



Jigging Initiative

Observations of high sea jigging vessels from a Falkland Islands Fishery Patrol Vessel



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The master and crew of the Fishery Patrol Vessel *Dorada*

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Introduction

Several methods of fishing are licensed in the Falkland Islands Conservation Zone, trawling and longlining have both been documented previously to have detrimental effects on seabird populations, especially the black-browed albatross *Thalassarche melanophrys* (Reid *et al.*, 2004) listed as *endangered* by IUCN. Trawl fisheries cause significant seabird mortality through the collision of birds, foraging on factory discharge, with the trawl cables (Sullivan *et al.*, in press). The longline fishery causes mortality through the incidental capture of seabirds foraging on baited hooks during setting procedures (Reid *et al.*, 2004). Both fisheries have been the subject of several years' research in the Falkland Islands through co-operation between Falkland Conservation's Sea Birds At Sea Team (SAST), the Falkland Island Fisheries Department (FIFD) and the local fishing industry.

Relatively simple and inexpensive solutions to the problem of incidentally hooked (longline fishery) and cable-struck (trawl fishery) birds have been developed and incorporated into the fishing licenses, preventing large seabird mortality. The result of the research culminated in the Falkland Islands National Plan Of Action – Seabirds (NPOA-S) (Sullivan, 2004) and has provided the first step into mitigating seabird mortality. A thorough review of these mitigation devices can be found in Sullivan (2004) and Sullivan *et al.* (in press a).

The jigging fleet is a distinct fishery and has historically provided the majority of annual income to the islands via fishing license revenue (Falkland Islands Government, 2001). The fishery targets the Argentine short-fin squid *Illex argentinus* between Uruguay and the Falkland Islands during the months of December through to June, with vessels fishing in the EEZ between February and June (Falkland Islands Government, 2005). The squid are associated with the convergence of the cold, nutrient rich northerly-flowing Falklands Current and the warm southerly-flowing Brazilian Current (Rodhouse *et al.*, 1995). At the merging of the waters, high marine productivity causes the squid to aggregate to feed. At the convergence the jigging vessels congregate in great numbers with over 300 vessels not uncommon. Over fifty vessels are regularly licensed to fish in the EEZ (Falkland Islands Government, 2005).

The method of fishing is a relatively environmentally friendly, engines are turned off and sea anchors deployed to maintain position. Fishing is conducted at night and bright lights attract krill and plankton that in turn attract the higher predator squid. Brightly coloured lures are carried by 2kg weights on long monofilament line deployed from outboard arms. Each vessel may have over one hundred jigging arms, each with several lures with a double crown of barbless hooks. The lures are raised and lowered by an elliptical drum that, when rotating, causes the lures to 'jig' up and down in the water as they rise and fall through the water column. This movement attracts the squid, which attack the lures and are entangled by the tentacles on the barbless spines. Catches up to 93,924 tonnes in a month have been recorded in the past indicating the great aggregations targeted by the vessels (Falkland Islands Government, 2001) although more recent catches have been much lower with only 1,700 and 8,000 tonnes caught in the Falkland Island Zone in 2004 and 2005 respectively (Falkland Islands Government, 2005).

From data recorded from trips by the SAST, little interaction exists between the fishing gear and seabirds inside or out of the Falklands Zone (Sullivan and Reid,

2003). Therefore there is little reason to investigate mitigation devices for this fishery. However, reports from fishery observers, fishery officers, yachtsmen and trawler captains (S. Crofts, pers. comm.; K. Passfield, pers. comm.; Anonymous, 2000; Sullivan and Reid, 2003; C. Freeman, pers. comm.) suggest that the crew of jigging vessels are intentionally targeting seabirds to supplement their diet. This covert targeting of seabirds makes investigation of the potential problem especially difficult.

