



**FLUME TANK TEST RESULTS**

For the:

**83-112 Eastern Survey Trawl**

**Poly Nor'Eastern Survey Trawl**

**RACE Survey Trawl**

**TESTING DATES:**

**January 13 – 17, 2025**



**Flume tank data note:**

Flume tank data typically includes “measured door spread values”. In this instance, to maximize model size, some rigs were equipped with truncated bridles, in particular those rigs which had larger door spread openings. In all cases for the attached data, the door legs and door leg extensions were not physically modelled.

Door spreads shown are theoretical estimates and were extrapolated using the bridle angle data along with the nominal door leg (10') and door leg extension values (40'). . In some cases, only a portion of the sweep was physically attached to the model, in those instances, the missing portion of the sweep was also used in determining the corresponding door spread value.

**Northeast Fisheries Science Center**

Trawl: 83-112 Eastern Trawl

Footgear: Standard

Bridle: Standard



January 13, 2025

Rig #	1	2	3	4	5	6	8	9	10	7	14	15
Tow speed (kts)	2.0	2.5	3.0	3.5	4.0	3.0	3.0	3.5	2.5	3.0	2.5	3.5
Door Spread (m)	68.2	64.5	64.6	66.4	66.4	64.6	34.4	34.2	35.5	75.9	74.5	77.7
Upper wingend spread (m)	17.8	17.5	17.5	17.5	17.5	17.5	12.5	12.5	12.5	20.1	20.0	20.0
Lower wingend spread (m)	20.2	20.7	19.9	20.1	20.0	19.9	12.9	12.8	13.1	22.9	22.7	22.8
Headline height (m)	2.7	2.4	2.0	1.7	1.5	2.2	3.0	3.0	3.6	2.0	2.2	1.8
Upper wingend height	1.4	1.4	1.2	1.1	1.0	1.5	1.5	1.5	1.6	1.5	1.6	1.4
Sweep length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9
Bridle length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9
Port tension (tonnes)												
Stbd. tension (tonnes)												
Total tension (tonnes)												
Mouth area (sq.m)	51.7	44.9	36.7	31.2	28.2	40.2	38.0	38.2	46.3	42.3	46.6	38.7
Mouth drag (kgf per sq.m)												
# of floats (6.3 lb buoyancy)	47	47	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	11.0	10.0	10.3	10.6	10.6	10.3	4.9	4.9	5.1	12.2	11.9	12.6

Notes:

Rigs 1 - 6 Baseline (nominal 17.5m upper wing spread) (180' bridles and sweeps)

Rigs 8 - 10 Underspread

Rigs 7, 14 and 15 Overspread

**Northeast Fisheries Science Center**

Trawl: 83-112 Eastern Trawl  
Footgear: Standard  
Bridle: Standard



January 13, 2025

Rig #	11	12	13									
Tow speed (kts)	3.0	3.0	3.0									
Door Spread (m)	66.5	66.5	66.5									
Upper wingend spread (m)	17.6	17.4	17.6									
Lower wingend spread (m)	19.7	19.6	19.7									
Headline height (m)	2.0	1.9	1.8									
Upper wingend height	1.0	1.1	1.0									
Sweep length (m)	54.9	54.9	54.9									
Bridle length (m)	54.9	54.9	54.9									
Port tension (tonnes)	1.1	1.2	1.2									
Stbd. tension (tonnes)	1.1	1.2	1.2									
Total tension (tonnes)	2.3	2.4	2.3									
Mouth area (sq.m)	37.1	34.4	33.6									
Mouth drag (kgf per sq.m)	61.1	68.9	70.0									
# of floats (6.3 lb buoyancy)	47	47	47									
Total buoyancy (kgf)	117.8	117.8	117.8									
Bridle Angle (degrees)	10.7	10.8	10.7									

Notes:

Rigs 11-13 Catch treatments 1 to 3

# **Northeast Fisheries Science Center**

Trawl: 83-112 Eastern Trawl  
Footgear: Standard  
Bridle: 2 (90')



January 13, 2025

Rig #	16	17	18	19	20	21	21	21	22	23	24	
Tow speed (kts)	2.0	2.5	3.0	3.5	4.0	3.0	3.0	3.0	2.5	3.0	3.5	
Door Spread (m)	70.2	68.3	68.3	68.3	68.3	68.4	68.4	68.5	36.4	35.5	34.6	
Upper wingend spread (m)	17.6	17.6	17.6	17.5	17.6	17.5	17.6	17.5	12.4	12.5	12.5	
Lower wingend spread (m)	20.0	19.9	19.8	19.9	19.8	19.6	19.3	19.0	12.9	12.8	12.6	
Headline height (m)	2.6	2.2	1.8	1.5	1.3	1.9	2.1	2.3	3.4	2.7	2.1	
Upper wingend height	1.4	1.2	1.1	1.0	0.9	1.3	1.4	1.7	1.4	1.3	1.1	
Sweep length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	
Port tension (tonnes)	0.6	0.9	1.2	1.5	1.8	1.2	1.3	1.3	0.9	1.2	1.5	
Stbd. tension (tonnes)	0.7	0.9	1.2	1.5	1.8	1.2	1.3	1.3	0.9	1.2	1.4	
Total tension (tonnes)	1.2	1.7	2.3	2.9	3.6	2.4	2.5	2.6	1.8	2.4	2.9	
Mouth area (sq.m)	49.6	40.6	33.8	28.4	25.1	35.3	38.8	41.9	43.3	34.4	26.5	
Mouth drag (kgf per sq.m)	24.7	42.7	68.9	103.7	142.8	67.9	64.6	62.1	42.2	69.2	107.9	
# of floats (6.3 lb buoyancy)	47	47	47	47	47	47	47	47	47	47	47	
Total buoyancy (kgf)	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	
Bridle Angle (degrees)	14.8	14.3	14.3	14.3	14.3	14.4	14.5	14.6	6.9	6.6	6.4	

