

**Special Publication No. 17-16**

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# **Overview of the Sport Fisheries for Groundfish and Shellfish in Southeast Alaska through 2017**

by

**Robert E. Chadwick**

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and

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December 2017

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



## Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics</b>	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	$H_A$
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	$e$
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, $\chi^2$ , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient (simple)	r
		corporate suffixes:		covariance	cov
<b>Weights and measures (English)</b>		Company	Co.	degree (angular)	$^\circ$
cubic feet per second	ft <sup>3</sup> /s	Corporation	Corp.	degrees of freedom	df
foot	ft	Incorporated	Inc.	expected value	$E$
gallon	gal	Limited	Ltd.	greater than	>
inch	in	District of Columbia	D.C.	greater than or equal to	$\geq$
mile	mi	et alii (and others)	et al.	harvest per unit effort	HPUE
nautical mile	nmi	et cetera (and so forth)	etc.	less than	<
ounce	oz	exempli gratia	e.g.	less than or equal to	$\leq$
pound	lb	(for example)		logarithm (natural)	ln
quart	qt	Federal Information Code	FIC	logarithm (base 10)	log
yard	yd	id est (that is)	i.e.	logarithm (specify base)	log <sub>2</sub> , etc.
		latitude or longitude	lat or long	minute (angular)	'
<b>Time and temperature</b>		monetary symbols (U.S.)	\$, ¢	not significant	NS
day	d	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	$H_0$
degrees Celsius	°C	registered trademark	®	percent	%
degrees Fahrenheit	°F	trademark	™	probability	P
degrees kelvin	K	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
hour	h	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
minute	min	U.S.C.	United States Code	second (angular)	"
second	s	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
<b>Physics and chemistry</b>				standard error	SE
all atomic symbols				variance	
alternating current	AC			population sample	Var
ampere	A			sample	var
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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## ABSTRACT

This report provides an overview of the sport fisheries for groundfish and shellfish, excluding halibut (*Hippoglossus stenolepis*), in Southeast Alaska. Catch and harvest information, descriptions of fisheries management, and a history of management actions involving these fisheries are provided. In addition, current proposals to the Alaska Board of Fisheries affecting these fisheries are discussed.

Key words: rockfish, lingcod, *Ophiodon elongates*, Tanner Crab, *Chionoecetes bairdi*, Dungeness Crab, *Cancer magister*, sablefish, *Anoplopoma fimbria*, *Sebastes*, shrimp, shellfish, sport fishery, groundfish, Alaska Board of Fisheries, Southeast Alaska

## INTRODUCTION

The Alaska Department of Fish and Game (department) has jurisdiction over all groundfish and shellfish fisheries management within the internal waters of the state, in coastal waters out to 3 miles offshore, and for certain groundfish species within the Exclusive Economic Zone (EEZ) which extends out to 300 miles offshore. The Alaska Board of Fisheries (board) extended existing state regulations governing the sport fishery for all marine species into the waters of the EEZ off Alaska in 1998. This was done under provisions of the Magnuson-Stevens Fishery Conservation and Management Act, which stipulates that states may regulate fisheries that are not already specified under a federal fishery management plan or other applicable federal regulations. In Southeast Alaska, yelloweye rockfish *Sebastes ruberrimus*, black rockfish *S. melanops*, and lingcod *Ophiodon elongatus* are the primary state-managed groundfish species harvested by sport fisheries. Shellfish harvested in the sport fisheries include shrimp (Pandalidae), Dungeness crab *Cancer magister*, Tanner crab *Chionoecetes bairdi*, and clams, (Pharidae) as well as other miscellaneous shellfish species.

This report updates similar reports prepared for the board, most recently for the 2015 meeting (Chadwick and Tydingco 2015). The objective of this report is to provide an overview of the sport fisheries for groundfish and shellfish in Southeast Alaska. Specifically, this report will detail the following:

- 1) fishery monitoring and briefings on the biology and functional groupings of groundfish and shellfish
- 2) the history of sport fisheries regulations and current fisheries management for groundfish and shellfish
- 3) groundfish and shellfish catch and harvest information
- 4) a discussion of the management issues and current proposals before the board

## FISHERY MONITORING TOOLS

The department monitors the sport harvest of groundfish and shellfish via three primary sampling programs: the Statewide Harvest Survey (SWHS), sport charter vessel logbooks, and on-site creel surveys. Each program's sampling methods has its utilities and limitations. A combination of the three fishery monitoring methods is used to generate different types of fisheries metrics such as harvest, biomass, and total mortality (harvest + release mortality).

### Statewide Harvest Survey

The Statewide Harvest Survey (SWHS) is an annual mail-out survey sent to a random sample of sport fishing license holders (Jennings et al. 2015) and provides estimates of sport harvests of rockfish, lingcod, Dungeness crab, and shrimp (as well as for other species) by survey area

(Figure 1). The benefits of the SWHS are that it provides a consistent annual estimate of all sport harvest that can be further divided into harvests by resident and nonresident anglers, as well as charter and noncharter anglers. However, the SWHS is conducted after the fishing season has concluded and therefore estimates are not available until the following year. Furthermore, rockfish harvest estimates are for all species combined and cannot be apportioned to species or management assemblages (e.g., pelagic vs. nonpelagic rockfish) without using other data. The SWHS does not collect biological characteristics of the harvest (e.g., age, sex, length, or weight).

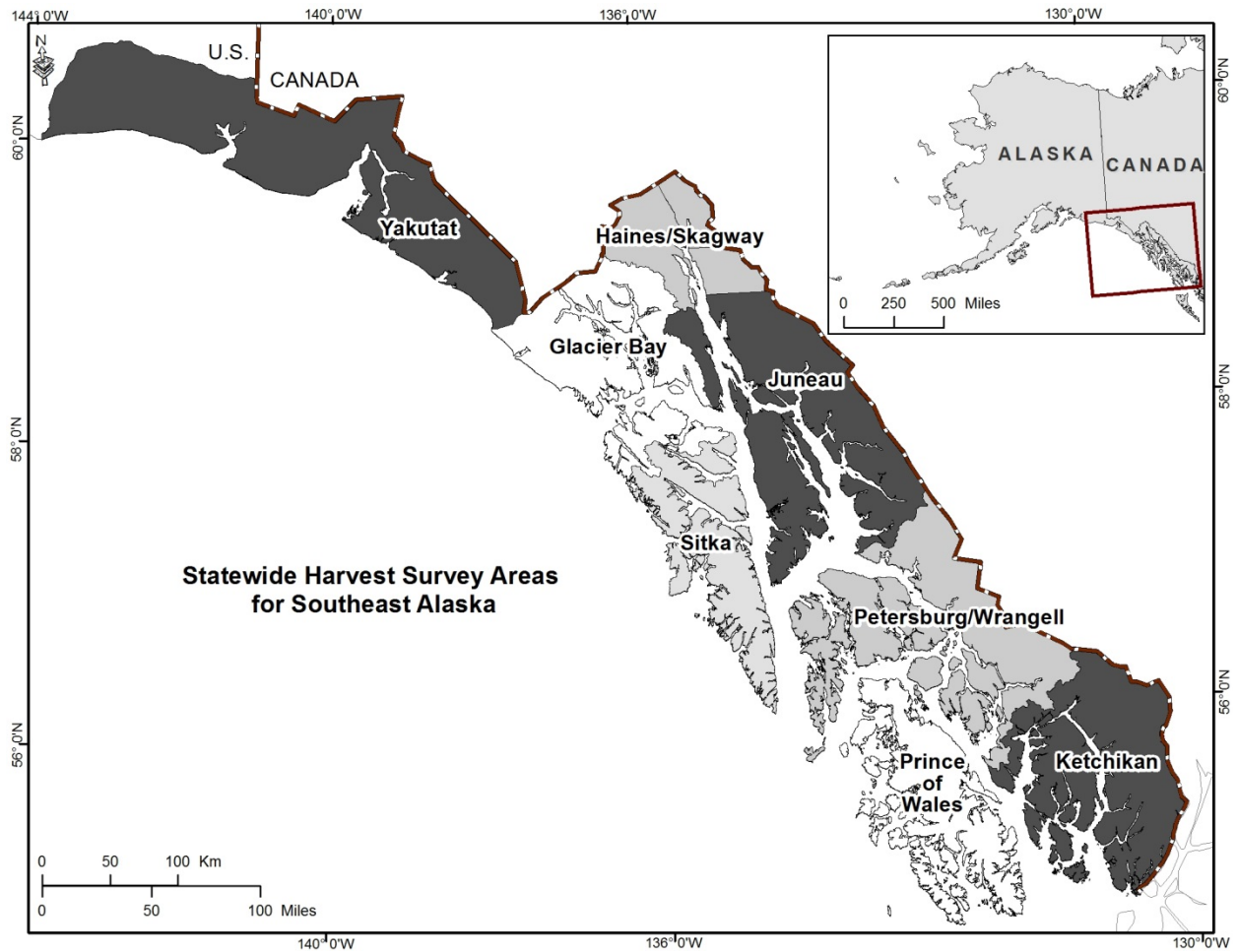


Figure 1.—Map of Southeast Alaska showing boundaries of the Statewide Harvest Survey Areas.

