

[redacted under reg 11(2)]

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Dear [redacted under reg 11(2)]

PROTECTION OF FLAPPER SKATE

Please find below our advice on the protection of flapper skate in response to your request on 18 October 2020. We provide further details of recent survey work and the location of the known habitat; give provisional advice on the potential importance of this location in a Scottish context based on our current understanding; summarise potential threats to flapper skate; and consider the need for the area to be included as part of the Scottish MPA network alongside broader conservation requirements of relevance to flapper skate.

NatureScot advice

The location where the egg-laying habitat has been recorded is at the Red Rocks, Inner Sound (see Figure 1). NatureScot undertook survey work in March 2020 which confirmed the presence of both live and hatched egg cases on the seabed.

Including this location within the MPA network has the potential to make a significant contribution to the conservation of flapper skate in Scotland, however, it is not the only type of spatial protection that could achieve this. We know there is exposure to fishing activity in the general vicinity of the Red Rocks that has the potential to negatively affect the quality of this location and its ability to continue to provide suitable egg-laying habitat in the future. However, the extent of the egg-laying habitat, and the overlap with relevant fishing activity are currently unknown and would require further survey work and analysis, including by Marine Scotland before a decision on whether to designate an MPA could be taken. We do not have any evidence of damage at this location which, combined with our understanding of the complex topography which is likely to confer a degree of natural protection, suggests that action does not need to be taken urgently. However, given current uncertainties in our understanding we think it would be reasonable to