Notes:

Rigs 16 - 20 Baseline (nominal 17.5m on upper wing spread) (90' bridles/180' sweeps)

Rigs 21 Short-scoping

Rigs 22 - 24 Underspread

**Northeast Fisheries Science Center**

Trawl: 83-112 Eastern Trawl  
Footgear: Standard  
Bridle: 2 (90')



January 13, 2025

Rig #	25	26	27									
Tow speed (kts)	3.0	3.0	3.0									
Door Spread (m)	66.5	66.4	66.4									
Upper wingend spread (m)	17.1	17.4	17.4									
Lower wingend spread (m)	19.6	19.8	19.8									
Headline height (m)	2.0	2.0	1.9									
Upper wingend height	1.2	1.3	1.2									
Sweep length (m)	54.9	54.9	54.9									
Bridle length (m)	27.4	27.4	27.4									
Port tension (tonnes)												
Stbd. tension (tonnes)												
Total tension (tonnes)												
Mouth area (sq.m)	36.0	37.0	35.8									
Mouth drag (kgf per sq.m)												
# of floats (6.3 lb buoyancy)	47	47	47									
Total buoyancy (kgf)	117.8	117.8	117.8									
Bridle Angle (degrees)	13.8	13.7	13.8									

Notes:

Rigs 25 - 27 Catch treatments 1 to 3

**Northeast Fisheries Science Center**

Trawl: 83-112 Eastern Trawl  
Footgear: Standard  
Bridle: 2 (90')



January 13, 2025

Rig #	28	29	30	31								
Tow speed (kts)	2.5	3.0	3.5	3.0								
Door Spread (m)	142.1	142.3	142.5	103.6								
Upper wingend spread (m)	20.0	20.0	20.1	17.6								
Lower wingend spread (m)	23.8	23.7	23.6	19.9								
Headline height (m)	1.7	1.4	1.2	1.7								
Upper wingend height	1.0	0.9	0.7	1.0								
Sweep length (m)	54.9	54.9	54.9	54.9								
Bridle length (m)	27.4	27.4	27.4	27.4								
Port tension (tonnes)	0.8	1.1	1.5	1.1								
Stbd. tension (tonnes)	0.9	1.2	1.6	1.1								
Total tension (tonnes)	1.8	2.4	3.0	2.2								
Mouth area (sq.m)	36.3	31.5	26.7	31.3								
Mouth drag (kgf per sq.m)	49.0	75.5	112.9	69.6								
# of floats (6.3 lb buoyancy)	47	47	47	47								
Total buoyancy (kgf)	117.8	117.8	117.8	117.8								
Bridle Angle (degrees)	37.1	37.2	37.3	25.3								

Notes:

Rigs 28 - 30 Overspread (20m)

**Northeast Fisheries Science Center**

Trawl: 83-112 Eastern Trawl  
Footgear: Standard  
Bridle: Standard



January 13, 2025

Rig #	63	64	65	66	67							
Tow speed (kts)	2.5	3.0	3.5	4.0	2.0							
Door Spread (m)	66.4	66.4	66.4	66.4	67.3							
Upper wingend spread (m)	17.6	17.6	17.6	17.6	17.5							
Lower wingend spread (m)	20.0	20.2	20.3	20.2	20.1							
Headline height (m)	2.3	1.9	1.7	1.5	1.5							
Upper wingend height	1.3	1.1	1.1	1.0	1.0							
Sweep length (m)	54.9	54.9	54.9	54.9	54.9							
Bridle length (m)	54.9	54.9	54.9	54.9	54.9							
Port tension (tonnes)	0.9	1.2	1.5	1.9	0.7							
Stbd. tension (tonnes)	0.9	1.2	1.5	1.9	0.6							
Total tension (tonnes)	1.8	2.4	3.0	3.8	1.3							
Mouth area (sq.m)	43.2	35.2	31.7	27.5	27.4							
Mouth drag (kgf per sq.m)	41.3	67.9	95.7	136.9	47.2							
# of floats (6.3 lb buoyancy)	47	47	47	47	47							
Total buoyancy (kgf)	117.8	117.8	117.8	117.8	117.8							
Bridle Angle (degrees)	10.6	10.6	10.6	10.6	10.8							

Notes:

Rigs 63 - 67 Baseline (17.5m spread)



