

Presence of sperm whales in Chatham Strait: A model for avoidance to reduce interactions with the state-managed sablefish fishery using SEASWAP (Southeast Alaska Sperm Whale Avoidance Project)

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Years and numbers

In 2008, sperm whales were reported for the first time in the inside waters of Southeast Alaska in Chatham Strait during the Alaska Department of Fish and Game (ADFG) longline assessment survey for sablefish (Table 1). Vessels were entering lower Chatham to fish and reported depredation by sperm whales. Sperm whales were observed as far north as Kelp Bay that year, but no more than a few (2) whales were reported in total. In August 2010, SEASWAP placed 4 satellite tags on sperm whales offshore near the Spencer Spit, off Cross Sound. Two of those whales, (GOA-023) and (GOA-091) moved south after tagging, with parallel tracks, and entered Chatham Strait within a few days of tagging in late August (Fig 1). The tags stopped transmitting in early October but the whales were in Chatham until at least October 10 when photographed by fishermen at Patterson Point. No more than two whales were reported in 2010. On September 16, 2014, one month after the fishery opened, SEASWAP tagged two sperm whales that had been depredated longline fishing gear in southern Chatham Strait (Fig 2). There were 3 whales photo-identified in total during tagging (GOA-023, GOA-086, and GOA-091) and two were the same individuals that ventured into Chatham in 2010 (GOA-023 and GOA-091). There may have been as many as five whales in Chatham in 2014. In summary, SEASWAP has data documenting one to four sperm whales present each year in Chatham Strait in 2008, 2010 and 2014. ADFG logbook data documented depredation in 2008 to 2014 with no reports in 2009 (Table 1).

Table 1. Summary of sperm whale observations from satellite tagged data from SEASWAP and reports in Chatham Strait provided by Alaska Department of Fish and Game.

Year	SEASWAP Data from Satellite Tags and Fishermen Reports	Chatham Fishery Logbooks Reported Depredation	ADFG Survey Presence of Sperm Whales
2008	2 whales reported	1 trip out of 119	Whales near vessel, depredation uncertain
2009	none	None or of 105 trips	None
2010	2 whales tagged	5 trips out of 102 trips	None
2011	none	4 trips out of 85 trips	None
2012	none	3 trips out of 82 trips	1 whale; no depredation
2013	none	2 trips out of 84 trips	None
2014	3-5 observed by fishermen (3 whales photo-id; 2 tagged)	8 trips out of 77 trips	None

Submitted by Linda Behnken

Avoidance as a means of reducing interactions in 2014

SEASWAP set up a reporting system for fishermen to be alerted to the locations of tagged whales in Chatham Strait in 2014. Tag locations were updated daily on the Alaska Longline Fishermen's Association (ALFA) website, and were provided to the Alaska Department of Fish and Game (ADFG) as well as the Petersburg Vessel Owner's Association (PVOA) daily. In addition, fishermen were provided with a contact number for more frequent updates of whale locations. While one tag stopped transmitting a week after deployment (GOA-091), the second tag has been consistently steady (GOA-086).

All nine fishermen who requested text message updates while they were fishing in Chatham Strait were able to successfully avoid sperm whales. Other fishermen were likely able to avoid sperm whales by accessing the ALFA website for updated locations and SEASWAP is in the process of contacting permit holders to determine if this was the case. On October 29 2014 SEASWAP re-sighted both whales confirming that these two individuals were still traveling together in Chatham Strait. The second tag is still transmitting today (GOA-086), over 158 days after it was deployed as of 22 Feb 2015. The whale stayed in Chatham, venturing into Lynn Canal, north of Juneau, in October, November, and December (Fig 3), before moving south again and exiting Chatham on December 28th, 2014. The whale has continued to move south steadily at approximately 2.5-3.5 knots, and as of Sunday February 22 2015, was transmitting offshore of the Baja Peninsula (Fig 4).

Summary and future directions

There is no historic record of sperm whales occurring in Chatham Strait despite the presence of a whaling station in lower Chatham Strait (at Port Armstrong) which apparently towed whales from offshore for flensing. Thus from reviewing the historical whaling data the presence of sperm whales in Chatham Strait is relatively new. It is very likely that these interactions may signal future patterns of behavior unless the opportunity for depredation is curtailed. While, the frequency of interactions with the fleet may increase there are factors within the fishery that may have prevented more whales from engaging in this behavior. Typically each vessel is present for only a few days due to the small individual vessel quota for each permit and the fleet is pretty spread out temporally over the opening period. This reduces opportunity for whales to figure out where the fishing effort occurs. The fact that the same whales have been seen in Chatham Strait across multiple years gives insight into the site fidelity of individuals and also that whales associate with the same individual whales over time. This social behavior of repeated associations among individuals has likely limited the spread of depredation in Chatham Strait to the larger population of sperm whales in the Gulf of Alaska. This perhaps has contained the information that Chatham has vessels fishing for sablefish to only a small circle of whales that associate with each other. Regardless of how fast this behavior has increased, the expansion by sperm whales into Chatham Strait provides an opportunity for the fishing fleet to limit the "reward" to whales for this behavior. Using avoidance as demonstrated in 2014 vessels can circumvent interacting with sperm whales. Towards this goal, SEASWAP aims to establish a real-time, interactive reporting network with managers and fishermen with concurrent acoustic monitoring of Chatham Strait. Documenting sperm whale seasonal presence visually, acoustically and geographically from satellite tracking will provide insight to individual behavior and interactions. This combined tactic will allow fishermen to continue successfully

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avoid whales in Chatham Strait while simultaneously curbing the social transmission of this behavior.

