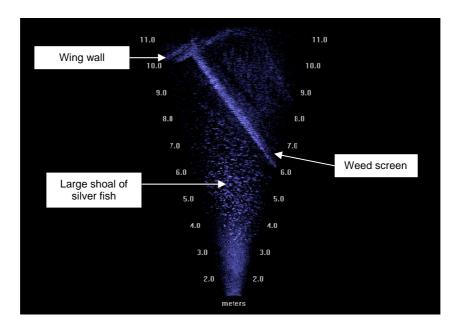


Image 4.

Image 5 shows a very large aggregation of fish, mostly roach and rudd, on both sides of Welches Dam Weed Screen, note the stop logs have been removed and fish have passed through the weed screen and entered the pump chambers, potentially becoming susceptible to the water pumps. This image therefore proving how fish populations utilise structures such as pump stations as a place of refuge.

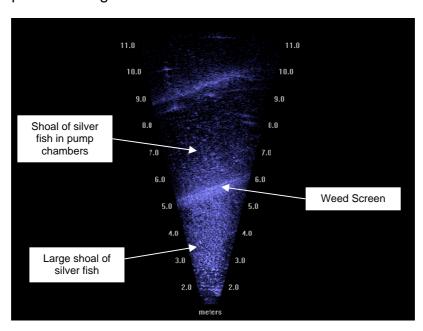


Image 5.

Image 6 shows four specimen perch attacking the shoal of roach and rudd outside Welches Dam Pumping Station.

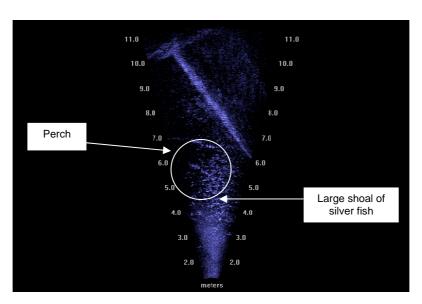


Image 6.

The data collected from DIDSON over the monitoring period has revealed a large aggregation of silver fish exploiting the safety provided by the pump chambers. It should be noted that the large shoal of fish vacated the area of Welches Dam in early May (presumable for spawning elsewhere) and therefore no danger was caused by subsequent pump tests. Further DIDSON monitoring will be carried out to assess winter use of the pumping station area by fish and the efficiency of the strobe light system. This data therefore would seem to suggest that fish populations along the Counter Drain are having to utilise what limited habitat is available due to the clear water conditions noted, and that there is actually a far greater number of roach, rudd, and bream present than was actually caught during the 2011 spatial surveys.

SCALE AGEING ANALYSIS

Mean length at age of fish species from the Counter Drain 2011.

Species: Roach

Mean length for age by year class

_		Age (ye	ears) an	d lengt	th (mm))
Year class	1	2	3	4	5	6
2005	43	64	128	149	174	196
2006	35	68	92	120	146	
2007	42	79	111	150		
2008	45	82	122			
2009	45	79				
2010	46					
Average	43	74	113	140	160	196

Percentage standard growth by age and year class

dard G 48 82 111 137 160 181

	Age (y	ears) p	ercenta	ge star	ndard g	rowth (
Year class	1	2	3	4	5	6
2005	89	78	115	109	109	108
2006	73	83	83	88	91	
2007	87	96	100	110		
2008	93	100	110			
2009	93	96				
2010	97					
Average	96					

Species: Rudd

Mean length for age by year class

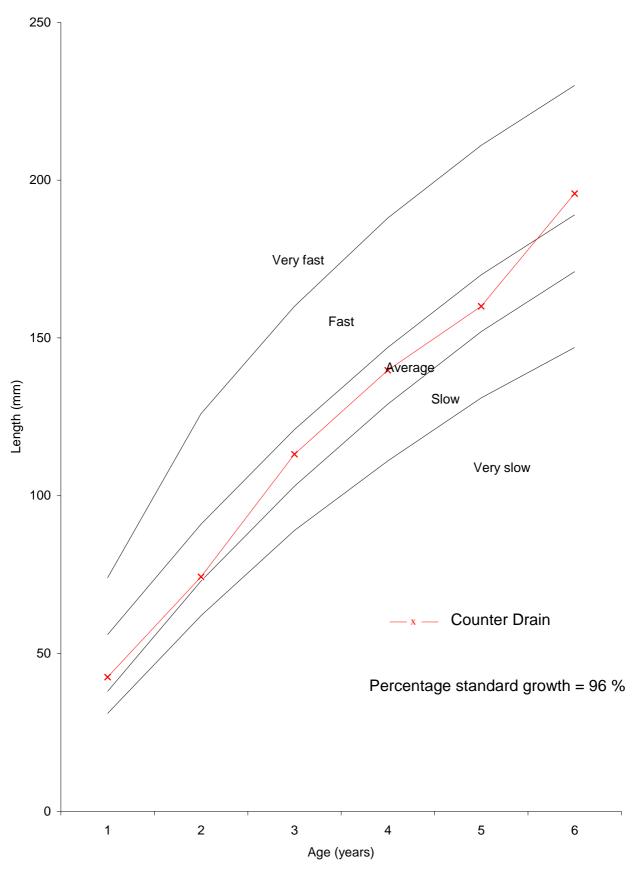
	Age	(years) and le	ength (r	nm)
Year class	1	2	3	4	
2007	25	86	114	158	
2008	42	78	107		
2009	36	86			
2010	-				
Average	34	83	110	158	

