



## Supplementary Information. Bottom trawl fishing effort in the Hauraki Gulf Marine Park (HGMP)

**Description:** These maps provide a representation of the intensity of bottom contacting trawl effort in the HGMP relative to each of the 4 proposed trawl and Danish seine closure options in Fisheries New Zealand Discussion Document 2023/19.<sup>1</sup>

The catch and effort data were used to identify priority areas for trawl fisheries in the HGMP. This was used alongside a prioritisation for biogenic habitats to identify areas of higher fishing value and lower biodiversity value and to thereby inform the placement of bottom fishing access zones (BFAZ). A significant portion of recent fishing activity falls within the proposed corridor options areas. These areas were generally those with lower prioritisation for biogenic habitats (low probability of occurrence for many biogenic habitat types). The reasons for this include that fishers, to avoid damaging fishing gear, will generally avoid rocky seafloor areas which generally support high biodiversity, and that historically impacted areas are unlikely to support biogenic habitats currently.

**Methods and assumptions:** Fisheries New Zealand routinely maps trawl effort by plotting the reported start and end positions of tows and estimating the area swept between those points based on the width of the trawl gear. The intensity of fishing effort is represented spatially by summing the swept area of multiple tows within grid cells. The aggregated swept area sums all overlapping tows and in some cases this summed value may exceed the total area of a grid cell. The grid cells used in the maps provided here are derived from a 3 degree minutes grid (approximately a 3 nautical mile grid) with an area of approximately 30km<sup>2</sup> per cell.<sup>2</sup> The cells with the highest intensity of trawl effort had an aggregated area swept of approximately 450km.<sup>2</sup> This means that between October 2017 and September 2022 the swept area of all bottom contacting tows within that cell added up to approximately 450km.<sup>2</sup>

The methods used to map trawl effort data and estimate the extent and intensity seabed contact by trawl gear are provided in the New Zealand Aquatic Environment and Biodiversity Report No. 316 (AEBR No. 316).<sup>3</sup> There are several assumptions that have had to be applied as a result of data quality and historical reporting requirements, these include:

1. Prior to 2019, the only positions reported for trawl tows were the start and, for some vessels, end positions. The mapping of trawl tow paths, using this data, is limited to the plotting of straight lines between the start and end positions of tows. Geospatial Position Reporting (GPR), available for much of the fleet since 2019, reports vessel position at set intervals and improves our ability to estimate tow paths.
2. Prior to 2019 the reporting requirements for some vessels required only start positions of tows. In these cases, an end point was estimated based on tow duration and speed, and the location of subsequent tows or direction to port.
3. The area swept is estimated based on the width of the gear (the trawl doors). The door width is not reported, and estimated widths are applied based on the target fishery and the vessel category. These are detailed in AEBR No. 316.

**Considerations:** Complete data in respect of current trawl effort at the level of individual trawl tracks, could not be provided because of confidentiality provisions provided to commercial fishers under section 9(2)(b)(ii) of the Official Information Act 1982, which protects the release of information that may be commercially sensitive.

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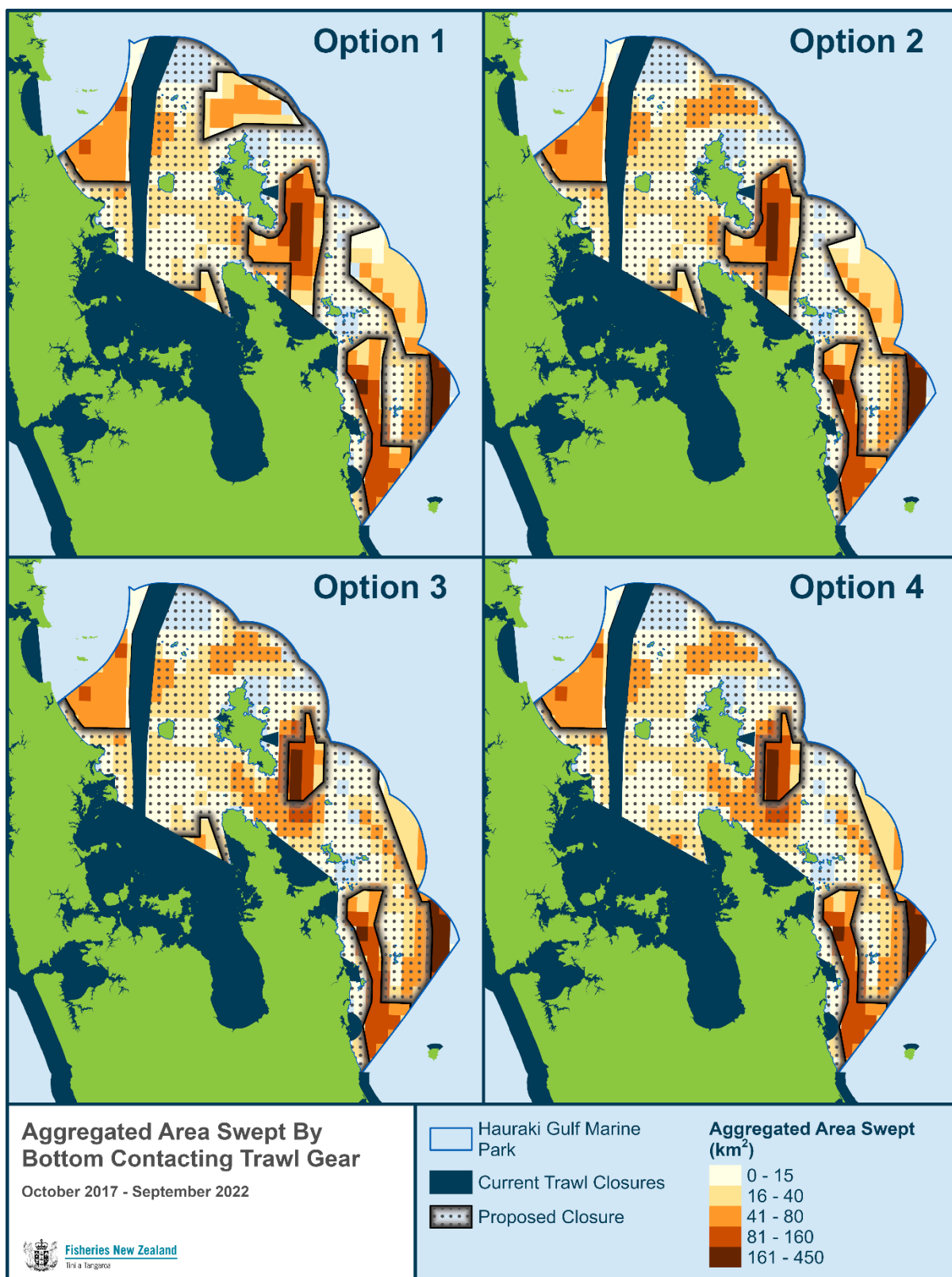
<sup>1</sup> [Discussion document: Bottom Fishing Access Zones in the Hauraki Gulf Marine Park \(mpi.govt.nz\)](#)

<sup>2</sup> This particular cell size was selected as this allowed for the majority of effort data to be displayed whilst maintaining data sharing confidentiality requirements.

<sup>3</sup> [AEBR-306](#).



Providing this complete data would have the effect of showing a similar concentration of current trawl effort within the proposed trawl corridors.



**Figure 1.** Aggregated Area Swept by Bottom Contacting Trawl Gear in the Hauraki Gulf Marine Park for each of the 4 proposed Options.