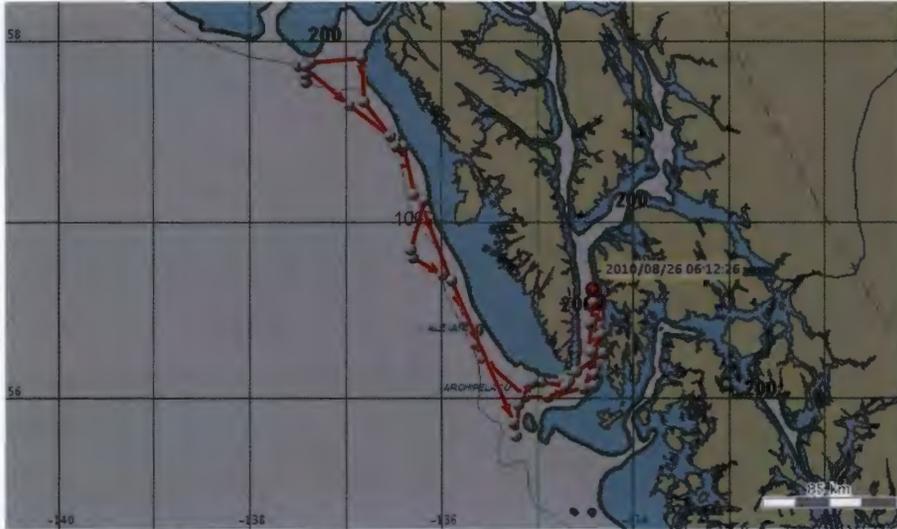


Figure 1. Sperm whale SWsat13 and SWsat15 tracks from August 17-26, 2010 showing the two individuals moving into Chatham during the fishery.



Figure 2. Russ Andrews, SEASWAP collaborator, deploys a satellite tag onto GOA-086 in Chatham Strait on September 16, 2014. Research conducted under NMFS Permit #14122.

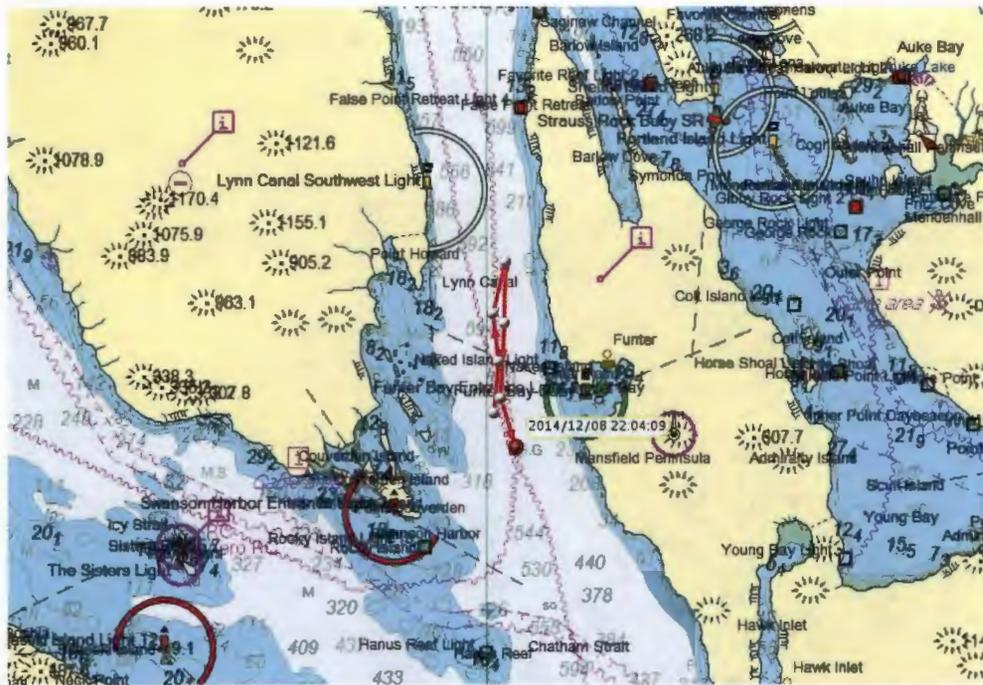


Figure 3. Satellite tag track of whale GOA-086 in southern Lynn Canal over a 24-hr period on December 8, 2014. The track shows the whale currently in southern Lynn Canal.



Figure 4. Sperm whale GOA86 track from February 18-23, 2015. The tag has now been active for 158 days, and transmits every five days.