The jigging initiative was set up to obtain as much information about the fishery as possible through direct observation of the fleet during fishing operations. The intention is to provide sufficient data to form the Plan Of Action – Jiggers, as recommended in the NPOA-S. This report summarises the first efforts through observations from the Fisheries Patrol Vessel *Dorada* during a trip north to count the jiggers operating on the high sea.

Methods

Observations were made from the bridge and bridge wings of FPV *Dorada* during daylight hours and assisted by the fishery officer onboard, who was collecting data on the position, callsign and number of the vessels for the Falkland Islands Government Fishery Department (FIFD).

The *Dorada* was directed by the fishery officer through the fleet at close quarters to help afford the best possible view of the vessels, the crew and the activity. Photographs were taken of any activity apart from the day-to-day fishing that may have indicated an interaction with seabirds. Observations were carried out with 7 x 50 binoculars and the naked eye whilst photographs were taken with a Canon EOS D300 and a 170 – 500mm Sigma zoom lens.

Date and time were recorded for each observation along with vessel details including callsign and flag. The presence or absence of fishing discards was noted plus the presence or absence of vessel rubbish in the surrounding water. The estimated number of birds attending the vessel was recorded using the scale 0 – 50, 51 – 100, 101 – 200, 201 – 500, 500 – 1,000 and 1,000+. Additional notes were added for each entry on an individual basis.

During poor weather conditions or visibility the FPV was not able to approach close to the jigging vessels for safety reasons.

Results

From a 10 day trip onboard FPV *Dorada* observations were made on the 11th and 13th December of the jigging fleet, indicating that a total of 108 vessels were fishing to the north of the Falkland Islands Conservation Zone. The majority of the vessels encountered were registered in China (34%) followed closely by Taiwan and Korea (26 and 24% respectively) (Figure 1).

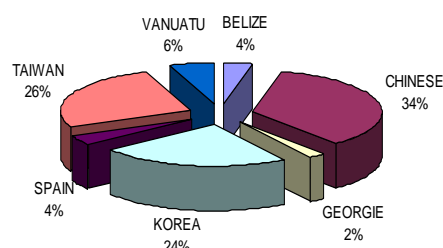


Figure 1: Fishing vessels by flag

Fishing vessels were discovered between the positions of 45°32'S and 45°54'S and occupying a distance of no more than five miles either side of the

60°30'W line. The group remained in the same location whilst *Dorada* moved north searching for more vessels. On the northward journey, *Dorada* failed to locate more fishing vessels, stopped short of 42°S and returned south past the fleet once more.

Of the 108 vessels, 52 were approached closely 56 times providing an excellent view of the infrastructure, water line around the boats and fishing gear. This allowed various photographs of non-jigging related activity to be obtained.

None of the jigging vessels were seen to discard fishery waste, presumably as there was no catch. Seven of the vessels were observed disposing of vessel litter directly into the water, or litter was observed close to the vessel therefore indicating a recent disposal. Of the 56 close approaches, 11 required a photograph to help describe the activity and obtain proof of the nature of the jigging fleet interaction with seabirds.

Non-jigging activity

Of the vessels with crewmembers performing non-jigging related, apparent fishing activity, 122 images were taken to aid description. A large percentage (63.2%, 12 vessels) of these vessels were Chinese flagged, the remainder Taiwanese (15.8%, 3 vessels), Korean (10.5%, 2 vessels) Vanuatu and Georgie with 5.3% each (single vessel). No direct take of seabirds was witnessed and it was impossible to directly comment on what the various devices were used for. The following was based on personal observations, past discussions with fishery observers, fishery officers and other people with experience on or close to jigging vessels.

Type of activity

Two main types of non-jigging activity were observed, on all but one occasion from the stern of the vessels. The two types of activity involved using monofilament jigging line or a rope dropped aft of the vessel in the surface waters or to depth. Figure 2 displays both types.



Figure 2: Monofilament (a) and rope (b) used from the stern of the jigging vessels

Technique detail

Lines off the stern appeared to be weighted and at depth (Figure 3 a) or non-weighted and at the surface or just below the surface (Figure 3 b). This was judged by the slackness of the line and how it moved in relation to the pitch and roll of the vessel.

