Commercial Trap and Pot Fishing Effort in Georgia Ocean Waters:
A Report to the Atlantic Large Whale Take Reduction Team

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Introduction

Entanglement in commercial fishing gear is a leading cause of baleen whale injury and mortality (NMFS 2005, Knowlton and Kraus 2001). In order to estimate whale entanglement risk in vertical buoy lines, the National Marine Fisheries Service (NMFS) is developing a Geographic Information System (GIS)-based model to identify areas along the U.S. Atlantic coast where fishing effort and whale distribution overlap. Of particular interest are anchored gillnet, trap and pot fisheries. In August 2009 NMFS requested data on such fisheries from the Georgia Department of Natural Resources (GDNR) to be used in the GIS model. Numerous classes of data were requested, including types of fisheries, spatiotemporal effort and gear type. There are two types of fisheries in Georgia ocean waters that utilize fixed gear with vertical buoy lines: 1) blue crab and 2) black sea bass. Black sea bass effort offshore of Georgia is limited (n = 2 fishermen), but there are 140 licensed commercial blue crab fishermen in Georgia, a small portion of which fish in the Atlantic Ocean during the winter months. Unfortunately, quantifying blue crab effort specifically within ocean waters was not possible with existing GDNR fishing data for two reasons: 1) the majority of blue crab effort occurs inshore in the rivers and sounds, and 2) most blue crab fishermen report landings by the river or sound where they usually fish, even when they fish in adjacent ocean waters. As such, there are virtually no records of blue crab landings from the Atlantic Ocean in the GDNR commercial landings database. To address this data gap, we surveyed commercial blue crab and black sea bass fishermen, focusing specifically on those that fish (or are suspected to fish) in ocean waters (Appendix 1).

Methods

A commercial fishing survey was developed with the following classes of questions: 1) temporal effort, 2) spatial effort, 3) species targeted, 4) gear type and 5) attitudes about managing ocean waters to reduce whale entanglement. Surveys were mailed to all 140 licensed blue crab fishermen in December 2009. Sixteen fishermen returned completed surveys, eight of which acknowledged fishing in ocean waters. To identify potential non-respondents fishing in ocean waters, we contacted a subset of respondents along the coast and asked them for names of other fishermen possibly fishing in ocean waters; 17 non-respondent fishermen were identified. We attempted to contact all 17 non-respondents for follow-up telephone surveys. Seven fishermen

were contacted successfully and their survey results were added to the respondent category, for a total of 15 respondents that acknowledged fishing in ocean waters. We were unable to contact ten remaining non-respondents. Fishing effort for non-respondents was estimated as a function of: 1) ocean fishing effort reported by survey respondents, 2) the number of pot tags[1] purchased in 2009 by survey respondents, and 3) the number of pot tags purchased by non-respondents. In so doing, we made the following assumptions: 1) all blue crab fishermen that fish in ocean waters were correctly identified, 2) the ratio of pot tags purchased to pots fished in the ocean is similar among respondents and non-respondents and 3) spatiotemporal distribution in fishing effort is similar among respondents and non-respondents.

Black sea bass fishermen were surveyed with the same survey described above. One fisherman was surveyed by mail, the other by telephone.

Results

Blue Crab Fishery

We estimated that 25 commercial fishermen fish blue crab pots in Atlantic Ocean waters off Georgia during some portion of the year. This includes 15 survey respondents that acknowledged fishing in the ocean, plus 10 non-respondents that we were unable to contact.

Temporally, most effort was reported in December through March (figs. 2-3, tables 1-2), with peak effort reported in January and February (>2,500 pots estimated coast-wide). Fishermen noted that effort varied greatly from week to week and among years, depending upon weather, crab abundance, etc. We did not attempt to quantify within-month or inter-annual variability in effort.

Spatially, we estimated blue crab effort within two zones (fig. 1): 1) state ocean waters east of the COLREGS lines 0-3 NM from shore (fig. 2, table 1) and 2) federal waters 3-6 NM from shore (fig. 3, table 2). No respondents reported fishing greater than 6 NM from shore. Approximately 2000 pots were estimated in state ocean waters in January and February (table 1). Respondents reported fishing an average of 65 pots per fisherman in state ocean waters between December and March (n = 15 fishermen, range = 0-150 pots/fisherman). The average was as high as 90 pots per fisherman in January and February (n = 15 fishermen, 50-150 pots/fisherman). Effort in federal waters was less than in state ocean waters. Approximately 380-550 pots were estimated in federal waters between December and March (table 2). Respondents reported fishing an average of 22 pots per boat in federal waters between December and March (n = 15 fishermen, range = 0-100 pots/fisherman).

