

**Appendix Table 1. The number of fleets used in 2017 analyses and reported in the tables of this report.**

56 fleets uniquely identified in Tables 2 & 3

17 fleets with no observer coverage  
discard estimation not conducted  
pilot fleet designation for sample size analysis

4 confidential fleets (Rows 10, 15, 21, 41)  
aggregated into "Confidential fleets" in Tables 4 & 5  
13 nonconfidential fleets

5 fleets with sparse observer coverage  
discard estimation conducted  
pilot fleet designation for sample size analysis

0 confidential fleets

5 nonconfidential fleets

34 fleets with sufficient observer coverage  
discard estimation conducted  
variance of discard used for sample size analysis  
nonpilot fleets

0 confidential fleets

34 nonconfidential fleets

Other minor fleets  
not uniquely identified  
aggregated into "Other minor fleets" in Tables 4 & 5

**Appendix Table 2. Discard reason categories used in Appendix Tables 3A and 3B and the associated discard fish dispositions.**

Discard Reason Category	FISH DISPOSITION Code	FISH DISPOSITION Description
No Market	001	NO MARKET, REASON NOT SPECIFIED
	002	NO MARKET, TOO SMALL
	003	NO MARKET, TOO LARGE
	005	NO MARKET, WONT KEEP UNTIL TRIP END
	006	NO MARKET, BUT RETAINED BY VESSEL FOR ALTERNATE PROGRAM
	007	NO MARKET, BUT RETAINED FOR OBSERVER FOR SCIENTIFIC PURPOSES
	008	NO MARKET, BROUGHT ONBOARD ONLY FOR THE PURPOSE OF OBSERVER SAMPLING
	Regulation (Size)	012
013		REGULATIONS PROHIBIT RETENTION, TOO LARGE
Regulation (Quota)	004	NO MARKET, QUOTA FILLED
	014	REGULATIONS PROHIBIT RETENTION, QUOTA FILLED
	015	REGULATIONS PROHIBIT RETENTION, NO QUOTA IN AREA
	025	REGULATIONS PROHIBIT ANY RETENTION
Regulation (Other)	011	REGULATIONS PROHIBIT RETENTION, REASON NOT SPECIFIED
	022	REGULATIONS PROHIBIT RETENTION, V-NOTCHED
	023	REGULATIONS PROHIBIT RETENTION, SOFT-SHELL
	024	REGULATIONS PROHIBIT RETENTION, WITH EGGS
Poor Quality	030	POOR QUALITY, GREY MEAT/PARASITES OBSERVED
	031	POOR QUALITY, REASON NOT SPECIFIED
	032	POOR QUALITY, SANDFLEA DAMAGE
	033	POOR QUALITY, SEAL DAMAGE
	034	POOR QUALITY, SHARK DAMAGE
	035	POOR QUALITY, CETACEAN DAMAGE
	036	POOR QUALITY, HAGFISH DAMAGE
	037	POOR QUALITY, SHELL DISEASE
Other	038	POOR QUALITY, GEAR DAMAGE
	000	DISCARDED, UNKNOWN REASON
	040	NOT BROUGHT ON BOARD, OPERATIONAL DISCARDS
	041	NOT BROUGHT ON BOARD, REASON NOT SPECIFIED
	042	NOT BROUGHT ON BOARD, GEAR DAMAGE PREVENTED CAPTURE
	043	NOT BROUGHT ON BOARD, FELL OUT/OFF OF GEAR
	044	NOT BROUGHT ON BOARD, CONSIDERED TO HAVE NO MARKET VALUE
	045	NOT BROUGHT ON BOARD, SAFETY REASON
	046	NOT BROUGHT ON BOARD, MECHANICAL FAILURE
	047	NOT BROUGHT ON BOARD, SPINY DOG CLOGGING PUMP
	048	NOT BROUGHT ON BOARD, VESSEL CAPACITY FILLED
	049	NOT BROUGHT ON BOARD, NOT ENOUGH FISH TO PUMP ABOARD
	052	INCIDENTAL TAKE (MAMMAL, SEA TURTLE, SEA BIRD)
	053	DEBRIS
	054	EMPTY SHELLS
	062	UPGRADED
	063	RETAINING ONLY CERTAIN SIZE BETTER PRICE TRIP QUOTA IN EFFECT
064	RETAINING ONLY CERTAIN SIZE FOR BEST PRICE DUE TO PRICE DIFFERENCE	
070	NOT BROUGHT ON BOARD, QUALITY OF FISH	
071	NOT BROUGHT ON BOARD, CLOGGED PUMP OTHER	
099	DISCARDED, OTHER	

Note: Fish disposition code '039' = POOR QUALITY, PREVIOUSLY DISCARDED has been excluded from this report.

