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Seabirds and large pelagic trawlers in the south-eastern Pacific

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1 Introduction

At the 2014 SPRFMO Commission Meeting, a conservation and management measure was adopted for the conservation of seabirds (SPRFMO 2014). In accordance with this measure, an observation programme for seabirds was initiated on board of EU pelagic trawlers in the SPRFMO area. The aim of this programme was to monitor the presence of seabirds around the vessels and to establish the mortality and other damage inflicted to seabirds as a result of the fishing activities of the trawlers. The present report describes the results of the programme during the period May - August 2016. In addition it describes earlier observations that are relevant to the evaluation of the effect of pelagic trawlers on seabirds in the south-eastern Pacific.

2 Methods and Materials

The methodology was taken from Melvin et al. 2006. This methodology was adapted to the use on large pelagic trawlers. The main change was the increase of the arc behind the stern in which all birds were counted from 50m to 100m. The observations were made by Steiner binoculars 10 x 42. One observation should last no more than a couple minutes during day time. A "Bird sampling form", similar to the forms used in New Zealand, was used with a list of all seabirds that were known to occur in the area. Most observations were made during the time the fish was pumped from the net to the tanks. At this time and shortly afterwards, the biggest concentration of seabirds occur around the vessel. Some birds were not recognized to species level but to group of species because of the problems in recognising species in the field.

3 Results for 2016

Observations made from 15 May - 17 August 2016 on two EU trawlers fishing for jack mackerel in the SPRFMO area. The area where the vessels were operating is shown in Figure 1.

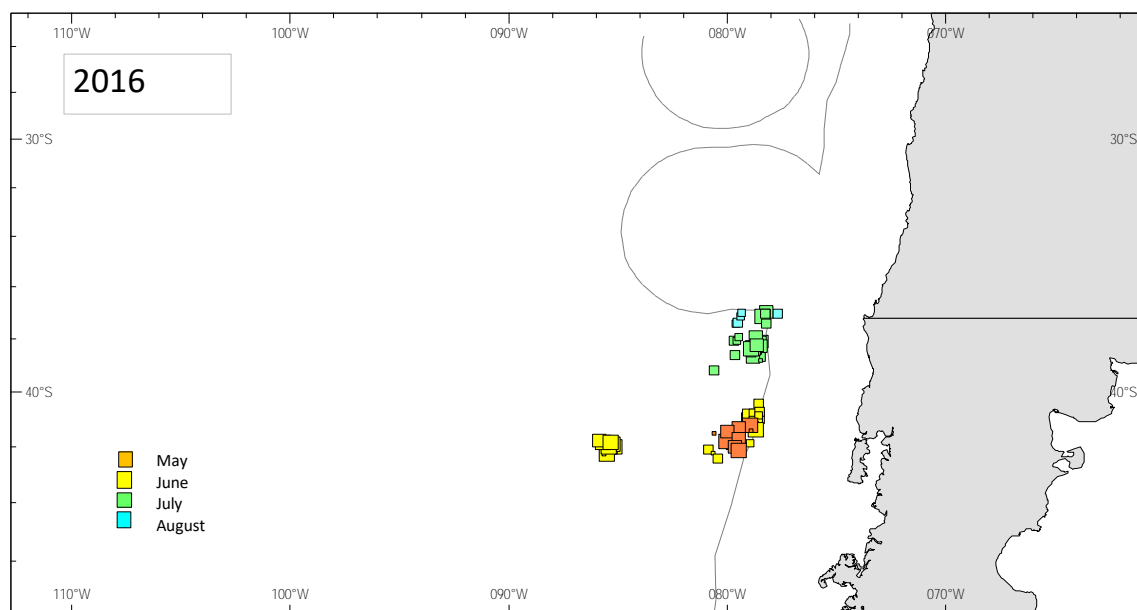


Figure 1. Fishing positions of EU pelagic trawlers in May - August 2016.

During this period observations were made on a total of 37 days, 10 of which on the Polish "Janus", and 27 on the German "Maartje Theadora". A summary of the results obtained is presented in Table 1.

