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Mr. Martyn Boyce M.A. M.I.Mgt.
Principal Fishery Officer
NW&NW Sea Fisheries Committee
Lancaster University
Bailrigg, Lancaster
LA1 4YY

Date: 13th April 2007

Dear Martyn,

RE: APEM – Mersey Gateway – Aquatic Surveys

This is a brief message following on from our contact a year or so back regarding APEM's monitoring of the Upper Mersey Estuary for an Environmental Impact Assessment for the Mersey Gateway development. It is to remind you of the methods we have been using to sample the estuary and to provide you with a brief update of our progress to date in order to keep you informed.

As discussed with you previously, we have been sampling fish within the Upper Mersey Estuary since 2002. Sampling is generally conducted in spring, summer and autumn and we sample in the following three zones:

- Zone 1: Extends from Hale Head to the existing Jubilee Bridge.
- Zone 2: Extends from the existing Jubilee Bridge to Round Cherval.
- Zone 3: Extends from Round Cherval to just downstream of the confluence with Whittle Brook.

Fish have also been surveyed in the saltmarsh scrapes and a creek on Wigg Island and have been sampled as by-catch from macroinvertebrate sampling using dredges.

Fish sampling

Main Estuary

Fish were sampled at 12 sites in Zone 1 and 12 sites in Zone 2. From 2006 onwards, however, the number of sites sampled in Zone 1 was reduced by half. Fish were sampled using a beam trawl with an opening of 1.2 m set over a distance of 50m. The net was fixed in an open position at a height of 0.6 m by attaching it to a rigid metal frame (the front bar of which was 1.2 m in length and 0.06 m in diameter). The net itself consisted of a mesh, with a bar length of 10 mm, and a cod end of 2 mm mesh. The overall length of the net from opening to tip was 2.4 m and the weight of the trawl was in excess of 5 kg. All beam trawls were taken from a 5 m RIB survey vessel.



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Fish in Zone 3 were sampled using seine nets. Three sites were sampled in Zone 3 although sampling in this zone ended in 2005. At each site a 50 m seine net was set by field scientists. The net was deployed by boat to a distance of approximately 40 m from the shore. The net was then hauled by hand in an even loop back toward the shore taking care that fish were retained and concentrated into the middle section of the net. A single haul was taken at each site and all fish collected were identified, measured and counted. The seine net had a 5 mm mesh and was 3 m deep. It had a 6 mm nylon headline rope with floats and a 6 mm foot rope with leads.

Eighteen different fish species were found via the different sampling methods with some freshwater species being sampled in Zone 3. All fish caught were juveniles with ~95% being <10 cm in length. Fish density was higher during summer than autumn and the density of fish in spring was lower than at the other times of year. Although the actual species found in each zone differed, species richness for each zone appears to be similar. Since 2002 the dominant species has generally been flounder and goby, although herring dominated the catch in spring 2006.

Saltmarsh Scrapes

Seine netting was used to sample the fish population in Astmoor saltmarsh on Wigg Island (within Zone 2). This involved sampling at a total of three shallow scrape locations. Water level was within wading depth and each scrape was sampled using a seine net of 25 m. The seine net was 1.5 m in depth with a 10 mm nylon headline rope with floats, a 10 mm foot rope with leads and a 5 mm mesh size. A single haul was taken at each site and all fish collected were identified, measured and counted.

In order to determine the extent of its use by estuarine fish, a creek located to the back of Wigg Island was also surveyed in spring 2005 using fyke nets positioned at low tide. Three nets were set and left until high tide, they were then retrieved and fish identified.

Few fish were found within the scrapes throughout the study period. The dominant species on each sampling occasion was sand goby. Species found in the scrapes were all estuarine (e.g. herring, sprat) with the exception during a 2002 survey, in which fresh water species including roach, bream and stickleback were caught. The spring 2005 survey of the creek located towards the back of Wigg Island revealed a low abundance and diversity of fish.

By-catch from epifauna sampling

Some further information has been gained from an examination of fish by-catch data obtained during epifaunal invertebrate surveys using a lightweight dredge. Juvenile fish were regularly caught during these trawls. One set of trawls was located in each survey zone.

The fish caught as by-catch within the invertebrate samples were juvenile flounder and sand goby. However, at all times of year and within all zones, the number of sand gobies sampled using this method was negligible. The greatest number of flounder were found during the spring 2004 survey in Zone 2, fewer were found in Zone 1 during this period and the number sampled in Zone 3 was negligible. In spring 2005 numbers caught were relatively high in all zones. During both summer and autumn the number of flounder caught during epifaunal surveys were negligible.



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We hope that this has helped keep you informed and we trust that you are still happy with our approach with respect to the fishery aspect of our aquatic ecology monitoring program. As always we would welcome any comments or questions that you may have.

Yours sincerely

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