**Appendix Table 3A. Estimated discards (live lb) and percentage by discard reason category for 14 species groups, based on July 2015 through June 2016 data.**

*Species Group: ATLANTIC SALMON (Salmo salar)* No discards

*Species Group: BLUEFISH (Pomatomus saltatrix)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
39 Other fleets filtered out						48,125	29.1	2.1	34.9	0.3	32.4	1.2	100.0
Total						48,125	29.1	2.1	34.9	0.3	32.4	1.2	100.0

*Species Group: FLUKE (Paralichthys dentatus) - SCUP (Stenotomus chrysops) - BLACK SEA BASS (Centropristis striata)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	1,923,060	9.4	52.3	31.4	1.6	0.2	5.1	100.0
6	Otter Trawl	OPEN	all	MA	lg	1,326,967	13.2	38.9	35.5	3.6	0.4	8.4	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,906,717	9.9	58.5	24.1	1.6	0.0	5.9	100.0
8	Otter Trawl	OPEN	all	NE	lg	642,565	17.0	17.5	50.1	0.2	0.1	15.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	163,672	63.3	0.0	36.7	0.0	0.0	0.0	100.0
34 Other fleets filtered out						847,949	43.6	14.3	35.3	1.2	0.8	4.8	100.0
Total						6,810,931	16.6	42.2	32.5	1.8	0.2	6.7	100.0

*Species Group: HERRING, ATLANTIC (Clupea harengus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
39 Other fleets filtered out						219,925	53.9	0.0	37.1	0.0	0.1	8.9	100.0
Total						219,925	53.9	0.0	37.1	0.0	0.1	8.9	100.0

See text for fleet abbreviations.

**Appendix Table 3A, continued. Estimated discards (live lb) and percentage by discard reason category for 14 species groups, based on July 2015 through June 2016 data.**

*Species Group: LARGE MESH GROUND FISH*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
6	Otter Trawl	OPEN	all	MA	lg	660,780	34.1	3.6	61.1	0.5	0.7	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	936,435	24.5	9.7	65.7	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	2,215,435	7.2	77.7	14.5	0.0	0.3	0.2	100.0
18	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	1,028,166	0.2	98.0	0.7	0.0	0.1	1.1	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	642,537	63.1	0.2	36.6	0.0	0.1	0.0	100.0
34 Other fleets filtered out						1,059,994	24.7	24.6	34.2	0.2	13.0	3.2	100.0
Total						6,543,347	19.6	47.5	29.7	0.1	2.3	0.8	100.0

*Species Group: MONKFISH (Lophius americanus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	207,339	24.4	74.2	0.0	0.0	0.2	1.2	100.0
6	Otter Trawl	OPEN	all	MA	lg	376,357	8.9	90.8	0.0	0.3	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	290,275	1.6	94.4	4.0	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	1,108,657	2.8	96.4	0.7	0.0	0.1	0.0	100.0
28	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	301,228	5.6	3.9	2.7	0.0	87.5	0.3	100.0
33	Scallop Dredge	AA	LIM	MA	all	318,491	78.8	18.4	0.0	0.0	0.1	2.7	100.0
34	Scallop Dredge	AA	LIM	NE	all	374,879	88.5	10.5	0.8	0.0	0.0	0.2	100.0
35	Scallop Dredge	OPEN	GEN	MA	all	124,397	34.9	51.2	12.3	0.0	0.2	1.4	100.0
36	Scallop Dredge	OPEN	GEN	NE	all	161,104	65.0	33.0	1.0	0.0	0.1	0.8	100.0
37	Scallop Dredge	OPEN	LIM	MA	all	845,484	72.1	25.0	0.2	0.0	0.1	2.6	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	2,387,166	78.5	18.5	0.9	0.0	0.1	2.0	100.0
28 Other fleets filtered out						422,464	52.3	20.0	9.3	0.0	14.3	4.1	100.0
Total						6,917,842	51.6	40.5	1.6	0.0	4.8	1.5	100.0

See text for fleet abbreviations.

**Appendix Table 3A, continued. Estimated discards (live lb) and percentage by discard reason category for 14 species groups, based on July 2015 through June 2016 data.**

*Species Group: RED DEEPSEA CRAB (Chaceon quinquegens)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
8	Otter Trawl	OPEN	all	NE	1g	77,154	100.0	0.0	0.0	0.0	0.0	0.0	100.0
49	Pots and Traps, Lobster	OPEN	all	NE	all	50,745	100.0	0.0	0.0	0.0	0.0	0.0	100.0
37 Other fleets filtered out						102,573	99.9	0.0	0.0	0.1	0.0	0.0	100.0
Total						230,472	100.0	0.0	0.0	0.0	0.0	0.0	100.0

*Species Group: SEA SCALLOP (Placopecten magellanicus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
33	Scallop Dredge	AA	LIM	MA	all	6,031,504	80.0	0.0	1.9	0.0	4.8	13.2	100.0
34	Scallop Dredge	AA	LIM	NE	all	6,482,707	77.6	1.4	2.1	0.0	5.5	13.4	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	3,621,199	89.9	0.3	0.0	0.0	9.6	0.3	100.0
36 Other fleets filtered out						6,577,985	73.5	1.3	12.7	0.2	2.2	10.2	100.0
Total						22,713,394	79.0	0.8	4.8	0.0	5.0	10.3	100.0

See text for fleet abbreviations.

**Appendix Table 3A, continued. Estimated discards (live lb) and percentage by discard reason category for 14 species groups, based on July 2015 through June 2016 data.**

*Species Group: SKATE COMPLEX (Rajidae)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	9,447,941	94.2	0.8	5.0	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	19,024,846	89.0	3.5	7.2	0.0	0.0	0.3	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,763,759	84.7	0.0	15.3	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	29,667,310	89.8	0.2	9.8	0.1	0.0	0.1	100.0
25	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	1,080,702	80.1	0.4	15.9	0.0	2.2	1.4	100.0
28	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	2,183,668	42.9	0.0	32.3	0.5	24.0	0.2	100.0
33	Scallop Dredge	AA	LIM	MA	all	928,959	99.5	0.0	0.4	0.0	0.0	0.0	100.0
34	Scallop Dredge	AA	LIM	NE	all	1,218,752	94.0	0.0	6.0	0.0	0.0	0.0	100.0
35	Scallop Dredge	OPEN	GEN	MA	all	1,928,500	90.1	0.0	6.9	2.1	0.0	0.9	100.0
36	Scallop Dredge	OPEN	GEN	NE	all	903,803	97.4	0.0	2.6	0.0	0.0	0.0	100.0
37	Scallop Dredge	OPEN	LIM	MA	all	4,285,525	99.7	0.0	0.2	0.0	0.0	0.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	8,918,963	99.4	0.0	0.6	0.0	0.0	0.0	100.0
27 Other fleets filtered out						3,441,937	82.9	0.0	16.3	0.0	0.0	0.7	100.0
Total						84,794,666	90.2	1.0	8.0	0.1	0.6	0.2	100.0