No°	English name	Latin name	IUCN Red List categories ver. 3.1	Populations trends	Number of observation	Number sighted
1	Great Albatrosses	Diomedea sp.	From Vulnerable till Critically Endangered	↓ Decreasing One species → Stable	23	59
2	Black-browed Albatross	Thalassarche melanophrys	Near Threatened	↓ Decreasing	37	9 714
3	Campbell Albatross	Thalassarche impavida	Vulnerable	↑ Increasing	9	13
4	Salvin's Albatross	Thalassarche salvini	Vulnerable	? Unknown	28	162
5	Chatham Islands Albatross	Thalassarche eremita	Vulnerable	↑ Increasing	10	13
6	Grey-headed Albatross	Thalassarche chrysostoma	Endangered	↓ Decreasing	1	1
7	Buller's Albatross	Thalassarche bulleri	Near Threatened	→ Stable	10	17
8	Giant Petrels	Macronectes sp.	Least Concern	↑ Increasing	17	29
9	Southern Fulmar	Fulmarus glacialisoides	Least Concern	→ Stable	1	1
10	Cape Petrel	Daption capense	Least Concern	→ Stable	36	2 867
11	White-chinned Petrel	Procellaria aequinoctialis	Vulnerable	↓ Decreasing	35	2 235
12	Grey Petrel	Procellaria cinerea	Near Threatened	↓ Decreasing	4	11
13	Sooty Shearwater	Puffinus griseus	Near Threatened	↓ Decreasing	3	20
14	Blue Petrel and prions	Pachyptila sp. or Halobaena sp.			8	24
15	Wilson's Storm- petrel	Oceanites oceanicus	Least Concern	→ Stable	23	1 397
					Total	16 563

Table 1. Results of bird observations in May - August 2016

In total 12 species were observed and 3 groups of species. The latter contained birds that could not be identified down to the species level. An example of these are the Giant Petrels that differ only in the color of the tip of their bill. At sea these differences are hard to observe, but at least a distinction could be made between Southern and Northern Giant Petrels.

The species composition of birds observed in 2016 is presented in Figure 2. It is seen that the most abundant species was Black-browed Albatross with 59% of the observations. Other common species were the Cape Petrel (17%), White-chinned Petrel (14%) and Wilson's Storm Petrel (8%). The remaining species made up only 2% of all observations.

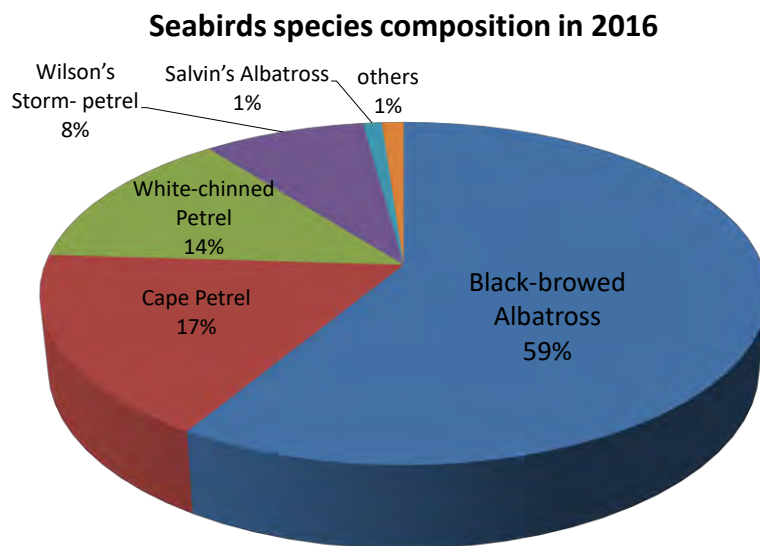


Figure 2. species composition of all birds observed in 2016.

An impression of the abundance of Black-browed Albatrosses in the fishing area is given in Figure 3. This photograph was taken on the 31st of July 2016 when the number of birds around the ship was estimated at 5000, 99% out of which were Black-browed Albatrosses. The picture shows only a fragment of all birds around the vessel. At the time the picture was taken, the vessel was not discarding fish but only pumping sump water overboard.



