

APPENDIX

Equations used in discard estimation and sample size analysis.

Total discarded pounds for species j is defined as:

$$(1) \hat{D}_j = \sum_{h=1}^Q K_h r_{c,j}$$

where

$$(2) r_{c,j} = \frac{\sum_{h=1}^Q N_h \sum_{i=1}^{n_h} \frac{d_{jih}}{n_h}}{\sum_{h=1}^Q N_h \sum_{i=1}^{n_h} \frac{k_{ih}}{n_h}}$$

Where \hat{D}_j is total discarded pounds for species j ; K_h is VTR total kept pounds in stratum h ; $r_{c,j}$ is the combined ratio of species j ; d_{jih} is discards of species j from trip i in stratum h ; k_{ih} is kept pounds of all species on trip i in stratum h ; N_h is the number of VTR trips in stratum h ; n_h is the number of observed trips in stratum h . In Eq. 2 the summation over strata $h = 1$ to Q is over calendar quarters and the other strata values are held constant. Equation 3 (below) requires a more explicit definition of the stratum designation since the summation over quarter relies on an annual average ratio defined in Eq. 2.

Variance of \hat{D}_j for species j is defined as:

$$(3) V(\hat{D}_j) = \sum_{q=1}^4 K_{qh}^2 \left(\frac{N_{qh} - n_{qh}}{n_{qh} N_{qh}} \right) \frac{1}{\left(\frac{\sum_{i=1}^{n_h} k_{iqh}}{n_{qh}} \right)^2} \left[\frac{\sum_{i=1}^{n_{qh}} \left(d_{jih}^2 + (r_{c,j})^2 k_{iqh}^2 - 2r_{c,j} d_{jih} k_{iqh} \right)}{n_{qh} - 1} \right]$$

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

Coefficient of variation (CV) of \hat{D}_j is defined as:

$$(4) CV(\hat{D}_j) = \frac{\sqrt{V(\hat{D}_j)}}{\hat{D}_j}$$

The number of sea days and trips needed to achieve a 30% CV are derived based on the variance of the total discards using the combined ratio method and the d/k discard ratio (Eq. 3).

From Eq. 3, let

$$(5) \hat{S}_{jqh}^2 = \left[\frac{\sum_{i=1}^{n_{qh}} \left(d_{jiqh}^2 + (r_{c,jh})^2 k_{iqh}^2 - 2r_{c,j} d_{jiqh} k_{iqh} \right)}{n_{qh} - 1} \right] \text{ and}$$

$$(6) \delta_{qh} = \frac{n_{qh}}{\sum_{q=1}^4 n_{qh}}$$

where δ_{qh} is the fraction of the trips in quarter q in stratum h ; $r_{c,jh}$ is the combined annual ratio of species j in stratum h ; d_{jiqh} is discards of species j from trip i in stratum h in quarter q ; k_{iqh} is kept pounds of all species on trip i in stratum h in quarter q ; and n_{qh} is the number of observed trips in stratum h in quarter q . The $r_{c,jh}$ in Eq. 5 is defined in Eq. 2 where the summation is over quarters within a given strata 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 stratum h is defined as

$$(7) \hat{TD}_{30jh} = \frac{\sum_{q=1}^4 \left(\frac{K_{qh}^2}{\bar{k}_{qh}^2} \hat{S}_{jqh}^2 \frac{1}{\delta_{qh}} \right)}{(0.09) \hat{D}_{jh}^2 + \frac{\sum_{q=1}^4 \frac{K_{qh}^2}{\bar{k}_{qh}^2} \hat{S}_{jqh}^2}{N_h}}$$

where $0.09 = 0.30^2$, the square of the 30% CV, the given target 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 stratum h is defined as

$$(8) \hat{SD}_{30jh} = \hat{TD}_{30jh} * \overline{DA}_h$$

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

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

$$(9) \hat{S}_{30,jhq} = \hat{T}_{hq} * \overline{DA}_{hq}$$

where \hat{T}_{hq} is 2% of the VTR trips in stratum h and quarter q , and $3 \leq \hat{T}_{hq} \leq 100$ trips; \overline{DA}_{hq} is the average trip length of VTR trips in stratum h and quarter q . 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{TF}_h for stratum h is defined as:

$$(10) \hat{TF}_h = \hat{SF}_h / \overline{DA}_h$$

where \hat{SF}_h is the number of funded sea days in stratum h and \overline{DA}_h is the weighted average trip length of VTR trips in stratum 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 stratum h and the number of funded trips in stratum h and re-writing Eq. 7.