*Species Group: SMALL MESH GROUND FISH*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	305,508	77.3	21.1	0.0	0.0	1.6	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	2,226,063	89.4	6.6	0.8	0.0	2.1	1.1	100.0
8	Otter Trawl	OPEN	all	NE	lg	760,953	97.6	1.3	0.4	0.0	0.3	0.4	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	160,091	100.0	0.0	0.0	0.0	0.0	0.0	100.0
35 Other fleets filtered out						352,582	74.1	13.5	7.5	0.0	4.9	0.1	100.0
Total						3,805,198	89.1	7.0	1.2	0.0	1.9	0.7	100.0

See text for fleet abbreviations.

**Appendix Table 3A, continued. Estimated discards (live lb) and percentage by discard reason category for 14 species groups, based on July 2015 through June 2016 data.**

*Species Group: SPINY DOGFISH (Squalus acanthias)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
2	Longline	OPEN	all	NE	all	518,016	88.0	0.0	12.0	0.0	0.0	0.0	100.0
5	Otter Trawl	OPEN	all	MA	sm	2,258,853	99.4	0.1	0.5	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	1,626,280	99.6	0.0	0.4	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,364,615	99.5	0.0	0.5	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	3,536,027	99.5	0.1	0.4	0.0	0.0	0.0	100.0
9	Scallop Trawl	AA	GEN	MA	all	277,811	31.5	0.0	68.5	0.0	0.0	0.0	100.0
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	272,529	10.3	0.0	60.6	0.0	29.0	0.2	100.0
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	2,155,098	93.4	0.3	4.4	0.0	1.7	0.3	100.0
28	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	161,438	74.1	0.3	3.8	0.0	21.7	0.0	100.0
30 Other fleets filtered out						677,740	79.3	0.4	11.6	0.3	8.4	0.1	100.0
Total						12,848,406	93.3	0.1	4.9	0.0	1.6	0.1	100.0

*Species Group: SQUID (Doryteuthis [Amerigo] pealeii, Illex illecebrosus)- BUTTERFISH (Peprilus triacanthus) - MACKEREL (Scomber scombrus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	3,075,277	90.4	2.7	1.8	0.0	4.8	0.3	100.0
7	Otter Trawl	OPEN	all	NE	sm	2,449,611	92.7	3.5	0.8	0.3	1.7	1.0	100.0
37 Other fleets filtered out						509,052	90.4	2.5	0.3	0.0	5.1	1.7	100.0
Total						6,033,940	91.3	3.0	1.3	0.1	3.6	0.7	100.0

See text for fleet abbreviations.

**Appendix Table 3A, continued. Estimated discards (live lb) and percentage by discard reason category for 14 species groups, based on July 2015 through June 2016 data.**

*Species Group: SURFCLAM (Spisula solidissima) - OCEAN QUAHOG (Arctica islandica)*

Fleet					Percentage by Discard Reason Category									
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
39 Other fleets filtered out							2,654,459	95.6	0.0	4.1	0.0	0.3	0.0	100.0
Total							2,654,459	95.6	0.0	4.1	0.0	0.3	0.0	100.0

*Species Group: TILEFISH (Lopholatilus chamaeleonticeps)*

Fleet					Percentage by Discard Reason Category									
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
39 Other fleets filtered out							22,627	55.2	24.0	10.1	0.0	10.7	0.0	100.0
Total							22,627	55.2	24.0	10.1	0.0	10.7	0.0	100.0

**Appendix Table 3B. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: BLACK SEA BASS (Centropristis striata)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	343,395	12.9	15.9	53.4	0.1	0.1	17.5	100.0
6	Otter Trawl	OPEN	all	MA	lg	250,877	6.7	16.6	32.5	0.4	0.8	42.9	100.0
7	Otter Trawl	OPEN	all	NE	sm	301,116	1.4	2.3	85.6	0.6	0.0	10.1	100.0
8	Otter Trawl	OPEN	all	NE	lg	64,305	11.9	3.0	80.9	2.4	0.1	1.8	100.0
43	Pots and Traps, Fish	OPEN	all	MA	all	99,846	0.0	84.9	15.1	0.0	0.0	0.0	100.0
44	Pots and Traps, Fish	OPEN	all	NE	all	95,189	57.7	5.8	0.0	0.0	0.0	36.5	100.0
33 Other fleets filtered out						115,871	46.4	1.1	52.4	0.0	0.0	0.1	100.0
Total						1,270,599	14.3	15.5	51.2	0.4	0.2	18.4	100.0

