

Fishing activity and seabird-vessel attendance near the Northern Antarctic Peninsula

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Introduction

- Seabirds are attracted to vessels at sea.
- Although seabirds may view fishing vessels as a source of food, there are potential negative interactions between fishing activities and seabirds (Montevecchi 2002).
- Several studies report significant differences in seabird abundance around fishing trawlers (Gonzalez-Zevallos & Yorio 2006; Sullivan et al. 2006; Weimerskirch et al 2000)
- Seabirds may be injured or killed during trawling activities through collision with various cables or entanglement in gear (Bartle 1991)
- We conducted a survey to investigate the factors influencing the number of seabirds attending a research vessel during scientific trawling activities near the northern Antarctic Peninsula (Figure 1).
- **Our objective was to assess whether seabirds exhibited differing levels of attendance that may be attributed to fishing activity.**

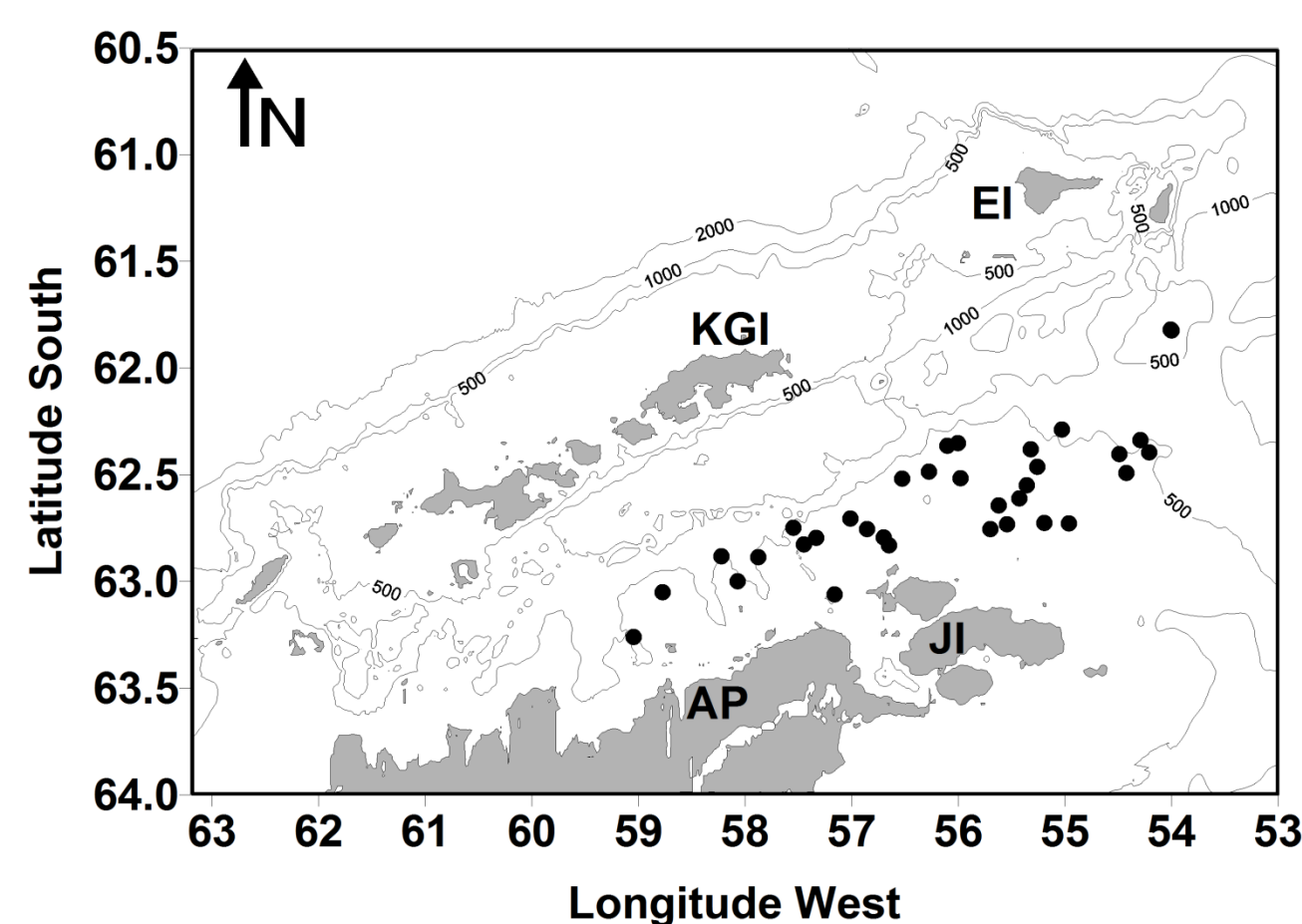
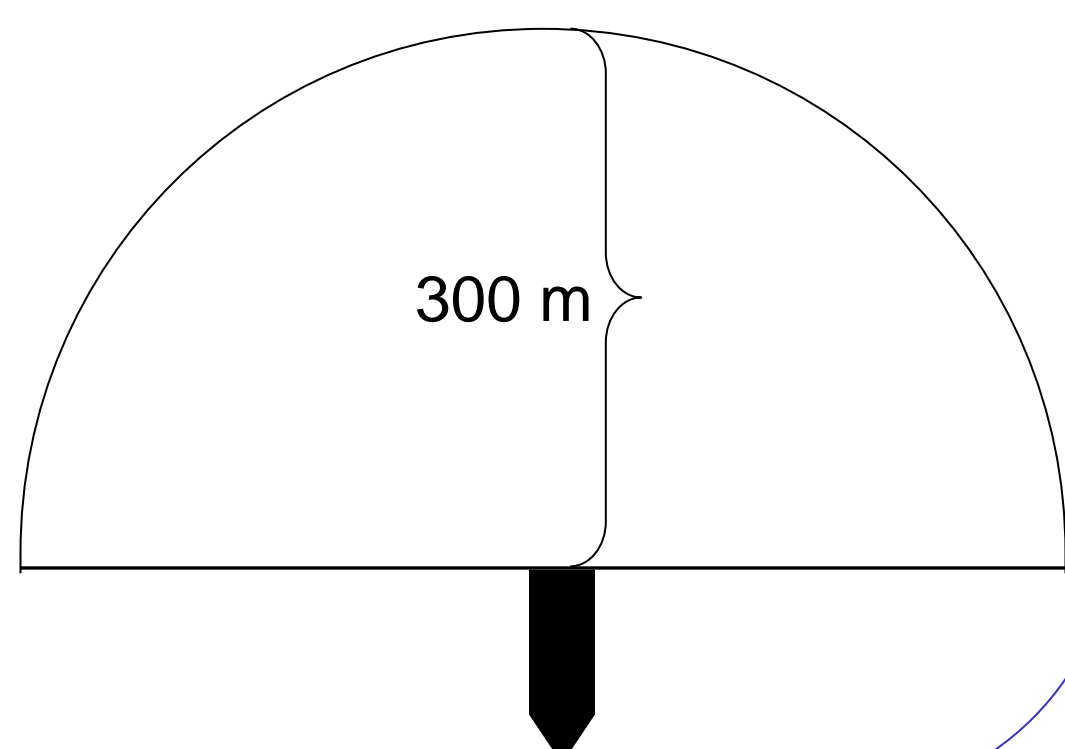