Sixty percent (n = 9) of respondents reported catching conch (i.e. whelk) in addition to blue crabs. Two fishermen stated that a whelk pot fishery could be developed in Georgia if market conditions were favorable. All respondents reported fishing wire mesh crab traps with a single vertical buoy line per trap. One fisherman reported using heavier, reinforced traps to reduce movements of pots in ocean currents. Trawls of traps are prohibited in Georgia state waters; no

[1] Blue crab fishermen are required to purchase a trap permit, a.k.a. “pot tag,” for every pot fished, up to a maximum of 200 tags per fishing license.

fishermen reported using trawls of traps in state or federal waters. Accordingly, no ground lines or anchor lines were used. All respondents reported using braided nylon rope for buoy lines. Five fishermen specifically reported using #10 (i.e. 5/16" diameter) braided nylon. Buoy line length ranged between 40 and 90 ft according to the water depth fished. Water depth in coastal Georgia is relatively shallow, ranging 0-20 ft in state ocean waters, and 10-40 ft in federal waters 3-6 NM from shore (NOAA Nautical Charts 11502 and 11509). All respondents reported using stainless steel hog rings for weak links. We assume that pots were left to soak continuously, as this is standard practice in the Georgia blue crab fishery.

Eighty percent (n = 12) of respondents said the ability to fish for blue crab in ocean waters is important or very important to their business. Twenty percent (n = 3) said the importance varies from winter to winter. The survey concluded with two hypothetical management scenarios. Fishermen were asked if they would support, oppose, or be neutral about closing state and federal ocean waters to pots between November 15 and April 15 to protect right whales. Eighty-seven percent (n = 13) of respondents were opposed and two fishermen did not answer. Lastly, fishermen were asked if they would support, oppose, or be neutral about closing **federal waters only** to pots between November 15 and April 15, while allowing state ocean waters to remain open. Sixty-seven percent (n = 10) were opposed, 20% (n = 3) were neutral and 13% (n =2) said they may be able to support it but needed to consider it further.

Black Sea Bass Fishery

We identified two commercial fishermen that fish for black sea bass with pots in federal waters offshore of Georgia. Fishermen reported fishing a combined maximum of 70 pots, 7-40 NM offshore, primarily between September and April (fig. 1, table 3). Fishermen stated that effort varied tremendously spatially and temporally, depending on market factors, fuel prices and whether the quota had been met (i.e. whether the fishery was open or closed). One fisherman said he had not fished his pots in at least one year. Soak time was described as less than 24 hours, because traps are often set for the day, or overnight, then hauled and taken back to shore. Standard square plastic black sea bass pots were used with a single vertical buoy line per pot. Fishermen did not report using trawls of pots. Number 10 (5/16" diameter) braided nylon was reported for most buoy lines, with black twisted poly line of unspecified diameter being used on occasion. Length of buoy line was estimated as 100-150 ft, or 2:1 scope depending on depth fished. One fisherman reported that the ability to fish for black sea bass in ocean waters was very important to his business, while the other said importance varied among years. Both fishermen opposed closing state and/or federal waters to pot gear in order to reduce risk of right whale entanglements.

Anchored Gillnet

We are not aware of any gillnet fishing in Georgia state ocean waters or federal waters offshore of Georgia. A small shad gillnet fishery operates in coastal Georgia during late winter and spring, but effort is confined to coastal rivers.

Discussion

Estimates of over 2,000 pots in Georgia ocean waters during the winter months are greater than we anticipated prior to this survey. While these findings are consistent with anecdotal reports that blue crab fishing effort has increased in ocean waters in recent years, further study will be required to determine whether effort is increasing and/or expanding further offshore. Any such trends should be monitored closely given that ocean waters offshore of Georgia are the calving grounds for endangered North Atlantic right whales between November 15 and April 15 each year (NMFS 2005).

It should be noted that our estimates were not statistically derived (i.e. error and variance were not estimated) and they are likely biased. For example, many fishermen reported moving pots back and forth frequently between ocean and inshore waters in response to weather, crab abundance and other factors. As such, fewer traps may be present in ocean waters at any given time during winter. Likewise, we cannot verify if we accurately identified all fishermen fishing in ocean waters.

