

Response ID ANON-FXD1-SKUX-X

Submitted to **Formal Consultation - MMO management of fishing in marine protected areas**

Submitted on **2021-03-26 11:44:37**

1. Confidentiality

1 Would you like your response to be confidential?

No

If you answered Yes to this question please give your reason.:

2. About you

1 What is your name?

Name:

Jackie Pearson

2 What is your email address?

Email:

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3 What is your organisation?

Organisation:

National Oceanography Centre

6. The Canyons MCZ

1 Do you have any additional information about the location, condition or sensitivity of the designated features?

Yes

Please respond:

- The National Oceanography Centre has carried out benthic research in the wider Whittard Canyon area (the submarine canyon to which the Explorer and Dangaard Canyons from The Canyons MCZ connect) for over 10 years. We have worked together with JNCC and Cefas for the last five years, and shared our data from the MCZ, but our research is continuously evolving and some of the most recent studies were not published in time for MMO call for evidence in December 2020. This includes species distribution models of scleractinian cold-water corals in Explorer Canyon at very high resolution (maps of 5m pixel size, PhD thesis of Dr. D. Price – available on request).
- Overall, regarding the assessment of the MCZ, we feel that the impact of the different fishing techniques on the four habitat features has been evaluated well. However, we worry that the assessment of the litter impact may have missed some evidence. The specific setting of the MCZ, as part of a submarine canyon system, needs to be taken into account. As a result of their unique geomorphology, submarine canyons are prone to a series of processes that may be less common along the rest of the continental margin, but that will have a direct influence on both benthic communities and litter behaviour (transport and accumulation processes). The presence of submarine canyons causes enhanced bottom currents (e.g. as a result of internal waves) and particularly enhanced sediment transport (e.g. through turbidity currents), which will include the transport of litter and microplastics. A recent study as part of an MSc dissertation (Hernandez, 2020 - available upon request) found that the fishing activities on the canyon interflaves result in a very high amount of marine litter in the MCZ, with local densities >60,000 items/km². This strongly contradicts the assessment stated in the MMO Assessment report: "Given the low likelihood of litter reaching the deep sea bed features,...". The study by Hernandez (2020) did find that most of the observed litter (>95%) consists of lost & discarded fishing gear. The litter types and distribution therefore reflect very well the fishing pressures and locations identified from VMS. However, other studies of submarine canyons around Europe have demonstrated that canyons can also act as "litter traps" and that turbidity currents will transport litter items (including microplastics) to deeper waters, where they can accumulate in litter "islands" or clusters (Tubau et al., 2015; Pierdomenico et al., 2019). Litter in general, and particularly lost and discarded fishing gear, can result in a series of impacts on benthic fauna, including entanglement, provision of substratum for settlement (also in areas where no natural hard substratum occurs), but most importantly it can result in 'ghost fishing', where mobile species are still caught in the nets and lines for years to decades after they have been lost at sea.

2 Do you have information about the level or nature of fishing activity within the site?

Yes

Please respond:

- What fishing gears are commonly used?

We have evidence of potential bottom trawling impacts on an area of small cold-water coral mounds on the interflave south of Dangaard Canyon. This evidence consists of sidescan sonar data from 2015 which show a large number of linear scars in the seabed, interpreted as trawl scars; and video/photographic data that illustrate the status of the seabed and benthic communities in 2018. These data have been analysed by Dr Tabitha Pearman for her PhD (Pearman, 2020).

- How regularly are each of these gears used?

The sidescan sonar data does not provide information on when the impacts took place: the scars observed may have been created over several years. It is not clear how soon they would disappear under the activity of bottom currents and bioturbation, but in the Darwin Mounds SAC trawl marks at 1000m water depth disappeared after max. 11 years (Huvenne et al., 2016).

- What is the approximate size of each of the gears being used?

This cannot be estimated from the sidescan sonar and video data. The scars are too numerous to identify which scars would potentially form a pair. Scars observed on the seabed are several tens of centimetres deep.

- What species do each of these gears target?

We do not have any information about this.

- What species are caught as bycatch by each of these gears?

We do not have any information about this.

- What are the other environmental effects of these gears?

The environmental impacts of bottom trawling in and around submarine canyons have been studied in several locations around Europe. Regular bottom trawling on the interflues of submarine canyons can reduce the seabed complexity at both broad (Puig et al., 2012; Daly et al., 2018) and fine scale (Pearman, 2020, PhD thesis), which will have an effect on the benthic communities and their diversity. Furthermore, regular bottom trawling on canyon interflues, followed by export of the suspended fine material through lateral transport into the canyons, can cause the deep seabed habitat of the interflues to be compacted and severely starved of organic matter, impairing biodiversity and ecosystem functioning (Pusceddu et al., 2014).

3 How would the proposed management option affect you?

Please respond:

N/A

4 What other effects will the proposed management option have?

Please respond:

Given the potentially enhanced downslope impact of fishing in, or adjacent to, canyon environments, a full prohibition of all bottom contact fisheries throughout the MCZ may be warranted:

■ Given the severe impacts caused by bottom trawling, as described above (mechanical disturbance, sediment resuspension, impoverishment of the benthic habitat, impact on ecosystem functioning; in addition to impacts further away from the trawling activity, as a result of the submarine canyon processes), we would argue that demersal trawling should be banned in the entire MCZ.

■ We specifically argue to extend the proposed closure boundary to the south-east, to cover the entire SE corner of the MCZ. The straight southern boundary of the area "to be managed as coral reef" located south of the Dangaard Canyon is in reality an artefact caused by data limitations: it marks the southern boundary of the dataset on which the coral 'mini-mounds' were identified (published in Stewart et al., 2014). However, this high-resolution bathymetry dataset is suggestive of the area of mounds continuing towards the south-south-east. The mini-mounds on this interflue are also more pronounced than on the interflue north of the Dangaard Canyon. This difference has been attributed to either a lower historical fishing pressure, or to past climatic conditions (Stewart et al., 2014; Stewart & Gafeira, 2016; Pearman, 2020). As these mounds are better preserved, they provide a higher structural complexity and habitat heterogeneity, and therefore their full extent deserves to be protected.

■ Similarly, following the impacts of anchored lines observed elsewhere along the continental margin, we would support the introduction of precautionary management measures and that anchored longlines be banned in the entire MCZ, and that the southern boundary of the proposed closure area is extended towards the SSE.

■ We also expect that the impact of demersal seines will be very similar, and hence would suggest they be banned in the entire MCZ as well.

5 Further information

Optional:

References NOC.docx was uploaded

7. Feedback on the online survey

1 Overall, how satisfied are you with our online consultation tool?

Very satisfied

2 Please give us any comments you have on the tool, including suggestions on how we could improve it.

Please give us any comments you have on the tool, including suggestions on how we could improve it:

Response to MMO consultation about The Canyons MCZ draft Bylaw

References provided by the National Oceanography Centre

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