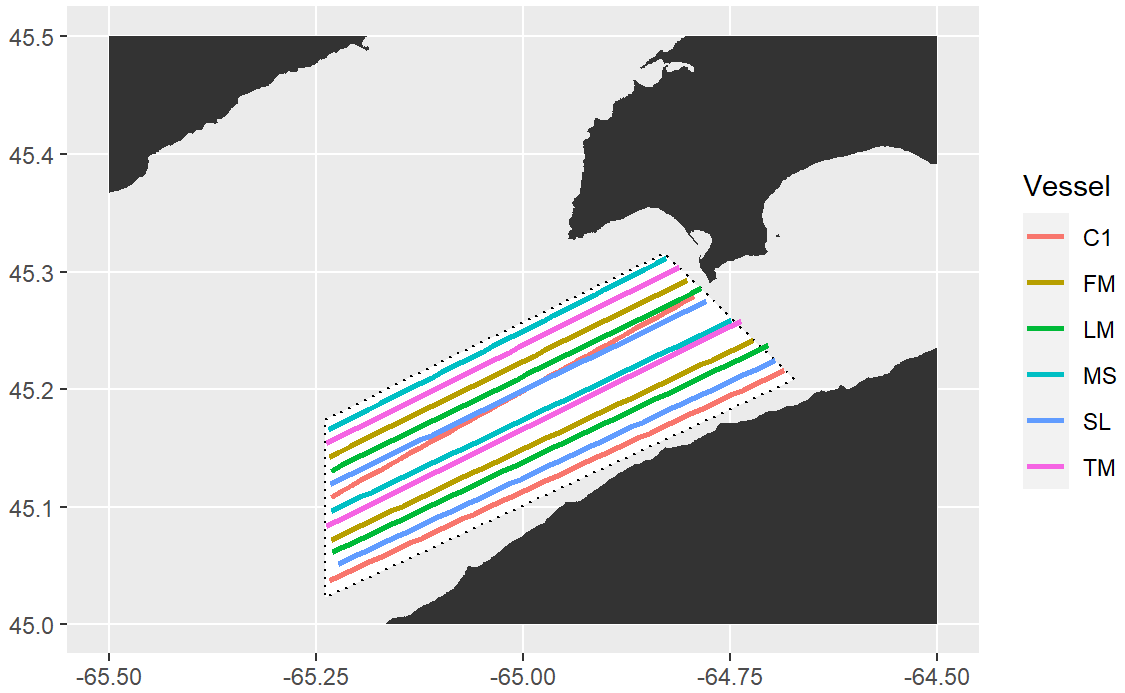
HSC Survey Results

Scots Bay Survey # 7 Results from 13/08/2023

Survey Details



Track plot and Survey Area

6 commercial purse seiners conducted this fishing survey on 13/08/2023 starting at 20:30:00, which was 2.48 hours before hide tide.

All vessels ran two transects each in the Main Survey Box.

There was a plankton tow and replicate conducted and CTD cast by Lady Melissa.

No tags were applied during this survey.

Samples were obtained for target strength estimation.

Tides Tables

2023-08-13 (Sun)

Time ADT	Height (m)	Height (ft)
04:32	1.5	5
10:43	8.9	29.1
16:54	1.9	6.2
22:59	9.4	30.7

2023-08-14 (Mon)

Time ADT	Height (m)	Height (ft)
05:22	1.5	4.9
11:32	9	29.4
17:41	1.9	6.1
23:46	9.4	30.9

Event Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2023-08-13		6	4.1	2.5	1.6	1.6	2.5	4	5.9	7.6	8.6	8.8	8.2	6.8	5.
2023-08-14	8.9	7.6	5.8	3.8	2.3	1.5	1.7	2.7	4.3	6.2	7.9	8.8	8.9	8	6.