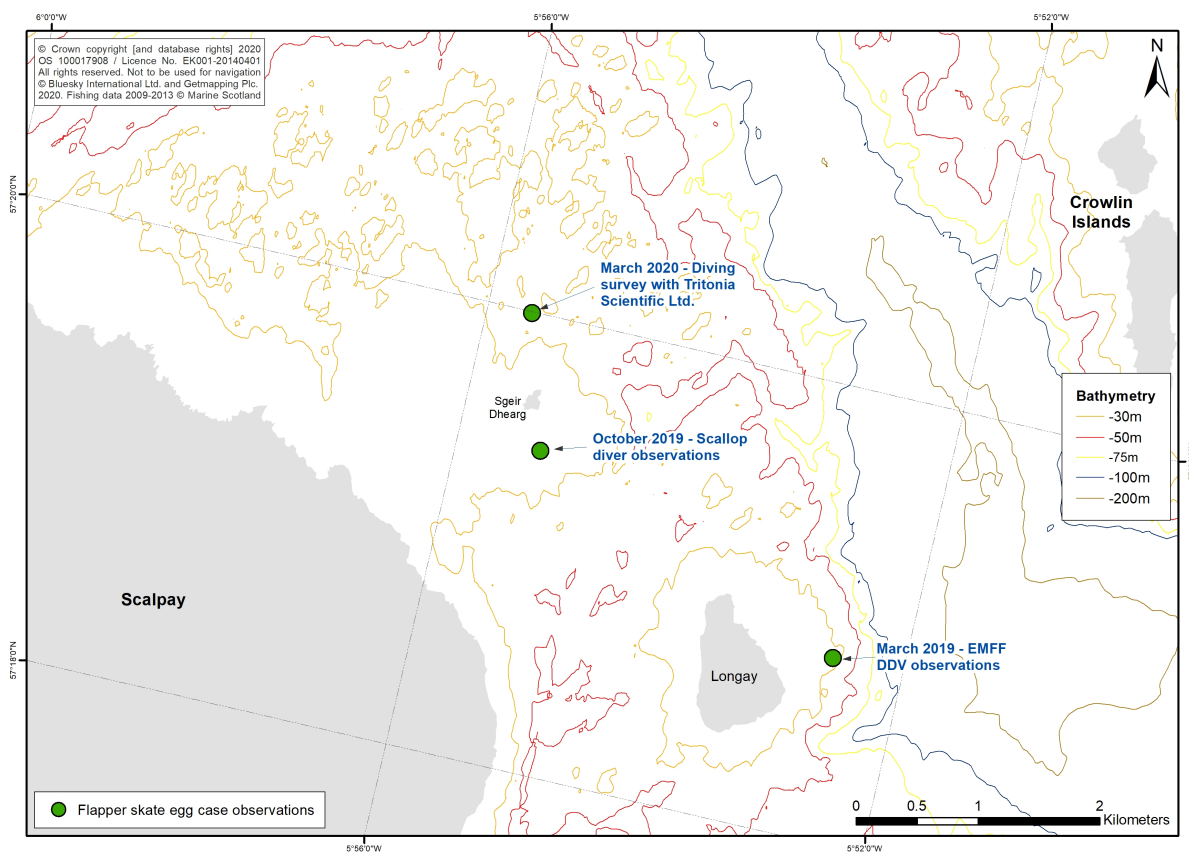


Figure 1. Location of March 2020 survey undertaken by NatureScot and Tritonia Scientific Ltd. and other recent egg-case records at the southern end of the Inner Sound

take a precautionary approach to considering when and how spatial protection might be implemented.

The location at the Red Rocks is the first example of a high-density egg-laying site recorded in Scotland. There are a number of other locations in which one or a few egg cases have been recorded on the seabed. There are also locations where numerous hatched egg cases have been washed ashore. However, it is worth noting that despite numerous surveys on potentially suitable habitat, there are still relatively few observations of egg cases on the seabed. This is an indication that, even with dedicated additional survey work, areas with egg cases present in the densities recorded at Red Rocks are not likely to be widespread. Therefore, our advice is that this is likely to be an important location for flapper skate in Scottish waters.

Taking account of the conservation needs of the flapper skate and the requirements of the relevant conservation legislation, policies and strategies, our advice is that it is relevant to consider further action relating to the protection of egg-laying habitat of flapper skate. This is because the focus of action to date has been largely on adult skate and not on the egg-case phase of their lifecycle, which is critical to the recovery of the population. An additional MPA to protect this habitat has the potential to be of benefit and help support an ecosystem-based approach to conservation of this population, although it would require additional survey work and would still not enable the network to reflect the geographic range of flapper skate in Scotland's seas. Based

on our current understanding, there is potential for scallop dredge activity in this location to have a significant impact on the national status of flapper skate (through adverse interaction with egg-laying habitat). Therefore our advice is that spatial protection, whether through designation of an MPA or through implementation of fishery management measures, has the potential to make a contribution to the continued recovery of the flapper skate population in Scotland. Depending on the outcome of the assessment of fishing activity, progressing work on the relevant PMF management area would, at the least, support a precautionary approach and provide interim protection to flapper skate, alongside other sensitive PMFs. We would be keen to see work relating to protection of this location prioritised by both NatureScot and Marine Scotland.

The remainder of this letter provides further detail to support this advice.

Background

NatureScot's advice takes into account the status of flapper skate as:

- a protected feature of the Loch Sunart to the Sound of Jura Marine Protected Area; and
- a species on the OSPAR Threatened and/or Declining Species and Habitats List, the list of Priority Marine Features and identified as 'critically endangered' on the IUCN Red List.

It also takes into account the protection that flapper skate receive from being one of the listed sharks, skates and rays that are prohibited from being landed as a commercial species.

NatureScot survey work and location of habitat

On 4-5th March 2020, NatureScot and Tritonia Scientific Ltd undertook survey work on a small area of seabed in the Inner Sound (see Figure 1). This survey was in response to reports from divers of the presence of flapper skate egg cases. The survey took place at the Red Rocks, to the north of Sgeir Dhearg. The area surveyed was approximately 55m² comprising a boulder and cobble substrate (see Figure 2). 73 egg cases were recorded, some of which had already hatched. Because of the large number of egg cases, we planned to do further survey work on this habitat in 2020 but this has not yet been possible due to Covid-19 restrictions. Our view is still that further survey work would be helpful to enable us to build a better understanding of the extent of this egg-nursery habitat.