## Charter Vessel Logbooks

Charter vessel logbooks (logbooks) have been required in Southeast Alaska since 1998 (Powers and Sigurdsson 2016). All charter operators who take clients fishing are required to report harvest and fishing effort in a logbook that must be filled out on a trip-by-trip basis. For the main part of each season, logbook pages for each week (ending on Sunday) are required to be returned (or postmarked) within eight days. Operators are required to provide the number of anglers fishing along with their residency, license number (or permanent identification number) if applicable, and the number of lingcod, sablefish *Anoplopoma fimbria*, pelagic rockfish,

yelloweye rockfish, and other nonpelagic rockfish harvested and released. Shellfish harvest is not required to be recorded.

### **On-site Creel Surveys**

On-site creel surveys occur during the summer months capturing more than 90% of the annual fishery effort. Creel surveys are designed to collect data on the effort, catch, and harvest as well as biological characteristics of the harvest such as species, age, size, and sex composition (Jaenicke et al. 2015). On-site creel surveys occur in the major fishing ports of Yakutat, Haines, Gustavus, Elfin Cove, Juneau, Sitka, Petersburg, Wrangell, Craig, Klawock, and Ketchikan. Sport anglers are surveyed at the completion of their fishing trip by department personnel. Since inception, the primary focus of the on-site creel survey program has been to collect data on the sport salmon harvest of the region; however, catch and harvest information on groundfish are also obtained. Biological data collected on rockfish and lingcod include species, length and weight, sex (lingcod only), and age (black rockfish only at Sitka).

## **ROCKFISH**

Rockfish are found in marine waters throughout Southeast Alaska. Many are slow-growing and long-lived with estimated maximum ages up to 121 years (yelloweye rockfish; O’Connell et al. 2006). They are very susceptible to overharvest with slow population recovery once overharvest occurs. Rockfish have closed gas-filled swim bladders that expand when fish are brought to the surface from deep water. Expanded gases are reabsorb very slowly, so fish are unable to swim back to depth once released. Released fish die from injuries sustained due to the rapid pressure change or from predation when they submerge on their own.

Rockfish are grouped into two assemblages for sport fisheries management: pelagic rockfish include dark *S. ciliatus*, dusky *S. variabilis*, widow *S. entomelas*, yellowtail *S. flavidus*, black, and deacon *S. mystinus* rockfish, and nonpelagic rockfish include all other species in the genus *Sebastes*. Rockfish species assemblages are defined differently for commercial fisheries management—the nonpelagic assemblage is further divided into demersal shelf rockfish (DSR) and slope rockfish. The DSR component contains yelloweye rockfish and six other species: canary *S. pinniger*, China *S. nebulosus*, copper *S. caurinus*, quillback *S. maliger*, rosethorn *S. helvomaculatus*, and tiger *S. nigrocinctus* rockfish. The slope rockfish component contains all remaining nonpelagic rockfish species.

There is currently no population assessment for rockfish in Southeast Alaska and little is known about the specific effect of current harvest rates in the sport fishery on local populations. However, rockfish are long-lived, late-maturing species that are susceptible to overharvest and localized depletion. Although there is limited stock assessment information, there is evidence of a slight but gradual decline in average length since 2006 in the Sitka Area sport harvest, suggesting a change in the population structure that may be a result of recent increases in harvest.

### **REGULATION HISTORY**

Sport fishing regulations for rockfish in Southeast Alaska south of Cape Fairweather were first established in 1989 and consisted of bag limits of five rockfish and 10 in possession, of which only two per day and four in possession could be yelloweye rockfish (Appendix A1). Prior to 1989, there were no sport bag or possession limits established for rockfish in Southeast Alaska.

Exceptions to the regionwide limits were enacted in 1989 for the Ketchikan and Sitka areas where the bag and possession limits were set at three rockfish, of which only one could be a yelloweye rockfish.

In 1994, the Southeast Alaska regionwide regulations for rockfish were modified by the board to provide bag limits for the pelagic and nonpelagic assemblages, as well as yelloweye rockfish specifically. Bag limits for pelagic species were set at five fish, 10 in possession. The bag limits for other species were also five fish and 10 in possession, of which only two per day and four in possession could be yelloweye rockfish. These Southeast Alaska regionwide regulations were also extended to include the Yakutat area.

Since 2006, annual emergency orders (EO) establishing nonpelagic rockfish regulations (Appendix A1) have been used to manage the sport fishery within the allocation of demersal shelf rockfish. The specific exceptions for the Ketchikan and Sitka areas were repealed when the board met in 2015 because these regulations were superseded by the annual EOs that implemented more restrictive regulations prior to commencement of the fishing season.

## **BAROTRAUMA AND MANAGEMENT IMPLICATIONS**

Nonpelagic rockfish, including those in the DSR assemblage, usually stay close to the bottom, often in rocky areas, and generally in deeper water than pelagic species. Nonpelagic rockfish are subject to high mortality rates when released at the surface due to tissue and organ injuries sustained by pressure differences from positive buoyancy, caused by expansion of swim bladder gases when the fish is brought to the surface, otherwise known as barotrauma. Barotrauma injuries include crushed, displaced, or ruptured internal organs, embolisms (air bubbles in blood), and exophthalmia (bulging eye) and detached retina. Fish are often unable to return to depth on their own if released at the surface due to increased buoyancy caused by barotrauma injuries. Pelagic species also incur these injuries, but to a lesser extent due to physiological and behavioral differences for buoyancy regulation and preferences for shallower water.

From 2006-2017 total mortality (harvest plus release mortality; charter and noncharter) of nonpelagic rockfish in the Southeast Alaska sport fishery averaged 59,440 fish. Total mortality of nonpelagic rockfish for noncharter anglers averaged 27,574 fish, or 46.5% of the fishery total during this time period. Since 2013, chartered anglers are required to release nonpelagic rockfish at depth, thereby increasing survival. As a result, the department considers the mortality rate to be 20% (beginning in 2013) for all nonpelagic rockfish released by guided anglers and 100% for DSR released by nonguided anglers when calculating the total biomass removal of DSR (Green et al. 2014; Jarvis and Lowe 2008; Hochhalter and Reed 2011; Hannah et al. 2014; GMT 2014). Prior to mandatory use of deep water release devices in the guided fishery, mortality was assumed to be 100% for nonpelagic rockfish released at the surface. The department has reviewed the current scientific literature on survival of rockfish species released at depth (Appendix A2) and recently completed its own study in 2011 (Hochhalter and Reed 2011).

Recent studies in California, Oregon, and Alaska indicate that some portion of rockfish released at the surface are able to submerge on their own, but it does vary by species and depth of capture. The Alaska study (Hochhalter and Reed 2011) assessed the effectiveness of using deep water release devices on common nonpelagic rockfish species in a field setting and deployed the devices mimicking techniques most likely to be used by the common angler. This study suggests survival of released yelloweye rockfish could be increased from about 20% to over 95% by using these simple devices. Survival of other rockfish species released in the Alaska study has not been

estimated, but other studies in the scientific literature (Berry 2001; Jarvis and Lowe 2008; Parker et al. 2006; Pribyl et al. 2009) demonstrate substantial increases in survival following deep water release for numerous rockfish species. Collectively, this research has focused on ways to reduce the effects of barotrauma by forcing released rockfish back to deep water quickly after capture. Various recompression devices can be made from common materials and have been marketed to release fish at the depth of capture as quickly as possible.

