



Non-lethal options for mitigating catch depredation by toothed whales from pelagic longlines

Update #9 – August 2011: First gear trial completed (Coral Sea)

- Find this and other related documents at: <http://www.marinemammals.gov.au/regional-initiatives/depredation-project>
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9.1 *First gear trial in the Coral Sea completed*

The first in a series of trials to determine if physical deterrence technologies can mitigate whale depredation and by-catch on pelagic longlines has recently been completed. Despite considerable lead-in time caused by numerous developmental and logistical challenges, the trial was carried out in the Coral Sea during July 2011. The *FV Sarah J* was used for the trial, which is the sister ship of the *FV Fortuna* that was used during the initial fact finding voyage at the beginning of this project in late 2009 (see Update #2). The recent trial was also conducted in a similar location to the initial fact finding voyage, making it possible to draw general comparisons between the data collected on catch, depredation and by-catch rates.

9.2 *Results: to be presented at Indian Ocean Tuna Commission (IOTC) meeting*

The results of the trial and a description of the project in general have been used to produce a draft abstract, which is to be presented at the Indian Ocean Tuna Commission (IOTC) Working Party on Ecosystems and Bycatch (WPEB) in the Maldives, between 24 and 27 October 2011. The abstract can be found on the IOTC website (<http://www.iotc.org/English/meetings.php>) in the subsequent report, which reads in a similar manner to the following:

Mitigating odontocete by-catch and depredation in pelagic longline fisheries using physical deterrence at the hook.

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As the size of human populations increase globally, so too does the demand for food. Spatial overlap between fisheries and odontocetes (toothed whales) has become extensive as a result, increasing the occurrence of depredation (where the catch is removed or damaged by a foraging predator) and by-catch (where the depredating predator is incidentally caught). This phenomenon raises concerns about the economic viability of the fisheries involved (due to catch depredation) and the conservation status of the odontocetes species involved (due to by-catch mortality).

These operational interactions are a particular problem for pelagic longline fisheries, in all major oceans. Two devices, which are designed to be attached to the longline snood, are being developed by the Australian Marine Mammal Centre to combat this problem. One is comprised of a monofilament nylon cage (the ‘cage device’; figure 16 & 18) and the other is comprised of two lengths of small-link stainless steel chain (the ‘chain device’; figure 15 & 17). Each is designed to simulate a tangle in the fishing gear, which fishers report may act to physically and psychologically deter depredating odontocetes. The first ‘controlled’ trial was conducted in Coral Sea (Australian territory) in July 2011. Units of the two devices were attached alternately to each snood along the longline, so depredating odontocetes could choose between fish caught on either ‘control’ snoods (without a device attached) or ‘treatment’ snoods (those fitted with the cage or chain device; Figure 19). The aims were to assess the impact of the cage and chain devices on rates of (1) target fish catch, (2) odontocete depredation and (3) odontocete by-catch.

A total of 4,532 hook hauls from 10 sets were observed and preliminary analyses indicated that the presence of the devices on snoods had little or no effect on target fish catch rate (Chi squared test [cage/chain – control]: $P = 0.41$; figure 20), thus addressing aim 1. Unfortunately, no operational interactions with odontocetes were observed during the trial, thus aims 2 and 3 remain unaddressed. Nonetheless, the devices performed well operationally, with no structural failures or tangles reported, the crew finding them easy to handle and fish catch composition being unaffected (Table 4), suggesting incorporation into normal fishing practices is possible. A second trial will soon be conducted in waters around Fiji and it is hoped that several further trials will be conducted in other locations, including the Indian Ocean which is thought to be a ‘hot spot’, to account for regional differences in gear type, catch composition and odontocete species present. The results of this study demonstrate that non-lethal depredation mitigation technologies have the potential to be successful.

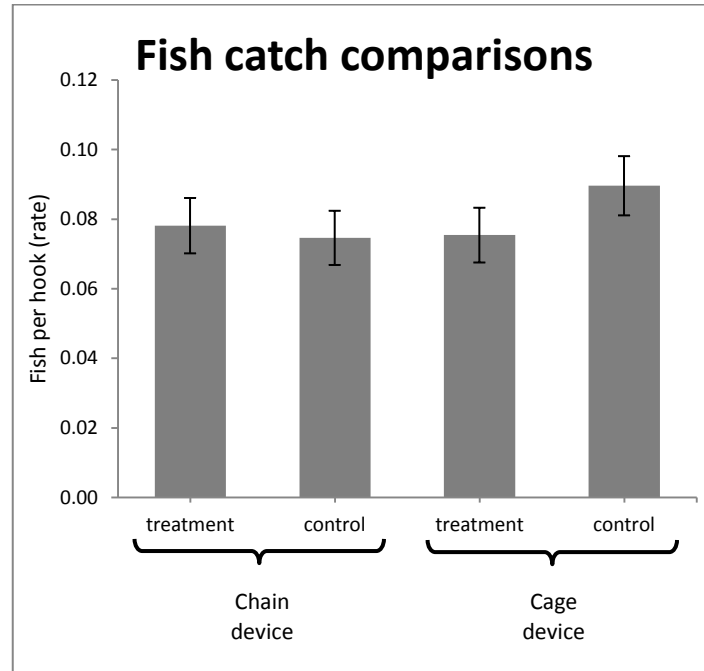


Figure 20 Comparison of fish catch between ‘treatment’ and ‘control’ snoods for the *chain device* and the *cage device*, for first trial: Coral Sea July 2011. For analysis, control snood was paired with the device on the next hook, thus explaining the two control groups.

Table 4 Catch composition from all hooks, for first trial: Coral Sea July 2011.

Species	% of catch	Fate
Albacore	56.2	Retained
Yellowfin	7.5	Retained
Bigeye	7.8	Retained
Rudder	10.1	Retained
Lancet	10.7	Discarded dead
Sharks (most blue)	2.9	Discarded most alive
Other	4.8	

9.3 *Second gear trial in Fijian waters planned for November-December 2011*

The outcome of the first gear trial yielded promising results and outcomes. However, as indicated in the draft abstract above, the absence of interactions with odontocetes prevented the opportunity to quantitatively assess the impact of the devices on depredation (project aim ii) and by-catch (project aim iii). As such, a second trial of a similar nature is planned for the waters around Fiji during November and December 2011. Based on anecdotal accounts and data collected by a Fijian tuna longline company over the last decade, the problem of odontocete depredation may be even more widespread there than in Australian waters. Recent reports of odontocete depredation from longlines in the Indian Ocean have also emerged. It is hoped that pelagic longline fisheries there will participate in future development and trials of the devices.