# **Northeast Fisheries Science Center**

Trawl: Poly Nor'Eastern  
Footgear: Standard  
Bridle: Standard



January 14, 2025

Rig #	35	36	37	38	39	40	40		
Tow speed (kts)	2.0	2.5	3.0	3.5	4.0	3.0	3.0		
Door Spread (m)	55.8	55.8	55.9	55.9	55.9	55.9	55.9		
Upper wingend spread (m)	16.0	15.9	16.0	16.0	15.9	15.9	15.9		
Middle wingend spread (m)	21.0	21.2	21.1	21.2	21.3	21.1	21.2		
Lower wingend spread (m)	18.0	17.8	17.6	17.7	17.6	17.6	17.6		
Headline height (m)	6.4	5.7	5.0	4.2	3.5	5.3	5.7		
Upper wingend height (m)	4.7	4.6	3.6	3.1	3.0	4.1	4.5		
Middle wingend height (m)	2.1	1.9	1.8	1.6	1.5	2.2	2.9		
Lower wingend height (m)							0.6		
Sweep length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9		
Bridle length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9		
Port tension (tonnes)	1.2	1.8	2.4	3.2	3.8	2.6	2.7		
Stbd. tension (tonnes)	1.3	1.9	2.5	3.1	3.7	2.6	2.7		
Total tension (tonnes)	2.6	3.7	5.0	6.3	7.4	5.2	5.4		
Mouth area (sq.m)	117.3	104.2	91.7	76.8	64.7	97.1	103.3		
Mouth drag (kgf per sq.m)	22	35	54	82	115	54	52		
# of floats	16+4	16+4	16+4	16+4	16+4	16+4	16+4		
Total buoyancy (kgf)	215.7	215.7	215.7	215.7	215.7	215.7	215.7		
Bridle Angle (degrees)	8.7	8.8	8.8	8.8	8.8	8.8	8.8		

Notes:

Rigs 35 - 39 Baseline (16m spread)

Rig 40 Short scoping

**Northeast Fisheries Science Center**

Trawl: Poly Nor'Eastern

Footgear: Standard

Bridle: Standard



January 14, 2025

Rig #	41	42	43	47	48	49	44	45	46
Tow speed (kts)	2.5	3.0	3.5	2.5	3.0	3.5	3.0	3.0	3.0
Door Spread (m)	48.8	48.8	48.8	64.7	64.7	64.7	55.9	55.9	55.9
Upper wingend spread (m)	14.6	14.6	14.5	17.5	17.5	17.5	16.0	15.9	16.1
Middle wingend spread (m)	18.5	18.8	19.1	23.8	24.0	24.2	21.3	21.3	21.2
Lower wingend spread (m)	16.0	15.9	15.8	19.6	19.6	19.5	17.7	17.6	17.6
Headline height (m)	6.4	5.9	5.2	4.8	4.0	3.5	4.9	4.9	4.7
Upper wingend height (m)	4.8	4.3	3.9	3.4	3.0	3.0	3.5	3.4	3.5
Middle wingend height (m)	2.5	3.0	2.4	1.3	1.2	1.1	1.8	1.5	1.8
Lower wingend height (m)									
Sweep length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9
Bridle length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9
Port tension (tonnes)	1.9	2.6	3.3	1.9	2.5	3.2	2.5	2.4	2.4
Stbd. tension (tonnes)	1.9	2.6	3.3	1.9	2.5	3.2	2.5	2.5	2.5
Total tension (tonnes)	3.8	5.2	6.6	3.9	5.0	6.4	5.0	5.0	4.9
Mouth area (sq.m)	105.0	97.7	85.7	96.8	81.5	70.6	90.0	89.6	85.5
Mouth drag (kgf per sq.m)	36	53	77	40	62	90	55	55	58
# of floats	16+4	16+4	16+4	16+4	16+4	16+4	16+4	16+4	16+4
Total buoyancy (kgf)	215.7	215.7	215.7	215.7	215.7	215.7	215.7	215.7	215.7
Bridle Angle (degrees)	7.6	7.6	7.6	10.4	10.4	10.4	8.8	8.8	8.8

Notes:

Rigs 41 - 43 Underspread (14.6m)

Rig 44 - 46 Catch treatments

Rig 47 - 49 Overspread (17.5m)

# **Northeast Fisheries Science Center**

Trawl: Poly Nor'Eastern  
Footgear: Standard  
Bridle: 2 (90')



January 14, 2025

Rig #	50	51	52	53	54	55			
Tow speed (kts)	2.0	2.5	3.0	3.5	4.0	3.0			
Door Spread (m)	59.2	59.2	59.3	59.2	59.2	59.3			
Upper wingend spread (m)	16.1	16.1	16.2	16.1	16.1	16.2			
Middle wingend spread (m)	0.0	20.9	21.0	20.9	21.0	21.0			
Lower wingend spread (m)	18.1	18.0	17.9	18.0	18.0	17.9			
Headline height (m)	5.7	4.9	4.0	3.4	2.8	4.2			
Upper wingend height (m)	3.7	3.2	2.7	2.3	2.0	3.3			
Middle wingend height (m)	1.3	1.2	1.1	1.0	1.0	1.2			
Lower wingend height (m)									
Sweep length (m)	54.9	54.9	54.9	54.9	54.9	54.9			
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4			
Port tension (tonnes)	1.1	1.6	2.2	2.8	3.4	2.2			
Stbd. tension (tonnes)	1.2	1.8	2.3	2.8	3.4	2.3			
Total tension (tonnes)	2.3	3.4	4.5	5.7	6.8	4.6			
Mouth area (sq.m)	64.3	89.7	74.4	62.0	52.3	77.7			
Mouth drag (kgf per sq.m)	36	38	61	92	130	59			
# of floats	16+4	16+4	16+4	16+4	16+4	16+4			
Total buoyancy (kgf)	215.7	215.7	215.7	215.7	215.7	215.7			
Bridle Angle (degrees)	12.2	12.2	12.2	12.2	12.2	12.2			

