

Halibut Discard Mortality Rates

Final Recommendations
2016-2017

Action Needed:

- Recommend DMRs

Documents (C3)

- IPHC Report
- Comparison of DMRs across methods
 - PT Recommended Halibut DMRs

IPHC Report

Non-CDQ

Bering Sea/Aleutians			Gulf of Alaska		
Gear/Target	Used in 2013-2015	2016-2018 Recommendation	Gear/Target	Used in 2013-2015	2016-2018 Recommendation
<i>Trawl</i>			<i>Trawl</i>		
Atka mack	77	80	Bottom poll	60	58
Bottom poll	77	81	Pacific cod	62	62
Pacific cod	71	66	Dpwtr flats	43	62*
Other Flats	71	63	Shallwtr flats	67	67
Rockfish	79	81	Rockfish	66	65
Flathead sole	73	76	Flathead sole	65	67
Midwtr poll	88	88	Midwtr poll	71	72
Rock sole	85	86	Sablefish	71	71
Sablefish	75	66*	Arr. fldr	73	76
Turbot	64	82	Rex sole	69	72
Arr. fldr	76	84			
YF sole	83	84			
<i>Pot</i>			<i>Pot</i>		
Pacific cod	8	9	Pacific cod	17	15
<i>Longline</i>			<i>Longline</i>		
Pacific cod	9	9	Pacific cod	11	10
Rockfish	4	9*	Rockfish	9	10*
Turbot	13	14			

Bering Sea/Aleutians CDQ

Gear/Target	Used in 2013-2015	2016-2018 Recommendation
<i>Trawl</i>		
Atka mackerel	86	81
Bottom pollock	83	86
Pacific cod	90	90
Rockfish	80	80
Flathead sole	79	79
Midwtr pollock	90	90
Rock sole	88	88
Turbot	89	89
Yellowfin sole	86	85
<i>Pot</i>		
Pacific cod	-	1
Sablefish	34	39
<i>Longline</i>		
Pacific cod	10	10
Turbot	4	10*

IPHC Report

2014									
Target	Sample totals			Projected fishery totals					
	Exc	Poor	Dead	Exc	Poor	Dead	DMR	SE	
BSA Trawl									
Atka mackerel	2	10	38	899	4,496	17,084	0.860	0.0038	
Bottom pollock	56	53	1,941	3,060	2,896	106,054	0.856	0.0000	
Pacific cod	1,060	681	1,084	61,901	39,769	63,303	0.541	0.0004	
Other flatfish	0	0	0	0	0	0	-	-	
Rockfish	0	0	7	0	0	15,134	0.900	0.0000	
Flathead sole	0	1	6	0	5,876	35,256	0.865	0.0061	
Midwtr pollock	3	2	1,717	36	24	20,595	0.898	0.0000	
Rock sole	20	57	1,242	7,574	12,585	470,325	0.870	0.0019	
Arrowtooth fldr	0	0	0	0	0	0	-	-	
Yellowfin sole	21	67	612	12,891	41,127	375,672	0.828	0.0005	
BSA Pot									
Pacific cod	317	15	10	1,130	53	36	0.067	0.0004	
GOA Trawl									
Bottom pollock	33	30	21	2,124	1,931	1,352	0.360	0.0039	
Pacific cod	66	78	168	9,178	10,847	23,363	0.677	0.0010	
Shall wtr flatfish	5	23	7	2,105	9,683	2,947	0.584	0.0207	
Rockfish	38	22	99	7,947	4,601	20,703	0.636	0.0320	
Flathead sole	5	7	18	629	881	2,265	0.702	0.0053	
Midwtr pollock	0	0	0	-	-	-	-	-	
Sablefish	3	2	0	268	179	0	0.345	0.0021	
Arrowtooth fldr	1	3	70	899	2,696	62,910	0.870	0.0036	
Rex sole	3	23	31	1,765	13,529	18,235	0.725	0.0069	
GOA Pot									
Pacific cod	162	14	16	703	61	69	0.152	0.0025	

Target	Sample totals				Projected fishery totals					
	Minor	Mod	Severe	Dead	Minor	Mod	Severe	Dead	DMR	SE
BSA Longline										
Pacific cod	9,182	759	144	177	337,800	27,923	5,298	6,512	0.079	0.0000
Turbot	1	0	0	0	10	0	0	0	0.035	0.0000
GOA Longline										
Pacific cod	1,477	216	16	46	46,971	6,869	509	1,463	0.099	0.0007