Beginning in 2012, the department began a focused outreach program to encourage public awareness of rockfish biology and management with special focus on the susceptibility of rockfish to barotrauma injuries. The department developed communication plans, educational materials, and a video showing rockfish release mechanisms and their applied uses in the field to improve public understanding of nonpelagic rockfish concerns. Creel staff promoted deep water rockfish release during interaction with anglers dockside. The Southeast Alaska Sport Fishing Regulations Summary contains information dedicated to deep water release procedures and mechanisms. In addition, department offices display and demonstrate deep water release mechanisms and provide a pamphlet describing the mechanisms and the benefits of their use. Sport Fish staff opportunistically promotes strategies for deep water release of rockfish at public meetings, informational events, advisory committee meetings, and at local offices. Beginning in 2012, all charter logbooks issued in Southeast Alaska also include an informational pamphlet that promotes rockfish release at depth.

From 2006–2017, total mortality of nonpelagic rockfish for non-guided anglers averaged 27,574 fish, or 46.5% of the fishery total. The number of released nonpelagic rockfish by non-guided anglers in 2017 was approximately 5,597 fish that totaled just over 0.77 mt. If non-guided anglers would have released these fish at depth and incurred a 20% mortality rate, the total mortality (i.e., harvest plus release mortality) of nonpelagic rockfish in the Southeast Alaska sport fishery would decrease by 0.61 mt. In the SEO this represents a decrease of 0.21 metric tons or 0.5% of the total DSR mortality in SEO for combined guided and non-guided total removals.

## **FISHERY MANAGEMENT**

### **Nonpelagic rockfish**

The North Pacific Fishery Management Council delegated management of DSR species in the Southeast Outside Subdistrict (SEO) to the State of Alaska under the federal Fishery Management Plan for Groundfish of the Gulf of Alaska. The SEO Subdistrict includes: the East Yakutat Section (EYKT), Northern Southeast Outside Section (NSEO), Central Southeast Outside Section (CSEO) and Southern Southeast Outside Section (SSEO) (Figure 2). A total allowable catch (TAC) is set annually for the SEO Subdistrict as part of the North Pacific Fishery Management Council stock assessment process (Olson et al. 2017). The TAC varied between 211–960 metric tons from 1988 to 2017 (Table 1). DSR fishery mortality occurs in the directed commercial fishery, sport fishery, subsistence fishery, and as bycatch and unreported mortality in the commercial groundfish and halibut fisheries (Figure 3). After the projected subsistence harvest of DSR has been subtracted from the TAC, the remainder of the TAC is allocated between sport and commercial fisheries (5 AAC 28.160(c)).

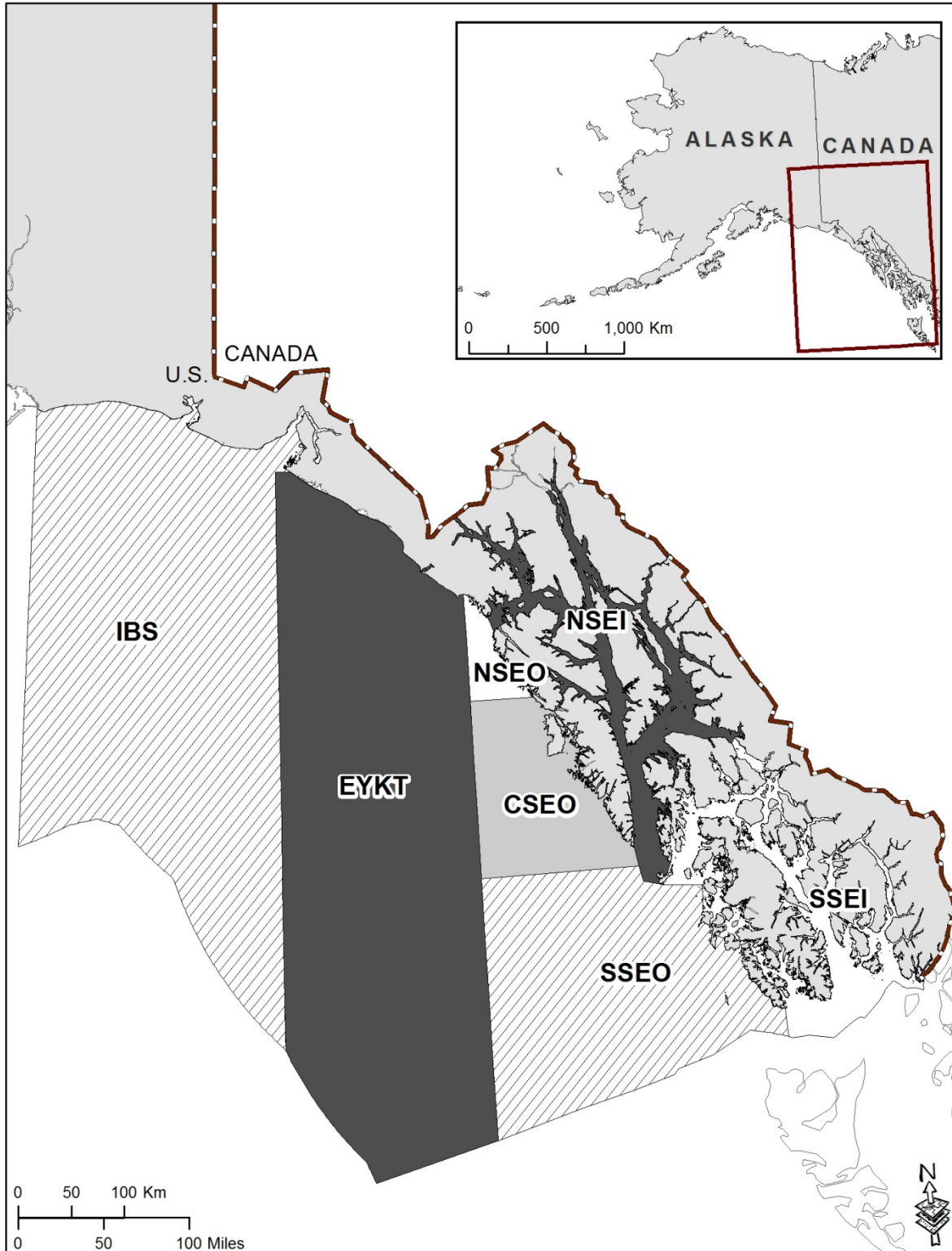


Figure 2.—Map of Southeast Alaska rockfish management areas.

*Note:* The Southeast Outside Subdistrict (SEO) consists of the following management areas: EYKT = East Yakutat; NSEO = Northern Southeast Outside; CSEO = Central Southeast Outside; and SSEO = Southern Southeast Outside.

Table 1.—Reported landings of demersal shelf rockfish (t) from research, directed commercial, incidental commercial, sport and subsistence fisheries in the Southeast Outside Subdistrict (SEO), 1988–2017, and Total Allowable Catch (TAC) for commercial and recreational sectors combined (Olson et al. 2017).

Year	Research	Directed	Incidental <sup>a,b</sup>	Sport	Subsistence <sup>c</sup>	Total <sup>a</sup>	TAC
1988				21			660
1989				15			420
1990				17			470
1991				18			425
1992		351	119	16		486	550
1993	13	341	188	20		562	800
1994	4	383	219	34		640	960
1995	13	168	103	25		309	580
1996	11	350	85	28		474	945
1997	16	280	100	38		434	945
1998	2	241	120	47		410	560
1999	2	242	126	73		443	560
2000	8	187	107	80		382	340
2001	7	178	146	71		402	330
2002	2	136	149	87		374	350
2003	6	105	169	74		354	390
2004	2	173	155	104		434	450
2005	4	42	195	90		331	410
2006	2	0	203	75		280	410
2007	3	0	196	60		259	410
2008	1	42	152	68		263	382
2009	2	76	139	37		254	362
2010	7	30	131	52	8	228	287
2011	5	22	87	36	6	156	294
2012	4	105	76	46	7	238	286
2013	4	130	83	34	7	258	296
2014	5	33	63	40	7	148	267
2015	4	33	70	48	8	163	217
2016	4	34	79	48	7	172	224
2017	3	32	87	43 <sup>d</sup>	7	172	220

Note: Reported landings are from ADF&G Southeast Region fish ticket database and NMFS weekly catch reports through October 24, 2017.

<sup>a</sup> Data are from reported landings. Full retention of DSR went into effect in 2005, and unreported DSR discard associated with the halibut fishery prior to 2005 is not reported in these totals.

