The Impact of Cuttle Pots on Seagrass Study and Egg Laying Media Trial

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Introduction

Torbay Marine Conservation Zone (MCZ) is located in South Devon between Oddicombe Beach and Sharkham Point, covering an area of 19.8km^2. Torbay was designated as a Tranche 1 MCZ on 12th December 2013. Ten habitats and two species were designated as features of the MCZ, including seagrass beds. The Conservation Objective for seagrass beds is to "recover to favourable condition". On 1st January 2014, Devon & Severn Inshore Fisheries and Conservation Authority (D&S IFCA) introduced a byelaw prohibiting the use of mobile gear within or close to the seagrass beds. Potting however, can and does occur in the MCZ.

Cuttlefish migrate inshore into shallow waters from March to September to lay eggs, although they usually disappear from the inshore waters by July. Cuttlefish lay their eggs on natural substrata including; the tubes of polychaeta, seagrass leaves and algae and on artificial surfaces, such as cuttle pots and rope. During this time, they are targeted by industry using trawls, nets and cuttle pots. Trawling and potting for cuttlefish occurs in Torbay between May and July, with the potting being carried out within the Torbay Marine Conservation Zone (MCZ), near and on the seagrass feature of the MCZ. Cuttle pots are very different to parlour pots or creels and are much lighter in construction.

D&S IFCA carried out an MCZ assessment for potting for cuttlefish on seagrass beds, this resulted in uncertainties surrounding the potential impact the cuttle pots may have on the seagrass feature and the level of fishing effort in the vicinity of the seagrass. Due to the uncertainties it was agreed with Natural England (NE) that a Monitoring and Control Pan (M&C plan) would be required to investigate these uncertainties. Part of this was to look at the possible impacts of the pots on the seagrass, whilst they are shot, hauled and on the seabed.

Alongside this study, a pilot study was also carried out to investigate the use of different media attached to the pots on which cuttlefish could lay eggs, and which could be subsequently removed from the pots and kept in sea water until the eggs have hatched. Cuttlefish are known to lay thousands of eggs on the cuttlefish pots and there is a risk of these not remaining in the sea long enough to hatch. Eggs are often cleaned off during the cuttle season, and at the end of the cuttlefish season most fishers change their fishing gear (to lobster/crab pots or nets) and remove the pots and clean the eggs off them before they then to go into storage. In the North Adriatic Sea over 3 million eggs are likely to be destroyed on 3750 traps by 15 fishermen (Melli et al, 2010). In Morbihan Bay in France an estimated 28 million eggs have been laid on pots in three years (Blanc & Daguzan, 1998), and in Sussex there was an average of 184 eggs found per trap (Davis & Nelson, 2018).

Aim

1. To investigate impacts cuttle pots may have on the seagrass during shooting, hauling, and while on the seabed.
2. To carry out a pilot study investigating the use of different media attached to cuttle pots, for cuttle to lay eggs on.

Method

Impact Study

A cuttle pot was obtained from a local cuttle fisher and set up by the fisher, in the way it would be set if fishing as a single pot. Four GoPro Hero 4 cameras were attached to the pot in various positions looking towards the seabed (Figure 1).

Figure 1 GoPro set up on cuttle pot

The survey site was a seagrass bed known as Millstones, located in the Torbay MCZ. A GoPro camera was deployed in the area before the pot was set to confirm the presence of seagrass.

Once an area of seagrass was established, the GoPro cameras were turned on and the pot was deployed and left to fish. After approximately six hours the pot was hand hauled onto the vessel, any cuttle were removed and returned alive and the pot was checked over for cuttle eggs.

The footage from this first set and haul was viewed in the office. It was established that the time the pot was left for was too long as the GoPro batteries had run-out and therefore the hauling of the pot was not recorded.

On the second day of deployment, the pot was set for 30 minutes to allow the pot to settle but also to allow for the hauling to be recorded. Again, the pot was hand hauled, cuttle were released and the pot was checked for eggs. On the second day of deployment, the pots were only set once. Another two days of deployment were carried out, with the pots being set and hauled twice on both days. The pot was set and hauled a total of six times, over four survey days.

The pot was checked for any seagrass attached to it each time it was hauled, along with the second pot which was used for the egg laying media trial.