Percentage standard growth by age and year class

	Standard G	48	82	111	137
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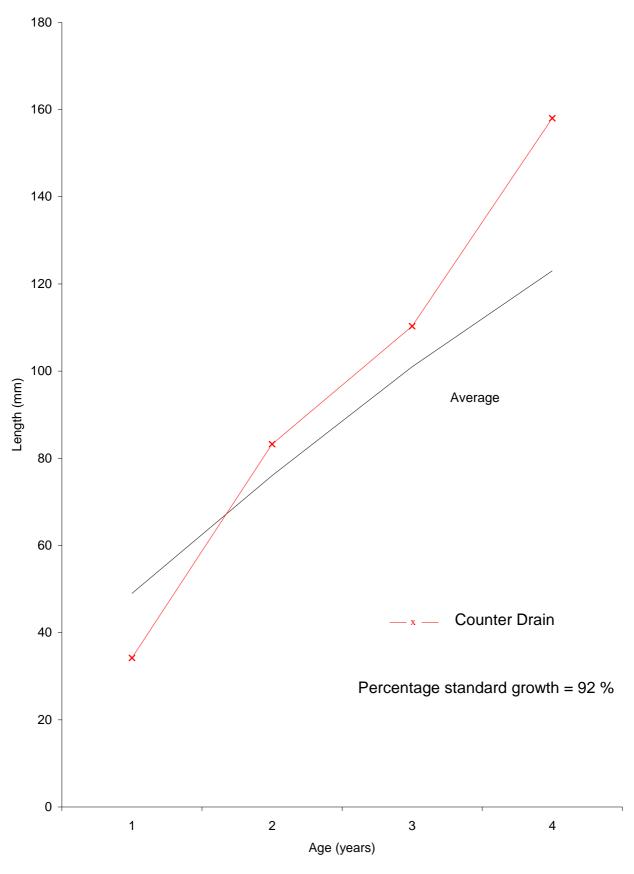
	Age (y	ears) p	ercenta	ge star
Year class	1	2	3	4
2007	51	105	102	115
2008	87	95	96	
2009	76	104		
2010	-			
Average	92			

Growth graph for roach from the Counter Drain 2011.



Graph to show the growth of roach in the Counter Drain compared to the standard growth of roach in 'southern' rivers (Fisheries Technical Services unpublished data)

Growth graph for rudd from the Counter Drain 2011.



Graph to show the growth of rudd in the Counter Drain compared to the standard growth of rudd (Fisheries Technical Services unpublished data)



Specimen pike weighing 20lb from U/s Welney



A brace of specimen perch weighing 3lb and 3lb 4oz from U/s Welney



A brace of specimen tench weighing 6lb 8oz and 6lb 14oz from U/s Welney



A tench caught from Welches Dam

If you have any questions regarding anything in this report, please contact the fisheries team on Tel: 01480 483818

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- being prejudicial to the effective management of information held by the Agency, or
- damage to the Agency's reputation

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5. Intellectual Property Rights

No Intellectual Property Rights are transferred or licensed to you save those which are expressly provided in this agreement

6. Assignment

You may not transfer or in any other way make over to any third party the benefit of this agreement either in whole or in part

7. Waiver

Failure by either of us to exercise or enforce any rights available to it, or any forbearance, delay or grant of indulgence, will not be construed as a waiver of rights under this agreement or otherwise

8. Entire agreement

This agreement constitutes the entire agreement between us and supersedes all oral or written agreements, representations, understandings or arrangements relating to its subject matter (whether previous, contemporaneous or future). You agree to waive any right to rescind this agreement by virtue of any misrepresentation and not to claim damages for any misrepresentation that is not fraudulent

9. Severance

If any part of the agreement is found by a court of competent jurisdiction or other competent authority to be unenforceable, then that part will be severed from the remainder of the agreement which will continue to be valid and enforceable to the fullest extent permitted by law

10. Variation and Termination

This agreement may not be amended, modified, varied or supplemented but it may if both of us agree be terminated or replaced by a new agreement

11. Relationship of Parties

We are not in a partnership or joint venture, nor is either of us the agent of the other or authorised to act on behalf of the other

12. Rights Of Third Parties

No third parties shall have rights to enforce any part of this agreement under the Contracts (Rights of Third Parties) Act 1999

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