Regarding whale entanglement risk, our findings indicate that most pot fishing effort in Atlantic Ocean waters off Georgia occurs in Georgia state waters within 3 NM of shore. Since right whales are rarely seen within 3 NM of shore (North Atlantic Right Whale Consortium, unpublished data), blue crab gear within 3 NM of shore likely poses little risk to right whales. However, right whales are frequently sighted in federal waters >3 NM from shore. Accordingly, blue crab and other pot gear may pose an entanglement risk to whales in federal waters off Georgia between November 15 and April 15 each year. Expansion of blue crab, black sea bass and other trap and pot fisheries into federal waters off of Georgia during winter would likely increase this risk. To keep the risk of entanglements low, expansion of trap and pot fisheries into federal waters off of Georgia between November 15 and April 15 should be discouraged. Doing so would be consistent with task 1.2 of the North Atlantic Right Whale Recovery Plan (NMFS 2005).

Literature Cited

Knowlton, A.R., and S.D. Kraus. 2001. Mortality and serious injury of northern right whales (*Eubalaena glacialis*) in the western North Atlantic Ocean. Journal of Cetacean Research and Management (Special issue) 2: 193-208.

National Marine Fisheries Service. 2005. Recovery Plan for the North Atlantic Right Whale (*Eubalaena glacialis*). National Marine Fisheries Service, Silver Spring, MD.

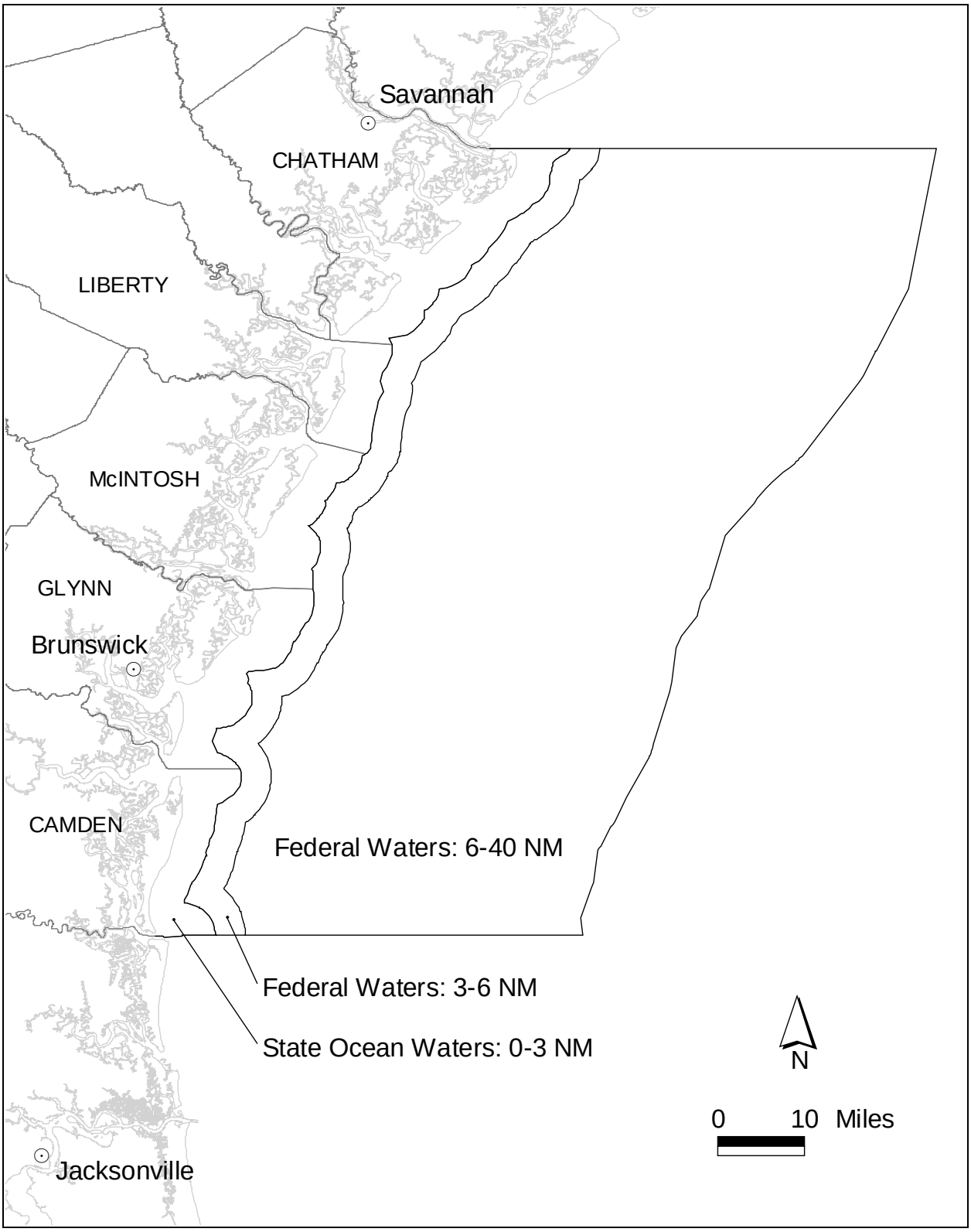

Figure 1. Pot fishing effort was estimated in three areas: 1) state ocean waters within 3 NM of shore, 2) federal waters 3-6 NM from shore and 3) federal waters 6-40 NM from shore.