From Eq. 7, let

$$(11) CV(\hat{D}_{jh}) = \sqrt{\frac{\sum_{q=1}^4 \left(\frac{K_{qh}^2}{\bar{k}_{qh}^2} \hat{S}_{jqh}^2 \frac{1}{\delta_{qh}} \right) - \hat{TF}_h \left[\frac{\sum_{q=1}^4 \left(\frac{K_{qh}^2}{\bar{k}_{qh}^2} \hat{S}_{jqh}^2 \right)}{N_h} \right]}{\hat{TF}_h * \hat{D}_{jh}^2}}$$

Appendix Table 1. Discard reason categories used in Appendix Tables 2A and 2B.

Discard Reason Category	FISH DISPOSITION Code ⁹	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
	Poor Quality	031
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, SHALL DISEASE
038		POOR QUALITY, GEAR DAMAGE
Regulation (Size)	012	REGULATIONS PROHIBIT RETENTION, TOO SMALL
	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.
Other	000	DISCARDED GENERAL, UNKNOWN DISCARD REASON
	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.
	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.
	099	OTHER, DISCARDED

⁹ Fish disposition code “039” = POOR QUALITY, PREVIOUSLY DISCARDED has been excluded from this report.

Appendix Table 2A. Estimated discards (live pounds) and percentage by discard reason category for the 14 species for July 2010 through June 2011. Note: Salmon is not presented due to no discards.

Species Group: BLUEFISH

						Discard by 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 %
32 Other fleets filtered out						375,371	44.3	0.9	17.3	21.0	5.8	10.7	100.0

Species Group: FLUKE - SCUP - BLACK SEA BASS

						Discard by 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	1,088,895	4.6	71.2	20.6	0.7	0.0	2.7	100.0
6	Otter Trawl	OPEN	all	MA	lg	1,041,621	2.1	63.5	31.4	0.0	0.0	3.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	832,098	10.9	62.6	22.2	0.8	0.1	3.4	100.0
8	Otter Trawl	OPEN	all	NE	lg	625,775	3.0	8.1	78.6	1.7	0.6	7.9	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	838,800	74.5	0.0	24.5	0.9	0.1	0.0	100.0
27 Other fleets filtered out						965,046	49.0	6.9	39.5	1.0	2.6	1.2	100.0

Species Group: HERRING, ATLANTIC

						Discard by 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 %
32 Other fleets filtered out						387,511	77.6	0.0	4.4	0.0	0.5	17.6	100.0

Species Group: LARGE MESH GROUND FISH

						Discard by 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	824,043	31.1	3.4	64.4	1.1	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	779,536	29.1	3.1	56.4	11.4	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	400,400	10.7	3.2	85.9	0.1	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	2,214,486	6.4	62.7	29.7	0.0	0.8	0.4	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	841,986	76.5	0.6	22.8	0.1	0.0	0.0	100.0
27 Other fleets filtered out						2,277,083	13.7	24.3	53.5	1.2	6.2	1.1	100.0

Appendix Table 2A, continued. Estimated discards (live pounds) and percentage by discard reason category for the 14 species groups for July 2010 through June 2011. Note: Salmon is not presented due to no discards.

Species Group: MONKFISH

						Discard by 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	201,027	27.3	54.6	18.0	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	634,066	1.5	75.0	16.2	0.0	0.1	7.2	100.0
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	199,762	0.4	7.0	3.1	0.0	89.5	0.0	100.0
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	283,601	1.0	6.3	2.0	0.0	87.2	3.5	100.0
32	Scallop Dredge	AA	LIM	MA	all	188,197	76.6	18.5	3.2	0.0	0.0	1.6	100.0
33	Scallop Dredge	AA	LIM	NE	all	178,549	75.7	22.6	0.2	0.0	0.2	1.4	100.0
36	Scallop Dredge	OPEN	LIM	MA	all	1,697,549	79.5	12.1	7.2	0.0	0.0	1.1	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	1,607,216	68.9	30.3	0.0	0.1	0.0	0.7	100.0
24 Other fleets filtered out						403,389	26.6	53.3	17.0	1.8	0.5	0.7	100.0

