

 <p data-bbox="225 533 443 573">Acuerdo sobre la Conservación de Albatros y Petreles</p>	<p data-bbox="501 237 1401 277">Fifth Meeting of the Seabird Bycatch Working Group</p> <p data-bbox="836 295 1401 336"><i>La Rochelle, France, 1 - 3 May 2013</i></p> <p data-bbox="528 427 1358 521">Seabird mortality estimate for the Namibian demersal Hake trawl fishery</p> <p data-bbox="770 600 1121 636"><i>BirdLife International</i></p>
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SUMMARY

Seabird interactions with the hake trawl fishery in Namibia were used to calculate an annual mortality estimate for the fleet. An at-sea observation effort included 6,457 minutes during 107 trawls from ten trips. Total fleet effort data was provided by the Ministry of Fisheries and Marine Resources. The estimate indicates that 8,088 (0 – 27,487) birds are killed each year in the Namibian demersal trawl fishery. Of those birds 5,010 (62%) albatrosses are estimated to be killed and 3,078 (38%) non-albatross species.

RECOMENDATIONS

Regulations that require the use of bird-scaring lines would be an effective measure to mitigate seabird mortality in the Namibian demersal Hake trawl fishery.

Estimación de la mortalidad de aves marinas para la pesca de arrastre demersal de merluza en Namibia

Se usaron las interacciones de las aves marinas con la pesca de arrastre de merluza en Namibia para calcular una estimación de mortalidad anual para la flota. Un observación en el mar incluyó 6.457 minutos durante 107 arrastres de diez campañas. El Ministerio de Pesca y Recursos Marinos proporcionó los datos totales del esfuerzo de la flota. La estimación indica que mueren 8.088 (0 – 27.487) aves por año en la pesca demersal de arrastre en Namibia. De estas aves, se estima que mueren 5.010 (62%) albatros y 3.078 (38%) aves de otras especies que no son albatros.

RECOMENDACIONES

Reglamentaciones que exijan el uso de líneas espantapájaros serian una medida efectiva para mitigar la mortalidad de aves marinas en la pesquería de arrastre demersal de merluza en Namibia.

Estimation de la mortalité des oiseaux de mer dans les opérations Namibiennes de pêche au chalut pour le merlu

Les interactions des oiseaux de mer avec la pêche au chalut de merlu de la Namibie ont donné lieu à une estimation de leur mortalité annuelle. L'effort d'observation en mer a porté sur 6,457 minutes, soit 107 chalutages à partir de dix campagnes. L'effort total de pêche a été fourni par le Ministère des pêcheries et des ressources marines. L'estimation de la mortalité a été calculée à 8,088 (0 – 27,487) oiseaux de tués chaque année dans la pêche au chalut de merlu de la Namibie, 5,010 (62%) d'entre eux étant des albatros et 3,078 (38%) provenant d'espèces autres que des albatros.

RECOMMANDATION

Une réglementation imposant l'usage des lignes de banderoles dans la pêche au chalut au merlu Namibienne, représenterait une mesure efficace d'atténuation de la mortalité accidentelle d'oiseaux marins.

1. INTRODUCTION

The impact of trawl fisheries on seabirds has been well documented (Weimerskirch *et al.* 2000; Sullivan *et al.* 2006 amongst others), and solutions exist that have been shown to rapidly reduce this impact (Bull 2009; Løkkeborg 2011). The demersal Hake (*Merluccius* spp.) trawl fishery in Namibia has been shown to have an impact on seabirds due to seabird collisions with trawl warp cables during the discard of offal and fish remains, for which bird-scaring lines were found to be an effective mitigation device (BirdLife International 2011).

The objective of this report is to report the first estimate of the level of seabird mortality associated with the demersal Hake trawl fishery in Namibia. These data were collected by ATF observers and analysed using fleet effort data provided by the Namibian Ministry of Fishery and Marine Resources (MFMR).

2. METHODS

2.1 Data collection

Seabird interaction data were collected by BirdLife's Albatross Task Force during 2009/10. Observations conducted from the stern of the vessel during daylight trawls included the monitoring of seabird interactions with a single trawl warp (located on the side of the vessel with the factory discharge scupper). Individual seabird interactions (contacts) with the trawl warp cable were recorded by species and interaction intensity (light, medium, heavy). Fishing operations were recorded as setting, trawling and hauling and the duration of offal discards were recorded for all observed trawls; along with environmental conditions and seabird abundance. Full details of our sampling protocols can be provided upon request.

