



52nd Gravesend Fishing Experiment 28 September 2024

Report on results

This report has been drafted based on the results of, and data collected at, the City of London Thames Fishery Research Experiment 2024.

1. Introduction

This citizen science event uses recreational sea angling techniques to catch, measure, record and release fish found in the tidal river Thames.

Organised by the City of London, the Experiment began in 1972 with the aim of helping stakeholders better understand the positive impact of water quality improvements carried out in previous years.

The Experiment aims to engage the local and wider community in river conservation and especially encourages young people to take part.

2. Location

The Experiment is held at the same location every year: from the beach along the shoreline by the Port Health River Division Office, Denton, Gravesend, Kent. Between the following co-ordinates: 51° 26.601N/0°23.753E and eastwards for approximately one mile along the sea wall to 51° 26.659N/0°25.050E.

3. Conditions 28 September 2024

High tide – 10:50 hrs

Tide height - 5.17m

Fishing time – 09:00 to 13:00

Weather – Warm, sunny with light winds and no rain

Water temperature - 18C

Water salinity - 30‰

4. Results

Number of anglers - 75
(8 teams of adult anglers and 3 youth teams)

Number of fish caught - 122
Number of species caught - 5

Species caught:

Bass - 102
Flounder - 11
Eel - 6
Pouting - 2
Dab - 1

5. Analysis of fish by species

The stomach content findings in this report are purely visual and basic. However, the organising team is in contact with some interested educational establishments and are looking to engage with them to establish a more detailed analysis in future years.

(i) Bass (*Dicentrarchus labrax*)

Over the 52 years that the experiment has been running there have been 358 bass recorded from this section of the river Thames. With 102 landed this year, this has proved to be exceptional and represents 28% of that 52 year total.

Breaking down the size and age of the fish we recorded the following:
(Definitions Pawson *et al* 1987)

Adults greater than the Minimum Conservation Reference Size (MCRS) of 42cm = **2**
Adolescent fish between 32cm and 42cm = **4**
Juvenile fish below 32cm = **96**

This analysis clearly indicates that this section of the Thames provides important habitat for juvenile bass and requires further investigation to better understand possible reasons (e.g. feeding, protection, migration).

Further breakdown of the length data show that the 96 juvenile fish ranged from 9cm to 31cm and that half of these were between 18cm and 20cm (estimated to be 1-2 year olds). This larger group could be reflective of a 'good' spawning year in 2022.

The following factors may have had an impact on this observation.

1. The number of adult fish taken out of UK waters during the Covid-19 pandemic lockdown periods (in 2020 and 2021) is likely to have been lower than usual due to lack of demand from consumers.
2. Landing restrictions on bass during the spawning season introduced by the EU/UK governments have been in place since 2016.

Trends

Looking back at records from the Experiment over the last 10 years, when it has been held between mid-September and mid-October, the number of bass landed each year was:

| | |
|-------------------|-----|
| 10 September 2015 | 0 |
| 15 October 2016 | 6 |
| 21 October 2017 | 14 |
| 22 September 2018 | 20 |
| 12 October 2019 | 6 |
| 17 October 2020 | 4 |
| 18 September 2021 | 8 |
| 8 October 2022 | 6 |
| 14 October 2023 | 32 |
| 28 September 2024 | 102 |

Eight of those ten years indicate fairly low numbers of bass landed, whereas the last two years have shown a significant increase.

Stomach contents/scale measurement

We were unable to carry out any stomach content or scale measurement sampling as 100 of the 102 bass specimens were under the MCRS and were required to be released. The two specimens over the MCRS were released unharmed at the request of the angler.

We are considering making an application to Kent and Essex Inshore Fisheries Conservation Authority (K&E IFCA) for a dispensation to retain a small number of specimens in future years in order to gain an understanding of diet, parasites, ingested plastics, Polychlorinated Biphenyls (PCB's) and sex.

Scale ring assessments will give more accurate age profiles to help confirm the year class of each fish sampled.

Two anglers reported brown shrimp and common gobies' present in the mouths of some bass before release.

(ii) Flounder (*Platichthys flesus*)

This species has been a stalwart over the duration of the experiment with at least one being recorded every year from 1972.

Eleven were recorded at this year's event measuring between 20cm and 32cm in length. All were adult fish capable of reproducing and were aged between 3 and 5 years. (*19cm year 3, 24cm year 4. de Vlas 1979, Summers 1980*)

Appendix 3

This low number is confirmation of the dramatic decline in their number. Over the life of the experiment 2,736 have been recorded, an average of 53 per year. Between 1983 and 1989, between 150 and 300 Flounders were being recorded.

The reasons for the decline are unclear but four possibilities could be considered.