Annual DMRs

Gear/Target	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14
<i>BSA Trawl</i>																									
Atka mackerel	66	77	71	69	73	73	83	85	77	81	77	73	85	67	63	67	64	89	90	90	87	67	<u>90</u>	<u>90</u>	86
Bottom pollock	68	74	78	78	80	73	79	72	80	74	67	74	78	65	73	79	74	69	79	88	78	85	87	86	86
Pacific cod	68	64	69	67	64	71	70	67	66	69	69	69	69	67	70	81	77	78	61	76	63	65	63	45	54
Other Flatfish	80	75	76	69	61	68	67	71	78	63	76	81	77	79	80	65	82	-	41	-	-	-	-	-	-
Rockfish	65	67	69	69	75	68	72	71	56	81	89	85	73	84	68	79	90	87	73	83	67	87	<u>90</u>	<u>83</u>	<u>90</u>
Flathead sole	-	-	-	-	67	62	66	57	70	79	74	69	60	69	70	83	75	80	79	75	82	55	<u>20</u>	81	<u>87</u>
Midwtr pollock	85	82	85	85	80	79	83	87	86	87	88	89	90	89	88	90	90	90	85	84	87	86	90	85	90
Rock sole	64	79	78	76	76	73	74	77	79	81	75	77	83	82	85	84	83	83	86	88	88	84	87	89	87
Sablefish	46	66	-	26	20	-	-	-	-	90	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbot	69	55	-	-	58	75	70	75	86	70	74	68	75	67	31	82	-	-	-	-	-	-	-	-	-
Arrowtooth fldr	-	-	-	-	-	-	-	-	-	-	-	-	-	67	67	90	-	-	78	-	-	-	-	-	-
Yellowfin sole	83	88	83	80	81	77	76	80	82	78	77	74	77	81	86	85	87	77	87	87	85	79	82	84	83
<i>BSA Pot</i>																									
Pacific cod	12	4	12	4	10	10	7	4	13	9	13	6	5	6	7	3	8	15	4	11	12	13	8	5	7
<i>BSA Longline</i>																									
Pacific cod	19	23	21	17	15	14	12	11	11	12	12	12	10	8	10	8	10	9	8	8	9	9	9	9	8
Rockfish	17	55	-	6	23	-	20	4	52	-	12	10	4	-	-	-	-	-	-	-	-	-	-	-	-
Sablefish	14	32	14	13	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbot	15	30	11	10	14	9	15	22	18	17	14	6	23	7	4	6	8	-	17	35	6	9	<u>4</u>	<u>11</u>	<u>4</u>

-	-	-	-
87	<u>90</u>	<u>83</u>	<u>90</u>
55	<u>20</u>	81	<u>87</u>
86	90	85	90
84	87	89	87
-	-	-	-
-	-	-	-

Annual DMRs

Gear/Target	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	
BSA Travel																										
Atka mackerel	66	77	71	69	73	73	83	85	77	81	77	73	85	67	63	67	64	89	90	90	87	67	90	90	86	86
Bottom pollock	68	74	78	78	80	73	79	72	80	74	67	74	78	65	73	79	74	69	79	88	78	85	87	86	86	86
Pacific cod	68	64	69	67	64	71	70	67	66	69	69	69	67	70	81	81	77	78	61	76	63	65	63	45	54	
Other Flatfish	80	75	76	69	61	68	67	71	78	63	76	81	77	79	80	65	82	-	41	-	-	-	-	-	-	
Rockfish	65	67	69	69	75	68	72	71	56	81	89	85	73	84	68	79	68	67	75	85	67	67	82	82	82	
Flathead sole	-	-	-	-	67	62	66	57	70	79	74	69	60	69	70	83	75	80	79	75	82	55	90	81	87	
Midwtr pollock	85	82	85	85	80	79	83	87	86	87	88	89	90	89	88	90	90	90	85	84	87	86	90	85	90	
Rock sole	64	79	78	76	76	73	74	77	79	81	75	77	83	82	85	84	83	83	86	88	88	84	87	89	87	
Sablefish	46	66	-	26	20	-	-	-	-	90	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Turbot	69	55	-	-	58	75	70	75	86	70	74	68	75	67	31	82	-	-	-	-	-	-	-	-	-	
Arrowtooth flldr	-	-	-	-	-	-	-	-	-	-	-	-	-	67	67	90	-	-	78	-	-	-	-	-	-	
Yellowfin sole	83	88	83	80	81	77	76	80	82	78	77	74	77	81	86	85	87	77	87	87	85	79	82	84	83	
BSA Per																										
Pacific cod	12	4	12	4	10	10	7	4	13	9	13	6	5	6	7	3	8	15	4	11	12	13	8	5	7	
BSA Longline																										
Pacific cod	19	23	21	17	15	14	12	11	11	12	12	12	10	8	10	8	10	9	8	8	9	9	9	9	8	
Rockfish	17	55	-	6	23	-	20	4	52	-	12	10	4	-	-	-	-	-	-	-	-	-	-	-	-	
Sablefish	14	32	14	13	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Turbot	15	30	11	10	14	9	15	22	18	17	14	6	23	7	4	6	6	-	17	35	6	8	4	11	4	