*Species: FLUKE (Paralichthys dentatus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	347,348	3.5	19.2	59.5	8.0	0.6	9.3	100.0
6	Otter Trawl	OPEN	all	MA	lg	572,611	1.4	27.7	61.8	7.8	0.5	0.8	100.0
7	Otter Trawl	OPEN	all	NE	sm	209,584	10.6	10.3	67.5	0.0	0.2	11.4	100.0
8	Otter Trawl	OPEN	all	NE	lg	463,783	18.8	2.8	57.9	0.0	0.1	20.3	100.0
34	Scallop Dredge	AA	LIM	NE	all	106,752	64.9	0.0	35.1	0.0	0.0	0.0	100.0
37	Scallop Dredge	OPEN	LIM	MA	all	90,568	77.6	3.2	18.7	0.1	0.3	0.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	163,349	63.2	0.0	36.7	0.0	0.0	0.0	100.0
32 Other fleets filtered out						312,368	34.5	6.2	52.3	3.3	1.9	1.8	100.0
Total						2,266,363	21.2	12.4	55.1	3.7	0.5	7.1	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: SCUP (Stenotomus chrysops)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	1,232,317	10.2	73.8	15.9	0.0	0.1	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	503,479	30.5	63.4	5.9	0.2	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,396,017	11.5	78.1	4.1	2.1	0.0	4.0	100.0
36 Other fleets filtered out						142,156	19.7	76.3	3.9	0.0	0.0	0.0	100.0
Total						3,273,968	14.3	74.2	8.8	0.9	0.1	1.7	100.0

*Species: AMERICAN PLAICE (Hippoglossoides platessoides)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
8	Otter Trawl	OPEN	all	NE	lg	171,599	1.5	97.2	0.0	0.0	1.1	0.2	100.0
38 Other fleets filtered out						54,683	42.9	14.5	41.9	0.0	0.7	0.0	100.0
Total						226,281	11.5	77.2	10.1	0.0	1.0	0.1	100.0

*Species: ATLANTIC COD (Gadus morhua)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
4	Hand Line	OPEN	all	NE	all	39,055	0.0	65.3	0.0	0.0	0.3	34.4	100.0
8	Otter Trawl	OPEN	all	NE	lg	64,353	0.1	99.2	0.0	0.7	0.1	0.0	100.0
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	26,463	1.1	17.1	2.8	0.0	36.8	42.2	100.0
49	Pots and Traps, Lobster	OPEN	all	NE	all	67,850	30.5	1.1	68.4	0.0	0.0	0.0	100.0
35 Other fleets filtered out						63,595	15.2	35.6	24.7	0.0	21.7	2.7	100.0
Total						261,317	11.7	44.9	24.1	0.2	9.1	10.1	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: ATLANTIC HALIBUT (Hippoglossus hippoglossus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
8	Otter Trawl	OPEN	all	NE	lg	41,233	0.0	60.5	32.6	0.1	0.0	6.7	100.0
28	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	73,645	0.0	79.2	2.3	0.3	16.5	1.8	100.0
37 Other fleets filtered out						8,338	5.1	74.2	16.3	0.3	0.9	3.2	100.0
Total						123,216	0.3	72.6	13.4	0.2	9.9	3.5	100.0

*Species: ATLANTIC WOLFFISH (Anarhichas lupus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
2	Longline	OPEN	all	NE	all	6,065	27.7	0.0	72.3	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	33,804	13.1	0.0	86.9	0.0	0.0	0.0	100.0
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	4,031	20.9	0.0	79.1	0.0	0.0	0.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	3,635	92.7	0.0	7.3	0.0	0.0	0.0	100.0
49	Pots and Traps, Lobster	OPEN	all	NE	all	4,832	0.0	0.0	100.0	0.0	0.0	0.0	100.0
34 Other fleets filtered out						2,099	11.4	0.0	88.6	0.0	0.0	0.0	100.0
Total						54,465	19.4	0.0	80.6	0.0	0.0	0.0	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: HADDOCK (Melanogrammus aeglefinus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
7	Otter Trawl	OPEN	all	NE	sm	720,513	27.4	5.4	67.2	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	1,151,974	0.1	99.8	0.0	0.0	0.1	0.0	100.0
18	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	995,916	0.0	98.9	0.0	0.0	0.0	1.1	100.0
36 Other fleets filtered out						115,259	10.8	62.5	9.5	0.0	17.2	0.0	100.0
Total						2,983,662	7.1	75.3	16.6	0.0	0.7	0.4	100.0

*Species: OCEAN POUT (Zoarces americanus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	14,874	96.3	0.0	3.7	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	4,855	61.9	0.0	14.0	24.1	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	4,716	41.7	0.0	58.3	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	86,049	67.2	0.0	32.8	0.0	0.0	0.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	3,479	76.9	0.0	23.1	0.0	0.0	0.0	100.0
49	Pots and Traps, Lobster	OPEN	all	NE	all	19,156	38.7	0.0	61.3	0.0	0.0	0.0	100.0
33 Other fleets filtered out						5,276	37.5	0.0	62.5	0.0	0.0	0.0	100.0
Total						138,405	64.4	0.0	34.8	0.8	0.0	0.0	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: POLLOCK (Pollachius virens)*

Fleet						Percentage by Discard Reason Category								
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
27	Sink, Anchor, Drift Gillnet		OPEN	all	NE	lg	73,827	0.0	35.1	0.1	0.0	64.7	0.1	100.0
	38 Other fleets filtered out						133,326	0.6	85.4	0.4	0.0	11.5	2.1	100.0
	Total						207,152	0.4	67.5	0.3	0.0	30.5	1.4	100.0