<sup>b</sup> Assignment of ADF&G groundfish management areas for DSR bycatch landed in the commercial salmon troll fishery began in 2015.

<sup>c</sup> Projected subsistence catch for the fishery year, i.e., 2010 is for the 2010 fishery. These data were not available or deducted from the ABC prior to 2009.

<sup>d</sup> Sport harvest from 2006–2008 include EYKT and IBS. These data are not available prior to 2006. Estimate for 2017 is preliminary.

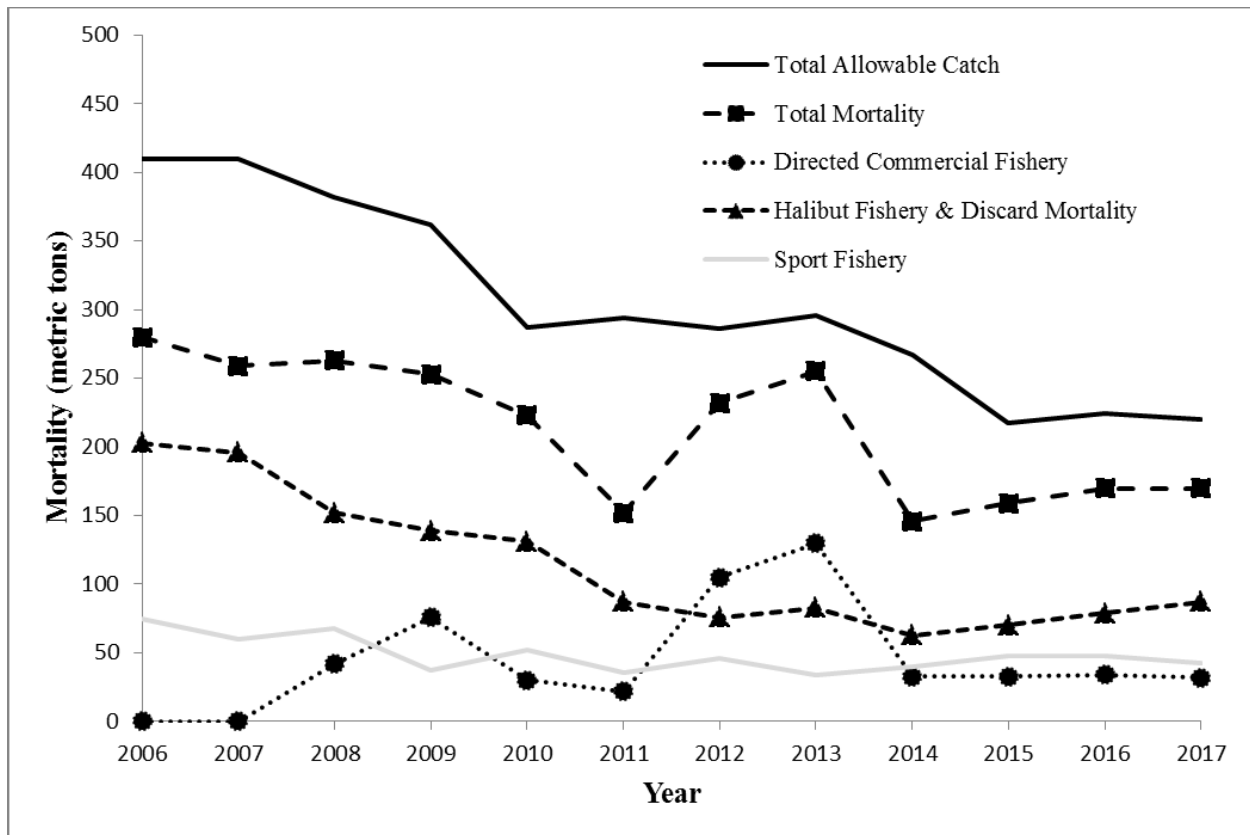


Figure 3.—Total allowable catch (TAC) and mortality by fishery and year of demersal shelf rockfish (DSR) in the Southeast Outside (SEO) Subdistrict, 2006–2017 (2017 estimates are preliminary).

The board allocated 16% of the TAC of DSR in the SEO to the sport fishery starting in 2006. At this time the board also outlined a series of management measures that the Commissioner may implement by EO to keep the sport fishery within its allocation (5 AAC 47.065). These measures include the following:

- 1) reduced bag and possession limits for nonresident anglers
- 2) retention of all DSR caught by a nonresident angler is required until the nonresident bag limit is reached
- 3) charter operators and crewmembers may not retain DSR while clients are on board the vessel
- 4) annual limits for DSR for nonresident anglers
- 5) reduced bag and possession limits for resident anglers
- 6) retention of all DSR caught by a resident angler is required until the resident angler's bag limit is reached
- 7) annual limits for DSR for resident anglers
- 8) time and area closures



The department used management measures 1–6 annually through 2016 (Appendix A1) to manage the sport fish harvest was within the sport allocation of DSR. Although DSR mortality in outside waters remained relatively stable between 2009 and 2016, the TAC, and subsequently the allocation to the sport fishery, has steadily decreased from 66 t (metric tons) in 2006 to 35 t in 2017 (Figure 4). In response to this decrease in allocation, the department has used increasingly restrictive management measures to maintain the sport harvest within its allocation. After exceeding the allocation in 2014 and 2015, the most restrictive measures to date were established in 2017. The 2017 measures included closing the nonpelagic rockfish fishery in SEO from August 1 through August 21, thereby implementing the eighth management provision established by the board. The seventh provision (annual limits for resident anglers) has also been considered but would not have had an appreciable effect on overall harvest because of the small relative contribution in SEO by resident anglers. Despite the more restrictive measures enacted in 2017, preliminary mortality estimates indicate the sport fishery exceeded its allocation (Figure 4).

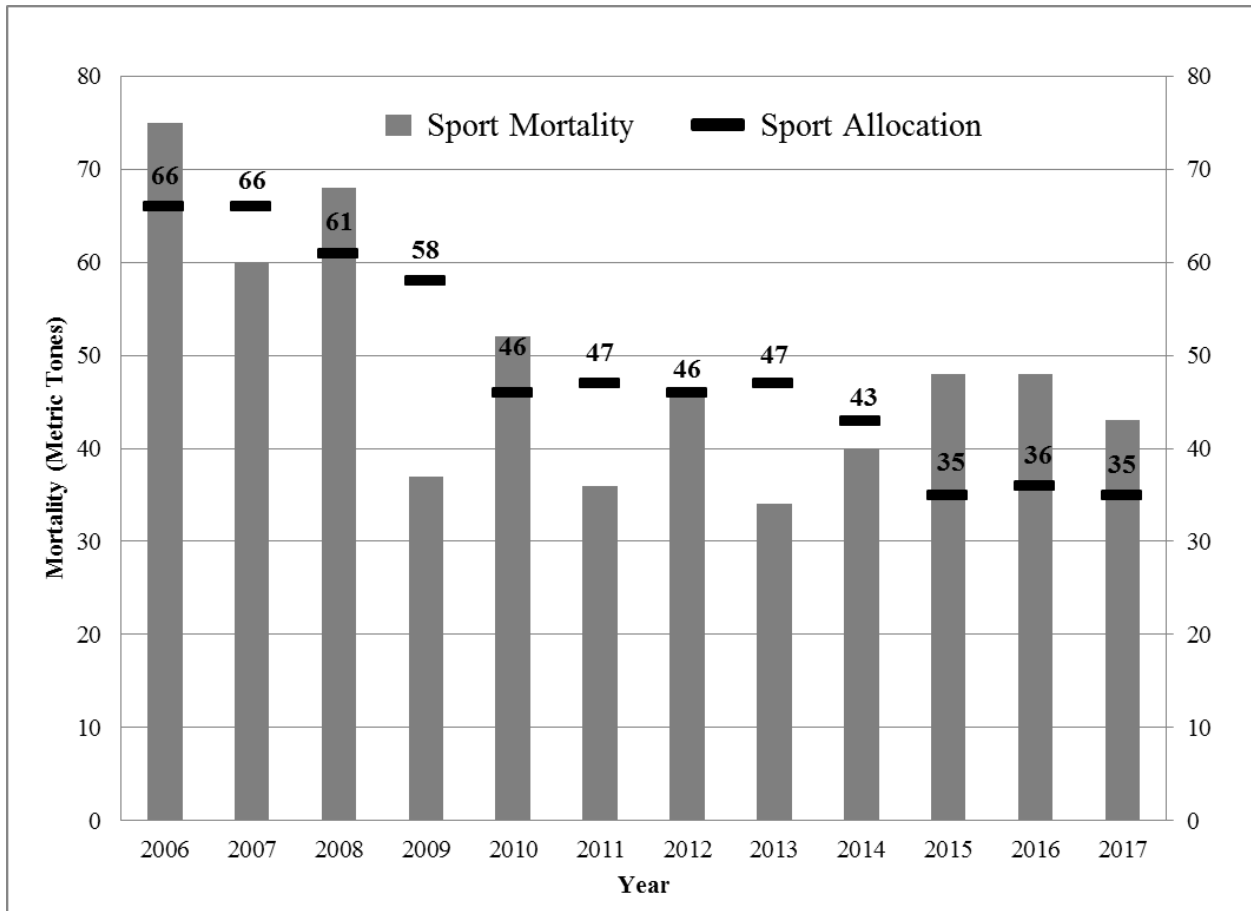


Figure 4.—Demersal shelf rockfish (DSR) allocation and mortality in the sport fishery from the Southeast Outside subdistrict during 2006–2017 (2017 estimate is preliminary).