64	89	90	90	87	67	90	90	86
74	69	79	88	78	85	87	86	86
77	78	61	76	63	65	63	45	54
82	-	41	-	-	-	-	-	-

Annual DMRs

Gear/Target	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14
GOA Trawl																									
Atka mackerel	67	89	81	67	53	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bottom pollock	51	62	66	57	48	66	79	66	55	55	52	58	55	47	73	45	70	69	70	57	54	57	58	66	36
Pacific cod	60	62	66	59	53	64	70	62	64	54	57	67	59	69	63	66	56	61	63	62	70	52	56	66	68
Deep wtr flats	61	58	70	59	60	56	71	61	51	51	62	49	48	31	49	-	-	-	-	-	-	-	-	-	-
Shall wtr flats	66	71	69	65	62	70	71	71	67	81	67	62	66	80	71	77	70	71	66	64	56	52	72	77	58
Rockfish	65	75	79	75	58	71	65	63	68	74	71	61	64	65	73	66	48	77	75	67	66	63	56	70	64
Flathead sole	-	-	-	-	54	64	67	74	39	51	69	68	74	49	62	57	63	83	78	45	73	69	47	87	70
Midwtr pollock	71	82	72	63	61	51	81	70	80	86	80	89	90	34	88	62	66	87	-	-	-	20	90	-	-
Sablefish	70	60	68	59	67	58	80	61	-	68	38	66	62	-	79	-	89	52	-	-	-	-	-	-	35
Arrowtooth flidr	-	-	-	-	-	-	66	48	62	73	75	86	76	70	65	66	76	64	73	69	90	81	80	-	87
Rex sole	-	-	-	-	56	76	63	47	58	70	71	62	57	69	67	61	45	57	85	84	80	82	80	-	73
GOA Pot																									
Pacific cod	12	7	16	24	17	21	7	11	16	13	8	33	19	21	22	13	15	17	10	31	13	10	13	13	15
GOA Longline																									
Pacific cod	15	18	13	7	11	13	11	22	11	17	16	11	11	13	16	8	13	7	10	10	9	8	13	13	10
Rockfish	6	-	-	7	-	4	13	-	9	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sablefish	17	27	28	30	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

70	71	66	64	56	52	72	77	58
48	77	75	67	66	63	56	70	64
63	83	78	45	73	69	47	87	70
66	87	-	-	-	-	20	90	-
89	52	-	-	-	-	-	-	35
76	64	73	69	90	81	80	-	87
45	57	85	84	80	82	80	-	73
15	17	10	31	13	10	13	13	15

Comparison

Halibut DMRs for use in 2016									
Non-CDQ					CDQ				
BSAI		GOA			BSAI		CDQ		
Gear/Target	Sept	IPHC (<50 3 yr)	(<50 all yr)	Status Quo (All years)	Gear/Target	Sept	IPHC (<50 3 yr)	(<50 all yr)	Status Quo (All years)
Trawl					Trawl				
Atka mack	82	80	78	82	Bottom poll	58	58	58	58
Bottom poll	81	81	81	81	Pacific cod	62	62	62	62
Pacific cod	66	66	66	66	Dpwtr flats	43	62	62	62
Other Flats	63	63	65	63	Shallwtr flats	66	67	67	66
Rockfish	83	81	78	83	Rockfish	65	65	65	65
Flathead sole	72	76	76	72	Flathead sole	67	67	68	67
Midwtr poll	88	88	88	88	Midwtr poll	59	72	75	65
Rock sole	86	86	86	86	Sablefish	59	71	52	59
Sablefish	75	66	66	66	Arr. fldr	76	76	76	76
Turbot	82	82	66	82	Rex sole	71	72	72	72
Arr. Fldr	84	84	78	84					
Yellowfin sole	84	84	84	84					
Pot					Pot				
Pacific cod	8	9	9	9	Pacific cod	17	15	15	15
Longline					Longline				
Pacific cod	9	9	9	9	Pacific cod	10	10	10	10
Rockfish	4	9	9	9	Rockfish	9	10	10	10
Turbot	11	14	9	11					