Provisional findings were emailed to Marine Scotland on 6th March 2020. A paper summarising the results of the survey work is nearing completion and we expect to share a draft with your team shortly.

Importance of the location for flapper skate

As set out above, our advice is that the density and extent of flapper skate egg cases at the Red Rocks site is important in a Scottish context. The results of the recent survey work provide valuable information, not just about this location, but also more generally about egg-laying habitat

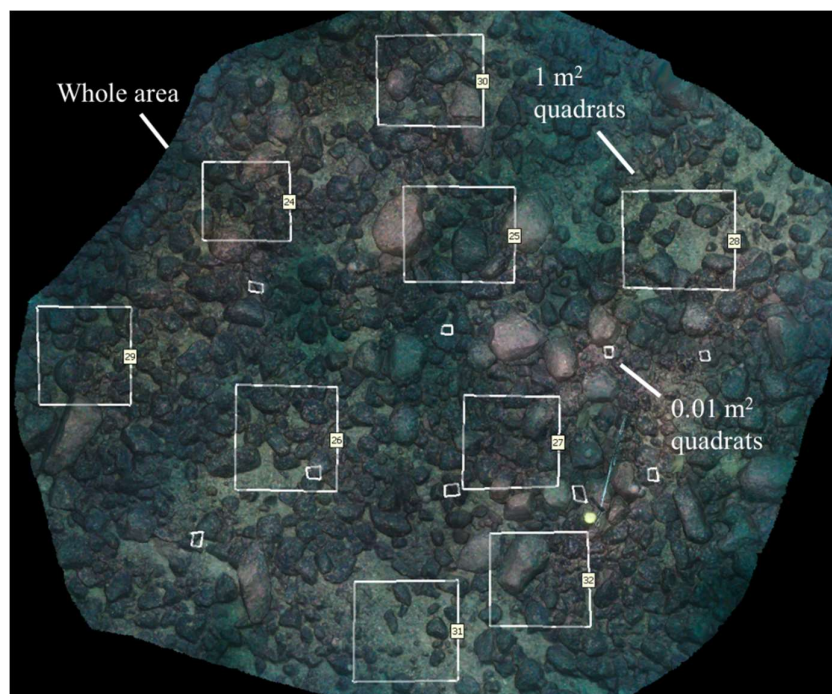


Figure 2. Boulder and cobble substrate that was surveyed during the March 2020 work.

used by flapper skate. The information about habitat type (predominantly boulders and cobbles) will help to inform future habitat modelling. In turn, this will enable future survey effort to be better focussed, not just in the Inner Sound, but elsewhere in Scotland.

There are two specific knowledge gaps in our understanding of the life history of flapper skate. One gap concerns the behaviour and ecology of the juvenile skate, which we do not discuss further in this advice. The other being their reproductive biology including egg laying (i.e. locations, preferred habitat, numbers of eggs, gestation period).

Consequently, attempts to identify egg-laying locations has been part of the research undertaken in the Loch Sunart to Sound of Jura MPA, including citizen science diving surveys and drop-down video camera surveys. Skate eggs have also been one of the targets for analysis of the drop-down video camera surveys conducted in the EMFF project *Engaging Fishermen in Marine Environmental Monitoring*.

The locations where skate eggs have been positively identified recently on the seabed include Red Rocks, the Sound of Jura (including at the mouth of Loch Craignish) and near Lunna Ness in Shetland. However, these latter records are for single or low numbers of eggs. There is also evidence of egg-laying activity by flapper skate to the west of Orkney, from robust records of flapper skate eggs coming ashore there. Unfortunately, there is not as yet corresponding observations of where on the seabed the eggs found in Orkney are being laid. We are aware of some other reports of egg cases but these are subject to confirmation.