Note: Sport fishery mortality equals harvest plus release mortality.

DSR species accounted for an average of 94% of the nonpelagic mortality in SEO during the period 2013–2017. During the same period, on-site creel sampling data indicate that yelloweye rockfish accounted for an average of 66% of the annual sport biomass removals of DSR in SEO.

Unlike the SEO waters, no TAC is set for nonpelagic rockfish in Southeast Inside (SEI) waters for the sport fishery. Nonpelagic rockfish harvest increased from approximately 16,000 fish in 2002 to over 30,000 fish in 2005. This increasing harvest, coupled with a lack of stock information and the susceptibility to overharvest, led to establishment of conservative nonpelagic rockfish regulations in SEI waters since 2006. Despite a conservative management strategy, the harvest of nonpelagic rockfish in SEI waters increased 90% from 2012–2016. In response, EOs issued during 2017 reduced nonpelagic rockfish bag limits in all southeast waters.

### **Pelagic Rockfish**

Pelagic rockfish have been managed as a separate rockfish species assemblage since 1994. Stock assessment data has been limited for this species group and regional regulations have remained unchanged since 1994. The regional harvest of pelagic rockfish has been on an increasing trend since the early 2000s. Between 2009–2014 the regional harvest more than doubled, increasing from 45,000 fish in 2009 to 113,000 fish in 2014. Although harvest has increased throughout the region, the Sitka Area (CSEO) has seen the greatest increase in pelagic harvest. Black rockfish account for 89% (range 79–94%) of the pelagic rockfish harvested in the sport fishery across the region.

Estimated harvest of pelagic rockfish in CSEO grew from 20,000 fish in 2009 to over 60,000 fish in 2014 and 2015 (SWHS estimates). Given the lack of stock status information, the department reduced the pelagic bag and possession limit in the Sitka Area from the regionwide bag limit of five fish, 10 in possession to three fish, six in possession in 2016 and 2017. This action resulted in a 27% decrease in pelagic rockfish harvest in CSEO during 2017 compared to 2015 (Figure 5).

## **HARVEST TRENDS**

Estimates of rockfish harvest have been obtained via the SWHS since 1977 (Table 2). Total harvest of all rockfish (pelagic and nonpelagic combined) increased steadily from 1977, peaking at 57,000 fish in 1988. With the implementation of bag limits for rockfish in 1989, harvest declined and remained relatively constant at about 30,000–40,000 fish until 1999. In 1999 there was an increase in rockfish harvest followed by four years of declining harvest, and an increase occurring again in 2004 to a peak harvest of 119,000 rockfish in 2008 (Figure 6). In 2009 the rockfish harvest declined to 94,000 fish and then increased to 193,000 fish in 2014. The decline in total rockfish harvest in 2016 as estimated by the SWHS is likely due in part to the bag limit reduction of pelagic rockfish in CSEO in 2016. The recent five-year average harvest (2012–2016) is 164,000 fish.

The majority of rockfish harvest in Southeast Alaska, as well as the majority of the recent increase in rockfish harvest, has primarily come from three sport fish harvest areas on the outer coast: Prince of Wales Island (Area B), Sitka (Area D) and Glacier Bay (Area G). These three areas accounted for 75% of the average regional rockfish harvest over the last five years (Figure 6). These areas correspond roughly to the three groundfish management areas: SSEO, CSEO and NSEO, respectively.

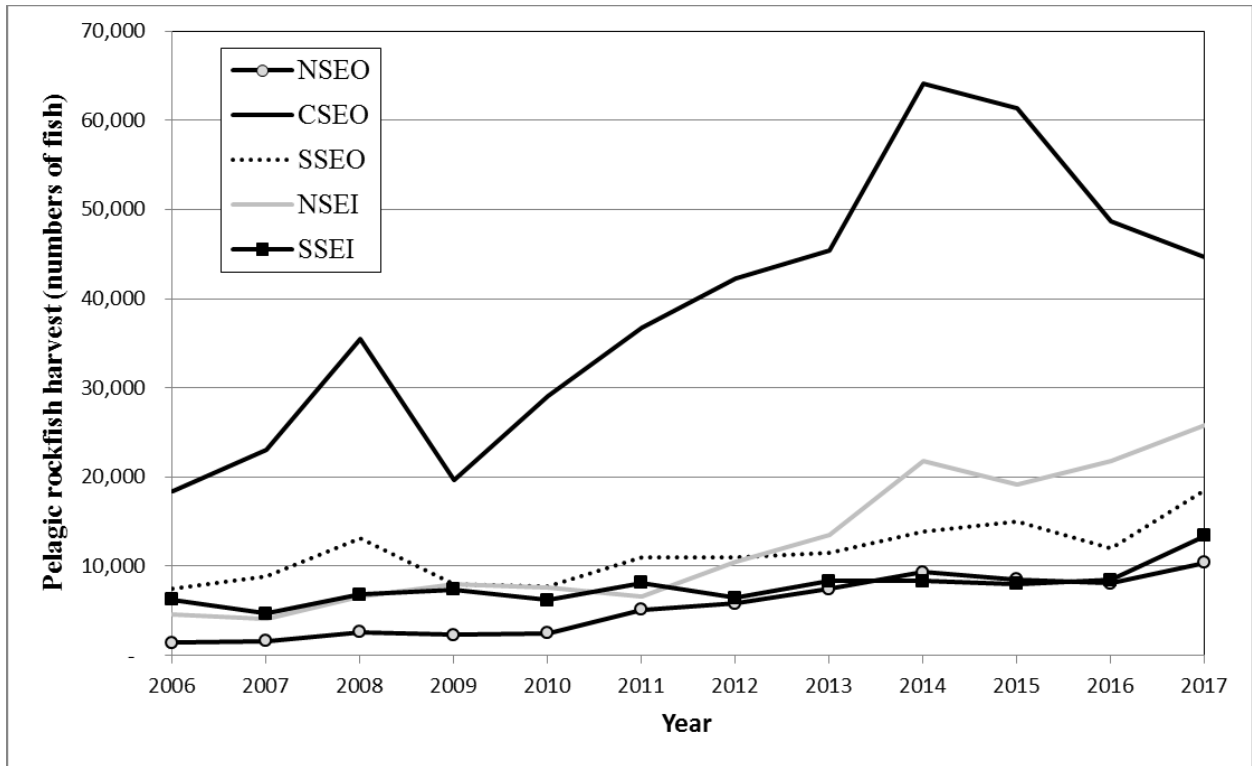


Figure 5.—Final sport harvest estimates (numbers of fish) of pelagic rockfish in Southeast Alaska, 2006–2016 and preliminary estimate for 2017.

Table 2.—Statewide Harvest Survey (SWHS) estimates of the number of rockfish harvested in Southeast Alaska, 1977–2016.

