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Standardised recording of hook parameters in demersal and pelagic longline

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Standardised recording of hook parameters in demersal and pelagic longline fisheries

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Purpose

This paper seeks to address feedback from the the 2nd Compliance and Technical Committee in relation to standardising the reporting of hook parameters for demersal and pelagic longline fisheries. The Conservation Management Measure on Standards for the Collection, Reporting, Verification and Exchange of Data (CMM 3.02) urges parties to ensure that data on fishing activities are collected from vessels according to the operational characteristics of each fishing method. At the 2nd Compliance and Technical Committee (CTC) New Zealand proposed a set of revisions to CMM 2.02 in order to better characterise fishing effort in terms of risk to marine mammals, seabirds, reptiles and other species of concern. Recommendations from that paper (CTC-02-22) were largely incorporated into the updated CMM, however the committee sought further analysis on the guidance necessary for recording longline hook parameters. This paper summarises hook parameter reporting in both New Zealand and international longline fisheries and provides recommendations on those parameters most critical to understanding fisheries interactions with marine mammals, seabirds, reptiles and other species of concern.

Interactions with longline hooks

Marine mammals, seabirds, reptiles and other species of concern have been recorded captured on the hooks of commercial longlines, both demersal and pelagic (Anderson et. al 2011, Clemens- Seely 2014, Ramm 2011). Interactions with longline hooks fall broadly into two categories; active feeding which results in the animal being hooked in the mouth or gut and 'foul hooking' whereby the animal is passively hooked in any part of the body whilst swimming past the line or during hauling. In either instance the shape and size of the hooks affect the likelihood of the hook embedding into the animal and therefore both target and bycatch rates (Sales et. al 2010).

Hook characteristics

Commercial fishing hooks fall into two broad categories; circle hooks and J-hooks. Circle hooks are characterised as having a overall more circular shape due to the curved shank and a hook point which points back to the shank. By comparison the J-hook has a straight shank meaning the hooks point runs more in parallel with the shank (Fig 1).

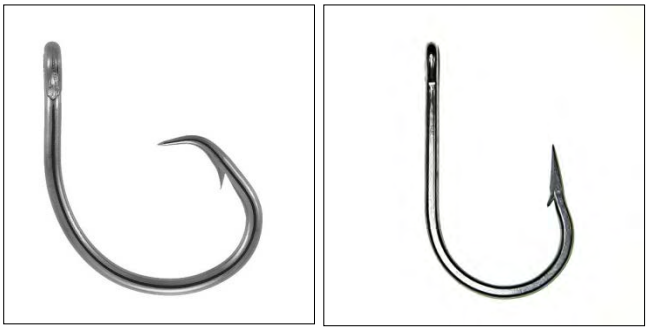

Figure 1 Circle hook shape (LEFT) contrasted against J-hook shape

Within these two categories, hooks also vary in total length, bend, bite, gape size and material gauge. Hook materials can also vary in composition, coating, colour and sharpening technique (mechanical or chemical). Figure 2 illustrates the main parameters of hook shape and size. The interplay between these factors varies both between and within fisheries and is often specific to manufacturer. In general, individual vessels show preference toward particular configurations dependant on their target catch. It is possible to define some simple parameters to characterise longline hooks in relation to their potential risk of capturing marine mammals, seabirds, reptiles or other species of concern.

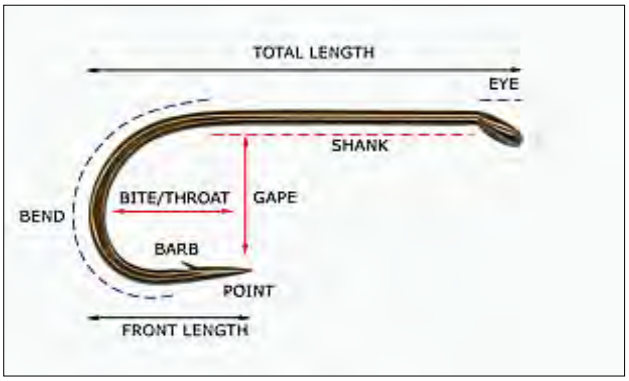

Figure 2 longline hook parameters (CCAMLR 2013)

Data Standards

The need to standardise the collection of hook information has previously been noted (Dietrich et.al.2007, Pierre et.al. 2015), to improve characterisation of existing fisheries and the understanding of risk associated with any new entrants to those fisheries. Both in New Zealand and internationally it has been demonstrated that it is possible for observers to effectively record set hook parameters (CCAMLR 2013, Pierre 2014).

We propose that the following parameters are measured:

- Brand
- Model name / number
- Hook type (Circle / J);
- Total Length (in millimetres measured in a straight line from the tip of the eye to the base of the bend);
- Gape (in millimetres measured from the tip of the point to the inside edge of the shank);
- Bite/Throat (in millimetres from the tip of the point to the inside base of the bend)

The planes of measurement for each hook type are illustrated in figure 3

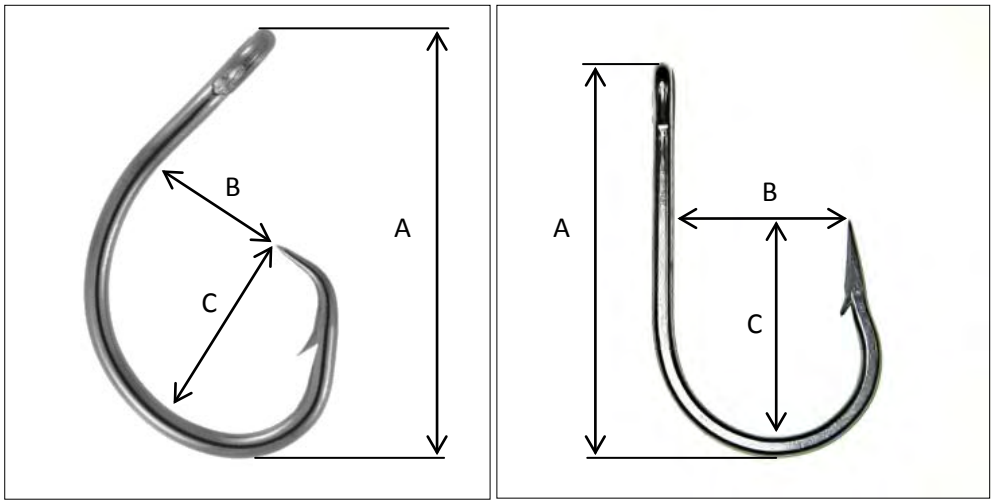

Figure 3 planes of measurement for both Circle (Left) and J-hooks (Right). A- total Length, B- Gape, C- Bite / Throat

Discussion

The placement of observers onboard fishing vessels allows for detailed data collection on fishing operations. Simple standardised hook parameters can be recorded by observer without the requirement for specific training or specialist materials. The addition of the proposed data fields to CMM 3.02 will allow for more precise characterisation of longline activity in terms of target catch and risk of marine mammal, seabird, reptile and other species of concern bycatch.

Recommendations

This paper **recommends that the Scientific Committee recommend to the Commission the addition of the following data fields to Annex 7 D of CMM3.02:**

- Brand
- Model name / number
- Hook type (Circle / J);
- Total Length (in millimetres measured in a straight line from the tip of the eye to the base of the bend);
- Gape (in millimetres measured from the tip of the point to the inside edge of the shank);
- Bite/Throat (in millimetres from the tip of the point to the inside base of the bend)

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