*Species: REDFISH (Sebastes fasciatus)*

Fleet						Percentage by Discard Reason Category								
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
	39 Other fleets filtered out						117,566	15.2	82.8	1.0	0.0	0.6	0.4	100.0
	Total						117,566	15.2	82.8	1.0	0.0	0.6	0.4	100.0

*Species: WHITE HAKE (Urophycis tenuis)*

Fleet						Percentage by Discard Reason Category								
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
	39 Other fleets filtered out						68,366	51.4	5.1	19.6	0.0	23.7	0.1	100.0
	Total						68,366	51.4	5.1	19.6	0.0	23.7	0.1	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: WINDOWPANE FLOUNDER (Scophthalmus aquosus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	176,259	49.3	0.4	50.4	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	574,651	34.7	0.0	64.9	0.4	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	43,944	13.0	1.3	85.4	0.3	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	322,360	21.6	0.0	78.4	0.0	0.0	0.0	100.0
35	Scallop Dredge	OPEN	GEN	MA	all	28,365	56.4	0.0	42.6	0.0	0.0	1.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	205,925	56.0	0.0	44.0	0.0	0.0	0.0	100.0
33 Other fleets filtered out						61,817	41.6	0.2	58.0	0.0	0.0	0.2	100.0
Total						1,413,321	36.7	0.1	63.0	0.2	0.0	0.0	100.0

*Species: WINTER FLOUNDER (Pseudopleuronectes americanus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	99,680	18.4	4.7	75.0	1.8	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	50,664	13.8	31.3	46.2	0.0	8.6	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	71,077	17.1	9.0	73.8	0.0	0.0	0.1	100.0
8	Otter Trawl	OPEN	all	NE	lg	47,155	11.2	75.9	8.0	0.0	4.6	0.3	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	227,766	77.1	0.1	22.8	0.0	0.0	0.0	100.0
34 Other fleets filtered out						35,651	34.4	2.8	62.0	0.0	0.7	0.1	100.0
Total						531,992	43.4	12.0	42.9	0.3	1.3	0.0	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: WITCH FLOUNDER (Glyptocephalus cynoglossus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	24,489	35.4	11.2	53.4	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	12,201	41.9	21.6	36.5	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	25,441	24.6	12.5	62.8	0.0	0.1	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	88,611	1.8	95.2	1.8	0.0	0.2	1.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	27,259	90.5	2.2	6.8	0.0	0.6	0.0	100.0
34 Other fleets filtered out						20,025	56.9	35.2	7.6	0.0	0.0	0.2	100.0
Total						198,028	29.1	50.8	19.4	0.0	0.2	0.5	100.0

*Species: YELLOWTAIL FLOUNDER (Limanda ferruginea)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
8	Otter Trawl	OPEN	all	NE	lg	54,479	3.7	96.1	0.0	0.0	0.2	0.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	101,830	37.9	0.0	62.1	0.0	0.0	0.0	100.0
37 Other fleets filtered out						63,267	26.4	10.2	62.2	0.7	0.4	0.0	100.0
Total						219,576	26.1	26.8	46.7	0.2	0.2	0.0	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: OFFSHORE HAKE (Merluccius albidus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	10,097	100.0	0.0	0.0	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	1,917	100.0	0.0	0.0	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	956	74.7	0.0	0.0	0.0	25.3	0.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	437	100.0	0.0	0.0	0.0	0.0	0.0	100.0
35 Other fleets filtered out						3,004	97.6	1.9	0.0	0.0	0.5	0.0	100.0
Total						16,411	98.1	0.3	0.0	0.0	1.6	0.0	100.0

*Species: RED HAKE (Urophycis chuss)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	219,239	70.8	29.2	0.0	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,875,496	90.6	7.4	0.7	0.0	0.1	1.3	100.0
8	Otter Trawl	OPEN	all	NE	lg	245,656	97.1	2.9	0.0	0.0	0.0	0.0	100.0
38	Scallop Dredge	OPEN	LIM	NE	all	133,504	100.0	0.0	0.0	0.0	0.0	0.0	100.0
49	Pots and Traps, Lobster	OPEN	all	NE	all	103,587	79.7	0.0	20.3	0.0	0.0	0.0	100.0
34 Other fleets filtered out						102,255	89.2	5.5	5.0	0.0	0.1	0.1	100.0
Total						2,679,737	89.6	8.0	1.4	0.0	0.1	0.9	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: SILVER HAKE (Merluccius bilinearis)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
7	Otter Trawl	OPEN	all	NE	sm	349,612	82.4	1.8	1.7	0.0	14.2	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	514,929	97.9	0.6	0.5	0.0	0.4	0.6	100.0
37 Other fleets filtered out						244,510	73.0	18.1	0.2	0.0	8.7	0.0	100.0
Total						1,109,051	87.5	4.8	0.8	0.0	6.6	0.3	100.0

*Species: ATLANTIC MACKEREL (Scomber scombrus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
39 Other fleets filtered out						35,145	97.4	0.0	1.2	0.0	0.5	0.9	100.0
Total						35,145	97.4	0.0	1.2	0.0	0.5	0.9	100.0

*Species: BUTTERFISH (Peprilus triacanthus)*

Fleet						Percentage by Discard Reason Category							
Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl	OPEN	all	MA	sm	1,952,074	95.2	3.0	1.8	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,765,637	96.0	2.4	1.1	0.3	0.1	0.2	100.0
37 Other fleets filtered out						98,789	87.0	12.8	0.2	0.0	0.0	0.0	100.0
Total						3,816,500	95.3	3.0	1.4	0.2	0.0	0.1	100.0

See text for fleet abbreviations.