Year	Ketchikan	PWI <sup>a</sup>	Petersburg	Sitka	Juneau	H-S <sup>b</sup>	Glacier Bay	Yakutat	Total
1977	834	571	762	3,635	2,996	130	34	0	8,962
1978	6,898	2,504	2,106	2,784	2,169	362	63	0	16,886
1979	8,491	1,882	1,881	8,372	9,627	364	182	182	30,981
1980	18,415	4,968	2,841	8,481	6,724	319	43	0	41,791
1981	20,581	4,544	1,937	11,837	5,649	820	259	44	45,671
1982	21,023	8,027	1,581	13,027	6,141	1,583	168	52	51,602
1983	18,824	12,040	1,008	9,855	7,859	168	409	105	50,268
1984	16,295	5,197	2,265	6,375	5,978	558	85	146	36,899
1985	16,632	4,168	2,663	5,085	4,704	315	472	0	34,039
1986	17,861	9,841	2,106	5,997	4,847	794	78	44	41,568
1987	18,231	9,984	2,525	5,944	4,709	289	307	272	42,261
1988	26,378	8,692	480	9,319	10,224	854	801	91	56,839
1989	17,159	8,955	1,726	6,196	4,638	465	357	8	39,504
1990	9,043	9,062	1,150	3,948	1,881	488	306	81	25,959
1991	8,504	7,200	1,222	4,879	3,408	415	936	264	26,828
1992	9,927	7,968	1,838	6,852	3,532	181	501	414	31,213
1993	6,764	9,589	2,070	6,622	5,717	569	448	251	32,030
1994	11,741	12,122	2,298	13,446	3,271	157	881	490	44,406
1995	7,984	11,915	1,870	7,968	3,438	233	355	584	34,347
1996	7,092	9,446	1,085	9,026	3,008	329	2,294	599	32,886
1997	8,156	10,804	1,760	10,471	4,735	323	2,441	1,396	40,088
1998	5,133	11,759	2,678	13,936	5,570	214	3,629	1,224	44,142
1999	10,538	23,667	3,778	20,281	8,379	233	3,840	772	71,489
2000	12,318	17,152	4,103	18,439	9,685	117	6,477	858	69,149
2001	8,540	17,161	2,461	16,444	8,857	138	3,309	668	57,578
2002	7,077	15,189	2,531	15,856	5,768	19	2,572	737	49,749
2003	7,321	15,518	1,940	16,212	8,649	44	4,095	1,615	55,394
2004	13,805	27,027	3,712	30,239	6,753	566	4,148	1,413	87,663
2005	13,136	23,617	3,598	31,984	8,412	277	6,595	2,371	89,990
2006	13,473	23,425	2,437	34,160	3,913	291	4,986	2,800	85,485
2007	15,522	25,371	4,190	38,264	5,323	90	3,765	2,013	94,538
2008	14,763	30,891	5,329	53,414	6,344	28	5,592	2,636	118,997
2009	16,742	23,767	4,623	30,601	9,683	140	5,823	2,372	93,751
2010	12,552	25,254	3,111	44,381	10,005	14	6,525	3,723	105,565
2011	9,233	28,637	3,786	51,514	5,309	29	7,939	2,710	109,157
2012	11,673	26,902	6,196	62,239	9,225	68	8,485	3,634	128,422
2013	17,232	27,334	4,471	60,322	12,502	277	13,253	4,518	139,909
2014	23,573	32,010	7,893	83,780	21,978	341	16,727	6,796	193,098
2015	20,786	37,181	6,170	86,099	16,443	203	15,348	4,586	186,816
2016	18,264	31,373	10,361	71,214	20,065	496	16,933	5,141	173,847

<sup>a</sup> PWI = Prince of Wales Island.

<sup>b</sup> H-S = Haines and Skagway

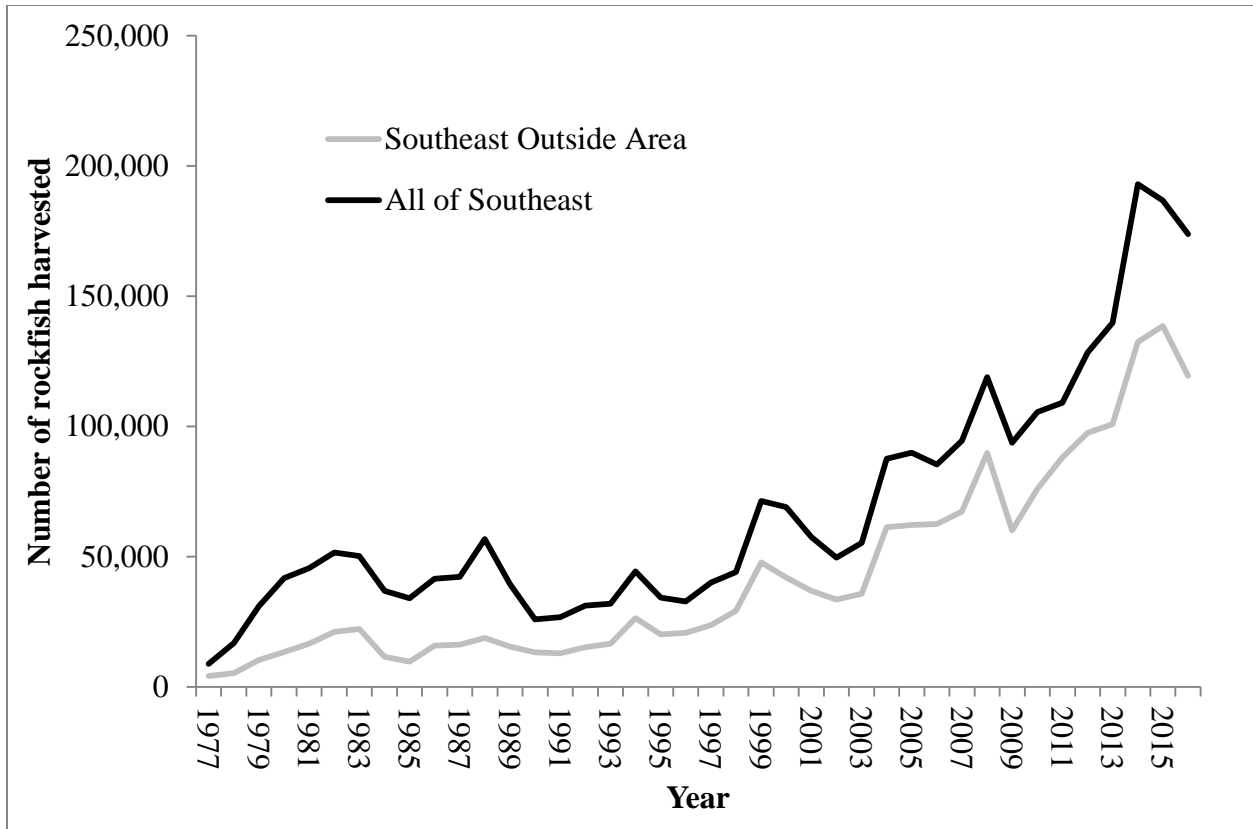


Figure 6.—Statewide Harvest Survey (SWHS) estimates of total rockfish harvest (pelagic and nonpelagic) in sport fisheries in the Southeast Outside (SEO) Subdistrict of Southeast Alaska, 1977–2016.

Since 1996, the SWHS has provided estimates of harvest that further partitions the harvest by resident and nonresident anglers. The proportion of the sport fishery harvest taken by nonresidents has varied between 63%–89%, with a large increase in the proportion harvested by nonresidents starting in 2004 (Figure 7). In the last five years (2012–2016), nonresidents have taken an average of 88% of the total rockfish sport harvest in Southeast Alaska.

The charter logbook program provides more detailed information on harvest as well as release estimates for pelagic and nonpelagic rockfish in the charter fishery. Rockfish harvest reported in logbooks increased from 31,000 fish in 1999 to 108,000 fish in 2008, followed by a decrease to 71,000 fish in 2009 and then a steady increase to 163,000 fish in 2015 (Figure 8). Prior to 2006, the “nonpelagic” component of the charter harvest was slightly larger than the harvest of pelagic rockfish (Figure 8). Since then, the harvest of pelagic rockfish has continued to increase and is now more than double the harvest of nonpelagic rockfish in the charter fishery.

