

Appendix 1

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Monitoring of biological parameters at mechanical kelp harvesting sites in Bantry Bay

Introduction.

5 locations in outer Bantry Bay have been identified as areas where kelp will be harvested on an annual rota basis i.e. only 1 location is harvested in any one year. Only the area that is scheduled to be harvested (and its control site) will be studied in any one year in Spring and Autumn.

1. Fauna

Invertebrates – A subtidal survey of the harvest site and a control location will be carried out by experienced marine scientific divers using SCUBA (see personnel profiles at end of proposal). The BACI (Before-After-Control-Impact) protocol will be employed, wherein a baseline survey will be conducted at an agreed number of areas prior to commencement of harvesting. Post-harvest surveys will be carried out in the areas. The transect area will be approx. 100m x 5m and a standard swimming speed (ca 0.5m 1 sec⁻¹) will be used. Diver entry and exit points for each dive will be logged with GPS. It is planned to replicate transects by selecting locations with similar depth profiles. Depending on the size of each harvest block, the total number of transects will vary from 6 - 12. The areas surveyed will include sites from where kelp will be harvested and those where kelp will not/cannot be harvested. Invertebrate species lists will be compiled *in situ* by the divers and digital still photographs will be taken for detailed post-survey examination. The SACFOR (Superabundant, Abundant, Common, Frequent, Rare) scale will be used to semi-quantify the assemblages.

Primary parameters:

- Inventory and relative abundance of macro/epifauna (sufficient seasonal and spatial extent) pre- and post-harvest.
- Harvest and non-harvest areas will have replicate transects stratified by depth.
- Epifauna including fauna attached to kelp and holdfasts as well as to rock in under-story will be inventoried and quantified.

Relative abundance of some species e.g. urchins post-harvest may not become obvious for at least one year. It should be considered to examine harvested sites on an annual basis solely for this reason.

Fish – Two survey methods are proposed to record fish species. The first will be carried out while doing the invertebrate transects; the larger, "over canopy" fish species will be counted and logged. For the smaller "under canopy", cryptic species, a stationary technique will be used. A 10 m line will be laid out at selected sites forming a visual cylinder which will be visually surveyed for ca 10 mins and species and species numbers will be logged.

Birds – Bird species will be identified and enumerated from the survey vessel while the SCUBA transects are being carried out. Due to seasonality of some species (Lesser Blackbacked Gull, tern species), it is proposed that the Spring survey will not be carried out until these species are present.

2. Flora - These surveys will be carried out at the same time as the invertebrate surveys and in post-harvest surveys will include recovery rates. In pre and post-harvest surveys, SACFOR estimates of species will be determined.

A survey period of 4-years is planned consisting of a pre harvest (assessment (baseline/background) and (initially) 3/4 years post-harvest to monitor short and long-term impacts and recovery. It is intended to review and refine programme after the year 1 post-harvest survey.