Tide Schedule for Margaretsville NS, Station #315m Source: www.waterlevels.gc.ca

Acoustic Equipment

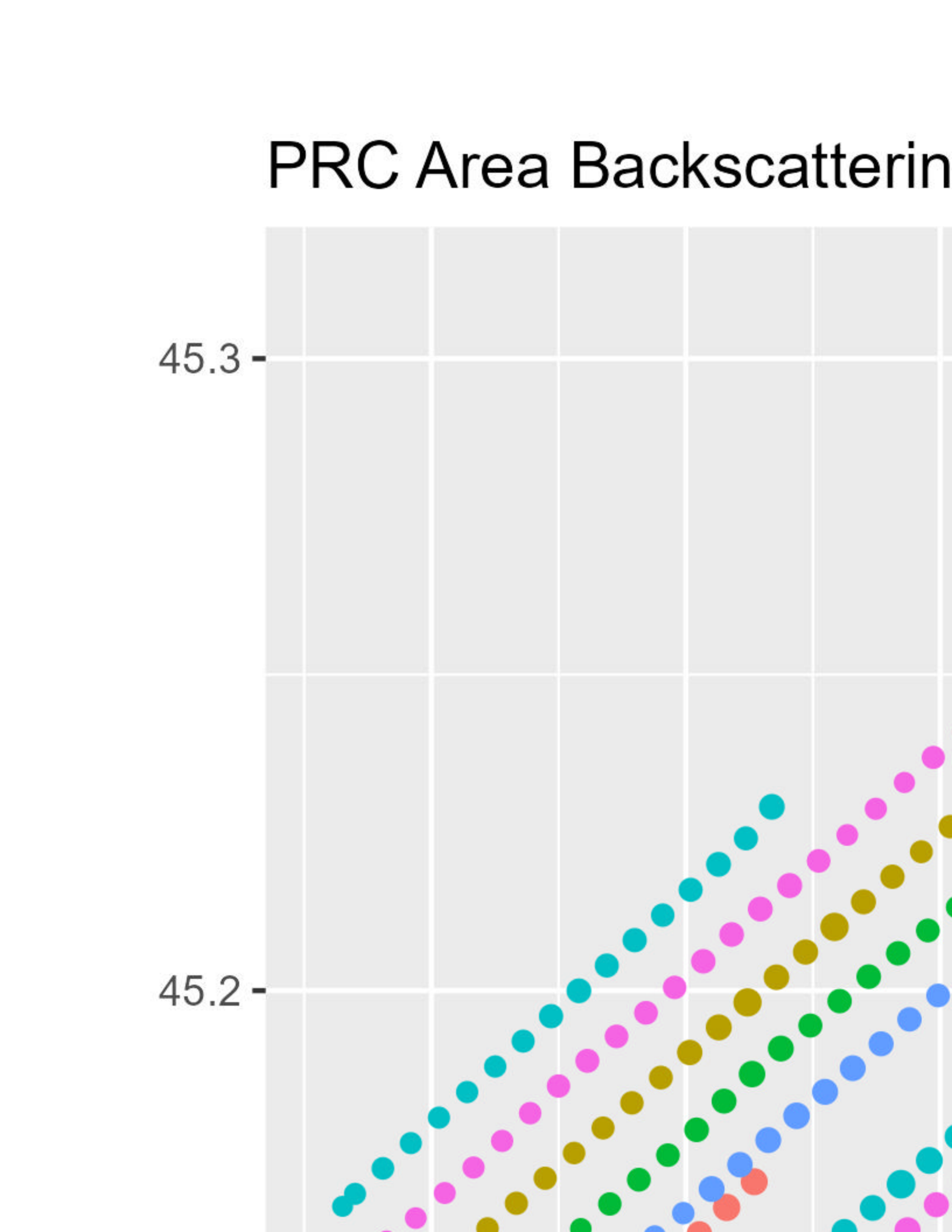
Each vessel was equipped with a Simrad ES38-18/200-18C combi (2-in-1) transducer prior to the survey that contains a 38kHz split beam and 200 kHz single beam transducer. Data was logged to the computer hard-drive for post-processing. All participating boats were calibrated on 38kHz before the survey.

Survey Results

Main Results

The results are subject to change as DFO will re-evaluate data editing, area estimation and apply a target strength.

Preliminary biomass prediction for Scots Bay using standardized parallel transects is 4,299mt, and with turnover applied 3,616mt.


PRC Area Backscatterin
45.3
45.2

Transect Details

Table 1: Transect Details

Vessel	Transect #	Date/Time Start	Date/Time End	Start Lon	Start Lat	End Lon	End Lat	Location	Distance (km)	Speed
C1	T01	2023-08-14 00:08:31	2023-08-14 03:09:16	-65.235	45.037	-64.685	45.216	SB	48.88	8.76
C1	T02	2023-08-14 04:04:43	2023-08-14 06:29:52	-64.793	45.279	-65.232	45.109	SB	40.53	9.05
FM	T01	2023-08-15 01:05:41	2023-08-15 03:56:22	-65.232	45.072	-64.722	45.242	SB	44.47	8.44
FM	T02	2023-08-15 04:28:46	2023-08-15 06:50:49	-64.802	45.293	-65.234	45.143	SB	37.96	8.66
LM	T01	2023-08-13 23:59:07	2023-08-14 02:55:19	-65.230	45.061	-64.705	45.237	SB	45.94	8.45
LM	T02	2023-08-14 03:24:56	2023-08-14 05:58:58	-64.785	45.286	-65.232	45.131	SB	39.37	8.28
MS	T01	2023-08-14 00:14:02	2023-08-14 02:52:16	-65.232	45.096	-64.749	45.259	SB	43.26	8.86
MS	T02	2023-08-14 03:27:11	2023-08-14 05:42:58	-64.828	45.311	-65.235	45.166	SB	37.35	8.91
SL	T01	2023-08-14 01:06:50	2023-08-14 04:04:59	-65.224	45.051	-64.696	45.225	SB	46.95	8.54

Vessel	Transect #	Date/Time Start	Date/Time End	Start Lon	Start Lat	End Lon	End Lat	Location	Distance (km)	Speed
SL	T02	2023-08-14 04:36:52	2023-08-14 07:13:32	-64.779	45.275	-65.233	45.119	SB	40.63	8.40
TM	T01	2023-08-14 00:06:21	2023-08-14 03:01:04	-65.237	45.083	-64.737	45.258	SB	44.00	8.16
TM	T02	2023-08-14 03:31:06	2023-08-14 05:59:44	-64.812	45.304	-65.237	45.154	SB	37.47	8.17

Survey Summary

Table 2: Acoustic Survey Results

Vessel	Transect No.	Target Strength (db/kg)	Mean Sa (/m2)	Biomass Density (kg/m2)
FM	T01	-35.5	-52.158	0.022
LM	T01	-35.5	-53.903	0.014
C1	T01	-35.5	-57.752	0.006
TM	T01	-35.5	-58.789	0.005
FM	T02	-35.5	-59.033	0.004
MS	T02	-35.5	-59.068	0.004
MS	T01	-35.5	-59.354	0.004
SL	T01	-35.5	-59.612	0.004
SL	T02	-35.5	-59.996	0.004
C1	T02	-35.5	-60.298	0.003