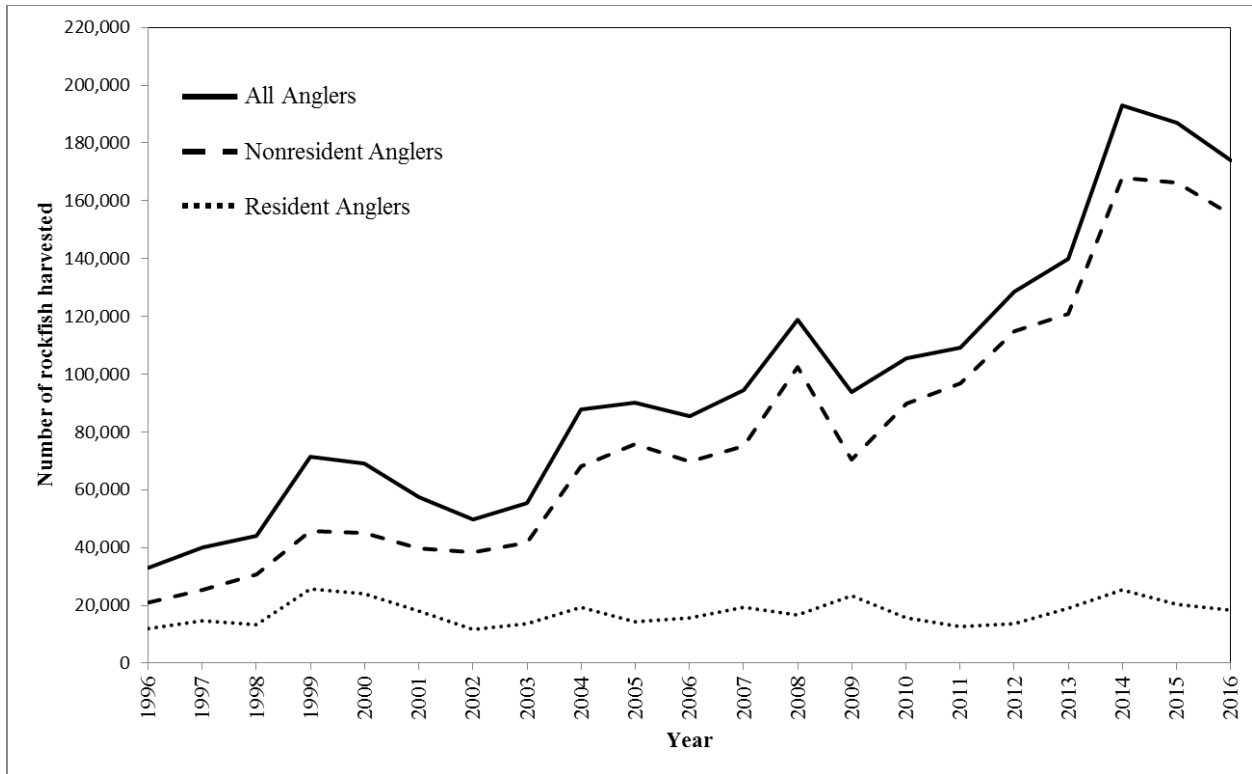


Figure 7.—Estimated harvest of rockfish in sport fisheries of Southeast Alaska as estimated from the Statewide Harvest Survey by angler residency for years 1996–2016.

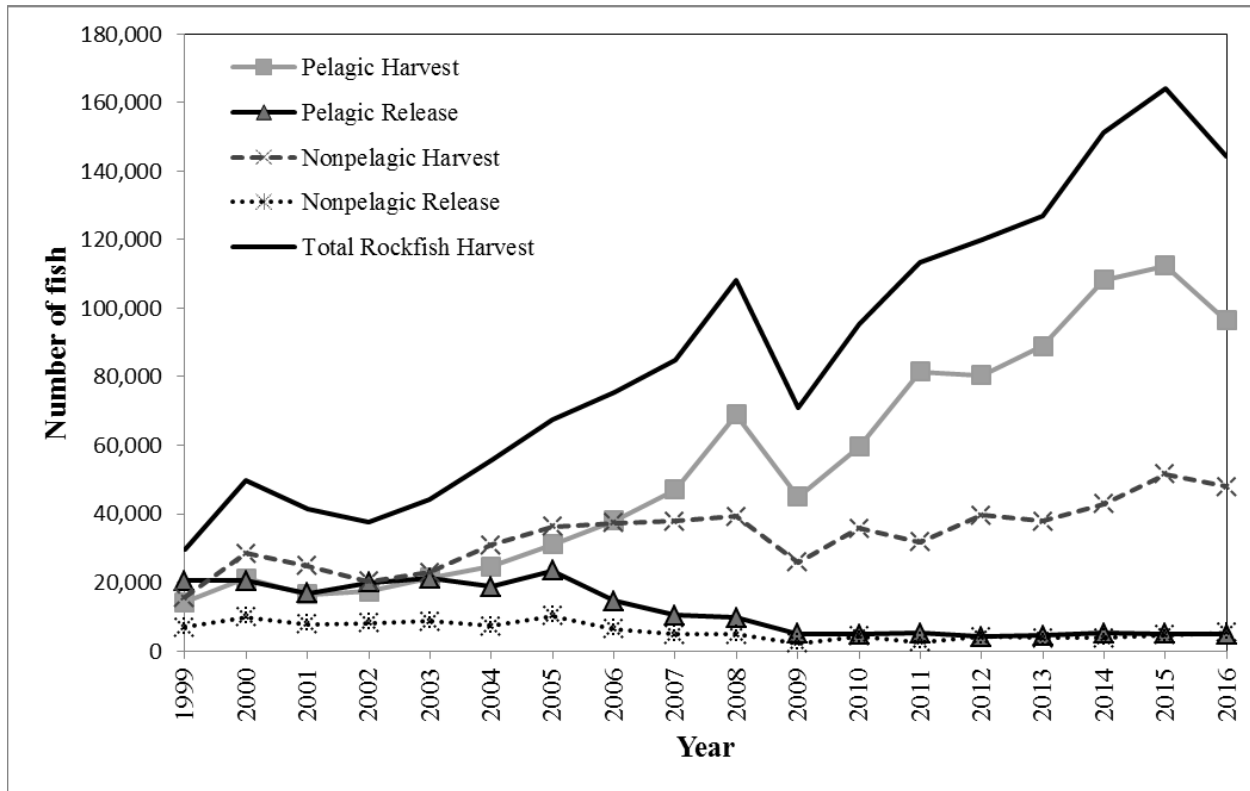


Figure 8.—Number of harvested and released pelagic and nonpelagic rockfish as reported on charter vessel logbooks in Southeast Alaska during 1999–2016.

## 2018 ROCKFISH PROPOSALS

Four proposals dealing with rockfish management have been submitted to the board for consideration in 2018.

- **Proposal 125** would repeal the mandatory retention requirements for nonpelagic rockfish.
- **Proposal 126** would require all anglers releasing nonpelagic rockfish to release them at depth and require at least one deep water release mechanism on board vessels used by sport anglers.
- **Proposal 127** would limit the reduction of pelagic rockfish bag limits in CSEO to nonresidents only, unless the resident harvest exceeded the nonresident harvest for two consecutive years.
- **Proposal 128** would reduce the bag limit of pelagic rockfish in a portion of the Sitka Area from five to three fish.

## LINGCOD

Lingcod are the largest member of the greenling family, unique to the west coast of North America, and found throughout the marine waters of Southeast Alaska. Lingcod are predatory and can grow to over 50 lb in weight, and are targeted by sport anglers. As with rockfish, lingcod are relatively sedentary and easy to locate and catch, and therefore are vulnerable to overharvest.

But unlike rockfish, lingcod have no air bladder and therefore are not susceptible to barotrauma. They are also not as long-lived as rockfish.

The department does not have a stock assessment for lingcod and is not currently able to reliably estimate lingcod biomass or abundance in Southeast Alaska. Lacking abundance estimates, and given the complex life history and behavior of lingcod, impacts to their population numbers due to fishing are difficult to assess.

## **REGULATORY HISTORY**

Prior to 1994 there were no bag or possession limits, size limits, or closed seasons for lingcod in the Southeast Alaska sport fishery. In 1994, lingcod regulations were adopted with a bag limit of two and a possession limit of four, no size limits and an open season from May 1–November 30. Season dates were established to protect lingcod during spawning and nest guarding. Since the adoption of the Lingcod Allocation Guidelines (5 AAC 28.165) in 2000, an EO has been issued annually to manage the sport lingcod fishery within its allocation (Appendix B1).