Assessing the relative importance of the Red Rocks location is subject to a number of uncertainties including those relating to: artefacts of the survey methodology including recent improvements in technology which affect the likelihood of observing egg cases; whether changes in skate

abundance/range are leading to changes in reproductive activity; and our understanding of the extent to which skate exhibit site-fidelity to egg-nursery habitats.

The information collected in the March survey provides information that helps address these questions. The number of eggs present indicates use by multiple animals and the range in egg condition is an indication of use over at least two years (i.e. bearing in mind the initial observation of eggs in March 2019 during the EMFF video survey, and that egg gestation period is thought to be well over a year).

Potential threats to flapper skate

The most relevant threats to skate eggs on the seabed include surface abrasion, water quality/contaminants and sedimentation, through direct mortality of eggs or indirectly by affecting the suitability of habitat. At this location, the most relevant impact is likely to be surface abrasion via mobile fishing gear and, given the nature of the seabed in this area, this will be scallop fishing by dredge.

Generic, low-resolution mapping of scallop fishing activity (e.g. as available via NMPi) shows that fishing is occurring in the vicinity of the egg site. However, a more detailed analysis of VMS data by Marine Scotland would be required to understand the nature of interaction at a scale that is relevant to informing a management decision (although noting the constraints that apply to VMS data in obtaining an understanding of fishing activity by all vessel sizes).

Understanding the risk of exposure to fishing that skate eggs may face requires this higher resolution fishing activity information (which is not directly available to NatureScot), however it is possible to give some consideration in the light of the March survey, the available bathymetry and some assumptions about fishing operations.

Firstly, the seabed in the wider area around Red Rocks in the Inner Sound has a complex topography with mixed substrates including areas of sediment, boulder/cobble and bedrock (and this area supports scallops) (see Figures 1 and 2). It is reasonable to assume that fishing will take place over some but not all of the available seabed - i.e. the precise footprint of fishing will be constrained by the ability of vessels to tow over seabed with larger boulders and bedrock.

At this point we know that eggs are present in amongst the boulders of the sizes observed in discrete areas at this location, and that these eggs have persisted there for at least a year (i.e. initial observation being in March 2019), indicating that they may not have been exposed to fishing. However, it is not yet possible to assess the size of the egg-laying area or the extent to which egg laying may be constrained by fishing activity, as this would depend on a fuller understanding of both fishing activity and potentially suitable egg-laying habitat and the overlap between them.

- In summary, therefore, fishing by dredge is happening in the vicinity of the skate eggs.
- This is the activity which is considered to have the greatest potential to have a negative impact on skate eggs.

- Assessing the risk of exposure requires higher resolution fishing activity information to understand the footprint and the relationship with potential skate egg-laying habitat.
- We also require more information on the extent of the egg-laying area (as knowledge is currently based on a limited number of survey locations).
- It is possible that fishing activity may be constraining egg laying to those areas where fishing is not feasible.

Conservation needs of flapper skate, taking account of relevant legislation and policy

Given the status of the flapper skate, as set out under *Background* above, there is a need to carefully consider the conservation needs of the species. We have considered in particular the requirements relating to:

- The Marine (Scotland) Act (the Act) including duties relating to the protection and enhancement of the health of the Scottish Marine Area, and to creating a network of conservation sites.
- The National Marine Plan (NMP) including the High-Level Marine Objectives and General Policy 9 associated with ‘Living within Environmental Limits’.

The requirements relating to the Marine Nature Conservation Strategy and the Scottish biodiversity duty are not considered separately as we consider them to be effectively covered through consideration of the other legal duties and policies.

The limitations in terms of the evidence relating to the extent of the egg-laying habitat and the overlap with scallop dredge activity, discussed in other sections, make it equally challenging to draw firm conclusions in relation to fulfilment of the relevant legislative duties and policies. Based on our current understanding, we are advising that it is appropriate to give further consideration to spatial management of egg-laying habitat. Therefore our advice on conservation needs is focussed on the relevance of the legal duties and policy commitments and the potential for them not be met if no further action were taken.

