Agreement on the Conservation of Albatrosses and Petrels

Seventh Meeting of the Seabird Bycatch Working Group

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'Hook Pod' as best practice seabird bycatch mitigation in pelagic longline fisheries

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SUMMARY

The 'Hook Pod' is proposed for review against criteria for assessing and recommending as best practice seabird bycatch mitigation in pelagic longline fisheries. The Advisory Committee has adopted the six best practice seabird bycatch mitigation criteria developed by the Seabird Bycatch Working Group for assessing and recommending best practice advice on seabird bycatch mitigation measures. An assessment of the Hook Pod is provided against these criteria.

RECOMMENDATIONS

1. That SBWG reviews the assessment of the 'Hook Pod' against criteria for assessing and recommending as best practice seabird bycatch mitigation.
2. That SBWG considers recommending the 'Hook Pod' as best practice seabird bycatch mitigation in pelagic longline fisheries.

Uso del Hook Pod (dispositivo de encapsulado de anzuelos) como parte de las mejores prácticas en mitigación de captura secundaria de aves marinas en pesquerías de palangre pelágico

RESUMEN

Se propone el producto Hook Pod (dispositivo de encapsulado de anzuelos) para su evaluación, sujeta a criterios de revisión y su recomendación como parte de las mejores prácticas en materia de mitigación de captura secundaria de aves marinas en las pesquerías de palangre pelágico. El Comité Asesor ha adoptado los seis criterios con relación a las mejores prácticas en mitigación de la captura secundaria de aves marinas elaborados por el Grupo de Trabajo sobre Captura Secundaria de Aves Marinas, a fin de evaluar y formular recomendaciones sobre las mejores prácticas para mitigar la captura secundaria de aves marinas. La evaluación del Hook Pod está sujeta a dichos criterios.

RECOMENDACIONES

1. Que el GdTCS analice la evaluación del Hook Pod en función de los criterios para su evaluación y recomendación como parte de las mejores prácticas en mitigación de captura secundaria de aves marinas.
2. Que el GdTCS considere la recomendación del Hook Pod como parte de las mejores prácticas en mitigación de captura secundaria de aves marinas en las pesquerías de palangre pelágico.

L'hameçon à gaine (Hook Pod) : meilleure pratique pour la réduction des captures accessoires d'oiseaux marins dans les pêches pélagiques à la palangre

RÉSUMÉ

Il a été proposé de vérifier que l'hameçon à gaine (Hook Pod) réponde aux critères établis en matière d'évaluation et de recommandation des meilleures pratiques pour la réduction des captures accessoires d'oiseaux de mer dans les pêches pélagiques à la palangre. Le Comité consultatif a adopté les six critères de meilleures pratiques en matière de réduction des captures accessoires d'oiseaux de mer élaborés par le Groupe de travail sur les captures accessoires d'oiseaux de mer, afin d'évaluer et de recommander les conseils de meilleurs pratiques pour les mesures d'atténuation des captures accessoires d'oiseaux de mer. L'hameçon à gaine (Hook Pod) est évalué à l'aune de ces critères.

RECOMMANDATIONS

1. Que le GTCA examine l'évaluation de l'hameçon à gaine (Hook Pod) au regard des critères établis d'évaluation et de recommandation des meilleures pratiques pour la réduction des captures accessoires d'oiseaux de mer.
2. Que le GTCA envisage de recommander l'hameçon à gaine (Hook Pod) en tant que meilleure pratique pour l'atténuation des captures accessoires d'oiseaux de mer.

1. INTRODUCTION

The 'Hook Pod' is an innovative seabird bycatch mitigation technology. The device is attached at a convenient length from the terminal end of the branch line using a spring-loaded, plastic ball bearing mechanism that grips to the monofilament line, which then passes through an eye at the bottom of the Hook Pod to ensure the branch line remains flush with the device. During setting the baited hook is inserted into spring-loaded doors at the terminal end of the Hook Pod. This 'loads' the device and encases the point and barb of the hook within the Hook Pod. The device contains a pressure release system designed to release the baited hook at a predetermined depth after setting. The Hook Pod also incorporates a light emitting diode (LED) light source that is triggered by a magnetic switch when the device opens at depth. On hauling, the Hook Pod remains attached to the branch line in an open state. The pressure release system is reset by closing the pod by hand before stowing the Hook Pod in the setting bin, ready for the next set.