Species Group: RED CRAB

						Discard by 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	335,300	100.0	0.0	0.0	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	222,747	100.0	0.0	0.0	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	318,214	100.0	0.0	0.0	0.0	0.0	0.0	100.0
29 Other fleets filtered out						2,586,192	100.0	0.0	0.0	0.0	0.0	0.0	100.0

Species Group: SEA SCALLOP

						Discard by 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 %
37	Scallop Dredge	OPEN	LIM	NE	all	17,327,809	87.0	0.0	0.0	0.0	3.1	9.8	100.0
31 Other fleets filtered out						8,115,737	70.2	0.4	13.7	0.6	4.3	10.8	100.0

Appendix Table 2A, continued. Estimated discards (live pounds) and percentage by discard reason category for the 14 species groups for July 2010 through June 2011. Note: Salmon is not presented due to no discards.

Species Group: SKATE COMPLEX

							Discard by 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	4,366,912	95.1	0.0	4.8	0.1	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	11,047,681	88.2	0.0	10.0	0.0	0.0	1.7	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,585,782	64.9	0.0	35.0	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	28,539,292	71.0	0.1	25.7	0.0	0.0	3.1	100.0
11	Scallop Trawl	OPEN	GEN	MA	all	1,190,509	99.8	0.0	0.0	0.0	0.2	0.0	100.0
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	2,373,349	74.5	0.1	22.8	0.0	0.0	2.6	100.0
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xlg	1,100,411	18.1	0.1	73.6	0.0	2.9	5.4	100.0
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	2,735,262	20.3	0.4	52.4	0.1	16.1	10.6	100.0
34	Scallop Dredge	OPEN	GEN	MA	all	858,165	100.0	0.0	0.0	0.0	0.0	0.0	100.0
36	Scallop Dredge	OPEN	LIM	MA	all	7,701,133	99.9	0.0	0.0	0.0	0.0	0.1	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	11,746,489	99.6	0.0	0.4	0.0	0.0	0.0	100.0
21 Other fleets filtered out						3,252,659	94.4	0.0	5.0	0.0	0.0	0.5	100.0

Species Group: SMALL MESH GROUND FISH

							Discard by 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	1,916,300	98.9	0.3	0.0	0.0	0.7	0.1	100.0
7	Otter Trawl	OPEN	all	NE	sm	3,153,636	95.4	0.3	3.4	0.0	0.9	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	227,432	97.8	0.9	0.9	0.0	0.2	0.1	100.0
19	Shrimp Trawl	OPEN	all	NE	all	949,223	52.5	0.0	47.5	0.0	0.0	0.0	100.0
28 Other fleets filtered out						1,424,060	98.1	0.0	0.0	0.0	1.8	0.0	100.0

Appendix Table 2A, continued. Estimated discards (live pounds) and percentage by discard reason category for the 14 species groups for July 2010 through June 2011. Note: Salmon is not presented due to no discards.

Species Group: SPINY DOGFISH

						Discard by 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	4,037,129	79.6	0.0	19.7	0.6	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	4,505,364	55.2	0.2	40.1	1.6	0.0	2.9	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,789,471	43.7	0.0	56.1	0.2	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	3,467,413	60.8	0.0	38.5	0.5	0.0	0.1	100.0
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	213,880	91.9	0.0	8.1	0.0	0.0	0.0	100.0
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	2,942,511	56.7	0.5	40.3	0.0	1.6	0.9	100.0
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	233,724	45.9	0.1	46.1	0.0	7.6	0.3	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	211,272	93.1	0.0	6.9	0.0	0.0	0.0	100.0
39	Mid-water paired & single Trawl	OPEN	all	NE	all	211,974	94.2	0.0	5.8	0.0	0.0	0.0	100.0
23 Other fleets filtered out						885,034	63.1	0.2	25.9	0.4	5.4	5.1	100.0

Species Group: SQUID - BUTTERFISH – MACKEREL

						Discard by 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	2,360,495	90.2	0.4	5.0	0.0	1.2	3.2	100.0
7	Otter Trawl	OPEN	all	NE	sm	3,403,902	76.9	0.2	9.4	0.4	2.1	11.1	100.0
30 Other fleets filtered out						281,226	99.1	0.3	0.4	0.0	0.1	0.1	100.0

Species Group: SURFCLAM - OCEAN QUAHOG

						Discard by 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 %
32 Other fleets filtered out						56,151	99.4	0.0	0.6	0.0	0.0	0.0	100.0

Species Group: TILEFISH

						Discard by 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 %
32 Other fleets filtered out						10,405	58.9	9.6	7.8	0.0	23.7	0.0	100.0

Appendix Table 2B. Estimated discards (live pounds) and percentage by discard reason category for the 23 individual species that comprise the 14 species groups for July 2010 through June 2011.