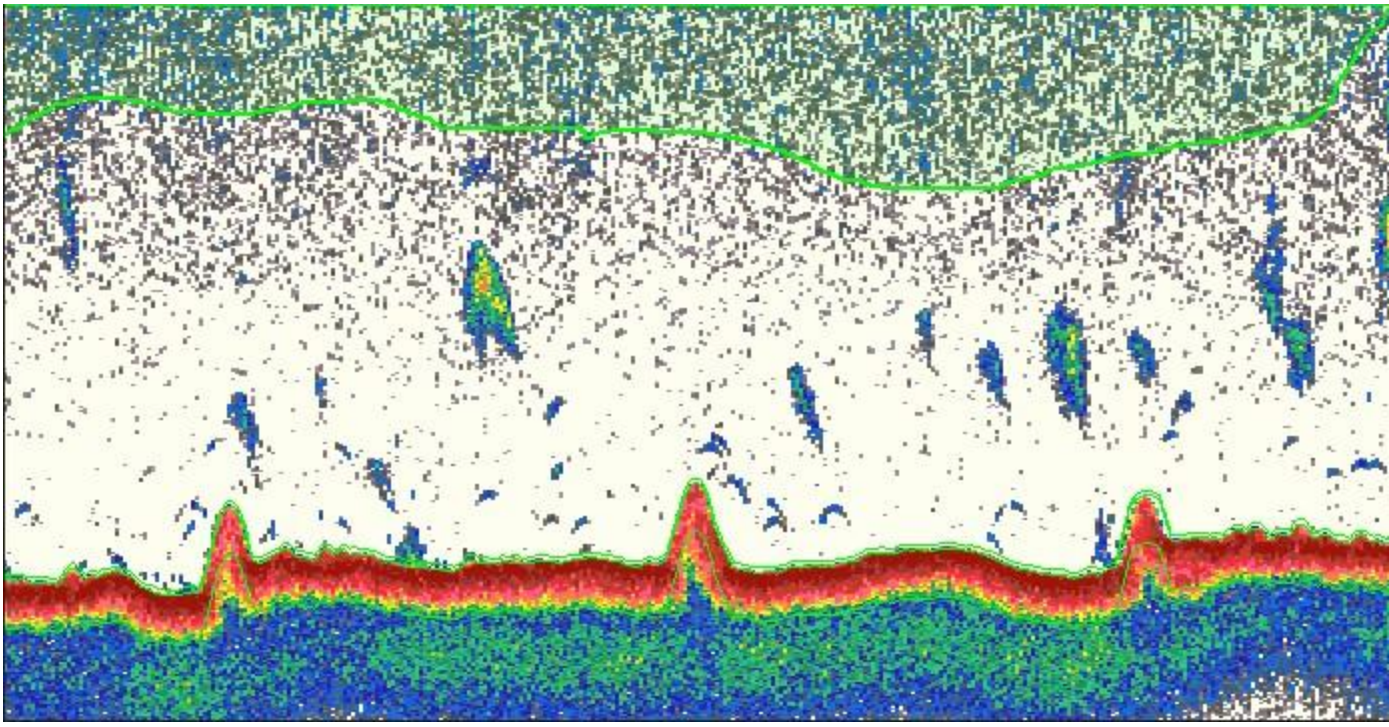
Vessel	Transect No.	Target Strength (db/kg)	Mean Sa (/m2)	Biomass Density (kg/m2)
LM	T02	-35.5	-60.659	0.003
TM	T02	-35.5	-62.007	0.002

Note:
Transects are listed from greatest to least backscatter.

Table 3: Survey Summary Table

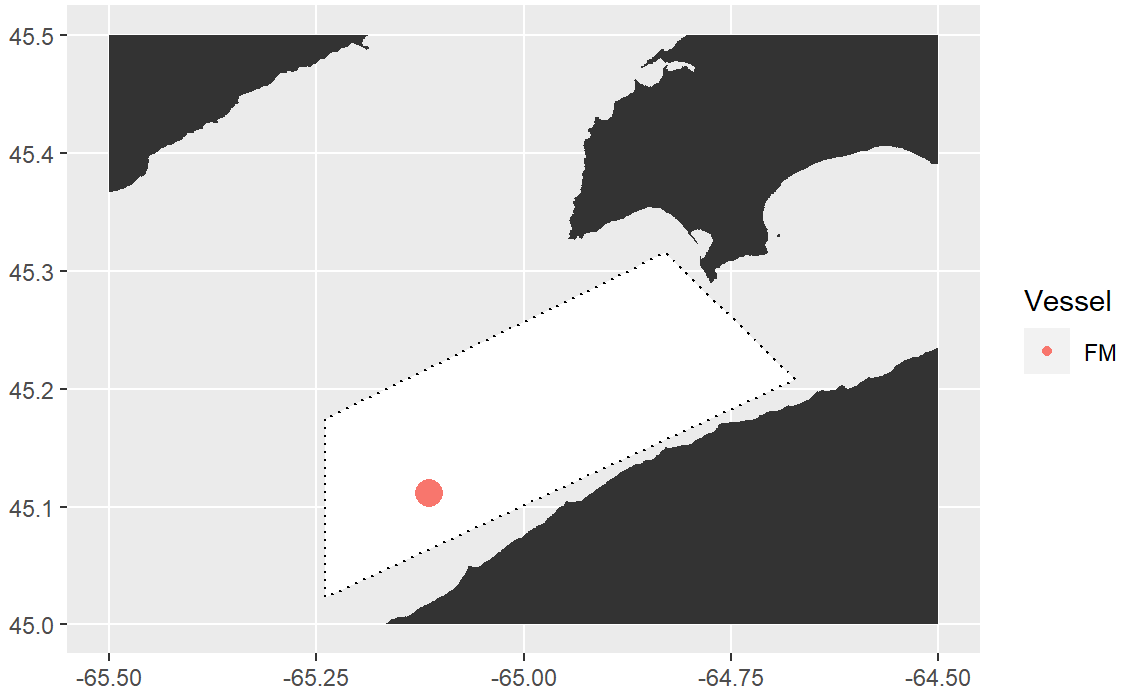
Layer	Target Strength	Area (km2)	Mean Sa	Density (kg/m2)	Biomass (tons)	Percent Area	Percent Biomass	Standard Error (tons)	Standard Error (%)
Main Box	-35.5	661	-57.3685	0.0063	4,298.806	NA	NA	1,097.66	25.53
Northern Box	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eastern Box	NA	NA	NA	NA	NA	NA	NA	NA	NA