The Hook Pod technology is innovative in four key ways: (i) baited hooks are encased to prevent seabird attacks during setting until a prescribed depth is reached, (ii) branch line weighting at the hook maximises the sink rate of the baited hook, (iii) the LED provides an alternative light source to disposable chemical light sticks and electric fishing lights (EFL), and (iv) the device is reusable.

Experimental research on the efficacy of the Hook Pod in reducing bycatch of seabirds has been conducted over a four-year period (Sullivan et al., in review). The Advisory Committee have agreed to six best practice seabird bycatch mitigation criteria developed by the Seabird Bycatch Working Group (SBWG) for assessing and recommending best practice advice on seabird bycatch mitigation measures (**AC8 Final Report**, para 12.1.3). An assessment of the research findings concerning the Hook Pod is provided against these criteria.

2. ASSESSMENT OF THE HOOK POD

2.1. Experimental research

Criterion 1: Individual fishing technologies and techniques should be selected from those shown by experimental research to significantly[1] reduce the rate of seabird incidental mortality[2] to the lowest achievable levels.

Experimental research has been conducted into the efficacy of the Hook Pod. The research has been undertaken in three geographically discrete regions: (i) southern Brazil, (ii) South Africa, and (iii) Australia (Sullivan et al., in review; BirdLife International, 2014). Seabird assemblages varied considerably between research locations in terms of the species present and their densities. At all locations albatrosses and petrels were present. In total, 62,000 hooks were set in approximately equal ratios in experimental conditions between a control treatment (status quo line weighting) and a Hook Pod treatment, over 127 sets, during 19 discrete at-sea trips. All experimental branch lines were set in the absence of bird scaring lines and line weighting other than that contained in the Hook Pod. Species-specific seabird bycatch thresholds prevented excessive seabird mortalities.

[1] Any use of the word 'significant' in this document is meant in the statistical context.

[2] This may be determined by either a direct reduction in seabird mortality or by reduction in seabird attack rates, as a proxy.

The research demonstrated that the hook pod significantly reduced seabird bycatch. There was bycatch of 24 seabirds under the control treatment, compared to bycatch of only a single seabird when Hook Pods were deployed. The single mortality occurred when the observer noted that the Hook Pod was not loaded correctly during line setting.

Seabird bycatch rates were lower when Hook Pods were used. The bycatch rate when Hook Pods were deployed was 0.034 birds per 1000 hooks, compared to a bycatch rate under the control treatment of 0.77 birds per 1000 hooks. The Hook Pod reduced the bycatch rate by about 95%, compared to the control treatment. This reduction occurred despite the absence of bird scaring lines.

Using Hook Pods will have no effect on seabird bycatch during hauling. Sullivan et al. (in review) reported incidental catch of three albatrosses during hauling when using Hook Pods—these occurred when the crew halted hauling for an extended period before responding to mainline entanglement caused by a cetacean, leaving hooks near the surface. As for pelagic longline fishing generally, other mitigation measures specific to hauling including procedures for promptly dealing with entanglements, would help mitigate these seabird bycatch risks. These data were not included in analyses of the effectiveness of the Hook Pod, as such bycatch is distinct from the experiment that was conducted (Sullivan et al., in review).

2.2. Specifications and minimum performance standards

Criterion 2: Fishing technologies and techniques, or a combination thereof, shall have clear and proven specifications and minimum performance standards for their deployment and use.

Operational trials of the Hook Pod have been conducted in pelagic longline fisheries in southern Brazil, South Africa and Australia to determine the operational performance in a commercial fishing operation (Sullivan et al., in review). The technology readily fits into standard line storage, setting and hauling operations. There has been ongoing refinement of the ergonomic shape of the pod, to ensure ease of handling, and minimise entanglements with monofilament branchlines during fishing operations.

Using the Hook Pod provides improved branch line sink rates. The Hook Pod weighs 68 g and is positioned at the hook, encapsulating the barb and point of the hook, until it reaches 10 m in depth, when the hook is released. The device achieved a sink rate that compared favourably to current best practice branch line weighting. Time-depth recorder studies compared the sink rate of the Hook Pod with best practice branch line weighting of 65 g at 3.5 m from the hook (Sullivan et al., in review). The sink rate to 5 m depth was 0.51 $m.sec^{-1}$ (SE 0.031) for the Hook Pod, compared to 0.31 $m.sec^{-1}$ (SE 0.034) for control branch line weighting of 65 g at 3.5 m. The Hook Pod sank about 60% faster to 5 m than current best practice branch line weighting of 65 g at 3.5 m.

