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ARTICLE

New records of shy-type albatrosses *Thalassarche cauta/T. steadi* off the Argentine Continental Shelf

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ABSTRACT: Shy *Thalassarche cauta* and White-capped albatrosses *T. steadi* are two taxa for which specific status has recently been posited, however, owing to their morphological resemblance they are frequently referred to as "shy-type" albatrosses. Information on the distribution of this albatross complex in the Argentine Continental Shelf is particularly scarce and limited to only a few observations, chiefly obtained in the Argentine-Uruguayan Common Fishing Zone and in the vicinity of the Malvinas (Falkland) Islands; there is virtually no information for other oceanic areas (continental shelf, shelf-break area and slope). New records of shy-type albatrosses were obtained during the development of project assessments of the interaction between commercial trawl fisheries and seabirds attending waters of the Argentine Continental Shelf. The observation effort (counts during trawling operations) covered all seasons in a four-year span. These records provide new information on the presence and abundance of this albatross complex for a wide latitudinal range off Argentina that is also an area of operation of trawling fishing fleets (e.g. Argentine hake fishery). The records presented here add to the recent body of evidence demonstrating that individuals of *T. cauta/steadi*, especially immatures, and to some extent non-breeding adults, attend waters of the southern South Atlantic, where they associate with commercial trawlers in Argentina.

KEY-WORDS: Argentina, high-seas trawl fleet, Shy Albatross, South Atlantic, White-capped Albatross.

INTRODUCTION

What was once regarded as a single Shy Albatross species *Thalassarche cauta* distributed in waters off southern Australia and New Zealand has now been split into four distinctive species of albatrosses, with the following three taxa now affording the status of independent species: Chatham *T. eremita*, Salvin's *T. salvini* and White-capped *T. steadi* Albatrosses (Robertson & Nunn 1998). Even though this taxonomy is currently followed by major authorities, such as the Agreement on the Conservation of Albatrosses and Petrels (ACAP 2012) and BirdLife International (2012), it is not universally accepted. Therefore, both the Shy and White-capped albatrosses are sometimes collectively referred in the literature as "shy-type" mollymawks (Brooke 2004, Penhallurick & Wink 2004, Onley & Scofield 2007). In this paper we consider these as separate species, although the distributions of some albatross species are greatly confounded by their resemblance with other species (Double *et al*. 2003). The White-capped, Chatham, and Salvin's Albatrosses breed only in New Zealand, but the latter two are well known in South American seas, traveling as far north as Peru in the Pacific (Couve & Vidal 2003, Shirihai 2008). The available literature shows that the White-capped Albatross has an almost circumpolar distribution outside the breeding season, but movements are not yet known in detail by either satellite tracking or banding studies (but see Thomspon & Sagar 2008). However, more recently, molecular analyses have revealed White-capped Albatrosses among birds killed by commercial fisheries in Australian, New Zealand and South African waters (Abbott *et al*. 2006, Baker *et al*. 2007). Conversely, the Shy Albatross, an Australian breeding endemic species, is less pelagic than many other albatrosses. The species is most frequently found around Tasmania and southern Australia throughout the year, usually seen over the continental shelf. However, its range also extends to southern Africa (Brothers *et al*. 1997, Hedd *et al*. 2001, Hedd & Gales 2005).

The White-capped Albatross is now claimed to be a biennial breeder (Thompson & Sagar 2008) with colonies on Disappointment, Auckland and Adam Islands in the Auckland Islands group, Bollon's Island in the Antipodes Islands group, and occasionally on the Forty-Fours in the Chatham Islands group (Taylor 2000). The global

population including non-breeders is estimated to be 350,000-375,000 individuals (BirdLife International 2012). However, Petersen *et al*. (2009) reported that the global estimated breeding population is approximately 95,000 pairs. On the other hand, the Shy Albatross is an annual breeding species with colonies on only three islands off Tasmania: Mewstone, Albatross Island, and Pedra Branca (ACAP 2012). Including non-breeders, the global population was estimated to be between 50,000-60,000 individuals in 1998 (Gales 1998). Still, a recent survey of all breeding sites indicates that the size of its breeding population is currently estimated to be about 12,750 pairs (ACAP 2012). Both White-capped and Shy albatrosses species are listed as "near threatened" due to their high mortality rates as a result of interactions with longline and trawl fisheries in south Indian and south-eastern Atlantic oceans (Baker *et al*. 2007, ACAP 2012).