- *Duty relating to the protection and enhancement of the health of the Scottish Marine Area* - flapper skate has been listed as critically endangered since 2006 as a result of overfishing. Flapper skate remain absent from large parts of their former United Kingdom distribution, such as the Irish Sea and the North Sea, with the west coast of Scotland remaining a stronghold for the species. Although the flapper skate is a mobile species, spatial management is relevant to its conservation / recovery in at least two ways. Firstly, the adult skate show a significant degree of site fidelity (which informed the rationale for the Loch Sunart to the Sound of Jura MPA designation). Secondly, due to the species’ use of specific habitat/locations for a key part of their life history (i.e. laying eggs) the protection of such critical habitat makes a material contribution to the recovery of the population. Therefore it is relevant to consider action relating to the protection of flapper skate egg-laying habitat in relation to this duty.
- *Duty to create a network of conservation sites* - there is currently one MPA designated for flapper skate which means that the guidelines relating to adequacy of the network have not been fully met. Therefore it is relevant to consider the contribution that a further MPA for flapper skate could make to the network. If an area in the Inner Sound were to be

designated as an MPA, the two MPAs would be in relatively close proximity. From an ecosystem-based approach, there could be benefits to having an MPA for adult skate relatively close to an MPA for egg-laying habitat, and this would meet the linkages part of the assessment of adequacy as well the part relating to replication. However, the network would still not reflect the known geographic range and variation of flapper skate because both MPAs would be on the west coast of Scotland.

- *High-Level Marine Objectives* - the current status of flapper skate as a Priority Marine Feature and the fisheries provisions prohibiting landing of the species (in addition to the existing MPA discussed above), are undoubtedly contributing towards the conservation, recovery, and halting the loss of biodiversity through the positive impact on the population of flapper skate. Recent evidence (e.g. Rindorf *et al.* 2020) suggests that flapper skate are showing signs of recovery. The objectives also refer to viable populations of 'representative, rare, vulnerable and valued populations' all of which are applicable to flapper skate. However, the measures implemented to date focus on adult flapper skate, and do not address requirements in relation to the egg-case phase of their life cycle. Therefore it is relevant to consider these objectives in relation to the egg-laying habitat which, for a mobile species, is critical to the recovery of a population.
- *National Marine Plan General Policy 9* - the contribution to the health of the marine area is covered above. Therefore, our advice in relation to this policy focusses on whether or not use of the marine area would result in a significant impact on the national status of flapper skate as a Priority Marine Feature. Based on our understanding of the high density of egg cases recorded to date and subject to further evidence and assessment of the Red Rocks area, we consider that there is the potential for scallop dredge activity to have a significant impact on the national status of this PMF.

Related work and next steps

We are aware that the Red Rocks location is relevant to the work being led by Marine Scotland to improve the protection of Priority Marine Features outside the MPA network. Whilst this work was not specifically referred to in your request for advice, the surveyed egg-laying habitat lies within the proposed Scalpay, Inner Sound management area (see Figure 3) which contains records of both maerl beds and flame shell beds. Given that there is currently insufficient information with which to define the extent of the egg-laying habitat in the Inner Sound, and the ongoing difficulties there are likely to be relating to progressing marine survey work in a way that would be consistent with Covid-19 restrictions over the next year, the Scalpay area could facilitate a precautionary approach. Our view is that progressing this PMF management area could provide the basis for a pragmatic, interim measure, whilst further survey work of the egg-laying habitat in the Inner Sound is undertaken to determine whether it should be considered as part of the MPA network.

We know there are records of egg cases within or close to other PMF management areas being considered by Marine Scotland. This includes Longay (also in the Inner Sound - see Figure 3), Loch Craignish and that there have been preliminary discussions about new maerl bed records off Lunna Ness in Shetland. Although to date we do not have records from any other areas with the same high densities of egg cases as seen at Red Rocks, it would be useful to consider what role these other areas might play in the conservation of flapper skate.