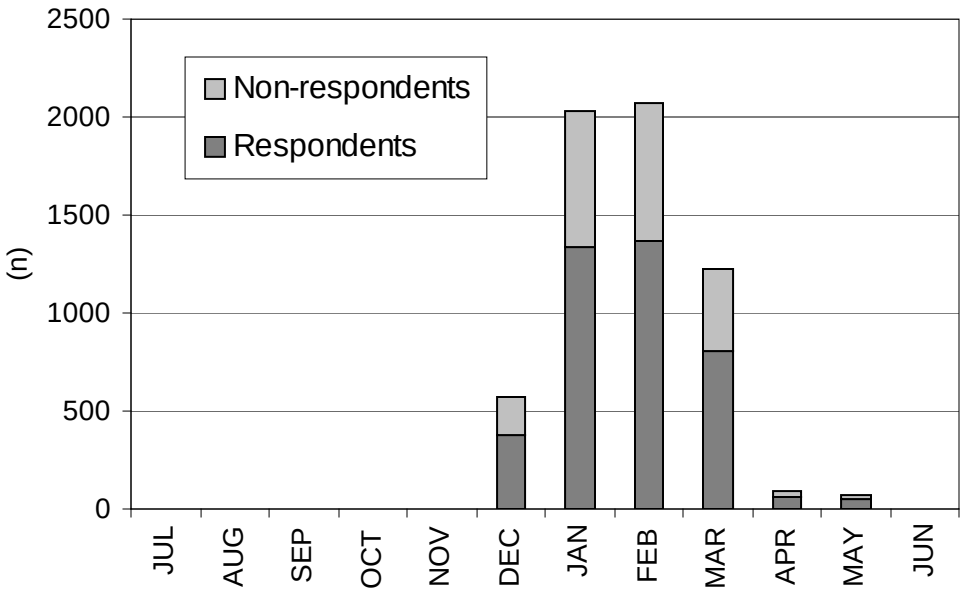

Figure 2. Estimated number of commercial blue crab pots in Georgia state ocean waters, 0-3 NM from shore, by month.

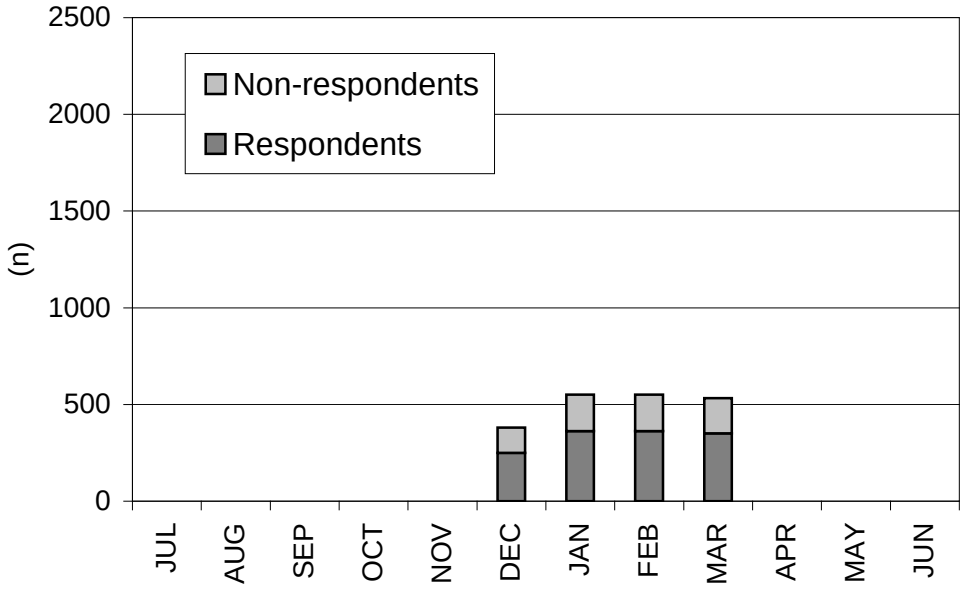

Figure 3. Estimated number of commercial blue crab pots in federal waters 3-6 NM offshore of Georgia, by month.