On some occasions the line was observed hauled or set by the crew members, who were always watching over the lines, often keeping a hand to them. This confirmed

that some were weighted and others not. The close up shots in Figure 3 (c and d) show hooks with bait on the end of un-weighted lines.

There were two types of activity that occurred on the sterns of the jigging vessels that did not prove immediately obvious. One was the use of a pole attached to rope or monofilament line with what appeared to be a noose (Figure 3 e). This line was always observed at sea level. The other type, seen only once was the use of a glove attached to a monofilament line with a noose tied at sea level (Figure 3 f).



Figure 3: Weighted (a) and non weighted (b) lines used with hooks (c and d) or poles (e) or gloves (f).

Fish catches

From observations of lines being hauled on the stern of some vessels it was obvious that at least some of the activity reported here was in relation to fishing demersal fish species with hooked and weighted lines. Figure 4 shows a weighted line being hauled with a small, possibly notothenid fish caught on a hook.

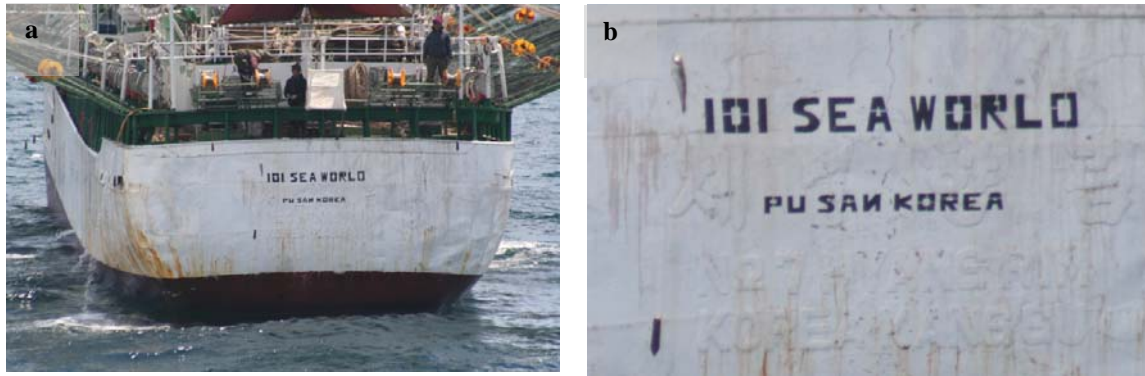


Figure 4: Catches of fish with weighted line (a) and zoom of catch (b)

Bird mortality

On two occasions bird remains were observed in the water aft of jigging vessels suggesting that the closest ships, up wind of the remains were responsible for the bird corpses. Vessels identified were BKUV8 and BKUU8, both Chinese flagged jigging vessels registered in Zhou Shan (Figure 5 a and b). On the first instance there were several objects in the water, identified through binoculars to be body parts of three black-browed albatross including three torsos (hence estimate of three birds) and various wings.

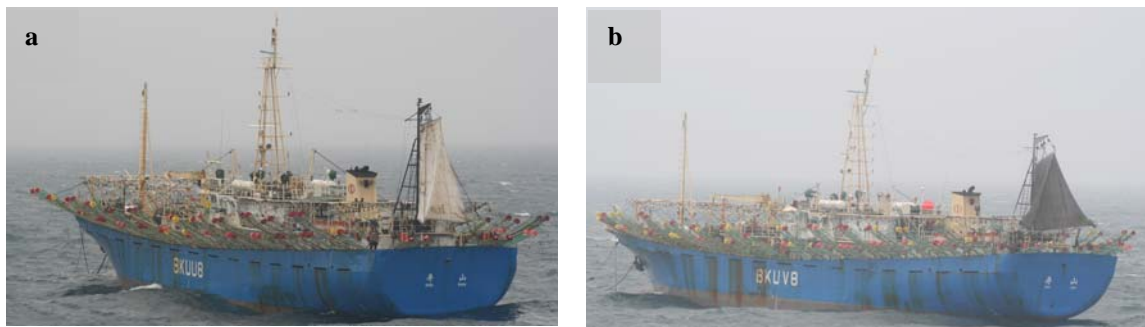


Figure 5: Jigging vessels BKUU8 (a) and BKUV8 (b) photographed from FPV *Dorada* when remains of black-browed albatross were found in the water close-by.

