# THE CENTRE FOR ENVIRONMENT, FISHERIES & AQUACULTURE SCIENCE, LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT

# 2007 CHARTER SURVEY PROGRAMME

# **REPORT: YOUNG FISH SURVEY 2007**

STAFF:	Team 1 – River Humber to the north Norfolk coast	Stephen Shaw Denise Goldsmith Gary Burt
	Team 2 – Thames Estuary	Tom Woods Gary Burt Louise Cox

**LOCATION:** River Humber to Margate

**DURATION:** 26<sup>th</sup> August to 4<sup>th</sup> September 2007

#### AIM:

To carry out an inshore beam trawl survey to estimate juvenile flatfish abundance and collect data on small demersal fish in relation to the environment, in support of the EU Data Collection Regulation.

#### METHODS:

Two teams of two staff working on charter vessels carried out the Young Fish Survey. The standard survey positions for each of the two areas (Figure 1) were worked using a 2-metre wooden beam trawl with three tickler chains a 4 mm-mesh liner towed for a duration of ten minutes. At each station all the fish were identified and measured, the shrimp catch estimated volumetrically and other commercial shellfish species counted. Benthic species were counted at 20 of the standard positions for each survey area that were pre-selected prior to the survey's commencement. Otoliths were collected for ageing purposes from sole and plaice. Observations of temperature and salinity were also recorded at every station and dissolved oxygen readings were taken for the Environment Agency in the River Humber.

# TEAM: 1

**LOCATION:** River Humber to the north Norfolk coast - River Humber, Lincolnshire coast, The Wash and north Norfolk coast (survey mini-areas 8 to 11)

**DATES:** 26<sup>th</sup> August to 4<sup>th</sup> September

#### NARRATIVE:

Staff travelled to Gibraltar Point, Skegness on the 25<sup>th</sup> of August and loaded gear on the FV Challenge. The following day the vessel left Gibraltar Point to commence

fishing in the Wash. A total of 32 stations were fished in the first three days, one of which was an invalid tow. The survey stopped for one day to allow for a change of staff. The survey then recommenced on the 30<sup>th</sup> of August when the boat sailed from Gibraltar Point and fished the stations in the locality of Wells-Next-The-Sea. The boat stayed in Wells for one night and then sailed back to Gibraltar Point. During these two days 17 valid tows were completed. There was one invalid tow that resulted in gear damage. The last four days were spent working from Grimsby. During this period a total of 35 tows were completed with three invalid tows. 19 Environment Agency stations were successfully completed but the station at Reed's Island could not be completed after undertaking two invalid tows as the channel had changed. The vessel finally docked at Gibraltar point, after which staff then returned to Lowestoft on the 4<sup>th</sup> of September. The weather during the survey varied between fair to moderate.

# TEAM: 2

**LOCATION:** Thames Estuary - River Thames and Outer Thames Estuary (survey mini-areas 13 to 15)

**DATES:** 26<sup>th</sup> August to 2<sup>nd</sup> September

# NARRATIVE:

Staff departed Lowestoft on the 25<sup>th</sup> August to drive to Colchester prior to the commencement of the survey the following day aboard the FV Fisher Lassie, which set sail from West Mersea. Over the course of the next four days 42 stations were sampled, including 10 stations with full benthos counts. One net was damaged during the course of the northern Thames survey. Staff drove to Whitstable on 30<sup>th</sup> August and loaded sampling equipment onboard the FV Columbine. The southern Thames part of the survey commenced on 31<sup>st</sup> August and over the course of the next three days 37 stations were sampled, including 10 stations with full benthos counts. One of the survey stations at Mid Shoebury was not fished due to time constraints resulting from inclement weather on the first day. The survey was completed on 2<sup>nd</sup> September after which staff returned to Lowestoft the same day. Two nets were damaged during the course of the southern Thames survey. The survey was completed without incident, with no major problems to report.

# **RESULTS**:

For both of the surveys 159 valid tows (80 for the River Humber to the north Norfolk coast and 79 for the Thames Estuary) were successfully completed out of a total of 161 (Figure 1). Two positions were not fished due to bad weather and a change to the ground. The results for the survey are presented in Table 1 and Figures 2 to 6.

Across the whole of the survey a total of 37 fish species / species groupings were identified of which gobies (*Pomatoschistus* spp) were the most widely distributed, occurring at 90% of the survey stations (Table 1). Plaice and sole occurred at over 60% of the stations. Sole was encountered at more of the stations in the Thames Estuary, whereas plaice occurred on more occasions within the River Humber to the north Norfolk coast survey area. Of the other species of note, thornback ray was encountered at nearly 40% of the Thames Estuary positions, juvenile brill were caught at nine of the River Humber to the north Norfolk coast stations, mainly off

Blakeney Head and one lamprey was caught in the River Humber. Only one cod was caught (measuring 24 cm) during the survey.

Figures 2 and 3 show the distribution and relative abundance pf plaice and sole. Across the survey the greater concentrations of plaice occurred within the area of The Wash. Plaice were less abundant within the Thames Estuary survey area, although good catches were made at the Swim Spitway. The average plaice catch rate for the River Humber to the north Norfolk coast was five times greater than that for the Thames Estuary and averaged 10.86 per 1000 m<sup>2</sup> for the survey (Figure 6). Sole were distributed across the survey but were far more abundant in the Thames Estuary compared to the River Humber to the north Norfolk coast, averaging 16.35 and 2.79 per 1000 m<sup>2</sup> respectively. For the Thames Estuary greater numbers of fish were caught within the northern portion of the survey area, just off the Essex coast, and high numbers were consistently caught at stations in the mouth of the River Thames.