Figure 1: Map of trawling locations during February-March 2006; AP=Antarctic Peninsula, EI=Elephant Island, KGI=King George Island, JI=Joinville Island

Methods

- Bird counts every 30 minutes during non-fishing times and every 5 minutes during net deployment, towing and retrieval
- Observation zone 300-m hemisphere at stern (Figure 2)
- Monitored environmental variables and discards
- Separate Generalized Additive Models (GAMs) used to determine factors influencing attendance for 3 most abundant species

Figure 2
Observation zone for estimating seabird abundance



Results

- Three species, the Black-browed Albatross *Thalassarche melanophrys*, Cape Petrel *Daption capense* and Wilson's Storm-Petrel *Oceanites oceanicus* were the most common seabirds attending the vessel (Table 1).
- Abundance of seabirds did not differ among fishing activities (Table 2).
- The presence of discard caused an increase in numbers of petrels and albatrosses (Figure 3).
- No seabird mortality was observed.

Table 1 Species observed and frequency of occurrence

Common Name	Species Name	Total	%Total
Cape Petrel	<i>Daption capense</i>	1421	40.0
Black-browed Albatross	<i>Thalassarche melanophrys</i>	1026	28.9
Wilson's Storm Petrel	<i>Oceanites oceanicus</i>	625	17.6
Southern Fulmar	<i>Fulmarus glaciodes</i>	209	5.9
Giant Petrel spp.	<i>Macronectes spp.</i>	188	5.3
Grey-headed Albatross	<i>Thalassarche chystostoma</i>	38	1.1
Snow Petrel	<i>Pagodroma nivea</i>	9	0.25
Skua spp.	<i>Catharacta spp.</i>	8	0.2
Antarctic Tern	<i>Sterna vittata</i>	8	0.2
White-chinned Petrel	<i>Procellaria aquinocitalis</i>	5	0.1
Black-bellied Storm Petrel	<i>Fregetta tropica</i>	4	0.1
Gentoo Penguin	<i>Pygoscelis papua</i>	4	0.1
Chinstrap Penguin	<i>Pygoscelis antarctica</i>	2	0.05
Snowy Sheathbill	<i>Chionis alba</i>	2	0.05
Prion spp.	<i>Pachyptilla</i>	1	0.03
Wandering Albatross	<i>Diomedea exulans</i>	1	0.03
TOTAL		3551	



Table 2 Significance of variables in GAM models assessing seabird-vessel attendance for the three most abundant seabirds. CAPE: cape petrel; BBAL: black-browed albatross; WISP: Wilson's storm-petrel. Number in parentheses is percent deviance explained by the model.