Greatest Backscatter

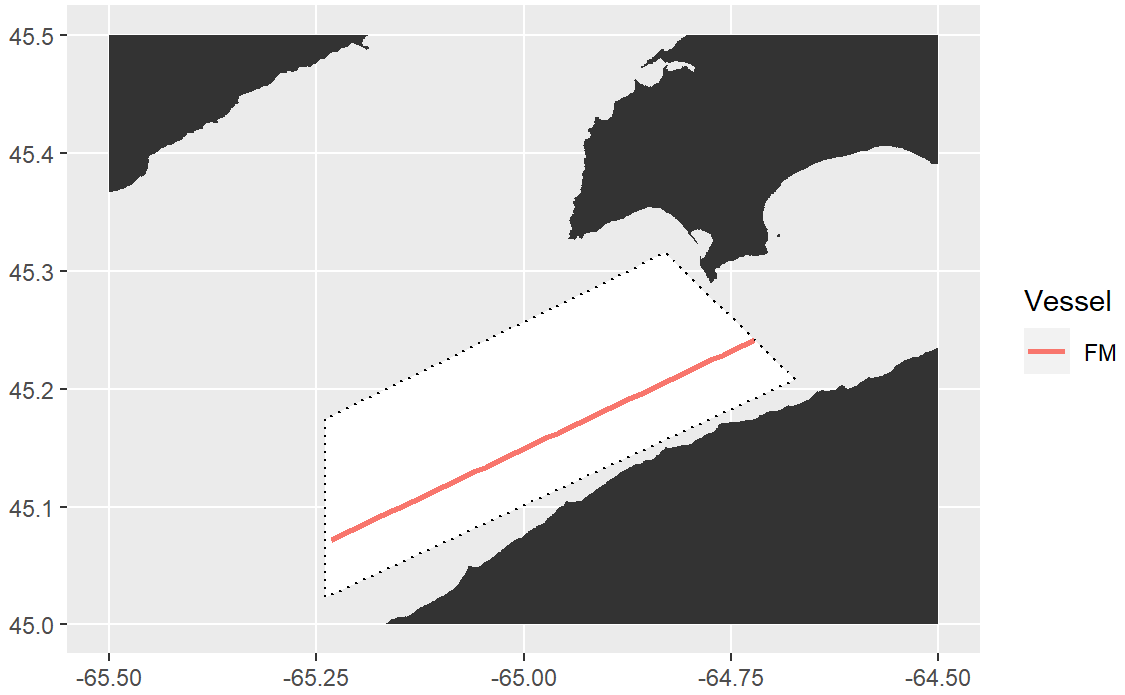


A snip from the transect with the greatest backscatter

The single point with the largest backscatter density (PRC) was recorded by FM, at the following location:



The transect with the overall largest biomass was recorded by FM, at the following location:



Annual Summaries

Table 4: Annual Comparison Table

		Current Year			Previous Year				
Ground	Survey Number	Survey Date	HSC Estimate	HSC Turnover Adjusted	Survey Date	HSC Estimate	HSC Turnover Adjusted	DFO Estimate	DFO Turnover Adjusted
Scots Bay	1	2023-05-22	40,856.000	40,856	2022-05-29	92,542	92,542	99,092	99,092
Scots Bay	2	2023-06-06	113,767.329	108,783	2022-06-12	93,163	80,663	113,792	100,407
Scots Bay	3	2023-06-18	34,279.387	15,158	2022-06-26	30,535	17,624	29,429	13,709
Scots Bay	4	2023-07-02	11,744.776	5,113	2022-07-10	9,886	5,432	7,892	3,515
Scots Bay	5	2023-07-16	19,282.634	17,575	2022-07-26	11,954	10,869	11,402	10,536
Scots Bay	6	2023-07-30	4,549.933	1,904	2022-08-07	4,900	2,901	6,150	4,248
Scots Bay	7	2023-08-13	4,298.806	3,616	2022-08-21	4,094	3,225	4,688	3,656
Scots Bay	8	NA	NA	NA	2022-09-05	20,439	19,939	21,420	20,848
Scots Bay	9	NA	NA	NA	2022-09-18	7,275	4,212	7,283	0
Scots Bay	10	NA	NA	NA	2022-10-03	4,573	3,613	4,152	0