NN	0 years of data
	Change from Sept Report
	Different from IPHC

Comparison

Halibut DMRs for use in 2016									
Non-CDQ					CDQ				
BSAI		GOA			BSAI		CDQ		
Gear/Target	Sept	IPHC (<50 3 yr)	(<50 all yr)	Status Quo (All years)	Gear/Target	Sept	IPHC (<50 3 yr)	(<50 all yr)	Status Quo (All years)
Trawl					Trawl				
Atka mack	82	80	78	82	Bottom poll	58	58	58	58
Bottom poll	81	81	81	81	Pacific cod	62	62	62	62
Pacific cod	66	66	66	66	Dpwtr flats	43	62	62	62
Other Flats	63	63	65	63	Shallwtr flats	66	67	67	66
Rockfish	83	81	78	83	Rockfish	65	65	65	65
Flathead sole	72	76	76	72	Flathead sole	67	67	68	67
Midwtr poll	88	88	88	88	Midwtr poll	59	72	75	65
Rock sole	86	86	86	86	Sablefish	59	71	52	59
Sablefish	75	66	66	66	Arr. fldr	76	76	76	76
Turbot	82	82	66	82	Rex sole	71	72	72	72
Arr. Fldr	84	84	78	84					
Yellowfin sole	84	84	84	84					
Pot					Pot				
Pacific cod	8	9	9	9	Pacific cod	17	15	15	15
Longline					Longline				
Pacific cod	9	9	9	9	Pacific cod	10	10	10	10
Rockfish	4	9	9	9	Rockfish	9	10	10	10
Turbot	11	14	9	11					

NN	0 years of data
	Change from Sept Report
	Different from IPHC

Halibut catch

2009 - 2015 BSAI total halibut catch by gear, target and Non/CDQ or CDQ									
Target	Trawl Halibut		Trawl Sectors - Allocated/Open		Hook-and-line			Pot	
	Non-CDQ	CDQ	Amendment 80	BSAI trawl limited access	CDQ	Non-CDQ	CDQ	Non-CDQ	CDQ
Atka mackerel	806	84	Y	Y	Y	-	-	-	-
Bottom pollock	1,154	42	N	Y	Y	-	-	-	-
Pacific cod	3,148	53	Y	Y	Y	32,590	5,265	244	5
Alaska plaice	54	2	Y	N	N	-	-	-	-
Other flatfish	30	0	Y	N	N	-	-	-	-
Rockfish	606	30	Y	Y	Y	2	-	-	-
Flathead sole	1,064	58	Y	N	Y	-	-	-	-
Kamchatka flounder	373	3	Y	N	N	-	-	-	-
Other species	1	2	N	N	N	-	-	-	-
Pelagic pollock	1,242	134	N	Y	Y	-	-	-	-
Rock sole	4,878	253	Y	N	Y	-	-	-	-
Sablefish	2	0	Y	N	Y	781	129	73	10
Greenland turbot	13	0	Y	N	Y	271	-	-	-
Arrowtooth	1,916	124	Y	N	Y	-	-	-	-
Yellowfin sole	7,932	573	Y	Y	Y	-	-	-	-
Total	23,219	1,358				33,644	5,394	317	15

2009 - 2015 GOA total halibut by gear and target			
Target	Trawl	Hook-and-line	Pot
Bottom pollock	882	-	-
Pacific cod	4,020	13,314	985
Deep-water flatfish	-	-	-
Shallow-water flatfish	3,099	-	-
Rockfish	850	30	-
Flathead sole	681	-	-
Other species	2	-	-
Pelagic pollock	81	-	-
Sablefish	35	2,772	-
Arrowtooth	3,797	-	-
Rex sole	945	-	-
Total	14,393	16,116	985