Notes:

Rigs 50 - 54 Baseline (with extra weight on bridle)

Rig 55 Comparable to rig 52, with weight removed

# Northeast Fisheries Science Center

Trawl: Poly Nor'Eastern  
Footgear: Standard  
Bridle: 2 (90')



January 14, 2025

Rig #	56	56	56	57	58	59	60	61	
Tow speed (kts)	3.0	3.0	3.0	2.5	3.0	3.5	2.5	3.0	
Door Spread (m)	59.3	59.3	59.3	50.2	50.2	50.2	68.4	68.4	
Upper wingend spread (m)	16.0	16.0	16.0	14.6	14.6	14.6	17.6	17.6	
Middle wingend spread (m)	21.0	21.0	20.9	18.4	18.5	18.7	23.6	23.8	
Lower wingend spread (m)	17.9	17.9	17.9	16.0	16.0	16.1	19.9	19.8	
Headline height (m)	4.3	4.7	5.1	5.8	5.1	4.4	4.0	3.3	
Upper wingend height (m)	2.9	3.3	3.9	3.4	3.4	2.9	2.7	2.3	
Middle wingend height (m)	1.4	1.8	2.2	2.0	1.9	1.7	0.7	0.7	
Lower wingend height (m)			0.6						
Sweep length (m)	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	
Port tension (tonnes)	2.4	2.4	2.6	1.8	2.4	3.1	1.8	2.3	
Stbd. tension (tonnes)	2.3	2.5	2.5	1.8	2.4	3.0	1.8	2.3	
Total tension (tonnes)	4.7	5.0	5.1	3.6	4.8	6.1	3.5	4.6	
Mouth area (sq.m)	78.4	85.9	93.6	94.2	83.1	72.3	82.1	68.1	
Mouth drag (kgf per sq.m)	60	58	54	38	58	84	43	68	
# of floats	16+4	16+4	16+4	16+4	16+4	16+4	16+4	16+4	
Total buoyancy (kgf)	215.7	215.7	215.7	215.7	215.7	215.7	215.7	215.7	
Bridle Angle (degrees)	12.3	12.3	12.3	10.1	10.1	10.1	14.5	14.5	

Notes:

Rig 56 Short scoping

Rigs 57 - 59 Underspread (14.6m)

Rigs 60 - 61 Overspread (17.6m)

**Northeast Fisheries Science Center**

Trawl: RACE  
Footgear: Eastern Bering Sea  
Bridle: 2 (90')



January 15, 2025

Rig #	68	69	70	71	72	73	73	73	74	75	76	77	78
Tow speed (kts)	2.0	2.5	3.0	3.5	4.0	3.0	3.0	3.0	2.0	2.5	3.0	3.5	4.0
Door Spread (m)	66.6	66.6	66.6	66.6	64.6	66.6	66.7	66.6	54.9	53.9	52.9	51.0	51.0
Upper wingend spread (m)	15.9	16.0	16.0	16.0	16.0	16.0	16.0	16.1	14.4	14.4	14.5	14.4	14.4
Lower wingend spread (m)	17.6	17.6	17.5	17.5	17.2	17.5	17.3	17.4	15.7	15.6	15.2	15.0	14.9
Headline height (m)	5.9	5.3	4.5	3.8	3.3	4.7	4.9	5.5	6.7	6.1	5.6	4.9	4.2
Upper wingend height (m)	4.0	3.5	3.1	2.7	2.4	3.2	3.7	4.1	4.2	3.9	3.6	3.2	2.8
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Port tension (tonnes)	1.1	1.7	2.3	3.1	3.9	2.5	2.7	2.8	1.4	2.0	2.6	3.3	4.0
Stbd. tension (tonnes)	1.3	1.9	2.5	3.2	3.8	2.8	2.7	2.7	1.3	1.9	2.7	3.4	4.0
Total tension (tonnes)	2.4	3.6	4.9	6.3	7.8	5.3	5.3	5.5	2.7	3.9	5.3	6.7	8.1
Mouth area (sq.m)	99.2	88.2	76.1	64.5	55.3	78.9	82.3	91.6	100.3	91.3	83.3	72.5	60.9
Mouth drag (kgf per sq.m)	24.3	40.6	63.9	97.5	140.7	67.5	64.7	60.1	26.7	42.9	63.8	93.0	132.1
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	20.3	20.3	20.4	20.4	19.6	20.4	20.4	20.4	16.1	15.8	15.5	14.8	14.8

Notes:

Rigs 68 - 72 Baseline (16m spread)

Rig 73 Short scoping

Rig 74 - 78 Under spread (14.5m)

**Northeast Fisheries Science Center**

January 15, 2025

Trawl: RACE  
Footgear: Eastern Bering Sea  
Bridle: 2 (90')