Variable - Species	CAPE (69%)	BBAL (56%)	WISP (38%)
Vessel activity	-	-	-
Discards	0.02323	0.02620	-
Vessel Speed	-	-	-
Position	0.00000	0.00000	0.00000
Visibility	0.00000	-	0.00297
Wind Speed	-	-	-
Air Temperature	-	-	-
Pressure	-	0.00000	-

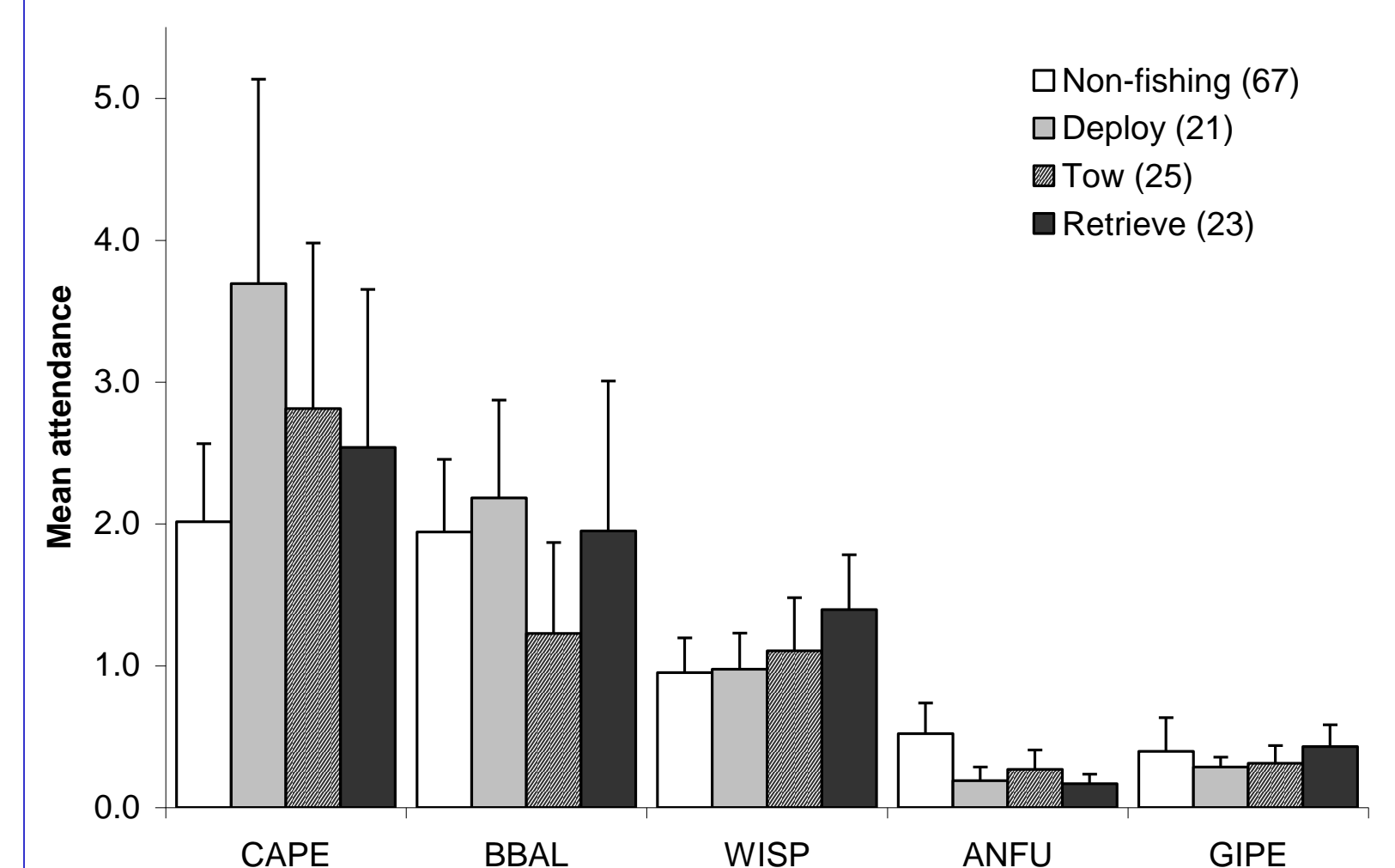


Figure 3 Attendance of species by vessel activity. CAPE: cape petrel; BBAL: black-browed albatross; WISP: Wilson's storm-petrel; ANFU: Antarctic fulmar; GIPE: giant petrel. Numbers in parentheses are sample size for each activity type. Bars are standard errors.

Discussion

- Our study is the first to examine seabird-vessel attendance to scientific trawling activities in Antarctic waters where there is a moratorium on commercial finfish fishing.
- By comparison to other studies, the level of fishing conducted during this study is not anywhere near that of commercial fishing (i.e., catch rate and fishing duration).
- It is important to monitor seabird attendance to fishing vessels so that proper mitigation and conservation actions are met to protect seabirds.



Literature Cited

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