The corpses were collected by FPV *Dorada*'s rigid inflatable boat (R.I.B.) (Figure 6 a) and brought onboard for inspection before freezing as evidence. The remains collected were the skin of a single torso, two left wings, one right wing and some part of a third left wing (Figure 6 b). The skinned carcasses are consistent with a bird that has been prepared for consumption and it would be impossible for the animals to have arrived in this condition without human intervention.

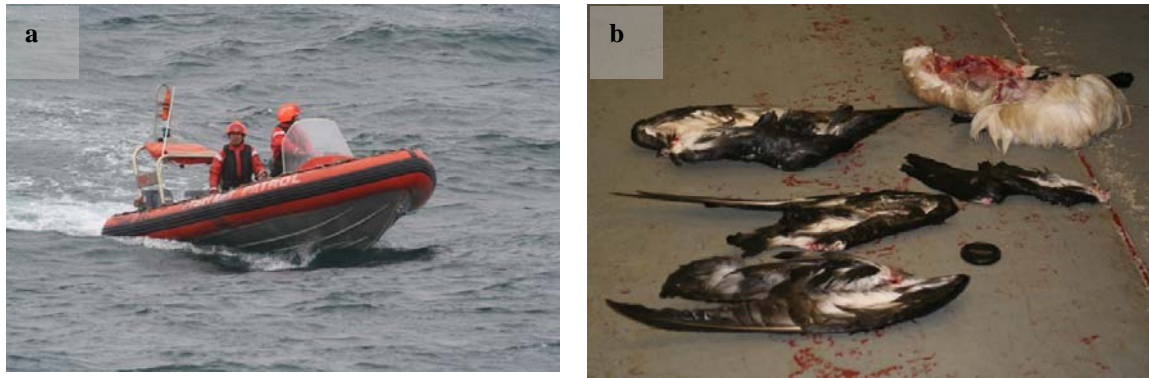


Figure 6: Collection of bird remains by the FPV's R.I.B. (a) and remains (b).

Discussion

Several boats were observed and recorded to be fishing in surface waters using baited hooks and what appeared to be objects with nooses, although there was a total of just four corpses identified in the water around the vessels. It must be taken into consideration that the chances of finding or observing birds intentionally caught for the galley are extremely low. It must also be taken into consideration that direct observations of this nature may be less likely by observers and fishery patrol vessels, as behaviour of crew is expected to alter in the presence of government officials. Therefore any estimates that are drawn are likely to be very conservative and care must be taken not to assume too much from this early result.

However, the collection of corpses from the waters in the direct vicinity of jigging vessels subsequent to photographic evidence of fishing in the surface waters strongly implies that jigging vessels are, to some extent targeting seabirds for consumption in international waters surrounding the Falkland Islands Conservation Zone. If the assumption is made that each of the 11 vessels observed fishing from the aft of the ship (23.15% of 52 vessels observed) take between one and three seabirds each two days, then of the 108 vessel fleet approximately 23 vessels may be targeting between one and three seabirds per two days. In a fishery that may last from December to May, this could mean **between 1,737 and 5,210 birds per year** or **between 11.5 and 34.5 birds per day** based on a six-month period.

Obviously this estimate is extremely unreliable and is simply calculated at this time to provide an idea of the seriousness of the issue that may be confronting the albatross populations. In previous years, larger quantities of vessels were present in and around the Falkland Islands Conservation Zone and this mortality estimate would be much greater.