Rig #	79	80	81	82	83	84	85	86	87	88	89	90	91	92
Tow speed (kts)	2.5	3.0	3.5	3.0	3.0	3.0	2.0	2.5	3.0	3.0	3.5	4.0	2.0	2.5
Door Spread (m)	40.3	39.3	39.3	66.7	66.7	66.6	82.2	82.3	82.3	82.4	82.3	82.4	82.2	82.3
Upper wingend spread (m)	12.4	12.4	12.4	15.9	15.9	15.9	17.5	17.5	17.6	17.5	17.5	17.5	17.5	17.4
Lower wingend spread (m)	13.0	12.8	12.8	17.3	17.3	17.4	19.8	19.7	19.7	19.7	19.7	19.7	19.8	19.7
Headline height (m)	7.2	6.8	6.2	4.5	4.5	4.5	5.2	4.5	3.8	3.6	3.2	2.6	5.2	4.5
Upper wingend height	4.2	4.0	3.7	3.1	3.2	3.2	3.7	3.1	2.6	2.9	2.2	1.8	3.6	3.1
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Port tension (tonnes)	2.0	2.7	3.4	2.5	2.5	2.4	1.2	1.7	2.4	2.5	3.1	3.8	1.3	1.9
Stbd. tension (tonnes)	2.0	2.7	3.6	2.6	2.5	2.5	1.4	1.9	2.5	2.5	3.2	3.8	1.4	2.0
Total tension (tonnes)	4.0	5.4	7.0	5.2	5.0	4.9	2.5	3.7	4.9	5.0	6.3	7.5	2.7	3.9
Mouth area (sq.m)	92.0	85.8	78.8	75.2	74.9	75.3	97.3	83.4	71.3	66.7	58.7	48.9	96.7	82.8
Mouth drag (kgf per sq.m)	43.4	63.1	88.6	68.8	67.1	65.3	26.0	43.9	69.0	75.2	107.2	153.7	28.1	47.3
# of floats (6.3 lb buoyancy)	47	47	47	47	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	117.6	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	11.1	10.8	10.8	20.5	20.5	20.4	26.2	26.3	26.3	26.4	26.3	26.4	26.2	26.3

Notes:

- Rigs 79 - 81 Under spread (12.5m)
- Rigs 82 - 84 Catch treatments 1 to 3
- Rigs 85 - 87 Overspread (17.5m)
- Rigs 88 - 92 Overspread (17.5m - with extra weight)

# Northeast Fisheries Science Center

Trawl: RACE  
Footgear: Eastern Bering Sea  
Bridle: 2 (90')



January 15, 2025

Rig #	93	94	95	96	97	98	99	100	101	102	103
Tow speed (kts)	2.5	3.0	3.5	2.5	3.0	3.5	2.5	3.0	3.5	4.0	2.0
Door Spread (m)	71.6	71.6	70.2	70.0	70.2	70.2	67.6	67.7	67.6	67.7	67.6
Upper wingend spread (m)	20.0	20.0	19.9	15.9	15.9	16.1	15.9	16.0	16.0	16.1	15.9
Lower wingend spread (m)	23.1	23.1	22.9	17.5	17.3	17.3	17.4	17.4	17.4	17.4	17.6
Headline height (m)	3.2	2.8	2.3	5.4	4.8	4.1	5.3	4.5	3.9	3.2	5.9
Upper wingend height	2.4	2.0	1.8	3.6	3.2	2.8	3.6	3.1	2.7	2.4	4.0
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Port tension (tonnes)	2.0	2.6	3.2	2.0	2.6	3.3	1.8	2.5	3.2	3.9	1.3
Stbd. tension (tonnes)	2.0	2.6	3.2	2.0	2.7	3.4	2.0	2.6	3.3	4.0	1.4
Total tension (tonnes)	3.9	5.2	6.4	4.0	5.3	6.7	3.8	5.1	6.5	7.8	2.7
Mouth area (sq.m)	69.0	59.3	50.2	90.5	79.1	68.2	88.4	75.6	65.9	54.3	99.4
Mouth drag (kgf per sq.m)	57.2	87.8	128.0	43.8	66.9	98.3	43.1	67.6	99.4	144.6	27.6
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	20.1	20.1	19.6	21.8	22.0	22.0	20.8	20.9	20.8	20.8	20.7

Notes:

Rigs 93 - 95 Overspread (20m)

Rigs 96 - 98 Baseline (17.5m with truncated bridles)

Rigs 99 - 102 Baseline (17.5m with full bridles)

# Northeast Fisheries Science Center

Trawl: RACE  
Footgear: Gulf of Alaska  
Bridle: 2 (90')



