Report on Initial Visual Impacts of Two Otter Trawl Types on the Mud Sediment In Torbay Marine Conservation Zone. Author: Lauren Parkhouse (2019)

Introduction

In 2017 D&S IFCA undertook a research project to investigate the impact of otter trawling on the mud habitat in the Torbay Marine Conservation Zone (MCZ). This project had several components including; evaluating the area of impact of the fishing vessel's trawl doors and trawl net; a BACI study of "heavy" and "light" (regular) otter trawls on the mud habitat; and assessing the recovery of benthic habitats six months after the experimental trawling with the "heavy" gear. The research was funded by the Defra Impact Evidence Group, the first component was carried out by Seafish, and grab sampling and report for the BACI and recovery components were undertaken by Ocean Ecology Ltd.

As part of the wider BACI study on the impact of otter trawling on mud habitat in the Torbay MCZ, D&S IFCA has investigated the direct impact of the different trawl gear on the sediment using GoPro cameras attached to the trawls.

Method

Two different types of otter trawls were used in the BACI study, a heavier trawl and a lighter trawl, the lighter trawl is the regular trawl used for the cuttle fishery. Both of the trawl set ups used the same trawl doors.

The heavier trawl was a 7 fathom (12.8m) Box trawl which has a side panel of netting fitted between the top and lower panels of netting, and the trawl, measured on the footrope, was 12.8m in length. The ground gear of this trawl has 15cm mini hoppers all the way along the length of the ground gear as well as chain danglers for the entire length of the footrope. The headline length of the trawl is 11m allowing the top panel of netting to come ahead of the ground gear (Caslake and Montgomerie, 2017).

The lighter of the two trawls was a 9 fathom (16.45m) wing trawl with a simple two panel design net. The trawl, measured on the footrope, is 16.45m in length. The ground gear of the trawl is made up of eight 10cm rubbers every 45cm, the rubbers are 2.5-4cm thick. The ground gear has 11mm long link chain danglers at the centre and wing ends of the trawl. The headline length of the trawl is 13.3m, this is 3m shorter than the ground gear which provides a cover of netting above and ahead of the ground gear (Caslake and Montgomerie, 2017).

Three GoPros were attached to the trawls to try and capture any visual impact on the seafloor during the tows. Of the three GoPros set up, only one on each trawl stayed in the correct position to film the footrope on the seafloor. The same camera on both trawl types managed to produce this footage.

Results

The footage from the GoPros was reviewed and still images that were the best representation of the tows were taken. Figure 1 and 2 are from the heavy gear and Figures 3 and 4 from the lighter (regular) gear.