Previous observations of corpses and fishing at the surface with hook and line during April 2003 indicate that this is not an isolated incident (Sullivan and Reid, 2003). The present report is based on observations during the hatching period, in which the albatross are making the shortest foraging trips to sea, staying close to the coast (Huin, 2003). Before and after hatching (between 12th and 21st December) the albatross are known to make longer foraging trips and therefore in to contact with jigging vessels.

Only with greater data sets and statistically robust examination of the data can an estimate be formed for the mortality associated with these fishing vessels. The

acceptance of this as a problem is the first step and these initial results when used with more data should help provide enough evidence to ensure that action is taken.

Recent extension of the Falkland Islands Conservation and Wildlife Ordinance (1999) to cover the full 200-mile limit of the Conservation Zone has improved the ability of the Falkland Island Government to police the fisheries with regard to the intentional catch of protected seabirds in Falkland Island waters. With this in place the fishery officers can now report for prosecution fishing vessels found to be harming, killing or damaging seabirds within the Falkland Islands Conservation Zone, although the level of proof required to prosecute and the subject of prosecution (vessel owners or crewmember) will be vital in any cases. With this considered, national governments do not control international waters, control being effected by the respective flag states of the vessels, and the majority of the problem is likely to take place outside of policed waters. With declining catches and therefore fishing license holders, the ability of the Falkland Islands Government to exert control over the fishery is reduced.

The paucity of data for this issue and the collection of more evidence is a great problem. This report forms the first part of the jigger initiative, aimed at providing a clearer picture of the scale of the problem in the Falkland Islands and in international waters. With Falklands Conservation, Falkland Islands Government and the fishing industry working together, as has been a proven success so far, this issue may be controllable.

Acknowledgements

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References

- Anonymous (2003) Conservation, overfishing. BBC Wildlife Magazine, February 2003: 59 - 63
- BirdLife International (2004) Tracking ocean wanderers: the global distribution of albatrosses and petrels. Results from the Global Procellariiform Tracking Workshop, 1 – 5 September, 2003, Gordon's Bay, South Africa, Cambridge, UK:
- Falkland Islands Conservation and Wildlife Ordinance (1999) The Falkland Islands Gazette Supplement 10: 2-18
- Falkland Islands Government (2001) Fisheries Department Fishery Statistics, Volume 6, 2001, Stanley, FIG Fisheries Department
- Falkland Islands Government (2005) Fisheries Department Fishery Statistics, Volume 9, 2005, Stanley, FIG Fisheries Department
- Reid, T.A., B.J. Sullivan, J. Pompert J, Enticott and J.W. Black (2004) Seabird mortality associated with Patagonian Toothfish (*Dissostichus eleginoides*) longliners in Falkland Islands waters. *Emu*, 104: 317-325
- Rodhouse, P.G., J. Barton, E.M.C. Hatfield and C. Symon (1995) *Illex argentinus*: Life cycle, population structure, and fishery. ICES Marine Science Symposium, 199: 425-432
- Sullivan B.J., T.A. Reid, and L. Bugoni (in press) Seabird Mortality in the Falkland Islands and beyond. *Biological Conservation*, submitted
- Sullivan B.J., P. Brickle, T.A. Reid, D.G. Bone and D.A.J. Middleton (in press a) Mitigation of seabird mortality on factory trawlers: trials of three devices to reduce warp cable strikes. *Polar Biology*, submitted
- Sullivan, B.J. (2004) Falkland Islands National Plan Of Action – Seabirds. Report to Falkland Islands Government, Falklands Conservation, Stanley, Falkland Islands
- Sullivan, B.J. and T.A. Reid, (2003) Seabird Mortality in Fisheries and Mitigation techniques in Falkland Island Waters 2003/04. Falklands Conservation report, Falklands Conservation, Stanley, Falkland Islands