January 16, 2025

Rig #	104	105	106	107	108	109	110	111	112	113	114
Tow speed (kts)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	2.5	3.0	3.5
Door Spread (m)	74.4	74.4	74.4	74.4	74.5	65.2	65.2	74.5	106.8	106.8	103.6
Upper wingend spread (m)	17.1	17.2	17.2	17.1	16.9	15.9	15.8	16.9	20.1	20.1	19.9
Lower wingend spread (m)	18.9	18.8	18.7	18.7	18.6	17.2	17.2	18.5	22.9	22.9	22.6
Headline height (m)	3.0	2.4	2.5	3.2	3.8	4.2	5.7	3.8	4.1	3.5	3.1
Upper wingend height	2.1	1.9	1.8	2.4	2.8	3.0	3.9	2.8	3.1	2.7	2.3
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Port tension (tonnes)	2.7	2.5	2.4	2.8	3.0	3.1	3.0	3.0	1.4	1.9	2.5
Stbd. tension (tonnes)	3.8	3.6	3.7	4.1	4.5	4.4	1.9	4.5	2.3	3.0	3.7
Total tension (tonnes)	6.5	6.1	6.1	6.8	7.5	7.5	4.9	7.5	3.7	4.9	6.3
Mouth area (sq.m)	53.1	44.0	45.3	57.3	68.1	70.1	94.6	67.6	89.1	76.2	65.2
Mouth drag (kgf per sq.m)	122.5	138.7	134.7	118.9	110.2	107.3	51.3	111.2	41.3	64.4	95.9
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	23.2	23.2	23.3	23.2	23.3	19.9	19.9	23.3	36.5	36.5	35.0

## Notes:

Rig 104 Version 0 - as defined

Rig 105 Version 1 - setback removed

Rig 106 Version 2 - links removed from fishingline

Rig 107 Version 3 - 2 floats added to headline

Rig 108 Version 4 - 4 more floats plus wt at delta plate/chain

Rigs 109 - 110 Version 5 - reduced wingspread to 16m

Rig 111 Version 6 - Spread increase

Rigs 112 - 114 Overspread (20m)



# **Northeast Fisheries Science Center**

Trawl: RACE  
Footgear: Gulf of Alaska  
Bridle: 2 (90')



January 16, 2025

Rig #	115	116	117	118	119	120	121	122	123	124	125	126	127
Tow speed (kts)	2.0	2.5	3.0	3.5	4.0	2.5	3.0	3.5	2.0	2.5	3.0	3.5	4.0
Door Spread (m)	82.6	82.5	82.5	82.5	82.4	70.8	70.8	67.7	68.6	68.6	66.6	66.6	66.6
Upper wingend spread (m)	17.4	17.4	17.4	17.6	17.5	16.1	15.9	15.9	16.0	16.0	15.9	16.0	16.0
Lower wingend spread (m)	19.5	19.5	19.6	19.6	19.6	17.6	17.6	17.2	17.6	17.6	17.4	17.4	17.4
Headline height (m)	6.3	5.4	4.8	4.3	3.7	6.3	5.6	5.2	7.0	6.1	5.7	5.0	4.4
Upper wingend height	4.5	4.0	3.5	3.1	2.7	4.4	3.9	3.5	4.9	4.4	4.0	3.6	3.1
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Port tension (tonnes)	1.0	1.4	1.9	2.5	3.0	1.5	2.0	2.6	0.9	1.4	2.0	2.6	3.2
Stbd. tension (tonnes)	1.6	2.2	2.9	3.8	4.5	2.3	3.0	4.0	1.6	2.2	3.0	3.8	4.6
Total tension (tonnes)	2.5	3.6	4.8	6.4	7.6	3.7	4.9	6.6	2.5	3.6	5.0	6.4	7.8
Mouth area (sq.m)	116.7	100.0	89.4	79.2	68.4	105.9	93.6	85.5	117.2	102.9	94.5	83.9	74.2
Mouth drag (kgf per sq.m)	21.5	35.8	53.8	80.2	110.8	35.4	52.8	76.8	21.1	35.3	52.9	76.2	105.4
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	26.6	26.5	26.5	26.5	26.4	22.2	22.1	21.0	21.2	21.2	20.4	20.4	20.4

## Notes:

Rigs 115 - 119 Overspread (17.5m spread)  
Rigs 120 - 122 Baseline (16m spread - with truncated bridles)  
Rigs 123 - 127 Baseline (16m spread - with full bridles)

# **Northeast Fisheries Science Center**

Trawl: RACE  
Footgear: Gulf of Alaska  
Bridle: 2 (90')



January 16, 2025

Rig #	128	128	129	130	131	132	133	134	135	136	137	138	139
Tow speed (kts)	3.0	3.0	2.0	2.5	3.0	3.5	4.0	2.5	3.0	3.5	2.5	3.0	3.5
Door Spread (m)	66.6	66.7	56.9	54.9	53.0	53.0	53.0	56.9	54.9	54.9	42.7	41.3	40.8
Upper wingend spread (m)	16.0	15.9	14.5	14.4	14.4	14.4	14.5	14.6	14.5	14.6	12.5	12.6	12.5
Lower wingend spread (m)	17.4	17.3	15.7	15.4	15.1	15.1	15.0	15.8	15.5	15.4	13.4	13.1	13.0
Headline height (m)	5.7	6.2	7.6	7.1	6.7	6.0	5.1	6.7	6.1	5.5	7.7	7.3	6.7
Upper wingend height	4.1	4.6	5.1	4.8	4.5	4.1	3.4	4.3	4.0	3.6	4.6	4.3	4.1
Fishingline height (m)	0.3	0.5	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Port tension (tonnes)	2.0	2.1	1.0	1.4	1.9	2.6	3.1	1.4	3.0	2.5	1.4	2.0	2.6
Stbd. tension (tonnes)	3.1	3.1	1.5	2.2	3.1	4.0	4.7	2.2	1.9	3.8	2.3	3.1	4.1
Total tension (tonnes)	5.0	5.1	2.5	3.7	5.1	6.6	7.8	3.7	5.0	6.4	3.7	5.0	6.6
Mouth area (sq.m)	95.4	103.8	115.2	105.7	98.6	88.8	74.8	102.4	92.2	82.9	99.9	93.8	85.9
Mouth drag (kgf per sq.m)	52.9	49.5	21.8	34.9	51.4	73.9	104.6	35.7	53.8	77.0	37.0	53.6	77.4
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	20.4	20.5	17.0	16.3	15.6	15.6	15.6	16.9	16.2	16.2	12.0	11.5	11.4