1. Predation from significant increases in the grey seal population.
2. Predation from high numbers of juvenile bass who share the same habitat.
3. Overfishing: Flounders are a popular 'pot bait' for the commercial fishing industry.
4. Flounder often inhabit moderately polluted waters, and it might be assumed that cleaner waters are less likely to support them.

Stomach contents

Three flounder were retained for stomach content identification and the following were identified:

- The first specimen had the remains of a brown shrimp and a sea slater in its stomach.
- The second flounder had what looked like a piece of a rubber band (approx 5mm x 8mm) in its stomach along with the remains of a small brown shrimp.
- The third specimen had a number of small marine creatures in its stomach that were in an advanced state of decomposition and unrecognisable. However, the remains of a small sea slater were found.

(iii) European Eel (*Anguilla anguilla*)

There were 6 eels recorded this year reflecting a long term trend in the decline of this once plentiful fish. In fact the Experiment has recorded an average of just 8.3 eels per event in the last 10 years from a total of 1,329 over the last 52 years.

A large specimen measuring 57cm was recorded this year; this is most likely to have been a female as males rarely exceed a length of 54cm (*Dekker, 2004*)

Like the flounder, the eel's steady decline since the mid 1980's is reflected in the Experiment's records and in line with national and international trends.

Again, the reasons for the decline are mixed. Possible causes include:

1. Loss of suitable habitat or loss of access/egress to those habitats.
2. Unsustainable commercial fishing for young eel (elvers or 'glass eel').
3. Interruptions of the migration path to spawning grounds off the coast of Mexico (changes in the position of the Gulf Stream)

Stomach contents

The European Eel is a protected species and all fish were measured and returned to the water after careful recovery.

There are no plans to apply for dispensations to retain eels in future but there may be some benefit in recording visual observations like disease or parasites on the skin before release.

(iv) Dab (*Limanda limanda*)

A single dab was recorded, a specimen of 19cm.

This is only the fifth dab recorded in 10 years so an uncommon visitor and a welcome one. This fish secured the award for the fish that best represents improvements in water quality for this section of the river Thames.

Stomach contents

There were no stomach content sampling checks, and the fish was measured and immediately returned to the water.

(v) Pouting (*Trisopterus luscus*)

There were two pouting recorded between 16cm and 18cm in size. (Between 1-2 years of age) (*ices 1982*)

It is likely that the reason for the low numbers of pouting recorded this year, is that the event was held a little earlier and before large numbers of pouting have had the chance to migrate to this section of the River. Normally this occurs mid-autumn. Good numbers were being reported by anglers fishing the Thames Estuary at the time the Experiment was held.

Stomach contents

Both specimens were retained, and the following contents were recorded;

- One specimen had the legs of a small shore crab in its stomach.
- The second specimen had what appeared to be similar to a shiny flake of industrial insulating material (possibly expanded mica) plus the remains of a small marine animal that was in an advanced state of decomposition.

6. General notes and observations

Without historic water temperature measurement it is difficult to identify temperature related trends. However, the last two years have seen water temperatures of 18C, whereas the only two previous years in which temperature was recorded gave readings of 15C and 13.5C.

The organising team is investigating whether it is possible to recover water temperature measurement for the missing years.

Appendix 3

Water salinity levels were taken for the first time this year and were recorded at 30%. In future years, this information will be used to help understand the impact wet or dry spells may be having on the different species using this section of the River. Again, the team is looking at whether there is a source of historical salinity data that could be added to the records for use in future analysis of the results.

The number of angling participants has remained largely consistent since conception. The normal number of anglers participating is around 75. However, in 2020 and 2021 Government imposed Covid-19 restrictions meant that only 24 and 19 anglers could participate each year, respectively.

This section of the River Thames is protected from trawling and gill netting for mullet through a byelaw introduced on 7 January 2009 by the Environment Agency and currently enforced by the K&E IFCA. It is thought that this directly reduces the mortality rates on all species from commercial fishing which helps to stabilise normal fish populations.

In 2018, the Centre of Environment Fisheries and Aquaculture Science (Cefas), identified the area as a potential bass nursery area (BNA) requiring protected status.

7. Summary

Only a small number of fish recorded were of adult size. The majority of fish were either juvenile or adolescent. This underpins the understanding that this section of the River Thames is an important nursery area.

The large number of juvenile bass recorded measuring between 18cm and 20cm may indicate that the 2022 spawning year was a very successful one.

N.B. It is difficult to accurately age these fish without using a scale ring assessment technique and by determining the sex of the fish as males and females grow at different rates.

The Experiment records reflect national and international declines in flounder and eel populations.

With water temperatures at 18C, the autumn/winter species including whiting and pouting have not yet arrived in this section of the river Thames.

Despite a very small number of stomach content inspections, two specimens were found to have ingested man-made material.