Species Group: BLACK SEA BASS

						Discard by 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	145,771	1.9	56.5	35.5	0.1	0.0	6.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	182,277	1.5	76.8	18.7	0.0	0.0	3.1	100.0
7	Otter Trawl	OPEN	all	NE	sm	70,151	12.5	54.0	32.5	0.0	0.0	1.0	100.0
29 Other fleets filtered out						33,609	70.4	0.5	28.8	0.2	0.0	0.0	100.0

Species Group: FLUKE

						Discard by 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	461,091	7.4	45.6	40.1	1.9	0.0	4.9	100.0
6	Otter Trawl	OPEN	all	MA	lg	613,835	1.0	64.4	30.7	0.0	0.0	3.9	100.0
7	Otter Trawl	OPEN	all	NE	sm	120,949	15.3	20.0	55.4	4.5	0.4	4.4	100.0
8	Otter Trawl	OPEN	all	NE	lg	574,365	2.8	5.2	81.9	1.3	0.7	8.2	100.0
36	Scallop Dredge	OPEN	LIM	MA	all	493,483	64.5	8.7	25.4	1.1	0.0	0.2	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	824,905	73.9	0.0	25.0	0.9	0.1	0.0	100.0
26 Other fleets filtered out						449,289	29.9	5.2	56.3	0.9	5.5	2.2	100.0

Species Group: SCUP

						Discard by 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	482,034	3.2	96.1	0.7	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	640,999	9.9	72.0	14.5	0.2	0.1	3.4	100.0
30 Other fleets filtered out						299,477	8.6	49.4	39.7	1.2	0.0	1.1	100.0

Appendix Table 2B, continued. Estimated discards (live pounds) and percentage by discard reason category for the 23 individual species that comprise the 14 species groups for July 2010 through June 2011.

Species Group: AMERICAN PLAICE

						Discard by 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	75,890	1.2	4.9	93.9	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	357,353	0.1	98.7	0.0	0.0	1.1	0.0	100.0
19	Shrimp Trawl	OPEN	all	NE	all	139,598	8.5	0.0	91.5	0.0	0.0	0.0	100.0
29 Other fleets filtered out						18,543	15.2	77.3	5.5	0.2	1.5	0.4	100.0

Species Group: ATLANTIC COD

						Discard by 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	322,226	0.0	93.5	6.0	0.0	0.4	0.1	100.0
31 Other fleets filtered out						432,368	2.3	79.0	5.8	0.1	9.7	3.2	100.0

Species Group: ATLANTIC HALIBUT

						Discard by 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	30,511	0.4	90.7	7.2	0.5	0.0	1.2	100.0
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	1,736	0.0	97.9	2.1	0.0	0.0	0.0	100.0
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	4,281	0.9	92.2	3.7	1.1	1.4	0.8	100.0
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xlg	14,382	0.0	45.7	48.0	0.5	5.8	0.0	100.0
28 Other fleets filtered out						1,687	16.0	78.7	5.3	0.0	0.0	0.0	100.0

Species Group: ATLANTIC WOLFFISH

						Discard by 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	1,773	0.0	0.0	98.5	0.0	0.0	1.5	100.0
8	Otter Trawl	OPEN	all	NE	lg	51,913	0.7	0.0	99.3	0.0	0.0	0.0	100.0
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	7,235	0.5	0.0	98.5	0.0	0.3	0.7	100.0
29 Other fleets filtered out						3,107	2.2	0.0	97.8	0.0	0.0	0.0	100.0

Appendix Table 2B, continued. Estimated discards (live pounds) and percentage by discard reason category for the 23 individual species that comprise the 14 species groups for July 2010 through June 2011.