## Notes:

Rig 128 Short scoping  
Rigs 129 - 133 Underspread (14.5m)  
Rigs 134 - 136 Underspread (v6 - 14.5m)  
Rigs 137 - 139 Underspread (12.5m)

# **Northeast Fisheries Science Center**

Trawl: RACE  
Footgear: Gulf of Alaska  
Bridle: 2 (90')



January 17, 2025

Rig #	140	141	142	143	143	143	143	143	144	145	146	147	148
Tow speed (kts)	2.5	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	3.0	3.5
Door Spread (m)	69.1	68.6	67.6	68.7	68.7	68.6	68.6	68.6	68.6	68.6	55.8	55.8	55.8
Upper wingend spread (m)	16.0	16.1	16.1	16.0	16.0	16.0	16.0	16.0	16.0	16.0	17.6	17.6	17.6
Lower wingend spread (m)	17.7	17.7	17.6	17.5	17.5	17.5	17.6	17.5	17.5	17.7	19.6	19.6	19.6
Headline height (m)	5.9	5.2	4.7	5.3	5.4	5.8	6.0	6.6	5.3	5.3	5.2	4.7	4.0
Upper wingend height	4.1	3.7	3.3	3.6	3.8	4.1	4.4	5.0	3.6	3.7	3.7	3.3	2.8
Fishingline height (m)	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.6	0.3	0.0	0.0	0.0	0.0
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
Port tension (tonnes)	2.1	2.8	3.6	2.8	2.9	2.9	3.0	3.0	2.7	2.7	2.1	2.8	3.6
Stbd. tension (tonnes)	2.2	3.0	3.8	3.1	3.0	3.1	3.1	3.2	3.0	3.0	2.2	3.0	3.8
Total tension (tonnes)	4.3	5.7	7.4	5.9	5.9	6.0	6.1	6.2	5.7	5.7	4.3	5.8	7.4
Mouth area (sq.m)	100.0	88.4	78.8	88.9	90.8	96.8	100.5	110.1	89.0	89.7	97.1	87.0	74.7
Mouth drag (kgf per sq.m)	43.2	64.8	93.5	66.2	65.1	62.2	61.1	56.4	64.5	63.1	44.5	67.0	98.6
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47	47	47	47	47	47	47	47
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8
Bridle Angle (degrees)	21.3	21.1	20.8	21.3	21.3	21.2	21.2	21.2	21.2	21.2	14.9	14.9	14.8

Notes: Rigs 140 - 142 Baseline (V6 - 16m spread)  
Rig 143 Shortscoping  
Rig 144 Benthic bag attached  
Rig 145 CTD/Sensors attached  
Rig 146 - 148 Overspread (V6 - 17.5m)

# Northeast Fisheries Science Center

Trawl: RACE  
Footgear: Gulf of Alaska  
Bridle: 2 (90')



January 17, 2025

Rig #	149	150	151	152	153	154					
Tow speed (kts)	2.5	3.0	3.5	3.0	3.0	3.0					
Door Spread (m)	70.2	70.2	70.2	68.6	68.5	68.6					
Upper wingend spread (m)	20.0	20.0	20.1	16.2	16.2	16.2					
	0.0	0.0	0.0	0.0	0.0	0.0					
Lower wingend spread (m)	23.0	22.9	23.0	17.9	17.9	17.8					
Headline height (m)	4.1	3.5	3.1	5.2	5.2	5.3					
Upper wingend height	3.0	2.7	2.3	3.6	3.6	3.6					
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0					
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4					
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4					
Port tension (tonnes)	2.3	3.0	3.8	2.8	2.6	2.6					
Stbd. tension (tonnes)	2.3	3.0	3.9	2.9	2.9	2.9					
Total tension (tonnes)	4.6	6.0	7.7	5.7	5.5	5.5					
Mouth area (sq.m)	88.9	75.7	65.9	88.5	89.2	89.3					
Mouth drag (kgf per sq.m)	51.5	79.3	117.0	64.6	62.2	61.3					
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47					
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8					
Bridle Angle (degrees)	19.6	19.6	19.5	21.0	21.0	21.1					

Notes:

Rigs 149 - 151 Overspread (20m)

Rigs 152 - 154 Catch treatments 1 to 3

# **Northeast Fisheries Science Center**

Trawl: RACE  
Footgear: EBS  
Bridle: 2 (90')