Table 1. Estimated number of commercial blue crab pots in Georgia state ocean waters, 0-3 NM from shore, by month.

	Fisher-men (n)	Pot Tags (n)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A. Number of pots fished by survey respondents	15	2500	0	0	0	0	0	375	1338	1363	805	60	50	0
B. Ratio of pots fished by survey respondents (Row 'A') to the sum of pot tags purchased by survey respondents (n = 2500 tags)	-	-	0.00	0.00	0.00	0.00	0.00	0.15	0.54	0.55	0.32	0.02	0.02	0.00
C. Estimated number of pots fished by non-respondents: sum of pot tags purchased by non-respondents (n = 1300) multiplied by Row 'B'	10	1300	0	0	0	0	0	195	696	709	419	31	26	0
D. Total estimated number of crab pots fished: Row 'A' + Row 'C'	25	3800	0	0	0	0	0	570	2034	2072	1224	91	76	0

Table 2. Estimated number of commercial blue crab pots in federal waters 3-6 NM offshore of Georgia, by month.

	Fisher-men (n)	Pot Tags (n)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A. Number of pots fished by survey respondents	15	2500	0	0	0	0	0	250	362	362	350	0	0	0
B. Ratio of pots fished by survey respondents (Row 'A') to the sum of pot tags purchased by survey respondents (n = 2500 tags)	-	-	0.00	0.00	0.00	0.00	0.00	0.10	0.14	0.14	0.14	0.00	0.00	0.00
C. Estimated number of pots fished by non-respondents: sum of pot tags purchased by non-respondents (n = 1300) multiplied by Row 'B'	10	1300	0	0	0	0	0	130	188	188	182	0	0	0
D. Total estimated number of crab pots fished: Row 'A' + Row 'C'	25	3800	0	0	0	0	0	380	550	550	532	0	0	0

Table 3. Maximum number of commercial black sea bass pots in federal waters 6-40 NM offshore of Georgia, by month.

Fishermen (n)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
2	20	20	70	70	70	70	70	70	70	70	20	20

Appendix 1: Commercial Fishing Survey

Georgia DNR Commercial Fishing Survey: Trap/Pot Effort in Ocean Waters

Please complete both sides of this survey and return it in the enclosed envelope to: Clay George, Georgia DNR, Nongame Conservation Section, 1 Conservation Way, Brunswick, GA 31520, (912) 264-7218. Thank-you.

Fisherman Name: _____ Date: _____

Telephone Number: _____ Buoy Number: _____

THE FOLLOWING QUESTIONS ARE FOR TRAPS AND POTS FISHED IN THE ATLANTIC OCEAN (EAST OF THE BEACH AND SOUND LIMITS). DO NOT INCLUDE INFORMATION ABOUT TRAPS AND POTS FISHED IN THE SOUNDS AND RIVERS.

Do you ever fish with traps or pots in ocean waters (east of the beach and sound limits)? Yes No

How many traps or pots do you fish in ocean waters? Please fill in the table below:

	Average Number of Traps and Pots per Area by Month											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
State Ocean Waters (beach to 3 miles)												
Federal Waters (beyond 3 miles)												

Where do you fish traps/pots in ocean waters (Examples: "1/4 mile off Wolf Island" or "Between ALT and F reef")?

Do you fish for anything other than blue crab when fishing traps/pots in the ocean? What species?

Do you lose more pots fishing in the ocean than in the sounds? If so, about how many do you lose per year?

About how long is the float line on your pots? What kind of float line do you use?

About how deep is the water where you fish?

(over)

Are your pots different from normal inshore blue crab gear? How?

Do you ever see right whales when you're fishing?

Does anyone else you know fish pots in the ocean?

Weak links are required on trap and pot buoy lines in ocean waters. What kind of weak links do you use? Do they cause you problems?

How important is the ability to fish pots in ocean waters to your business?

What if state and federal ocean waters east of the beaches and sound limits were closed to trap and pot gear from November 15 to April 15 to protect right whales from becoming entangled? Would you support, oppose or be neutral about a closure? Explain:

What if federal waters (beyond 3 miles) were closed to trap and pot gear from November 15 to April 15 to protect right whales, but state ocean waters remained open? Would you support, oppose or be neutral about a closure? Explain:

Thank you for participating in this survey.