Species Group: HADDOCK

					Discard by 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 %
						178,602	2.7	52.7	33.5	0.0	8.9	2.2	100.0
32 Other fleets filtered out													

Species Group: OCEAN POUT

					Discard by 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	30,880	97.1	0.0	2.9	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	44,303	33.6	0.0	66.4	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	20,276	48.5	0.0	51.5	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	87,324	40.2	0.0	59.7	0.0	0.0	0.1	100.0
11	Scallop Trawl	OPEN	GEN	MA	all	8,671	41.9	0.0	58.1	0.0	0.0	0.0	100.0
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	5,106	29.9	0.0	70.1	0.0	0.0	0.0	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	7,771	58.7	0.0	41.3	0.0	0.0	0.0	100.0
25 Other fleets filtered out						19,069	14.2	0.0	85.6	0.0	0.0	0.2	100.0

Species Group: POLLOCK

					Discard by 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 %
32 Other fleets filtered out						205,832	0.6	66.8	0.8	0.0	30.8	1.0	100.0

Species Group: REDFISH

					Discard by 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	256,498	3.7	95.4	0.0	0.0	0.5	0.4	100.0
31 Other fleets filtered out						75,759	30.1	48.1	21.1	0.0	0.4	0.3	100.0

Appendix Table 2B, continued. Estimated discards (live pounds) and percentage by discard reason category for the 23 individual species that comprise the 14 species groups for July 2010 through June 2011.

Species Group: WHITE HAKE

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	Discard by Reason Category [%]					Total %	
							No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality		Other
						88,733	68.9	1.6	1.2	0.0	25.0	3.3	100.0
32 Other fleets filtered out													

Species Group: WINDOWPANE FLOUNDER

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	Discard by Reason Category [%]					Total %	
							No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality		Other
5	Otter Trawl	OPEN	all	MA	sm	186,292	67.2	1.1	27.2	4.3	0.0	0.2	100.0
6	Otter Trawl	OPEN	all	MA	lg	469,307	33.1	0.0	49.8	17.1	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	413,193	13.3	0.2	86.2	0.0	0.0	0.3	100.0
11	Scallop Trawl	OPEN	GEN	MA	all	22,776	76.4	0.0	19.8	3.8	0.0	0.0	100.0
34	Scallop Dredge	OPEN	GEN	MA	all	35,073	65.7	0.0	33.8	0.5	0.0	0.0	100.0
35	Scallop Dredge	OPEN	GEN	NE	all	24,210	47.1	0.0	52.9	0.0	0.0	0.0	100.0
36	Scallop Dredge	OPEN	LIM	MA	all	124,924	63.9	0.0	33.1	3.0	0.0	0.0	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	279,310	83.7	0.0	16.3	0.0	0.0	0.0	100.0
24 Other fleets filtered out						72,620	44.0	0.0	55.8	0.1	0.0	0.0	100.0

Species Group: WINTER FLOUNDER

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	Discard by Reason Category [%]					Total %	
							No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality		Other
5	Otter Trawl	OPEN	all	MA	sm	295,090	3.8	0.0	96.2	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	184,456	14.5	0.0	80.0	5.5	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	149,974	1.9	0.3	97.4	0.4	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	199,169	0.4	13.4	83.7	0.0	1.4	1.0	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	322,797	71.8	0.2	28.0	0.0	0.0	0.0	100.0
27 Other fleets filtered out						90,357	28.9	2.2	62.4	6.1	0.4	0.0	100.0

Appendix Table 2B, continued. Estimated discards (live pounds) and percentage by discard reason category for the 23 individual species that comprise the 14 species groups for July 2010 through June 2011.

Species Group: WITCH FLOUNDER

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	Discard by Reason Category [%]					Total %	
							No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality		Other
5	Otter Trawl	OPEN	all	MA	sm	212,145	35.3	0.2	64.4	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	30,763	94.8	0.1	5.1	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	23,555	20.4	18.2	61.4	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	123,532	0.4	96.8	2.0	0.5	0.3	0.0	100.0
28 Other fleets filtered out						837,266	2.8	0.5	96.7	0.0	0.0	0.0	100.0

Species Group: YELLOWTAIL FLOUNDER

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	Discard by Reason Category [%]					Total %	
							No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality		Other
5	Otter Trawl	OPEN	all	MA	sm	47,559	0.1	0.4	96.2	3.3	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	36,283	0.0	16.8	83.2	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	55,057	12.0	5.1	82.9	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	227,850	0.7	93.1	4.1	0.0	1.0	1.1	100.0
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	24,188	0.2	85.7	0.1	0.0	2.5	11.4	100.0
35	Scallop Dredge	OPEN	GEN	NE	all	34,745	10.3	0.5	40.0	49.2	0.0	0.0	100.0
36	Scallop Dredge	OPEN	LIM	MA	all	61,507	80.7	0.7	18.5	0.0	0.0	0.0	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	207,760	74.6	1.5	23.7	0.2	0.0	0.0	100.0
24 Other fleets filtered out						54,346	17.7	39.7	42.0	0.0	0.6	0.0	100.0