January 17, 2025

Rig #	155	156	157	158	159	160	161	162			
Tow speed (kts)	2.5	3.0	3.5	2.0	2.5	3.0	3.5	4.0			
Door Spread (m)	71.2	71.3	71.2	57.8	57.8	56.9	56.9	56.9			
Upper wingend spread (m)	20.0	20.0	20.0	17.6	17.5	17.5	17.6	17.6			
Lower wingend spread (m)	23.0	22.8	22.9	19.7	19.7	19.6	19.5	19.6			
Headline height (m)	4.1	3.5	3.0	5.8	5.1	4.5	4.0	3.3			
Upper wingend height	2.9	2.6	2.2	4.0	3.6	3.2	2.8	2.5			
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4			
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4			
Port tension (tonnes)	2.2	3.0	3.7	1.6	2.1	2.9	3.6	4.3			
Stbd. tension (tonnes)	2.3	3.0	3.7	1.6	2.2	3.0	3.7	4.4			
Total tension (tonnes)	4.5	5.9	7.4	3.1	4.3	5.8	7.3	8.7			
Mouth area (sq.m)	87.9	75.5	65.0	108.4	94.4	84.0	74.2	60.7			
Mouth drag (kgf per sq.m)	51.4	78.6	114.0	28.9	45.7	69.6	98.5	144.0			
# of floats (6.3 lb buoyancy)	47	47	47	47	47	47	47	47			
Total buoyancy (kgf)	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8			
Bridle Angle (degrees)	20.0	20.1	20.0	15.7	15.7	15.3	15.3	15.3			

Notes:

Rigs 155 - 157 Overspread (20m)

Rigs 158 - 162 Overspread (17.5)

# Northeast Fisheries Science Center

Trawl: RACE  
Footgear: EBS  
Bridle: 2 (90')



January 17, 2025

Rig #	163	164	165	166	167	168	169	170	171	172	
Tow speed (kts)	2.0	2.5	3.0	3.5	4.0	2.0	2.5	3.0	3.5	4.0	
Door Spread (m)	49.2	49.2	48.3	48.3	48.3	57.9	55.9	55.0	54.0	54.0	
Upper wingend spread (m)	16.1	16.1	16.0	16.0	16.1	14.4	14.5	14.4	14.5	14.5	
Lower wingend spread (m)	17.6	17.6	17.4	17.3	17.4	15.8	15.5	15.3	15.1	15.1	
Headline height (m)	6.6	5.9	5.3	4.7	4.1	7.2	6.7	6.1	5.6	4.9	
Upper wingend height	4.4	3.9	3.7	3.3	2.8	4.6	4.3	3.9	3.6	3.2	
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	
Port tension (tonnes)	1.5	2.2	2.9	3.7	4.4	1.5	2.1	2.8	3.6	4.3	
Stbd. tension (tonnes)	1.6	2.2	3.0	3.9	4.6	1.6	2.3	3.0	3.9	4.7	
Total tension (tonnes)	3.1	4.4	5.9	7.5	9.0	3.1	4.4	5.8	7.5	9.0	
Mouth area (sq.m)	110.7	98.9	88.6	78.9	68.7	108.2	100.6	90.5	82.9	71.9	
Mouth drag (kgf per sq.m)	27.7	44.3	66.3	95.6	130.6	28.6	43.4	64.6	90.5	125.2	
# of floats (6.3 lb buoyancy)	21	47	47	47	47	47	47	47	47	47	
Total buoyancy (kgf)	52.4	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	117.8	
Bridle Angle (degrees)	13.0	12.9	12.6	12.7	12.6	17.4	16.6	16.3	16.0	16.0	

Notes:

Rigs 163 - 167 Baseline (16m spread)

Rigs 168 - 172 Underspread (14.5m spread)

# **Northeast Fisheries Science Center**

Trawl: RACE  
Footgear: EBS  
Bridle: 2 (90')



January 17, 2025

Rig #	173	174	175	176	177	178					
Tow speed (kts)	2.5	3.0	3.5	3.0	3.0	3.0					
Door Spread (m)	43.3	41.8	41.4	68.7	68.7	68.7					
Upper wingend spread (m)	12.5	12.4	12.5	16.0	16.0	16.0					
Lower wingend spread (m)	13.1	13.0	12.8	17.4	17.4	17.4					
Headline height (m)	7.5	7.2	6.6	5.1	5.0	5.3					
Upper wingend height	4.5	4.2	3.9	3.5	3.3	3.6					
Fishingline height (m)	0.0	0.0	0.0	0.0	0.0	0.0					
Bridle length (m)	27.4	27.4	27.4	27.4	27.4	27.4					
Sweep length (m)	27.4	27.4	27.4	27.4	27.4	27.4					
Port tension (tonnes)	2.1	2.8	3.5	2.9	2.6	2.7					
Stbd. tension (tonnes)	2.2	3.1	4.1	2.7	2.9	2.9					
Total tension (tonnes)	4.4	5.8	7.7	5.7	5.5	5.5					
Mouth area (sq.m)	96.6	91.2	83.7	85.5	83.1	88.3					
Mouth drag (kgf per sq.m)	45.2	64.0	91.4	66.3	66.2	62.6					
# of floats (6.3 lb buoyancy)	47	47	47	21	47	47					
Total buoyancy (kgf)	117.8	117.8	117.8	52.4	117.8	117.8					
Bridle Angle (degrees)	12.3	11.8	11.7	21.3	21.3	21.3					

Notes:

Rigs 173 - 175 Underspread (12.5m)

Rigs 176 - 178 Catch treatments 1 to 3