**Appendix Table 3B, continued. Estimated discards (live lb) and percentage by discard reason category for 23 individual species that compose the 14 species groups, based on July 2015 through June 2016 data.**

*Species: NORTHERN SHORTFIN SQUID (Illex illecebrosus)*

Fleet						Percentage by Discard Reason Category								
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl		OPEN	all	MA	sm	431,373	94.2	0.0	5.7	0.0	0.2	0.0	100.0
7	Otter Trawl		OPEN	all	NE	sm	482,562	92.5	0.0	0.4	0.0	5.4	1.7	100.0
37 Other fleets filtered out							310,848	99.9	0.0	0.0	0.0	0.0	0.0	100.0
Total							1,224,783	95.0	0.0	2.2	0.0	2.2	0.7	100.0

*Species: LONGFIN INSHORE SQUID (Doryteuthis [Amerigo] pealeii)*

Fleet						Percentage by Discard Reason Category								
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Discarded	No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality	Other	Total
5	Otter Trawl		OPEN	all	MA	sm	659,373	73.4	3.7	0.0	0.0	21.5	1.4	100.0
38 Other fleets filtered out							271,132	59.6	15.4	0.4	0.0	14.2	10.4	100.0
Total							930,506	69.4	7.1	0.1	0.0	19.4	4.0	100.0

See text for fleet abbreviations.

**Appendix Table 4. Fleet abbreviations used in Figures 1A, 1B, 2, and 3. Fleets that were filtered out through the importance filter and fleets designated as in need of pilot coverage have been aggregated into "Other fleets."**

Row	Fleet Gear Type	Access Area	Trip Category	Region	Mesh Group	Fleet Abbreviation
1	Longline	OPEN	all	MA	all	LL MA (Row 1)
2	Longline	OPEN	all	NE	all	LL NE (Row 2)
3	Hand Line	OPEN	all	MA	all	HL MA (Row 3)
4	Hand Line	OPEN	all	NE	all	HL NE (Row 4)
5	Otter Trawl	OPEN	all	MA	sm	OT sm MA (Row 5)
6	Otter Trawl	OPEN	all	MA	lg	OT lg MA (Row 6)
7	Otter Trawl	OPEN	all	NE	sm	OT sm NE (Row 7)
8	Otter Trawl	OPEN	all	NE	lg	OT lg NE (Row 8)
9	Scallop Trawl	AA	GEN	MA	all	SCT AA GEN MA (Row 9)
10	Scallop Trawl	AA	LIM	MA	all	SCT AA LIM MA (Row 10)
11	Scallop Trawl	OPEN	GEN	MA	all	SCT OPEN GEN MA (Row 11)
12	Scallop Trawl	OPEN	LIM	MA	all	SCT OPEN LIM MA (Row 12)
13	Otter Trawl, Twin	OPEN	all	MA	all	OTT MA (Row 13)
14	Otter Trawl, Twin	OPEN	all	NE	all	OTT NE (Row 14)
15	Otter Trawl, Ruhle	OPEN	all	MA	lg	OTR lg MA (Row 15)
16	Otter Trawl, Ruhle	OPEN	all	NE	sm	OTR sm NE (Row 16)
17	Otter Trawl, Ruhle	OPEN	all	NE	lg	OTR lg NE (Row 17)
18	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	OTH lg NE (Row 18)
19	Shrimp Trawl	OPEN	all	MA	all	SHT MA (Row 19)
20	Shrimp Trawl	OPEN	all	NE	all	SHT NE (Row 20)
21	Floating Trap	OPEN	all	MA	all	FT MA (Row 21)
22	Floating Trap	OPEN	all	NE	all	FT NE (Row 22)
23	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	GN sm MA (Row 23)
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	GN lg MA (Row 24)
25	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	GN xlg MA (Row 25)
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	GN sm NE (Row 26)
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	GN lg NE (Row 27)
28	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	GN xlg NE (Row 28)
29	Purse Seine	OPEN	all	MA	all	PS MA (Row 29)
30	Purse Seine	OPEN	all	NE	all	PS NE (Row 30)
31	Scallop Dredge	AA	GEN	MA	all	SCD AA GEN MA (Row 31)
32	Scallop Dredge	AA	GEN	NE	all	SCD AA GEN NE (Row 32)
33	Scallop Dredge	AA	LIM	MA	all	SCD AA LIM MA (Row 33)
34	Scallop Dredge	AA	LIM	NE	all	SCD AA LIM NE (Row 34)
35	Scallop Dredge	OPEN	GEN	MA	all	SCD OPEN GEN MA (Row 35)
36	Scallop Dredge	OPEN	GEN	NE	all	SCD OPEN GEN NE (Row 36)
37	Scallop Dredge	OPEN	LIM	MA	all	SCD OPEN LIM MA (Row 37)

**Appendix Table 4, continued. Fleet abbreviations used in Figures 1A, 1B, 2, and 3. Fleets that were filtered out through the importance filter and fleets designated as in need of pilot coverage have been aggregated into "Other fleets."**