The GoPro footage was reviewed in the office to identify any impact the pot may have had on the seagrass.

Egg Laying Media

Two cuttle pots were used to trial different egg laying media. The pot used in the impact study was used as one of the pots, and another pot was obtained from the fisher.

Two different types of artificial media were used in the trial. For one of the pots, black and white bungy cords were attached to the outside of the pot and across the middle of the pot, in total five bungies were attached, two across the middle and three on the outside (Figure 2). The second pot had a piece of green trawl net attached to half of the outside of the pot (Figure 3).

The pots were left out for the inshore cuttlefish season and checked regularly for any cuttlefish eggs.

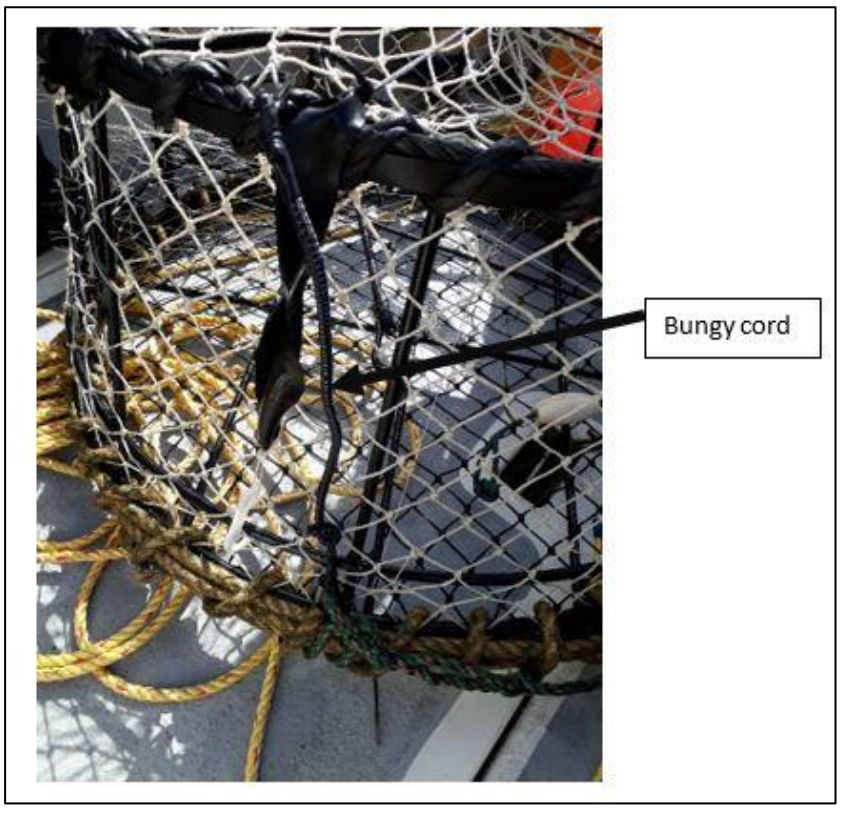

Figure 2 Cuttle pot with bungy cord attached to outside.