Figure 3. Black-browed Albatrosses around the "Maartje Theadora" on 31 July 2016

4 General observations on seabirds and large pelagic trawlers interactions

4.1 Biology of Tubenoses

In order to understand the interactions between seabirds and trawlers, it is important to consider some of the biological characteristics of the birds. Practically 100% of the birds observed in the open Pacific belong to the Tubenoses (order *Procellariiformes*). This order is characterized by a tubular nasal passage which enables the birds to smell (contrary to other birds). This means that even a fishing vessel that is not fishing actively is much more attractive for these birds than other types of vessels, because the birds still detect the smell of fish.

Tubenoses are flying very close to sea surface (Figure 4). This means that they may have collisions with fishing gear or another devices outside the vessel and close to the sea surface, like for instance trawl warps or bird bafflers



Figure 4. Buller's Albatross flying close to the surface.

4.2 Bird strikes with trawl warps

During two years (2015 and 2016) observation were collected on collisions of birds with trawl wires. Large pelagic trawlers have 3 lines going to the net during trawling operations: two heavy trawl warps low above the surface on each side of vessel, and a thinner cable higher above the surface that is leading to the headline transducer. In 2016 a total of 3 hours and 45 minutes was spent on observing bird strikes, and in 2015 a total of 7 hours and 45 minutes. During these periods, all 3 wires were observed simultaneously. In 2016 two strikes were recorded which were both classified as "light". This meant that the birds did not have any damage and flew away just after the contact with the wires. One of the collisions occurred with a White-chinned Petrel and the other by a young Black-browed Albatross. In 2015 two strikes were observed, one of which was classified as "light" and the other as "heavy". In the latter case, the bird sat on the water after the collision, but it was not possible to see whether any damage had occurred to the bird. In both cases the birds were adult Black-browed Albatross.

Species	2015 (7:45 h observation)		2016 (3:45h observation)	
	Light	heavy	Light	heavy
Black-browed Albatross	1	1	1	
White - chinned Petrel			1	

Tabel 2. Observations on birds strikes in 2015 and 2016

Starting from 2014, SPRFMO introduced the obligation for pelagic trawlers to mount bird bafflers as a means to scaring birds away from the net (SPRFMO 2014). An illustration of such a device on board an EU trawler is shown in Figure 5. Although these bird bafflers are meant to protect the birds, in practice they appear to present more of a danger for the birds than a protection.

On 22 July 2016 at 21:30 (GMT time) a Black-browed Albatross was observed to hit its wings to the iron beam to which the bird baffler was suspended. After this collision the bird sat on the water and looked like it had damaged its wing. In the opinion of the authors, bird bafflers on pelagic trawlers might increase bird mortality rather than reduce it.



Figure 5. Bird bafflers that are supposed to keep the birds away from the trawl.