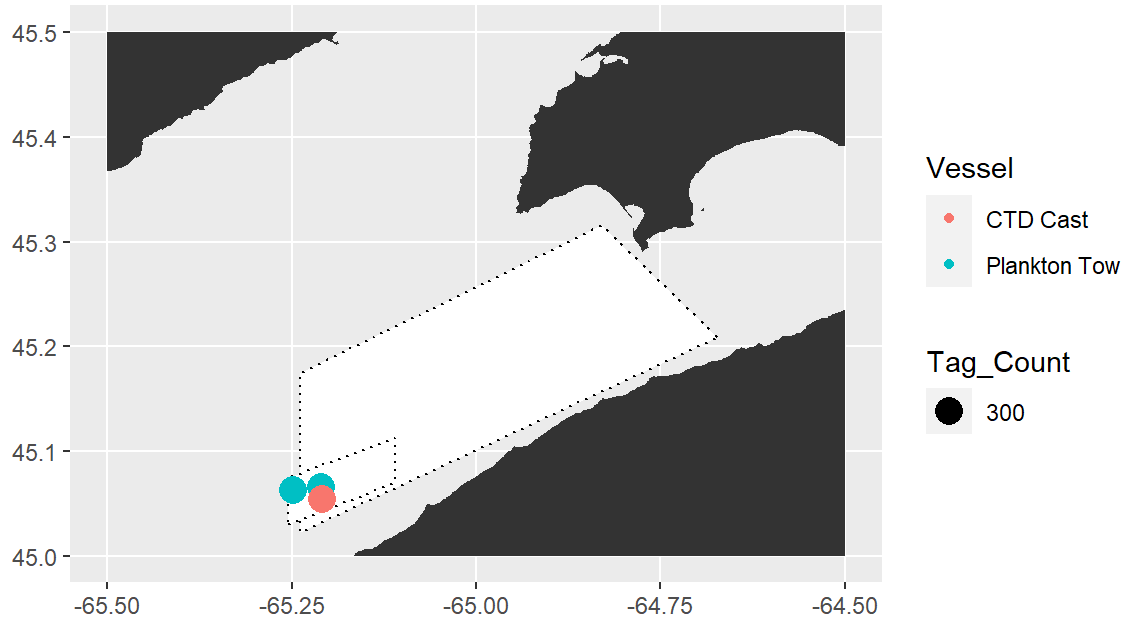
Table 5: Annual Summary Table

Year	Ground	HSC Estimate	HSC Turnover Adjusted	DFO Estimate	DFO Turnover Adjusted
2022	Scots Bay	279,361.0	241,020	305,300	256,011

Year	Ground	HSC Estimate	HSC Turnover Adjusted	DFO Estimate	DFO Turnover Adjusted
2023	Scots Bay	228,778.9	193,005	NA	NA

Tagging, Plankton, and CTD Data

Tag Data



Vessel

Tags

Plankton Data

Tow Summary Table

	Tow 1	Tow 2
Base Details		
Vessel	Lady Melissa	Lady Melissa
Set Number	SB2023-11	SB2023-12
Ground	SB	SB
Date	13/08/2023	13/08/2023
Wind Direction (km/h)	NW	NW
Swell (m)	0	0
Air Temp (c)	21	21
Tow Details		
Tow Start	19:06:00	19:27:00
Tow End	19:16:00	19:37:00
Start Lat	45.0625	45.0660
End Lat	45.05567	45.06033
Start Lon	-65.2485	-65.2100
End Lon	-65.22383	-65.22000
Avg Tow Depth (m)	1.3718477	0.9389333
Speed	6.7	3.3
Heading	60	230
Tide Direction	with	against
Other Data Collection		

	Tow 1	Tow 2
Flow Start	600052	650367
Flow End	650367	709731
No. Revolutions	50315	59364
Distance (m)	1352.115	1595.289
Volume	4247.669	5011.600
Secchi Disappear (m)	10	10
Secchi Reappear (m)	9.5	9.5