Species Group: OFFSHORE HAKE

Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Discarded	Discard by Reason Category [%]					Total %	
							No Market	Regulation (Size)	Regulation (Quota)	Regulation (Other)	Poor Quality		Other
5	Otter Trawl	OPEN	all	MA	sm	1,062	100.0	0.0	0.0	0.0	0.0	0.0	100.0
6	Otter Trawl	OPEN	all	MA	lg	10,013	0.0	0.0	0.0	0.0	100.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	5,979	97.7	0.0	2.3	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	2,389	97.2	0.0	0.0	0.0	2.8	0.0	100.0
36	Scallop Dredge	OPEN	LIM	MA	all	3,925	100.0	0.0	0.0	0.0	0.0	0.0	100.0
27 Other fleets filtered out						981	99.6	0.0	0.0	0.0	0.4	0.0	100.0

Appendix Table 2B, continued. Estimated discards (live pounds) and percentage by discard reason category for the 23 individual species that comprise the 14 species groups for July 2010 through June 2011.

Species Group: RED HAKE

						Discard by 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	846,366	100.0	0.0	0.0	0.0	0.0	0.0	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,135,488	99.5	0.0	0.5	0.0	0.0	0.0	100.0
8	Otter Trawl	OPEN	all	NE	lg	86,962	97.0	1.7	1.2	0.0	0.0	0.1	100.0
19	Shrimp Trawl	OPEN	all	NE	all	35,415	100.0	0.0	0.0	0.0	0.0	0.0	100.0
37	Scallop Dredge	OPEN	LIM	NE	all	59,591	99.0	0.0	1.0	0.0	0.0	0.0	100.0
27 Other fleets filtered out						91,666	99.4	0.1	0.0	0.0	0.1	0.4	100.0

Species Group: SILVER HAKE

						Discard by 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	1,068,871	98.0	0.5	0.0	0.0	1.3	0.2	100.0
7	Otter Trawl	OPEN	all	NE	sm	2,012,169	93.0	0.4	5.1	0.0	1.5	0.0	100.0
19	Shrimp Trawl	OPEN	all	NE	all	913,808	50.7	0.0	49.3	0.0	0.0	0.0	100.0
29 Other fleets filtered out						1,395,964	98.6	0.1	0.1	0.0	1.3	0.0	100.0

Species Group: ATLANTIC MACKEREL

						Discard by 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	80,036	99.9	0.0	0.0	0.0	0.1	0.0	100.0
31 Other fleets filtered out						45,880	97.3	0.0	0.1	0.0	2.0	0.6	100.0

Species Group: BUTTERFISH

						Discard by 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	1,012,732	83.5	1.1	12.9	0.0	2.2	0.3	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,936,031	76.8	0.3	16.4	0.7	0.0	5.9	100.0
30 Other fleets filtered out						55,511	98.2	1.5	0.0	0.0	0.2	0.1	100.0

Appendix Table 2B, continued. Estimated discards (live pounds) and percentage by discard reason category for the 23 individual species that comprise the 14 species groups for July 2010 through June 2011.

Species Group: ILLEX SQUID

						Discard by 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	1,228,034	98.0	0.0	0.0	0.0	0.3	1.6	100.0
7	Otter Trawl	OPEN	all	NE	sm	1,090,314	72.6	0.0	0.3	0.0	3.2	23.9	100.0
30 Other fleets filtered out						183,477	99.5	0.0	0.5	0.0	0.0	0.0	100.0

Species Group: LOLIGO SQUID

						Discard by 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 %
32 Other fleets filtered out						382,295	84.1	0.1	0.2	0.0	3.5	12.1	100.0