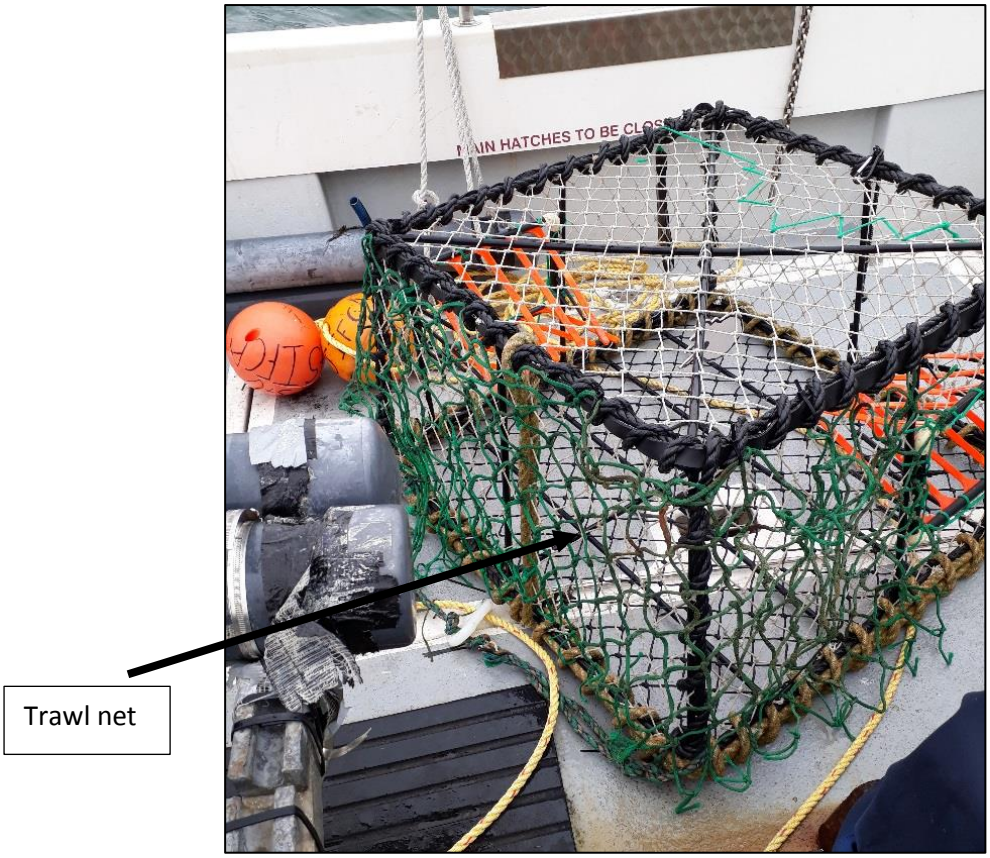

Figure 3 Trawl net attached to outside of cuttle pot

Results

The footage of the pot on the seagrass demonstrated that there was very little movement of the pots once they were on the seabed. The hauling of the pots had mixed results due to different people hand hauling the pot. If the pot wasn't hauled smoothly, it appeared to drag through the seagrass and created a plume of sediment (Figure 4). When hauled directly upwards there was little disturbance to the sediment or seagrass (Figure 5).

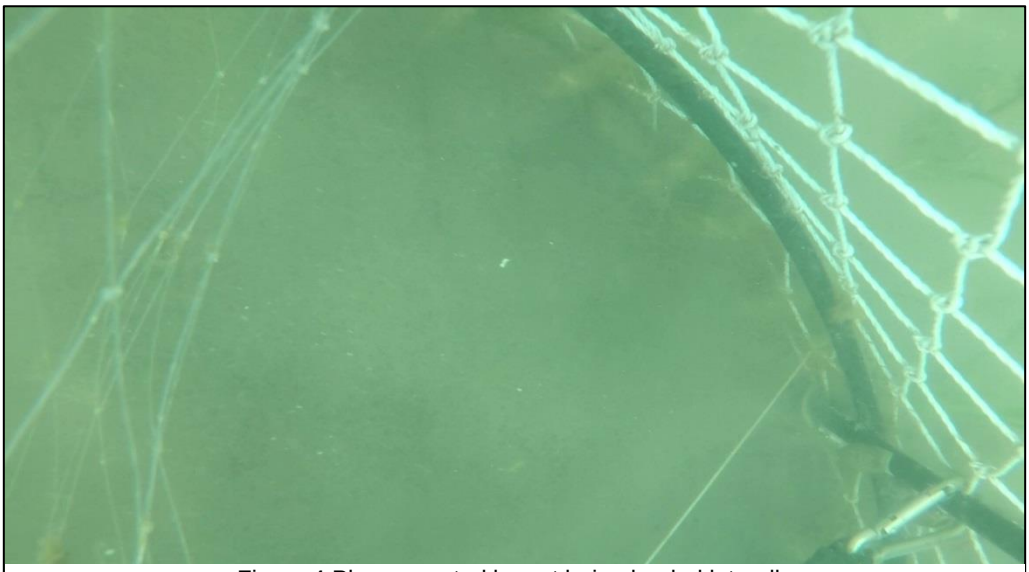

Figure 4 Plume created by pot being hauled laterally

Figure 5 Pot being hauled vertically, minimal disturbance to sediment

There were two occasions, out of the six hauls, where seagrass was attached to the pot. One leaf was observed on the deck after one haul and bits of leaves on another haul (Figure 6). These leaves were fragments of seagrass and appeared brown or green/brown in colour rather than bright green healthy blades. There were no observations of rhizome or roots attached to the pots.