To date there are few records of shy-type albatrosses attending waters of the Argentine Continental Shelf. In particular, this marine area off Argentina and its shelf-break constitute an important ecosystem of global importance due to the high abundance and diversity of marine vertebrates that it contains, some of which travel very long distances to forage there (*e.g.*, Antarctica, Australia, New Zealand and Tristan da Cunha) (Croxall & Wood 2002, Favero & Silva Rodríguez 2005). Likewise, the area is being heavily exploited by several industrial fishing fleet (*e.g.*, jiggers, trawlers and longliners) of which the size of the trawl fishery is considerably greater than the rest of the other fleets (400 trawlers *vs.* four longliners) (Subsecretaría de Pesca *unpubl. data*). The foraging distributions of several seabird species, especially albatrosses and petrels strongly overlap with commercial fisheries globally throughout their entire annual cycle (Grémillet *et al*. 2000, Anderson *et al*. 2011). Increased mortality rates due to interactions with fisheries, for example, were linked to the global population declines of many albatrosses and petrels, which have been extensively recognized as one of the most vulnerable group of birds (Gales 1998, BirdLife International 2012). It is important in this context that the global ranges of threatened, or potentially threatened, species of albatrosses are better understood.

Recent studies indicate that few juvenile (or immature) and non-breeding adult shy-type albatrosses have been recorded interacting with longline fisheries in the southwestern Atlantic Ocean off the Argentine-Uruguayan Common Fishing Zone (Jiménez *et al*. 2009) and off southern Brazil (Gianuca *et al*. 2011). Furthermore, Jiménez *et al*. (2009) identified – through molecular analysis – that all five individual shy-type albatrosses incidentally killed by Uruguayan pelagic longliners were White-capped Albatross. So far, shy-type albatrosses were not recorded in previous studies concerning interactions between seabirds, particularly albatrosses and, commercial longline (Favero *et al*. 2003, Seco Pon *et al*. 2007, among others) and trawl fisheries (González-Zevallos & Yorio 2006, Sullivan *et al*. 2006, Favero *et al*. 2011, González-Zevallos *et al*. 2011) operating in a wider marine area in Argentinian waters.

Herein we present new documented records of shy-type albatrosses observed off the Argentine Continental Shelf in central Patagonia, confirming their regular occurrence in the southwestern Atlantic Ocean and report that shy-type albatrosses interact with the fisheries under study during discard operations.

MATERIALS AND METHODS

Presence and abundance of seabirds were systematically recorded by the two authors onboard commercial bottom ice-trawlers (hereinafter referred to as freshies) targeting chiefly Argentine hake *Merluccius hubbsi* (other target species include Chub mackerel *Scomber japonicus* and Pink cusk-eel *Genypterus blacodes*) between the years 2008 and 2011 as part of on-going projects aimed at assessing seabird interactions with this fishery off Argentina (see Tamini *et al*. 2010, Favero *et al*. 2011). The trawl fishery under study operates within waters of the Argentine Continental Shelf between 34ºS and 48ºS, particularly concentrated between 42ºS and 46ºS. In general terms, fishers preserve the catch target species in ice within plastic cubes, trips last between four and 15 days, vessels operate a minimum of 130-150 days per year and perform some 600 hauls per year (see Favero *et al*. 2011). Species composition and abundance estimations were performed daily during trawling operations and in daylight hours only. The counts were made from either side and at the stern of the vessel, or aft, covering a 200 meters radius sampling area (200 m astern and 200 m on the starboard and port sides) and lasting 10 minutes hourly (Favero *et al*. 2011). At each survey we collected data on seabirds´ attendance by means of the strip transect method (Tasker *et al*. 1984). All seabirds that entered the designated area (200 m) were counted during 10 minutes. The 200-m radius was calibrated periodically throughout the day by using the methods proposed by Heinemann (1981). The distance of shy-type albatross relative to the vessels was assessed by means of a digital rangefinder Bushnell Yardage Pro Sport 450 with a laser rangefinder monocular of 5-731 ± 1 m accuracy. Audiovisual recordings (video and digital photos) were obtained for most of the shy-type albatrosses sightings.

RESULTS

Along the reported years (2008-2011), 22 sightings of shy-type albatrosses comprising up to 49 individuals

were made from the vessels (Table 1), chiefly between 39ºS to 44°S and 55ºW to 60ºW. Overall (pooled) sightings happened on the continental shelf and shelf-break area, mainly at depths between 80 and 300 m (Figure 1). The closest position of a shy-type albatross sighting from the South American continent measured using Google Earth was about 170 km or 92 nautical miles south-southwest of Mar del Plata, northern Argentina.