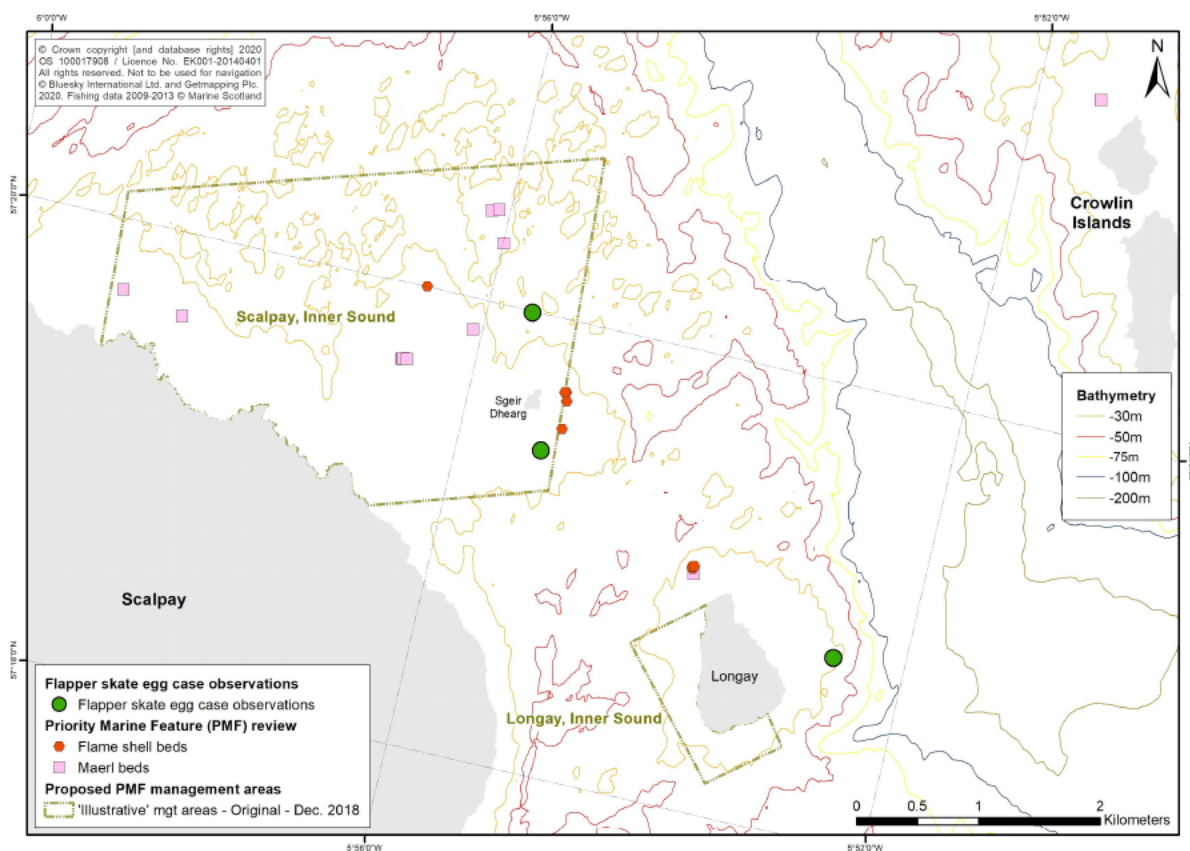


Figure 3. Proposed PMF management areas and relationship with records of skate egg-cases, maerl and flame shell beds.

Lastly, we are engaged in discussions with colleagues in MSS and MS Fisheries in relation to the protection of critical fish habitats, for example in relation to herring spawning areas. Beyond thinking about the Red Rocks area, it would be helpful to explore whether there could be join-up between future work in relation to flapper skate egg-laying habitat and other strategic approaches to protect critical fish habitat.

We would welcome the opportunity to discuss this advice, and look forward to taking forward further work on flapper skate

Yours sincerely,

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