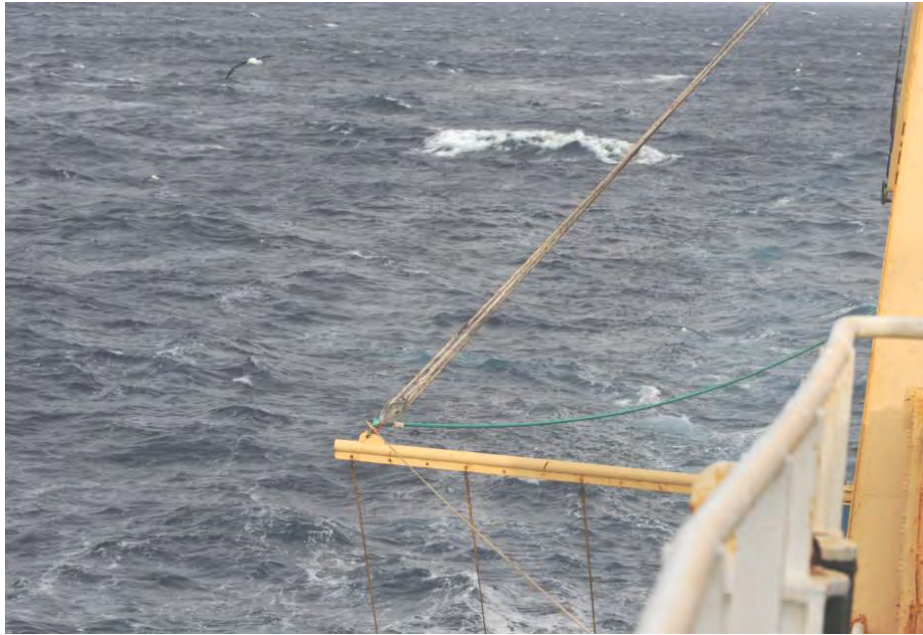


Figure 6. The beam to which the bird baffle is suspended presents an extra risk for bird collisions.

4.3 Other negative effects on seabirds caused by fishing vessels

4.3.1 Collisions with vessel.

This sometimes happens during night time. Probably the collisions are due to the birds being attracted by the lights of the vessel. Figure 7 shows a Wilson's Storm- petrel that was found on deck during the night of 4-5 July 2016. The next day this bird was released in apparently good condition. It flew away from the ship without resting on the water.



Figure 7. Wilson's Storm-petrel landed on the deck after a collision presumably with a light of the vessel.

In 2008 a young Black-browed Albatross collided with the vessel at a time when the trawler was transshipping to a reefer in the open sea. The wing did not seem to be broken, but the bird sat on the water after it was released.

4.3.2 Plastic waste

Plastic waste discarded by vessels could also present a hazard to seabirds (Figure 8). This of course applies not only to fishing vessels but to other ships as well. According to the observations made during our programme, the Albatrosses taste the plastic but do not swallow it.

Since the start of the observations on board EU trawlers, much progress has been made in reducing the discards of plastic offal. Whereas in 2008 nearly all plastic offal was thrown overboard, during 2016 the Polish and German trawler store the plastic on board in large bags that were offloaded in port. Other offal is burnt on board using special equipment. It is hard to judge whether the reduction in discarding of plastic and other offal is the effect of the presence of observers on board, or of a changed mentality of the ship owners.



Figure 8. Great Albatrosses showing an interest in plastic offal.



Figure 9. Bag with plastic offal that will be offloaded in port.

4.3.3 Oil pollution

Birds may also be contaminated with waste oil dumped from vessels. During two days in 2016, more than 20 birds were observed with oil on their feathers (Figure 10). It was unknown whether the oil originated from the fishing vessels or from other sources.



Figure 10. Black-browed Albatross contaminated with oil.

4.4 Positive effects of pelagic trawlers on seabirds

Until recently, pelagic trawlers used to discard damaged fish that had no commercial value. These discarded fish were a source of food for seabirds in an environment where food is otherwise difficult to obtain (Figure 11).

Following the introduction of a new regulation by the EU in 2014 (European Commission 2014), discarding is forbidden of fish species for which a conservation measures applies, such as jack mackerel. This regulation applies to EU vessels also outside European waters. The damaged or undersized fish is now kept on board, and is thereby no longer available to the seabirds.

The regulation is intended to provide additional protection to the fish stocks to which a quota system applies. The negative effects of this regulation on the marine ecosystem, however, have not been taken into consideration.



Figure 11. Black-browed Albatross feeding on jack mackerel discarded by trawler.

5 Conclusions

- a. Contrary to long liners, pelagic trawlers do not appear to inflict a significant mortality on seabirds.
- b. Discards from pelagic trawlers used to be an important source of food for seabirds. This source of food is no longer available from EU trawlers after the introduction of the discard ban in 2015.
- c. Bird bafflers are likely to increase seabird and should therefore be prohibited.

- d. The ban on dumping of plastic and other waste, already in force for many years, should be rigorously enforced, not only on fishing vessels but also on other kinds of vessels.

References

European Commission 2014. Commission delegated regulation (EU) No 1393/2014 of 20 October 2014 establishing a discard plan for certain pelagic fisheries in north-western waters. <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014R1393&from=NL>.

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