The length distributions of plaice and sole caught by survey area is given in Figures 4 and 5, which provides an indication of the year-class abundance. The majority of the plaice caught in the River Humber to the north Norfolk coast were between about 30 to 110 mm, which contrasted to those caught in the Thames Estuary that were in the range of between 95 and 150 mm. Although caught in far less numbers, there were two distinct groupings of sole, one at 40 to 80 mm and one at 130 to 175 mm for the River Humber to the north Norfolk coast, whereas for the Thames Estuary the majority of the fish were from the former length range.

Figure 6 provides a comparison of the average annual catch rate trends by survey area. Both sole and plaice average catch rates increased in the Thames Estuary in 2007, whereas the rates decreased for both species in the River Humber to the north Norfolk coast. However, when averaged across the survey the catch rates for both species remained similar tor those calculated for 2006.

Otoliths were collected for age determination and the sex and maturity data measured from 57 plaice and 36 sole for the River Humber to the north Norfolk coast, and 42 plaice and 77 sole from the Thames Estuary survey area.

G J Burt 3<sup>rd</sup> October 2007

Initialled:

DISTRIBUTION: Basic list + Staff on cruise Rob Blyth-Skyrme - English Nature North Eastern Sea Fisheries Committee Eastern Sea Fisheries Committee Kent and Essex Sea Fisheries Committee

H Gudmundsson - EA S Colclough - EA Participating skippers FLR 9641 Figure 1. The Young Fish Survey standard survey positions for (a) River Humber to the north Norfolk coast and (b) the Thames Estuary. The solid circles denote the positions at which benthic species are counted.



(a)

(b)



# Table 1. List of species caught during the survey and the percentage of validstations at which they were recorded.

		Survey area		
		River	Thames	Both areas
		Humber to	Estuary	combined
		the north		
		Norfolk coast		
Common name	Scientific name			
Gobies	Pomatoschistus spp	93%	89%	91%
Sole (dover sole)	Solea solea	56%	80%	68%
European plaice	Pleuronectes platessa	75%	48%	62%
Dab	Limanda limanda	45%	61%	53%
Common dragonet	Callionymus lyra	30%	41%	35%
Nilsson's pipefish	Syngnathus rostellatus	41%	27%	34%
Whiting	Merlangius merlangus	39%	20%	30%
Whiting-pout (bib)	Trisopterus luscus	4%	53%	28%
Pogge (armed bullhead)	Agonus cataphractus	29%	22%	25%
Lesser weever fish	Echiichthys (trachinus) vipera	40%	5%	23%
Thornback ray (roker)	Raja clavata	4%	39%	21%
Sea snail	Liparis liparis	34%	1%	18%
Snake pipefish	Entelurus aequoreus	21%	8%	14%
Great pipefish	Syngnathus acus	8%	11%	9%
Tub gurnard	Trigla (chelidonichthys) lucerna	9%	9%	9%
Five-bearded rockling	Ciliata mustela	13%	3%	8%
Brill	Scophthalmus rhombus	11%	1%	6%
Butter fish	Pholis gunnellus	11%		6%
Solenette	Buglossidium luteum		11%	6%
Scald fish	Arnoglossus laterna		8%	4%
Flounder (european)	Platichthys flesus	5%	3%	4%
Herring	Clupea harengus	6%		3%
Grey gurnard	Eutrigla (chelidonicthys) gurnardus	5%		3%
Sandeels	Ammodytidae	5%		3%
European seabass	Dicentrarchus labrax		4%	2%
Bullrout	Myoxocephalus scorpius	3%		1%
Lemon sole	Microstomus kitt	3%		1%
Sea scorpion	Taurulus bubalis	3%		1%
Lesser spotted dogfish	Scyliorhinus canicula		3%	1%
Sprat	Sprattus sprattus	1%	1%	1%
Red gurnard	Aspitrigla (chelidonichthys) cuculus	1%		1%
Lampreys-marine	Petromyzon spp	1%		1%
Pipe-fishes/seahorses	Syngnthidae	1%		1%
Long-rough dab	Hippoglossoides platessoides	1%		1%
Atlantic cod	Gadus morhua		1%	1%
European eel	Anguilla anguilla		1%	1%
Poor cod	Trisopterus minutus		1%	1%

Figure 2. River Humber to the north Norfolk coast. Distribution and relative abundance (number per  $1000m^2$ ) of (a) plaice and (b) sole.



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Figure 3. Thames Estuary. Distribution and relative abundance (number per 1000m<sup>2</sup>) of (a) plaice and (b) sole.





(b) Sole (number per 1000m<sup>2</sup>)





Figure 4. Length distributions of plaice for (a) the River Humber to north Norfolk coast, (b) the Thames Estuary and (c) both areas combined.

<sup>32</sup> − 0

Length (mm)

 






Figure 6. Average annual catch rates (number per 1000m<sup>2</sup>) of (a) plaice and (b) sole by survey area. The dashed line shows the River Humber to north Norfolk coast, the grey line the Thames Estuary and the solid line both areas combined.



(b) Sole