Row	Fleet Gear Type	Access Area	Trip Category	Region	Mesh Group	Fleet Abbreviation
38	Scallop Dredge	OPEN	LIM	NE	all	SCD OPEN LIM NE (Row 38)
39	Danish Seine	OPEN	all	MA	all	DS MA (Row 39)
40	Mid-water Paired & Single Trawl	AA	all	NE	all	MWT AA NE (Row 40)
41	Mid-water Paired & Single Trawl	OPEN	all	MA	all	MWT MA (Row 41)
42	Mid-water Paired & Single Trawl	OPEN	all	NE	all	MWT NE (Row 42)
43	Pots and Traps, Fish	OPEN	all	MA	all	FPT MA (Row 43)
44	Pots and Traps, Fish	OPEN	all	NE	all	FPT NE (Row 44)
45	Pots and Traps, Conch	OPEN	all	MA	all	CPT MA (Row 45)
46	Pots and Traps, Conch	OPEN	all	NE	all	CPT NE (Row 46)
47	Pots and Traps, Hagfish	OPEN	all	NE	all	HPT NE (Row 47)
48	Pots and Traps, Lobster	OPEN	all	MA	all	LPT MA (Row 48)
49	Pots and Traps, Lobster	OPEN	all	NE	all	LPT NE (Row 49)
50	Pots and Traps, Crab	OPEN	all	MA	all	CRPT MA (Row 50)
51	Pots and Traps, Crab	OPEN	all	NE	all	CRPT NE (Row 51)
52	Beam Trawl	OPEN	all	MA	all	BT MA (Row 52)
53	Beam Trawl	OPEN	all	NE	all	BT NE (Row 53)
54	Dredge, Other	OPEN	all	MA	all	DRO MA (Row 54)
55	Ocean Quahog/Surfclam Dredge	OPEN	all	MA	all	CDR MA (Row 55)
56	Ocean Quahog/Surfclam Dredge	OPEN	all	NE	all	CDR NE (Row 56)
	Other fleets filtered out					Other fleets

## APPENDIX: EQUATIONS USED IN DISCARD ESTIMATION AND SAMPLE SIZE ANALYSES

Total discarded pounds for species  $j$  in fleet  $h$  (i.e., gear type, access area, trip category, region, and mesh group stratum combination) is defined as:

$$(1) \hat{D}_{j,h} = \sum_{q=1}^Q K_{q,h} r_{c,j,h}$$

where

$$(2) r_{c,j,h} = \frac{\sum_{q=1}^Q N_{q,h} \sum_{i=1}^{n_{q,h}} \frac{d_{j,i,q,h}}{n_{q,h}}}{\sum_{q=1}^Q N_{q,h} \sum_{i=1}^{n_{q,h}} \frac{k_{i,q,h}}{n_{q,h}}}$$

Where  $\hat{D}_{j,h}$  is total discarded pounds for species  $j$  in fleet  $h$ ;  $K_{q,h}$  is vessel trip report (VTR) total kept pounds of all species in quarter  $q$  and fleet  $h$ ;  $r_{c,j,h}$  is the combined ratio of species  $j$  in fleet  $h$ ;  $d_{j,i,q,h}$  is discards of species  $j$  from trip  $i$  in quarter  $q$  and fleet  $h$ ;  $k_{i,q,h}$  is kept pounds of all species on trip  $i$  in quarter  $q$  and fleet  $h$ ;  $N_{q,h}$  is the number of VTR trips in quarter  $q$  and fleet  $h$ ;  $n_{q,h}$  is the number of observed trips in quarter  $q$  and fleet  $h$ . A fleet is defined by a gear type, access area, trip category, region, and mesh group combination. In Eq. 2  $q$  denotes calendar quarters.

Variance of  $\hat{D}_{j,h}$  for species  $j$  in fleet  $h$  is defined as:

$$(3) V(\hat{D}_{j,h}) = \sum_{q=1}^Q K_{q,h}^2 \left( \frac{N_{q,h} - n_{q,h}}{n_{q,h} N_{q,h}} \right) \left( \frac{\sum_{i=1}^{n_{q,h}} k_{i,q,h}}{n_{q,h}} \right)^2 \left[ \frac{\sum_{i=1}^{n_{q,h}} (d_{j,i,q,h}^2 + (r_{c,j,h})^2 k_{i,q,h}^2 - 2r_{c,j,h} d_{j,i,q,h} k_{i,q,h})}{n_{q,h} - 1} \right]$$

where  $\hat{D}_{j,h}$  is total discarded pounds for species  $j$  in fleet  $h$ ;  $K_{q,h}$  is VTR total kept pounds of all species in quarter  $q$  and fleet  $h$ ;  $r_{c,j,h}$  is the combined ratio of species  $j$  in fleet  $h$ ;  $d_{j,i,q,h}$  is discards of species  $j$  from trip  $i$  in quarter  $q$  and fleet  $h$ ;  $k_{i,q,h}$  is kept pounds of all species on trip  $i$  in quarter  $q$  and fleet  $h$ ;  $N_{q,h}$  is the number of VTR trips in quarter  $q$  and fleet  $h$ ;  $n_{q,h}$  is the number of observed trips in quarter  $q$  and fleet  $h$ .