TABLE 1. Dates, locations, and number of shy-type albatrosses sighted in association with Argentinean commercial bottom ice-trawlers, 2008-2011.

Date	Latitude	Longitude	Abundance		
			Adult	*Immature*	*Total*
May 05, 2008	40º 00´S	56º 17´W	0	1	1
May 12, 2008	39º 37´S	56º 17´W	0	1	1
May 13, 2008	40º 06´S	56º 28´W	0	3	3
May 16, 2008	41º 27´S	57º 57´W	0	5	5
May 17, 2008	41º 25´S	57º 39´W	0	7	7
May 18, 2008	41º 11´S	57º 26´W	1	2	3
May 19, 2008	41º 34´S	57º 49´W	0	1	1
May 19, 2010	42º 42´S	59º 47´W	1	0	1
May 22, 2010	43º 23´S	59º 31´W	2	0	2
May 23, 2010	43º 20´S	59º 26´W	3	0	3
May 24, 2010	43º 38´S	59º 45´W	1	0	1
May 25, 2010	44º 00´S	60º 28´W	1	0	1
May 26, 2010	42º 37´S	59º 03´W	3	0	3
May 27, 2010	41º 16´S	57º 14´W	2	0	2
June 01, 2010	39º 34´S	55º 19´W	2	1	3
June 05, 2010	39º 33´S	55º 55´W	0	3	3
June 07, 2010	39º 45´S	55º 57´W	0	3	3
June 08, 2010	40º 26´S	57º 01´W	0	1	1
June 13, 2010	39º 33´S	56º 03´W	0	2	2
November 24, 2011	42º 03´S	59º 49´W	0	1	1
November 26, 2011	42º 00´S	59º 58´W	0	1	1
November 29, 2011	41º 59´S	60º 21´W	1	0	1

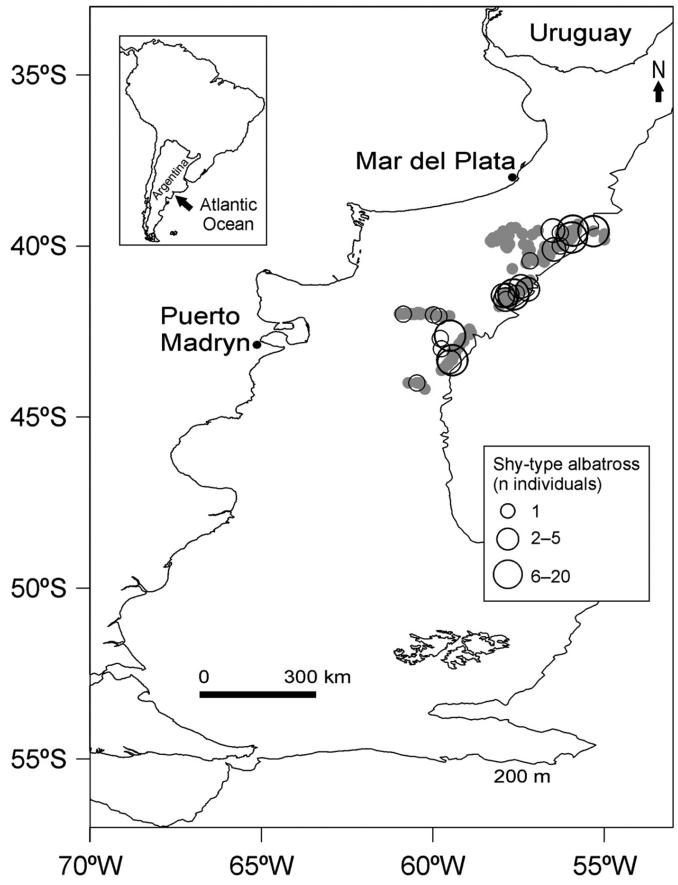

FIGURE 1. Sampling distribution of counts (solid grey circles) and sightings of shy-type albatrosses *Thalassarche cauta/steadi* (open black circles) recorded from observations aboard commercial ice-trawlers in relation to major fishing harbors in Argentina, 2008–2011.