Tow Depth Profiles

Plankton tow depth profile #1

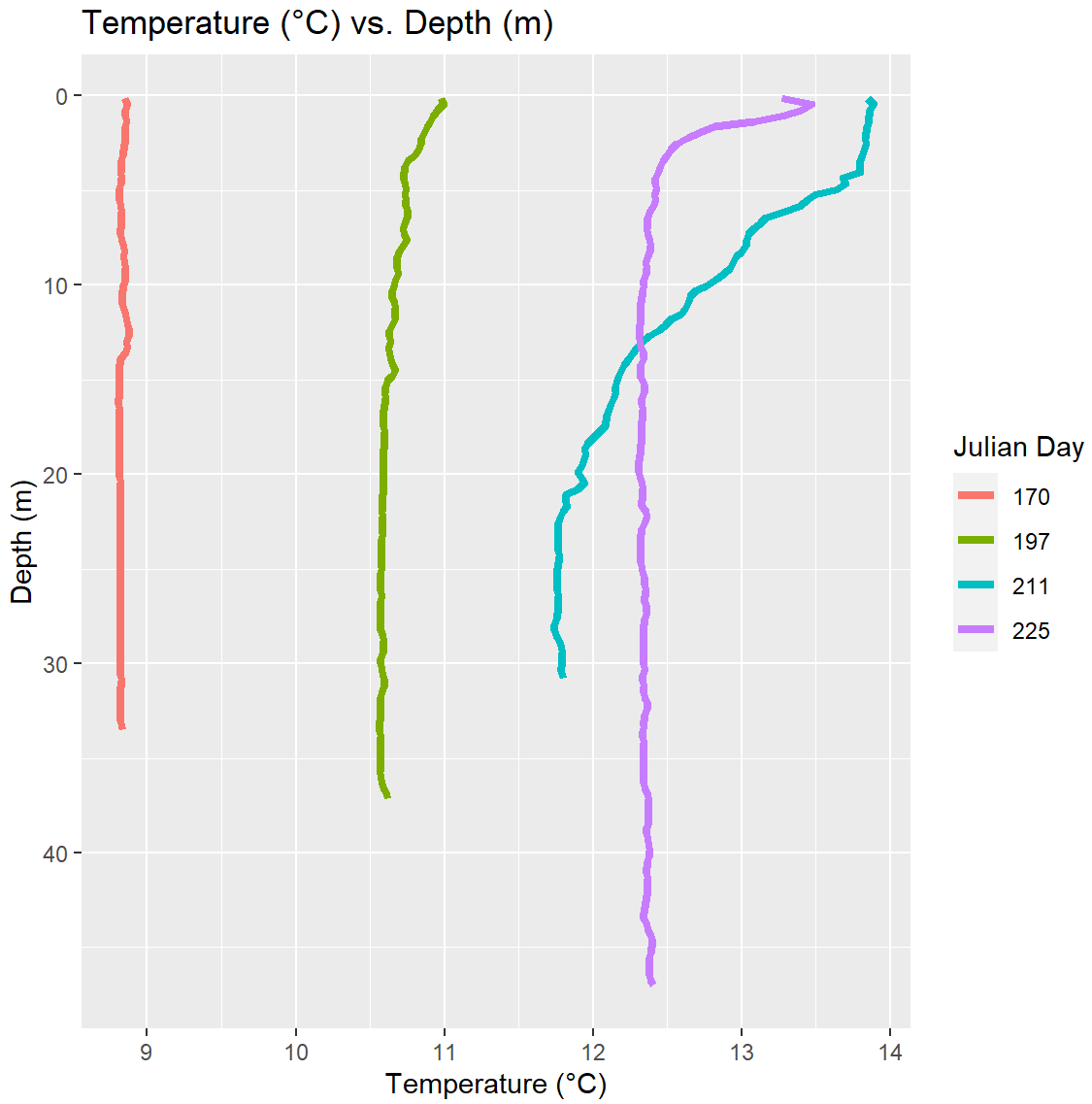
Plankton tow depth profile #2

The first tow is SB2023-11, which was with the tide and had an average depth of 1.3718477m. The second tow is SB2023-12, which was against the tide and had an average depth of 0.9389333m.

Captured plankton

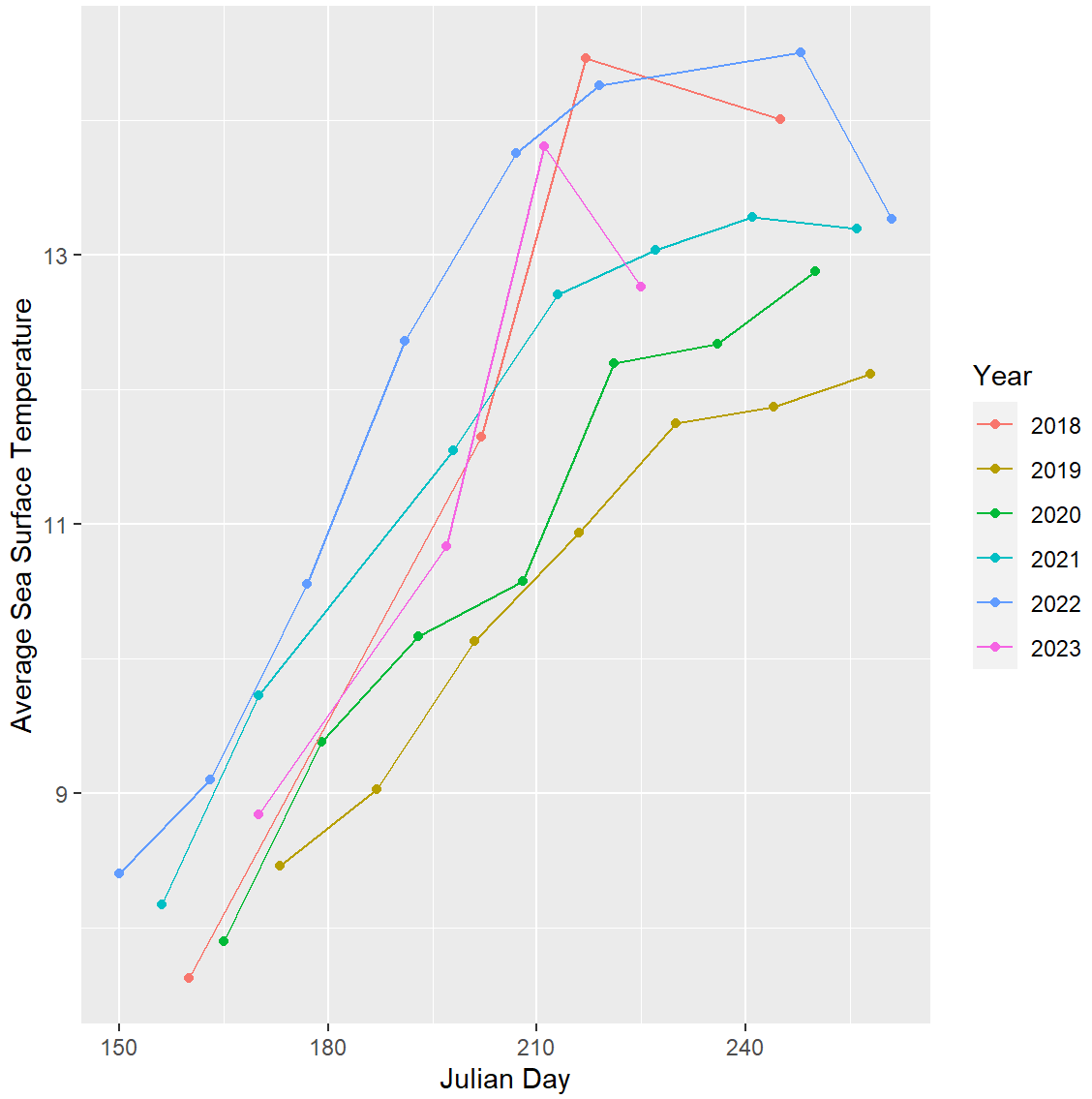
Captured plankton from the surface tows

CTD Data



CTD depth profiles for all 2023 Scots Bay surveys so far.

