Scottish MPA Project
Fisheries Management Guidance

OFFSHORE SUBTIDAL SANDS AND GRAVELS

JULY 2013[1]

The fisheries management guidance has been produced to provide advice on the impact various fishing activities may have on MPA search features in Scotland's seas. The advice is organised by features and gear types. Fishing gears are grouped to combine those with broadly similar impacts, but where there is likely to be variation within a group of features (e.g. for high and low energy sand habitats), this has been taken into account. Where possible the guidance has been based on evidence from peer-reviewed scientific journals.

The advice on fisheries management falls into three broad categories:

- Gear/feature combinations that are unlikely to cause unacceptable impacts (except possibly at very high levels of effort) and so no additional management is likely to be required;
- Gear/feature combinations that are likely to cause unacceptable impacts and for which no possible mitigation measures could be identified at this stage other than closure to that gear;
- Gear/feature combinations that are likely to cause some degree of impacts but for which management may be possible to mitigate the effects (e.g. modification or restriction of certain gears, partial or temporary area closures, effort limitation).

In the last type of cases in particular, further site-specific evidence gathering and discussion with stakeholders will be required to determine the appropriate management measures.

The fisheries management guidance has been used, along with the FEatures Activities Sensitivities Tool (FEAST), to inform the development of management options papers for each possible MPA.

[1] Based on Version 1.1 of the fisheries management guidance

OFFSHORE SUBTIDAL SANDS AND GRAVELS

In offshore waters, subtidal sand and gravel sediments are the most common seabed habitat in UK waters. The sands and gravels found to the west of the UK are largely shell derived, whereas those from the North Sea are largely formed from rock material. The composition of the sediment and the surface features (such as waves or ripples) depends on the prevailing wave and current conditions, and the communities of associated animals varies accordingly. This habitat can be found at depths from 80-3000m.

Impacts

Demersal towed gears (including dredges, beam trawl, otter trawl and seine net)

The extent to which mobile gear impacts on sand and gravel sediments can vary considerably, according to the type of gear, the intensity of fishing and the sediment composition. In high energy locations (i.e. of wave and/or tide exposed) the associated fauna tend to be well adapted to disturbance and as a result are more tolerant of fishing-related disturbance[5,6]. In lower energy locations, such as muddy sands and sand in deep water, sediments tend to be more stable and their associated fauna less tolerant of disturbance[4,6]. Stable gravels often support a 'turf' of fragile species which are easily damaged by trawling and recover slowly[7,8].

In general, the impact of towed gear on sand and gravel sediments is relatively well understood. Trawling and dredging tends to cause increased mortality of fragile and long lived species and favour opportunistic, disturbance-tolerant species[2,3]. Some particularly sensitive species may disappear entirely[2]. The net result is benthic communities modified to varying degrees relative to the un-impacted state[2,4].

Demersal static gears (including gillnets, trammel nets, longlines, pots and traps)

This habitat is not considered to be sensitive to the level of abrasion caused by static demersal gears[9,10,11]. The extent of direct impact on the faunal community is expected to be minimal and seabed structure will be maintained.

JNCC/SNH fisheries management Advice

Demersal towed gears - The variability in the sensitivity of sand and gravel sediments to fishing disturbance is such that site by site consideration of management options is likely to be the best approach. However, there are general points that can be applied. The requirement for management of fishing is more likely in lower energy sites with muddy sands and deepwater sands and gravels. Gears that penetrate deeply into the sediment (>5cm) would generally be of more concern than those with only surface impacts (e.g. light trawls, seines). In most cases, good information on the distribution and intensity of fishing activity and good knowledge of the current condition of features relative to their potential recovered condition will be required to inform management options.

Demersal static gears - It is not expected that static gears will require any additional management in this habitat.

Confidence in advice

Demersal towed gears - Medium certainty. The conclusions are supported by good quality, directly relevant scientific information. Some assumptions have been made regarding recovery potential.

Demersal static gears - Low certainty. Conclusions have been based on sensitivity assessments which may rely on significant assumptions or generalisations. It has not been possible to validate these assumptions.

Evidence

[1]UKBAP, 2010. [2]Bergman and Van Santbrink, 2000; [3]Eleftheriou and Robertson, 1992; [4]Kaiser *et al*., 2006; [5]Dernie *et al*., 2003; [6]Hiddink *et al.,* 2006 [7]Collie *et al*., 2005; [8]Foden *et al.,* 2010; [9]Hall *et al*., 2008; [10]Tillin *et al.,* 2010; [11]Tyler-Walters *et al.,* 2009.
There is abundant evidence for the impacts of trawling and dredging on subtidal sand and gravels. Much of this evidence comes from the UK and northern Europe so can be regarded as directly applicable to Scottish waters. However, due to the heterogeneous nature of the habitat type, the limited number of studies available may not be directly applicable to all component biotopes. No study has been found that directly addresses the impact of demersal static gears on subtidal sands and gravels. The advice is therefore based on interpretation of sensitivity assessments.

Directly relevant peer reviewed literature	✔	Directly relevant grey literature	✔	Inference from studies on comparable habitats, gears or geographical areas.	✔	Expert judgement or anecdotal evidence	✔