2.3. Practicality, cost-effectiveness and availability

Criterion 3: Fishing technologies and techniques shall be demonstrated to be practical, cost effective and widely available.

The Hook Pod is anticipated to soon be widely available. The Hook Pod is not yet in commercial production with availability limited to stock held in the United Kingdom and Australia. However, commercial-scale tooling has been completed and information about

commercial production estimates that each Hook Pod would cost AUD 17.00 (approx) (Sullivan et al., in review).

There is also a small version of the Hook Pod (50 g) in development that does not contain a LED. This small version is being tested in New Zealand's surface longline fishery (Sullivan, pers. comm., 2016). Commercial-scale tooling has also been completed for the small version of the Hook Pod and information about commercial production estimates that each small version Hook Pod would cost AUD 10.00 (approx) (Sullivan, pers. comm., 2016).

Trials conducted over a four-year period indicated that the Hook Pod was easy to store, deploy and haul. The device has performed well in all fisheries in which it has been trialled, after initial durability and design challenges were resolved (Sullivan et al., in review). Alkaline batteries (2x) are used to power the LED light source, and the batteries last for about 400 hours, or around +40 sets.

There are potential cost savings in fisheries where chemical light sticks are used. Unit costs for light sticks are AUD 0.25 (approx) compared to the unit cost of AUD 17.00 (approx) for the reusable LED-equipped Hook Pod, noting there is about a 1.23% failure rate when using Hook Pods, and battery working life of about 400 hours and cost of AUD 0.10 approx per battery (x2) (Sullivan et al., in review). For example, if a fishing vessel deployed 100 pelagic longline sets each year of 1000 hooks the cost of using Hook Pods would be about AUD 17,700, compared to the cost of using light sticks of about AUD 25,000. Using the Hook Pod as a light source would provide savings in this example of about 30% annually, compared to using light sticks. Further information is required to assess whether there are potential cost savings in fisheries where EFL are used.

The Hook Pod replaces branch line weighting using lead weights and/or lead swivels, with associated cost savings.

2.4. Effect on catch rates of target species

Criterion 4: Fishing technologies and techniques should, to the extent practicable, maintain catch rates of target species.

Experimental research indicates that the Hook Pod does not reduce the catch rate of target species (tuna and swordfish) (Sullivan et al., in review). The data indicated there were no significant differences in catch rates between the treatments for tuna and swordfish.

2.5. Effect on bycatch of other taxa

Criterion 5: Fishing technologies and techniques should, to the extent practicable not increase the bycatch of other taxa.

Experimental research conducted in three different regions demonstrated that the Hook Pod did not increase bycatch of other taxa (Sullivan et al., in review). Preliminary data about marine turtle bycatch, based on 14,922 hooks set in waters of southern Brazil, indicated that 19 turtles were bycaught under control conditions, while only nine turtles were bycaught when Hook Pods were used. These preliminary findings suggest that the Hook Pod might reduce marine turtle bycatch—further data are required to validate these findings.

2.6. Performance standards and methods of ensuring compliance

Criterion 6: Minimum performance standards and methods of ensuring compliance should be provided for fishing technologies and techniques, and should be clearly specified in fishery regulations.

Monitoring, control and surveillance of the Hook Pod technology is readily achieved through onboard observer programs, use of electronic monitoring systems that monitor setting operations and in port inspections. Once Hook Pods are purchased and fitted they are effectively integral to the gear, and this may be verified by visual inspection. Hook Pods are more easily fitted when the branch line is being built, prior to the hook being crimped onto the branch line, rather than by retro-fitting the device onto existing branch lines. There is a risk in unmonitored fisheries of non-compliance, as occurs in any fishing operations.

Correct use of the device contributes improves branch line sink rates reducing the risk of seabird attacks and loss of baits during setting operations. This might act as an incentive to deploy the Hook Pod correctly.

3. HOOK POD AS BEST PRACTICE SEABIRD BYCATCH MITIGATION

The SBWG is invited to review the above evaluation and decide whether to recommend the Hook Pod as best practice seabird bycatch mitigation in pelagic longline fisheries.

REFERENCES

BirdLife International (2014). Hook Pod Update. Paper presented to Sixth Meeting of Seabird Bycatch Working Group (Punta del Este, Uruguay, 10-12 September 2014). SBWG6 Inf 12.

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