Appendix Table 3. Fleet abbreviations used in Table 6 and Figures 1A, 1B, 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	Gear Type	Access Area	Trip Category	Region	Mesh Group	Fleet Abbreviation
1	Longline	OPEN	all	MA	all	LL MA
2	Longline	OPEN	all	NE	all	LL NE
3	Hand Line	OPEN	all	MA	all	HND MA
4	Hand Line	OPEN	all	NE	all	HND NE
5	Otter Trawl	OPEN	all	MA	sm	OT sm MA
6	Otter Trawl	OPEN	all	MA	lg	OT lg MA
7	Otter Trawl	OPEN	all	NE	sm	OT sm NE
8	Otter Trawl	OPEN	all	NE	lg	OT lg NE
9	Scallop Trawl	AA	GEN	MA	all	SCT AA GEN MA
10	Scallop Trawl	AA	LIM	MA	all	SCT AA LIM MA
11	Scallop Trawl	OPEN	GEN	MA	all	SCT OPEN GEN MA
12	Scallop Trawl	OPEN	LIM	MA	all	SCT OPEN LIM MA
13	Otter Trawl, Ruhle	OPEN	all	MA	lg	OTR lg MA
14	Otter Trawl, Ruhle	OPEN	all	NE	sm	OTR sm NE
15	Otter Trawl, Ruhle	OPEN	all	NE	lg	OTR lg NE
16	Otter Trawl, Haddock Separator	OPEN	all	MA	lg	OTH lg MA
17	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	OTH lg NE
18	Shrimp Trawl	OPEN	all	MA	all	SHT MA
19	Shrimp Trawl	OPEN	all	NE	all	SHT NE
20	Floating Trap	OPEN	all	MA	all	FT MA
21	Floating Trap	OPEN	all	NE	all	FT NE
22	Sink, Anchor, Drift Gillnet	OPEN	all	MA	sm	GN sm MA
23	Sink, Anchor, Drift Gillnet	OPEN	all	MA	lg	GN lg MA
24	Sink, Anchor, Drift Gillnet	OPEN	all	MA	xl	GN xl MA
25	Sink, Anchor, Drift Gillnet	OPEN	all	NE	sm	GN sm NE
26	Sink, Anchor, Drift Gillnet	OPEN	all	NE	lg	GN lg NE
27	Sink, Anchor, Drift Gillnet	OPEN	all	NE	xl	GN xl NE
28	Purse Seine	OPEN	all	MA	all	PS MA
29	Purse Seine	OPEN	all	NE	all	PS NE
30	Scallop Dredge	AA	GEN	MA	all	SCD AA GEN MA
31	Scallop Dredge	AA	GEN	NE	all	SCD AA GEN NE
32	Scallop Dredge	AA	LIM	MA	all	SCD AA LIM MA
33	Scallop Dredge	AA	LIM	NE	all	SCD AA LIM NE
34	Scallop Dredge	OPEN	GEN	MA	all	SCD OPEN GEN MA
35	Scallop Dredge	OPEN	GEN	NE	all	SCD OPEN GEN NE
36	Scallop Dredge	OPEN	LIM	MA	all	SCD OPEN LIM MA
37	Scallop Dredge	OPEN	LIM	NE	all	SCD OPEN LIM NE
38	Mid-water Paired & Single Trawl	OPEN	all	MA	all	MWT MA
39	Mid-water Paired & Single Trawl	OPEN	all	NE	all	MWT NE
40	Pots and Traps, Fish	OPEN	all	MA	all	FPT MA
41	Pots and Traps, Fish	OPEN	all	NE	all	FPT NE
42	Pots and Traps, Conch	OPEN	all	MA	all	CPT MA
43	Pots and Traps, Conch	OPEN	all	NE	all	CPT NE
44	Pots and Traps, Hagfish	OPEN	all	MA	all	HPT MA
45	Pots and Traps, Hagfish	OPEN	all	NE	all	HPT NE
46	Pots and Traps, Shrimp	OPEN	all	NE	all	SPT NE
47	Pots and Traps, Lobster	OPEN	all	MA	all	LPT MA
48	Pots and Traps, Lobster	OPEN	all	NE	all	LPT NE
49	Pots and Traps, Crab	OPEN	all	MA	all	CRPT MA
50	Pots and Traps, Crab	OPEN	all	NE	all	CRPT NE
51	Beam Trawl	OPEN	all	MA	all	BT MA
52	Beam Trawl	OPEN	all	NE	all	BT NE
53	Dredge, Other	OPEN	all	MA	all	DRO MA
54	Ocean Quahog/Surf Clam Dredge	OPEN	all	MA	all	CD MA
55	Ocean Quahog/Surf Clam Dredge	OPEN	all	NE	all	CD NE
	Other fleets aggregated together					Other Fleets