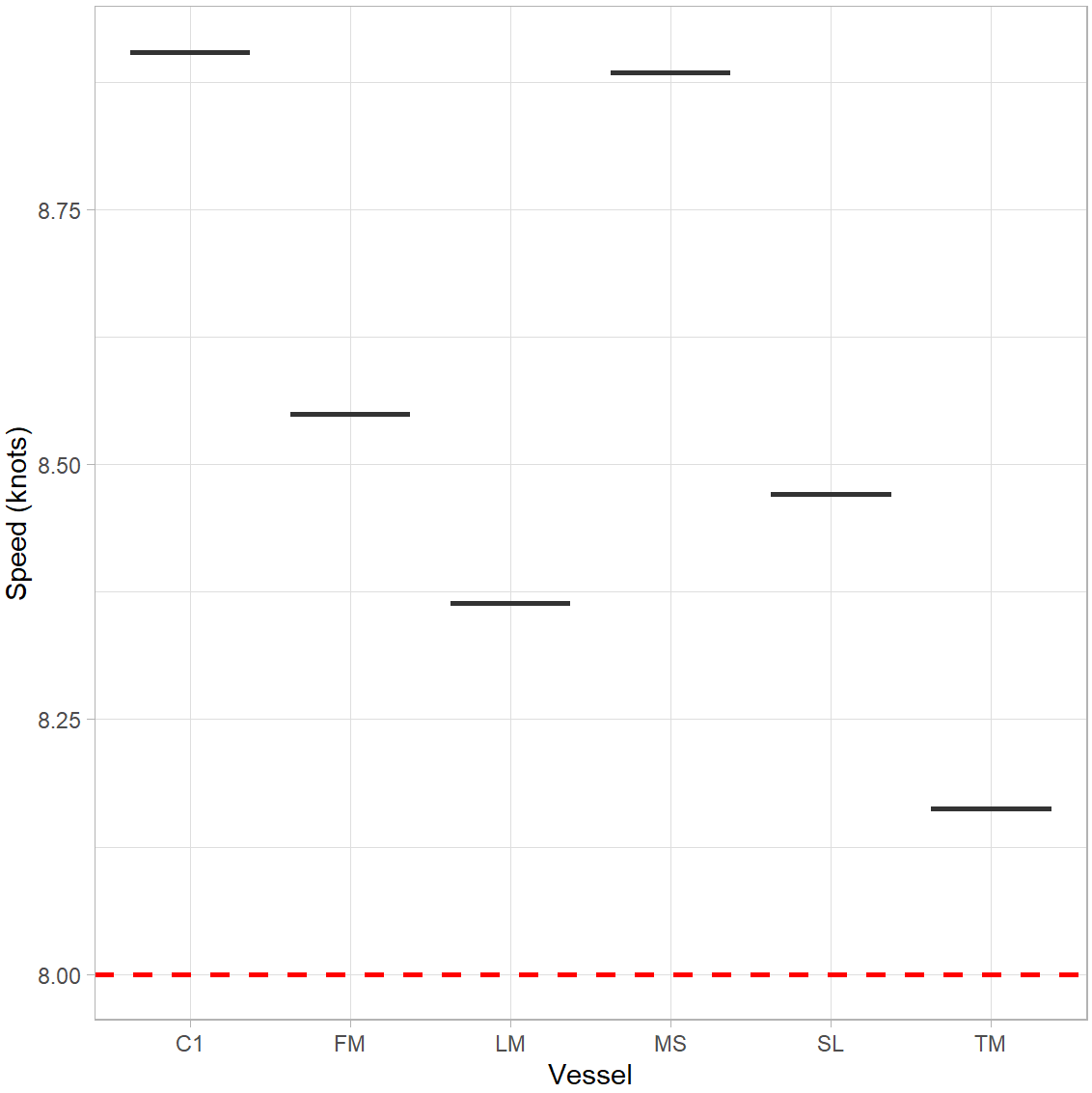
Sea surface temperatures

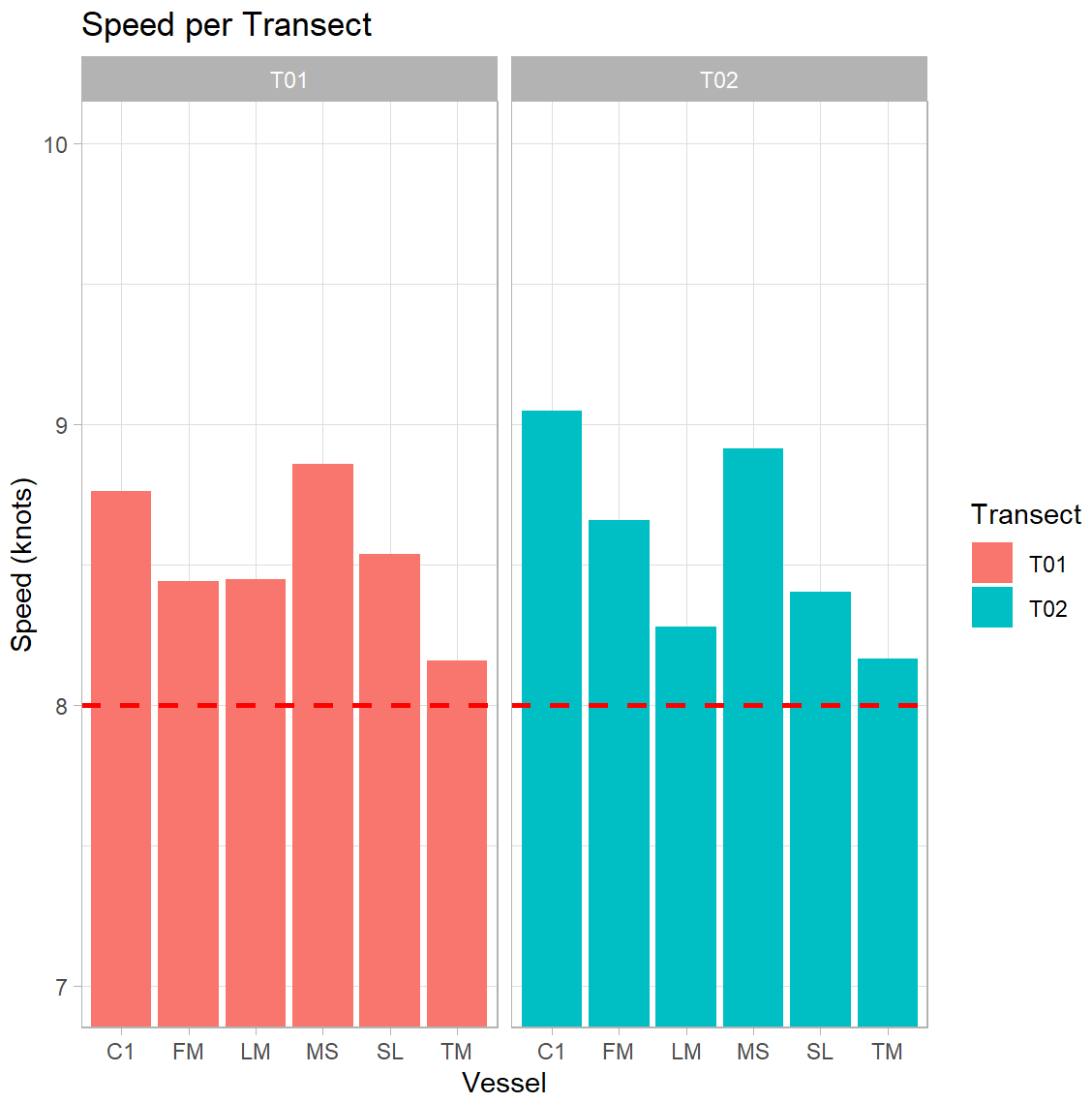


Annual average sea surface temperatures (SST) for Scots Bay.

Vessel Performance

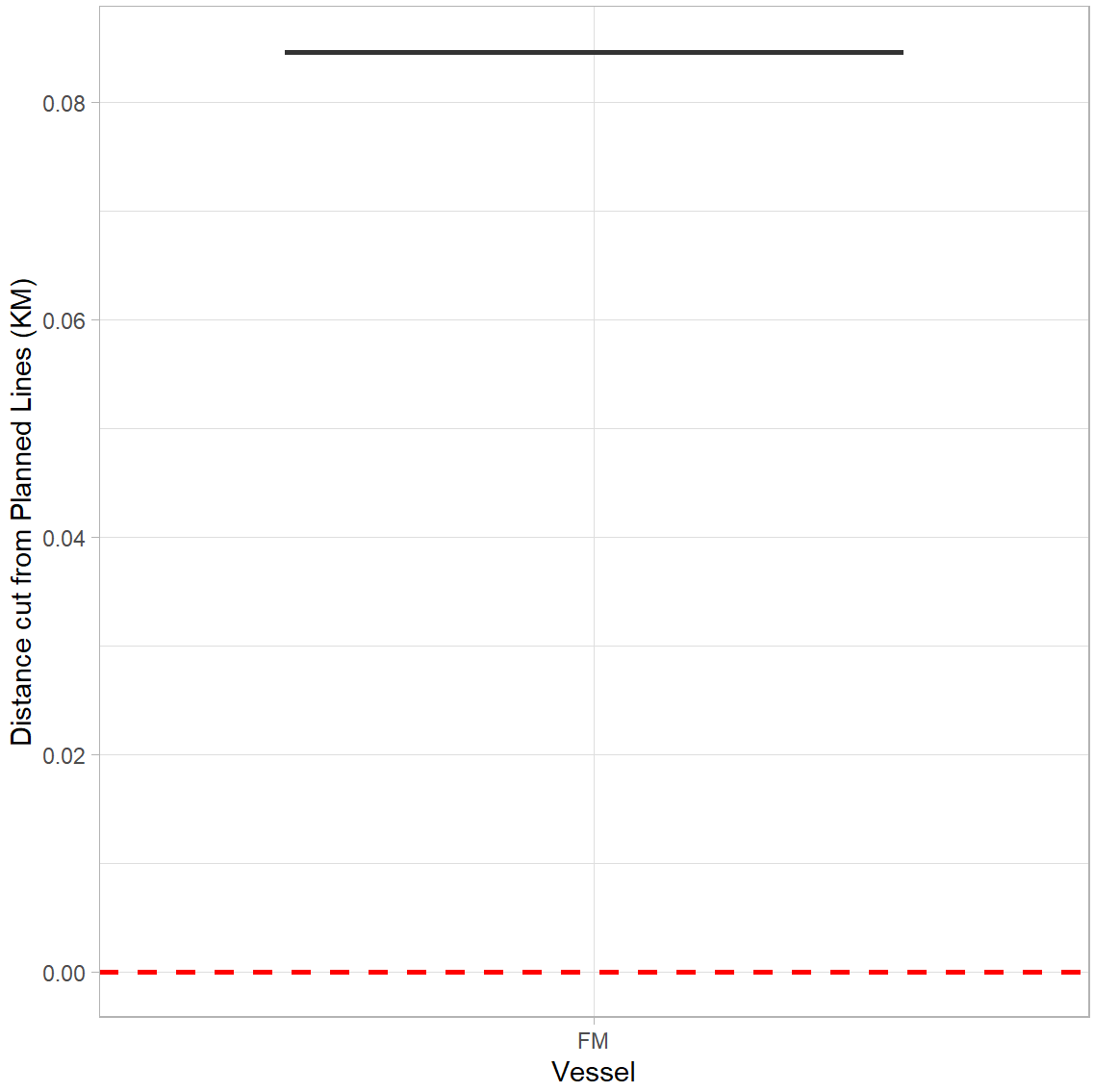
Speed


8.75
8.50
8.25
8.00
Speed (knots)
C1
FM
LM
MS
SL
TM
Vessel



Average vessel speed was 8.56. This is above the 8 knot requirement; vessels are urged to slow down to prevent backscatter noise from interfering with the acoustic data.

Distance



No significant distance was cut from the planned lines; vessels covered the planned area well.

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