Standard Error of the discard estimate for species  $j$  in fleet  $h$  is defined as:

$$(4) \quad SE(\hat{D}_{j,h}) = \sqrt{V(\hat{D}_{j,h})}$$

Coefficient of variation (CV) of  $\hat{D}_{j,h}$  for species  $j$  in fleet  $h$  is defined as:

$$(5) \quad CV(\hat{D}_{j,h}) = \frac{\sqrt{V(\hat{D}_{j,h})}}{\hat{D}_{j,h}}$$

Total discarded pounds of species  $j$  over all fleets,  $h$ , from 1 to  $H$  fleets, is defined as:

$$(6) \quad \hat{D}_{T,j} = \sum_{h=1}^H \hat{D}_{j,h}$$

Variance of  $\hat{D}_{T,j}$  for species  $j$  over all fleets is defined as:

$$(7) \quad V(\hat{D}_{T,j}) = \sum_{h=1}^H V(\hat{D}_{j,h}) + \sum_{h=1}^H \sum_{k \neq h}^H Cov(\hat{D}_{j,h}, \hat{D}_{j,k})$$

where the covariance term equals zero (fleets are independent; nonoverlapping strata)

Coefficient of variation of  $\hat{D}_{T,j}$  for species  $j$  over all fleets is defined as:

$$(8) \quad CV(\hat{D}_{T,j}) = \frac{\sqrt{V(\hat{D}_{T,j})}}{\hat{D}_{T,j}}$$

The number of sea days and trips needed to achieve a 30% coefficient of variation (CV) is derived based on the variance of the total discards for species  $j$  in fleet  $h$  using the combined ratio method and the d/k discard ratio (Eq. 3).

From Eq. 3, let

$$(9) \quad \hat{S}_{j,q,h}^2 = \left[ \frac{\sum_{i=1}^{n_{q,h}} (d_{j,i,q,h}^2 + (r_{c,j,h})^2 k_{i,q,h}^2 - 2r_{c,j,h} d_{j,i,q,h} k_{i,q,h})}{n_{q,h} - 1} \right] \quad \text{and}$$

$$(10) \quad \delta_{q,h} = \frac{n_{q,h}}{\sum_{q=1}^Q n_{q,h}}$$

where  $\delta_{q,h}$  is the fraction of the trips in quarter  $q$  in fleet  $h$ ;  $r_{c,j,h}$  is the combined annual ratio of species  $j$  in fleet  $h$ ;  $d_{j,i,q,h}$  is discards of species  $j$  from trip  $i$  in quarter  $q$  in fleet  $h$ ;  $k_{i,q,h}$  is kept pounds of all species on trip  $i$  in quarter  $q$  in fleet  $h$ ; and  $n_{q,h}$  is the number of observed trips in quarter  $q$  in fleet  $h$ . The  $r_{c,j,h}$  in Eq. 9 is defined in Eq. 2 where the summation is over quarters within a given fleet defined by gear, region, access area, trip type, and so forth.

The number of trips necessary to achieve a 30% CV based on the variance of the composite annual total discards for species group  $j$  in fleet  $h$  is defined as:

$$(11) \quad \hat{T}D_{30j,h} = \frac{\sum_{q=1}^Q \left( \frac{K_{q,h}^2}{\bar{k}_{q,h}^2} \hat{S}_{j,q,h}^2 \frac{1}{\delta_{q,h}} \right)}{(0.09) \hat{D}_{j,h}^2 + \frac{\sum_{q=1}^Q \frac{K_{q,h}^2}{\bar{k}_{q,h}^2} \hat{S}_{j,q,h}^2}{N_h}}$$

where  $0.09 = 0.30^2$ , the square of the 30% CV, the given precision level.

The number of sea days necessary to achieve a 30% CV based on the variance of the composite annual total discards for species group  $j$  in fleet  $h$  is defined as:

$$(12) \quad \hat{S}D_{30j,h} = \hat{T}D_{30j,h} * \overline{DA}_h$$

where  $\overline{DA}_h$  is the weighted average trip length of VTR trips in fleet  $h$  (weighted by the number of VTR trips in each quarter).

When total discards could not be estimated because of little or no observer coverage (no data) or when total discards are zero (no variance), sample size was determined by pilot coverage, where 2% of the quarterly VTR trips for a fleet were multiplied by the quarterly mean VTR trip length.

$$(13) \quad \hat{S}_{30,j,h,q} = \hat{T}_{h,q} * \overline{DA}_{h,q}$$

where  $\hat{T}_{h,q}$  is 2% of the VTR trips in fleet  $h$  and quarter  $q$ , and  $3 \leq \hat{T}_{h,q} \leq 100$  trips;  $\overline{DA}_{h,q}$  is the average trip length of VTR trips in fleet  $h$  and quarter  $q$ . If there were less than 3 VTR trips in fleet  $h$  and quarter  $q$ , then pilot coverage was set to zero for that fleet and quarter. The quarterly trips and sea days were then summed for annual number of trips and sea days.

The achieved precision resulting from the number of funded sea days can be derived by converting funded sea days into funded trips. The number of funded trips,  $\hat{T}F_h$  for fleet  $h$  is defined as:

$$(14) \quad \hat{T}F_h = \hat{S}F_h / \overline{DA}_h$$

where  $\hat{S}_h$  is the number of funded sea days in fleet  $h$  and  $\overline{DA}_h$  is the weighted average trip length of VTR trips in fleet  $h$  (weighted by the number of VTR trips in each quarter).

The achieved coefficient of variation (CV) of  $\hat{D}_j$  is based on the variance of the composite annual total discards for species group  $j$  in fleet  $h$  and the number of funded trips in fleet  $h$  and rewriting Eq. 11.

From Eq. 11, let

$$(15) \quad CV(\hat{D}_{j,h}) = \sqrt{\frac{\sum_{q=1}^Q \left( \frac{K_{q,h}^2}{\bar{k}_{q,h}^2} \hat{S}_{j,q,h}^2 \frac{1}{\delta_{q,h}} \right) - \hat{T}F_h \left[ \frac{\sum_{q=1}^Q \left( \frac{K_{q,h}^2}{\bar{k}_{q,h}^2} \hat{S}_{j,q,h}^2 \right)}{N_h} \right]}{\hat{T}F_h * \hat{D}_{j,h}^2}}$$