Figure 6 Small amount of seagrass leaves on deck after hauling

No cuttle eggs were laid on the extra media attached to the cuttle pots. Approximately 125 cuttle eggs had been laid on one of the pots, however this was on the opening of the pot (Figure 7). The pot was left in the water after the trial to allow the eggs to hatch.

Figure 7 Cuttle eggs attached to opening of cuttle pot

Discussion

Due to the several factors there were only were six deployments of the pots throughout the study period. Results could not be gathered from each deployment, due to either the pot landing on its side or not on seagrass. On several occasions, although a GoPro was used to locate seagrass, by the time the pot was deployed the vessel had drifted far enough for the pot to miss the seagrass bed.

The method of hand hauling is different to how the pots would be hauled in the fishery. The hand hauling resulted in the pots being hauled laterally along the seabed before moving vertically in the water column, causing sediment plumes. Hauling the pots with a pot hauler would result in less contact with the seabed before raising up to the surface.

Whilst the limited results indicate that the cuttle pot deployed in this study had some impact on the seagrass beds, with a few leaves being brought to the surface with the pot, it is difficult to say what the degree of impact is from this small-scale study and whether it is significant. It was noted that the leaves, which did come to the surface, were brown or green/brown in colour, meaning they could have been dying off before the pot landed on them. There were no rhizomes or roots attached to the seagrass which came up to the surface.

Cornwall IFCA (Jenkin, et al, 2017) carried out a study looking at the impact of parlour pots on seagrass bed. Although they did not quantify the level of impact, there was an impact

observed. The underwater video data showed leaves being removed from the seabed and floating free after the pot had been dragged across the seabed as well as loose leaves caught on the pot being recovered to the surface (Jenkin, et al, 2017). The parlour pots which were used in the Cornwall study are heavier than the cuttle pots and appeared to have removed more seagrass.

The trial of using different egg laying media on the pots was not successful, and this is probably due to the small number of pots deployed during the study. Although this trial was not successful, Melli et al, 2014, carried out a study investigating the use of egg laying media on pots in the North Adriatic Sea with positive results. They used two different rope types, both 8mm in diameter. Elastic rope and hemp rope were the chosen rope types. Cuttlefish laid eggs on 21 of the 38 ropes deployed, and there were no significant differences in cuttlefish catches between pots with hemp or elastic ropes and the control pots with no added media. By removing the ropes with eggs on and placing them in areas to hatch, could allow for more than 20% of eggs to be saved during the potting season, without lowering the catch rates of the pots. This is an area where an estimated 3 million eggs are likely to be destroyed by 15 fishermen with 3750 traps (Melli et al, 2014).

Sussex IFCA carried out a study to trial three different artificial egg laying medias within the operational cuttle traps of Hastings fishers. They used 45cm lengths of 8mm polypropylene rope, willow whips and plastic trap entrance fingers. They found that the 8mm rope was the most effective media when reviewing a number of criteria; the percentage of eggs deposited on the media, the time and effort required by fishers to remove the eggs from the trap, the number of cuttlefish in the traps, and the preferences of the participating fishers (Davis & Nelson, 2018).

References

Blanc, A., Daguzan, J. (1998) Artificial surfaces for cuttlefish eggs (*Sepia officinalis* L.) in Morbihan Bay, France. Fisheries Research 38 (1998) 225-231.

Davis, D., Nelson, K. (2018) Supporting Sustainable Sepia Stocks Report 3: Assessing the efficacy of egg receptors within fishing traps used to target common cuttlefish (*Sepia officinalis*) Sussex Inshore Fisheries and Conservation Authority.

Jenkin, A., Trundle, C., Street, K., Matthews, R., Naylor, H. (2017). The impact of potting on seagrass. Cornwall Inshore Fisheries and Conservation Authority (CIFCA), Hayle.

Melli, V., Riginella, E., Nalon, M., Mazzoldi, C. (2014) From Trap to Nursery. Mitigating the Impact of an Artisanal Fishery on Cuttlefish Offspring. PLoS One 9 (2): e90542.