Comparison

Halibut DMRs for use in 2016									
Non-CDQ					CDQ				
BSAI		GOA			BSAI		CDQ		
Gear/Target	Sept	IPHC (<50 3 yr)	(<50 all yr)	Status Quo (All years)	Gear/Target	Sept	IPHC (<50 3 yr)	(<50 all yr)	Status Quo (All years)
Trawl					Trawl				
Atka mack	82	80	78	82	Bottom poll	58	58	58	58
Bottom poll	81	81	81	81	Pacific cod	62	62	62	62
Pacific cod	66	66	66	66	Dpwtr flats	43	62	62	62
Other Flats	63	63	65	63	Shallwtr flats	66	67	67	66
Rockfish	83	81	78	83	Rockfish	65	65	65	65
Flathead sole	72	76	76	72	Flathead sole	67	67	68	67
Midwtr poll	88	88	88	88	Midwtr poll	59	72	75	65
Rock sole	86	86	86	86	Sablefish	59	71	52	59
Sabrefish	75	66	66	66	Arr. fldr	76	76	76	76
Turbot	82	82	66	82	Rex sole	71	72	72	72
Arr. Fldr	84	84	78	84					
Yellowfin sole	84	84	84	84					
Pot					Pot				
Pacific cod	8	9	9	9	Pacific cod	17	15	15	15
Longline					Longline				
Pacific cod	9	9	9	9	Pacific cod	10	10	10	10
Rockfish	4	9	9	9	Rockfish	9	10	10	10
Turbot	11	14	9	11					

NN	0 years of data
	Change from Sept Report
	Different from IPHC

PT Recommended DMRs

Table 1. JPT Recommended Halibut DMRs for 2016 – 2017 - all numbers are percents.

Non-CDQ			
BSAI		GOA	
Gear/Target	DMR	Gear/Target	DMR
Trawl		Trawl	
Atka mack	78	Bottom poll	58
Bottom poll	81	Pacific cod	62
Pacific cod	66	Dpwtr flats	62
Other Flats	65	Shallwtr flats	67
Rockfish	78	Rockfish	65
Flathead sole	76	Flathead sole	68
Midwtr poll	88	Midwtr poll	75
Rock sole	86	Sablefish	52
Sablefish	66	Arr. fldr	76
Turbot	66	Rex sole	72
Arr. Fldr	78		
Yellowfin sole	84		
Pot		Pot	
Pacific cod	9	Pacific cod	15
Longline		Longline	
Pacific cod	9	Pacific cod	10
Rockfish	9	Rockfish	10
Turbot	9		

CDQ	
BSAI	
Gear/Target	DMR
Trawl	
Atka mack	82
Bottom poll	86
Pacific cod	65
Rockfish	78
Flathead sole	79
Midwater poll	90
Rock sole	86
Turbot	66
Yellowfin sole	85
Pot	
Pacific cod	1
Sablefish	41
Longline	
Pacific cod	10
Turbot	10

SSC Recommended DMRs

SSC Recommended Halibut DMRs - all numbers are percents

Non-CDQ			
BSAI		GOA	
Gear/Target	DMR	Gear/Target	DMR
Trawl		Trawl	
Atka mack	82	Bottom poll	58
Bottom poll	81	Pacific cod	62
Pacific cod	66	Dpwtr flats	62
Other Flats	63	Shallwtr flats	66
Rockfish	83	Rockfish	65
Flathead sole	72	Flathead sole	67
Midwtr poll	88	Midwtr poll	65
Rock sole	86	Sablefish	59
Sablefish	66	Arr. fldr	76
Turbot	82	Rex sole	72
Arr. Fldr	84		
Yellowfin sole	84		
Pot		Pot	
Pacific cod	9	Pacific cod	15
Longline		Longline	
Pacific cod	9	Pacific cod	10
Rockfish	9	Rockfish	10
Turbot	11		

CDQ	
BSAI	
Gear/Target	DMR
Trawl	
Atka mack	82
Bottom poll	86
Pacific cod	87
Rockfish	70
Flathead sole	79
Midwater poll	90
Rock sole	86
Turbot	89
Yellowfin sole	85
Pot	
Pacific cod	1
Sablefish	41
Longline	
Pacific cod	10
Turbot	10