Shy-type albatrosses occurred at bird assemblages associated with bottom ice-trawlers (mean frequency of occurrence = 13%, total number of counts = 224). The birds attended the vessels chiefly between April and May (n = 112 counts; 13 sightings), May and June (n = 83 counts; 12 sightings), and in November (n = 29 counts; 4 sightings). Most of the birds sighted (65%) were aged as immatures based on their grey bills with dark tips and grey head and nape. The bulk of the albatrosses observed in April-May had pale grey heads and necks, extending to form partial grey collars, indicative of older immature birds (Onley & Scofield 2007) (Figure 2a-c). Likewise, the majority of birds sighted in May-June were immatures, however some had pale yellowish bill with pale grey on sides, yellow on top and a small dark patch at the tip of the lower mandible, in addition to an orange skin at the base of the lower mandible, which is typical of adult birds (Fitter 2008, Shirihai 2008) (Figure 2d-f). The majority of the records obtained in April-May ranged from one up to seven shy-type albatrosses, while up to nine birds were sighted in May-June. Only two immatures and one adult bird were sighted in November.

The sightings of shy-type albatrosses occurred chiefly during trawling and hauling operations, when most of the birds are attracted to fishery discards or by fish and squids stolen from the nets. In general, the behavior of

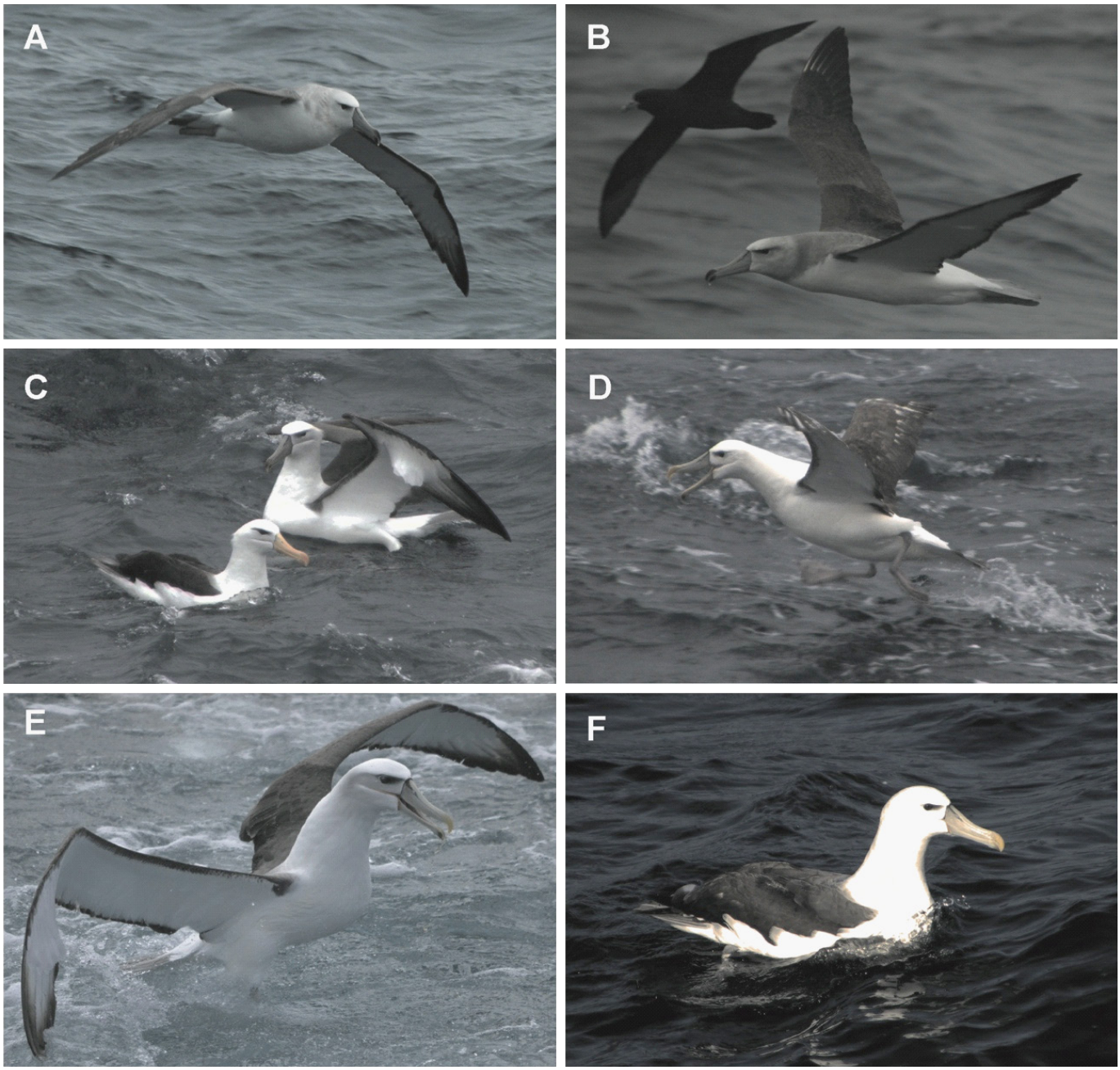

FIGURE 2. Shy-type albatrosses photographed in flight and resting on the surface of the water recorded in association with ice-trawlers off the Argentine Continental Shelf, 2008–2011, immature birds: (a-c, in the latter note an adult Black-browed Albatross *T. melanophris* in close proximity to a shy-type albatross extending its wings); adult non-breeding birds (d-f).