Heavy Gear

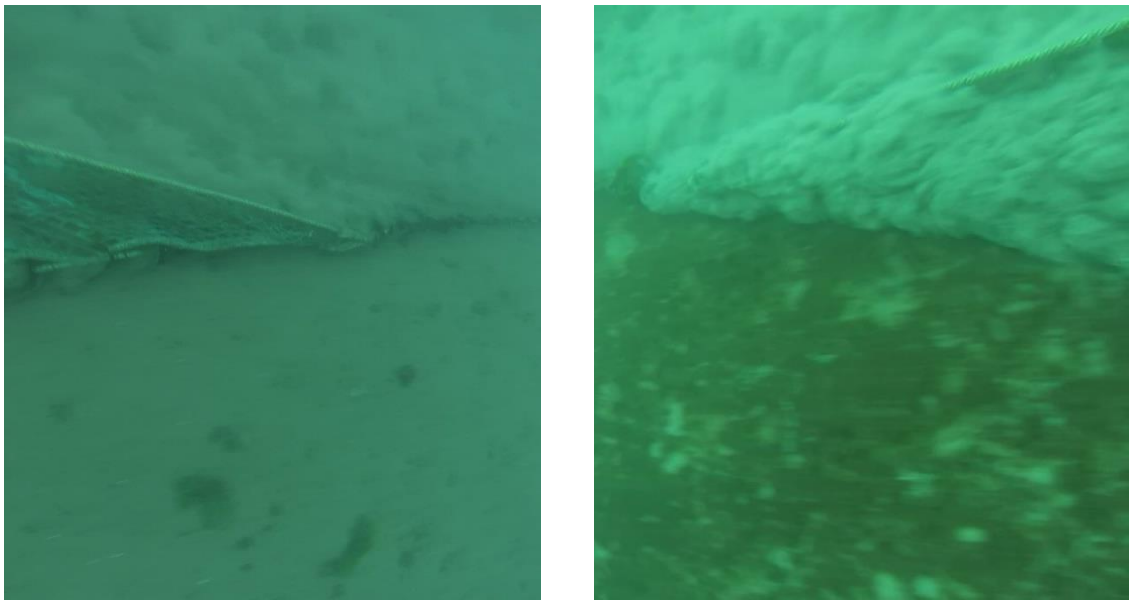

Figure 1 Footrope in contact with seafloor using the heavy trawl gear

Figure 2 Sediment plume caused by footrope on heavy trawl gear

Light (Regular) Gear

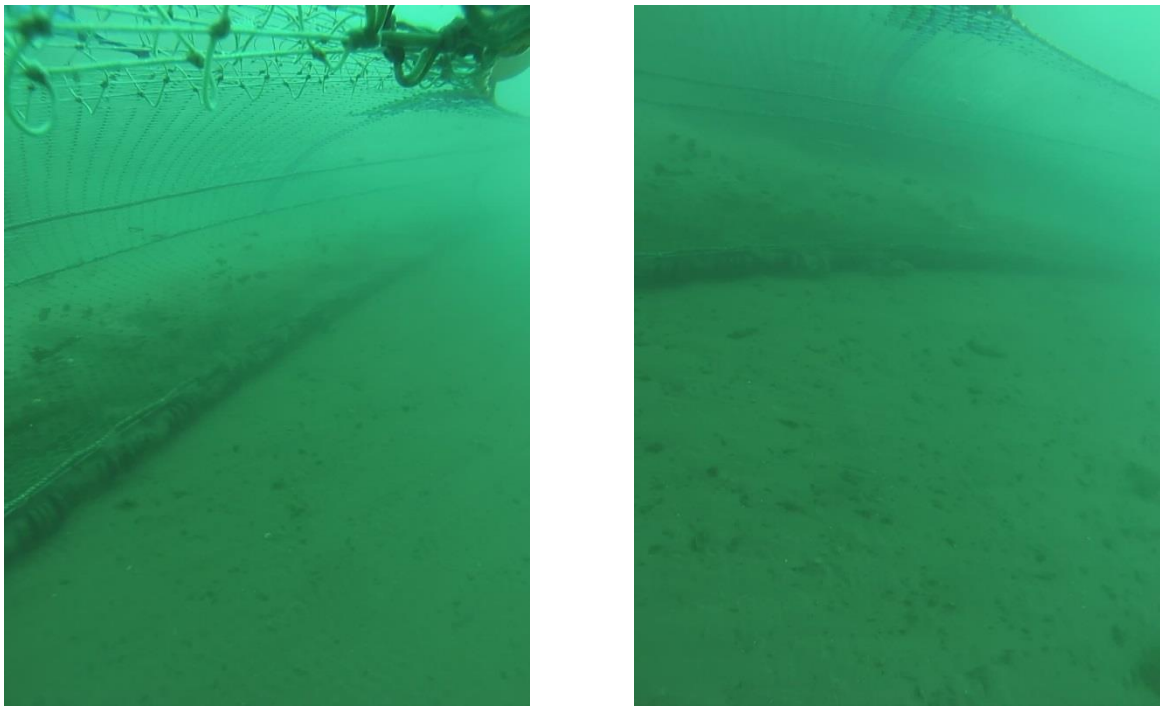

Figure 3 Light (regular) trawl gear on seafloor, showing minimal sediment plume

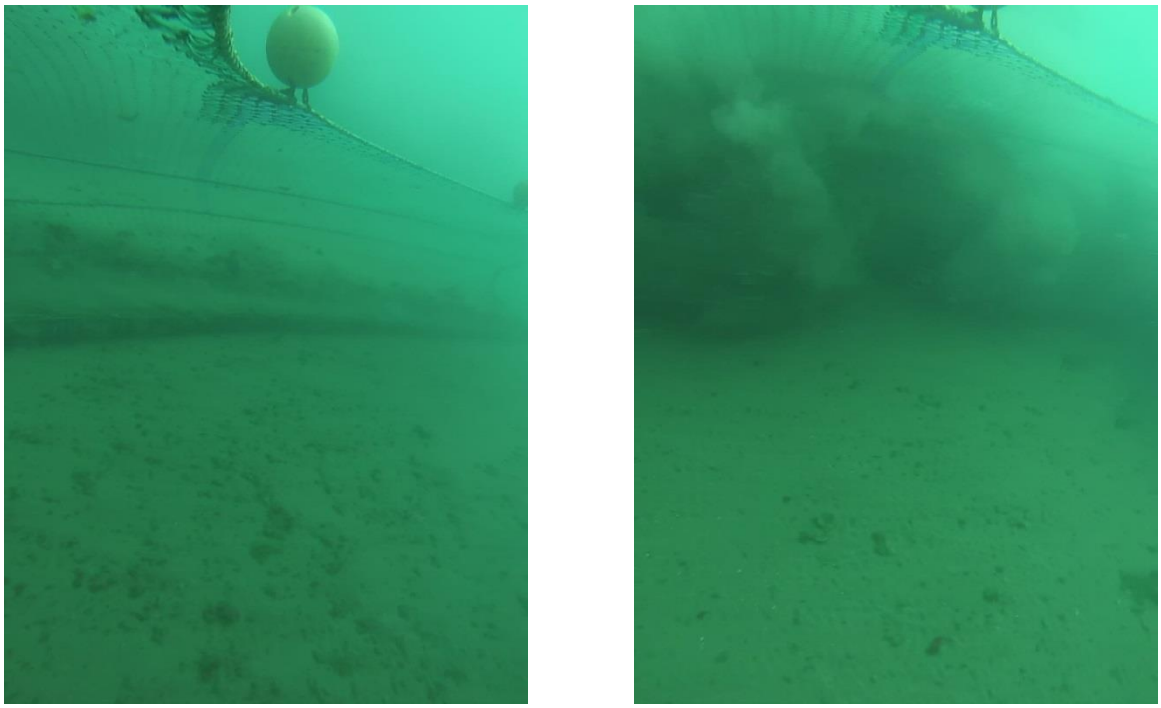

Figure 4 Light (regular) trawl, right image with greater plume possibly caused during a turn

Discussion

Although the visibility in the photos is not overly clear, it can be seen in Figure 1 and 2 that the heavy gear has caused a large sediment plume as the footrope comes in to contact with the seafloor.

Figure 3 indicates that the lighter trawl has less of an initial impact on the seafloor with a minimal plume of sediment. Figure 4 shows that at times, the lighter gear did cause a plume of sediment to be stirred up. From watching the video footage this plume is likely to have been created on the turn of a tow. Figure 3 however, represents the level of impact which was seen in much of the footage for the lighter regular gear.

It is indicated, from the footage and the stills, that the heavy gear has more of an initial impact on the sediment than the lighter gear. The lighter gear is the gear that is used for the cuttle fishery.

References:

Caslake R, Montgomerie M (2017) Trial to evaluate the area of impact of a single trawl and trawl doors on the mud habitat of an MCZ in Torbay, Devon. Seafish Research and Development.