2.2 Data analysis

Prior to analysis data were stratified by two characteristics:

- 1) seabird species (albatross and non-albatross) – to facilitate an understanding of albatross bycatch levels
- 2) by season; winter (April to September) and summer (October to March) - to reflect seasonal variation in seabird abundance around fishing vessels (and in the region generally)

To estimate level of seabird bycatch for the fleets we generated a proxy for seabird mortality based on observation data of heavy interactions between seabird and warp cables (Sullivan *et al.* 2006). Heavy interactions were divided into fatal or non-fatal and a ratio of fatalities was calculated. A heavy interaction rate/hour was calculated and multiplied by total fleet hours to estimate the total number of heavy interactions for the fleet. The total heavy interactions were then multiplied by the ratio of fatal to non-fatal interactions to obtain a mortality estimate.

As seabird interactions are highly related to offal discards, only fishing effort during offal discard was included in the calculation of a seabird mortality estimate. ATF at-sea observation data in conjunction with total fishing effort data were used to calculate what proportion of total effort was likely conducted while discarding. We then used over a hundred hours of on board ATF observations to calculate an average discard period of one hour per trawl. Given that on average setting the net took 15 minutes and offal discard commences immediately after the net is hauled and the fish are fed into the vessel factory below the trawl deck; this means that for each hour of offal discarding we allowed for 15 min for setting and 45 min for trawling.

Mortality estimates were calculated for each level of stratification only for observed trawls conducted in the absence of mitigation before deriving an annual bycatch estimate for the fleet. A non-parametric bootstrap with re-sampling was performed to derive confidence intervals from observed data (Efron and Tibshirani 1993).

3. RESULTS

Using the methodology described above with a total ATF at-sea sampling effort of 6,457 minutes collected from 107 trawls (ten at-sea trips) and the MFMR fishing effort data we estimate that 8,088 (0 – 27,487)¹ birds are killed each year in the Namibian demersal trawl fishery. Of those birds 5,010 (62%) albatrosses are estimated to be killed and 3,078 (38%) non-albatross species. Of these 6,502 (80%) birds were estimated to be killed in winter while 1,586 (20%) were killed in the summer months (Table 1).

Table 1: Seabird mortality estimates for albatross and all other birds by season and trawl operation (set and haul)

¹ The zero value in the confidence interval resulted because despite the observation of dead birds the bootstrap resampling process derived many zero values, particularly for the summer months when bird densities are lowest around the vessel.

		Summer		Winter	
		Estimate	CI	Estimate	CI
Albatross	Set	0	-	300	0 - 1,193
	Trawl	1,586	0 – 8,630	3,124	0 - 9,448
Other	Set	0	-	149	0 - 711
	Trawl	0	-	2,929	0 - 7,505
TOTAL		1,586	0 – 8,630	6,502	0 – 18,857

4. DISCUSSION AND CONCLUSIONS

This represents the first seabird mortality estimate for the Namibian demersal hake trawl fleet, and signifies a high level of impact to seabird populations, especially albatross. While care must be taken when interpreting the results due to a limited sample size, this is the best representation available of the current situation for this fishery. It must be noted that this estimation is for the wet fish fleet only and does not consider the freezer vessel fleet. The annual TAC of 130,000 tons is roughly divided 70% for wet fish vessels and 30% for freezer vessels. As no observations were carried out on freezer vessels their effort was not considered in the estimates. However, it does suggest that the estimate we present for the wet fish fleet is conservative and it is likely that markedly more seabirds are killed by the demersal hake trawl fleet.

Season had an important effect on the number of birds killed. In the winter months seabird density around the vessels is at its highest as seabirds from large Atlantic and Indian Ocean seabird populations migrate to the Benguela Current to forage in the non-breeding months.

In the SBWG-04 in Guayaquil we reported that three factors (Season, tori line use and discarding) were highly significant when considering the reduction of seabird mortality in this fleet (BirdLife International 2011). Thus limiting effort in winter, eliminating discard or deploying bird-scaring lines can be considered effective mitigation measures. Of these, the use of bird-scaring lines is the most economical to implement and requires no seasonal closures, and no meaningful modifications to vessels, operational procedures or fishing profitability.

In Namibia a draft National Plan Of Action-Seabirds and Hake Management Plan have been developed and both recommend the adoption of tori lines as mitigation measures. The draft NPOA-Seabirds calls for a seabird bycatch reduction of 80% in this fishery. However, despite positive stakeholder consultations the draft NPOA-Seabirds is still awaiting formal adoption by the Ministry for Fishery and Marine Resources.

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