shy-type albatrosses fluctuated from remaining stationary astern on the sea surface in the vicinity of other seabirds (of which Black-browed Albatrosses *T. melanophris*, Southern Giant Petrels *Macronectes giganteus*, White-chinned Petrels *Procellaria aequinoctialis*, and Cape Petrels *Daption capense* were the most common) to actively feeding upon fishery discards relatively close to the vessels. The mean (± 1 SD) distance (in m) of shy-type albatrosses relative to the vessel was estimated in 32.3 ± 3.6 m (n = 7) during discard operations in May-June (Seco Pon *unpubl. data*). Although shy-type albatrosses were often observed feeding upon fishery discards relatively close to the area where the warp cables entered the water, no individual was ever observed interacting (*i.e.*, colliding) with fishing gear or incidentally captured when combining overall sightings.

DISCUSSION

Although we do not provide the first record of shy-type albatrosses for Argentina, the data reported here indicates that the Patagonian shelf is an important contemporary feeding ground for these species. White *et al*. (2002) reported that between 1998 and 2001 a total of 25 shy-type albatrosses were recorded in Malvinas (Falkland) waters. The majority of records were of immature birds, with the exception of two records of adult birds. All records were in the period between January to May and the majority was from waters to the north or northwest of the islands (White *et al*. 2002). Recent findings by Jimenéz *et al*. (2009) of up to 20 shy-type albatrosses – chiefly immature birds with the exception of two adults – attending pelagic longline vessels on the slope of the Common Argentinean-Uruguayan Fishing Zone mainly from late July to December, and by Marin (2011) of 18 immature birds in March 2008 and of one immature individual in March 2010 sighted from opportunistic vessels in a restricted marine region of the southwestern Atlantic Ocean suggest that shy-type albatrosses may be more widely distributed both spatially and seasonally in the country's shelf than previously thought. In fact, prior to this contribution none of the several seabird-fisheries research campaigns conducted by the two authors aboard commercial bottom longline and trawl vessels operating in southern waters of the Argentine Continental Shelf up to 57°S have produced sightings of shy-type albatrosses in the last 10 years (*pers. obs.*). Thus, we extend observations of shy-type albatrosses to the waters of the Argentine Continental Shelf off Puerto Madryn (42°S), confirming the presence of the species along the coast of the northern Argentine platform and corroborating with a more spatio-temporally extended database a similar temporal pattern as found by White *et al*. (2002) and Marin (2011).

Our records also highlighted the occurrence of shy-type albatrosses during the late austral spring (*e.g.*, November), though they occurred in low numbers and relatively closer to the shore. The high proportion of juvenile birds recorded in Argentine waters could be due to their greater propensity to wander during their first years of life, while adults are more restricted in their distribution, as they remain closer to their colonies, which is the case for at least *T. cauta* (Brothers *et al*. 1998). Other confirmed records of shy-type albatrosses in the region were obtained in southern Brazil (Petry *et al*. 1991, Lima *et al*. 1994, Gianuca *et al*. 2011) and on Bird Island, Georgias del Sur (South Georgia) (Phalan *et al*. 2004).

Finally, it should be highlighted that all our sightings were of birds attending commercial fishing activities, as it is also the case of the shy-type albatrosses recorded by Jimenéz *et al*. (2009) and Gianuca *et al.* (2011). Shy-type albatrosses have been previously recorded interacting with longline and trawl fisheries globally (Bartle 1991, Abbott *et al*. 2006, Baker *et al*. 2007), and the South Atlantic seems not to be an exception (Jimenéz *et al*. 2009, Gianuca *et al*. 2011). It is concerning that shy-type albatrosses could be regularly attending commercial fisheries, since these near threatened species may be affected by fishing operations during their attendance at waters of South America. Further studies that monitor and provide more information about these interactions with commercial fishing vessels should be encouraged, along with further training programs to upgrade the skills of Argentine fisheries' observers.

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