## **FISHERY MANAGEMENT**

The board adopted the Allocation Guidelines for lingcod in response to declining catch per unit of effort in the directed commercial fishery. In this plan, the board established a guideline harvest level (GHL) management approach for sport and commercial fisheries in Southeast Alaska (5AAC 28.160(e)). A GHL was established for each of seven management areas and the GHLs for each area was allocated between sport and commercial fisheries (5AAC 28.165). The seven areas (Figure 2) are as follows: Icy Bay Subdistrict (IBS), East Yakutat Section (EYKT), Northern Southeast Outside Section (NSEO), Northern Southeast Inside Subdistrict (NSEI), Central Southeast Outside Section (CSEO), Southern Southeast Outer Coast Sector (SSEOC), and Southern Southeast Internal Sector (SSEIW). The SSEIW and SSEOC areas have slightly different boundaries than the SSEI and SSEO areas used in nonpelagic rockfish management delineated in Figure 2.

Under this approach, the sport fishery is managed to maintain lingcod harvest within its allocation. In addition to existing EO authority, the board granted authority for the department to implement size limits and annual limits for guided and nonresident anglers to achieve lingcod GHLs (5 AAC 47.060). In 2009, the board changed the authority to manage anglers based on whether or not they were guided to management based on residency.

The department has used this authority to achieve the desired GHL for each area by establishing sport fishing regulations through an annual EO. Before each fishing season the department examines current and historic harvest data, trends, and other fisheries information collected through the on-site creel surveys, SWHS, and charter logbooks to determine management actions which provide sport fishing opportunity but maintain the sport fishery within allocation.

The department manages the sport lingcod harvest for each area but often uses CSEO and NSEO for a combined allocation due to the interconnected nature of the sport fisheries in this area. Whenever possible, lingcod sport fishing regulations are kept uniform across areas or groupings of areas in order to provide consistency for anglers and simplify regulatory complexity. In recent years, distinct sport fishing regulations have been established for three areas within Southeast Alaska: Yakutat (IBS and EYKT), Northern Southeast (NSEO, CSEO, and NSEI), and Southern Southeast (SSEOC and SSEIW) (Appendix A3).



## **HARVEST**

The SWHS provides lingcod harvest estimates, in number of fish by SWHS area (areas roughly comparable to, but not identical to, groundfish management areas) back to 1991. On-site creel surveys are conducted at major ports in Southeast Alaska and provide estimates of harvest and average length for lingcod taken by anglers returning to those ports. Charter vessel logbooks have provided harvest estimates for guided anglers since 1998. Creel survey results become available before the next season, but SWHS are not available until the fall of the following year. The SWHS is the only source of complete harvest estimates because creel surveys are not conducted in every location where sport harvests are landed; additionally, charter vessel logbook data are available only for the guided sector.

The GHM approach requires harvest estimates, in round lb, for each management area. At the nine ports in Southeast Alaska with on-site sport fish creel survey programs, the length of harvested lingcod is measured to the nearest centimeter (cm), and the angler type (guided or unguided) is recorded. The length data is then converted into round weights based upon the length-weight relationship employed by the department. The average round weight is then calculated by angler type (guided or unguided) for each port where on-site sampling occurs. The estimated average round weights of harvested lingcod for each angler type (resident or nonresident) are multiplied by the SWHS harvest estimates for each angler type to obtain estimated harvest in lbs. The estimated harvest (lb) from each angler type (resident or nonresident) is then added together to come up with the overall harvest estimates for each lingcod management area.

Harvest guidelines established by the board in 2000 were 39% less than the 1997–1998 sport harvest estimates in CSEO/NSEO and NSEI, but similar (–1% to +14%) in other areas. A series of bag limit reductions and minimum length limit regulations were implemented by EO in 2000 to reduce harvest by 39% (Appendix A3). These regulations were generally effective in constraining the sport fishery harvest within the GHMs during the years 2001–2003. However, in 2004 and 2005, the GHM was exceeded in the CSEO/NSEO, SSEOC, SSEIW, and NSEI areas (Figures 9 and 10). The increase may have been due to increased effort and efficiency as well as a tendency for residents to retain larger lingcod.

From 2006–2008, the department implemented additional regulations by EO including annual limits for nonresidents and guided anglers, and prohibitions on charter operators and crew from retaining lingcod while clients were on board. In addition, some slot limits were added or made more restrictive. These regulations were generally effective in restricting the sport fishery harvest near the GHMs in 2007 and 2008 in most management areas (Figure 9). Beginning in 2009 and continuing through 2012, small measures have been taken to liberalize the sport fisheries (size limit liberalization and season extensions) in some areas. Lingcod regulations have been consistent for the past six years (2012–2017).

## **2018 LINGCOD PROPOSALS**

There are no proposals for consideration in 2018 that would directly affect lingcod sport fishery management.

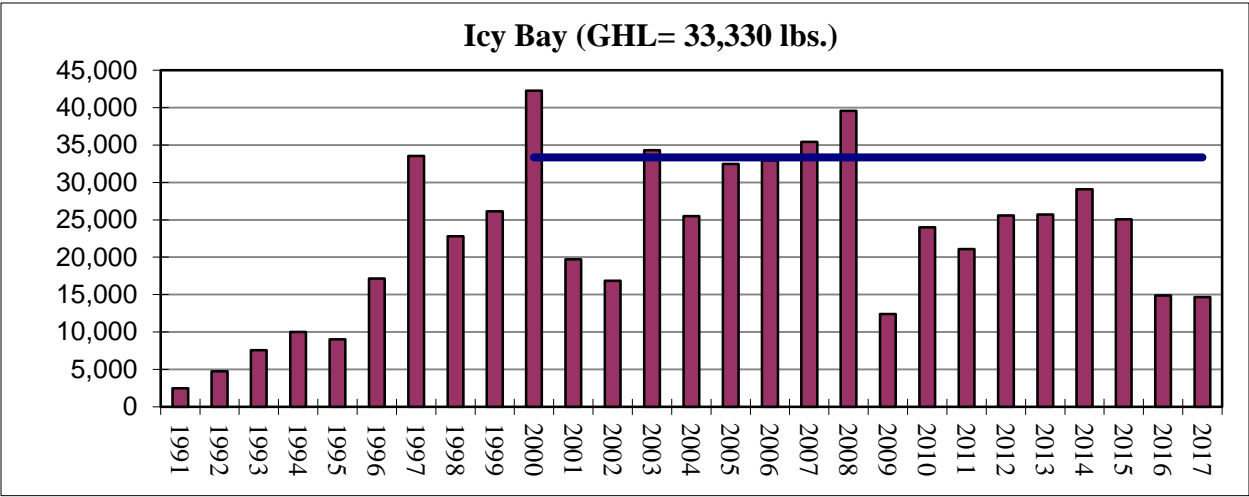
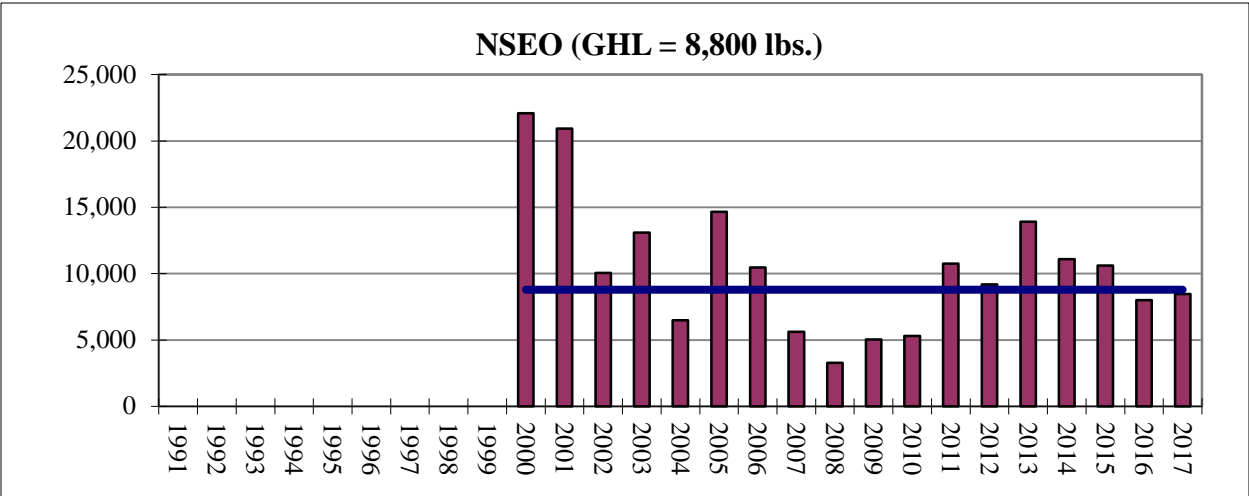
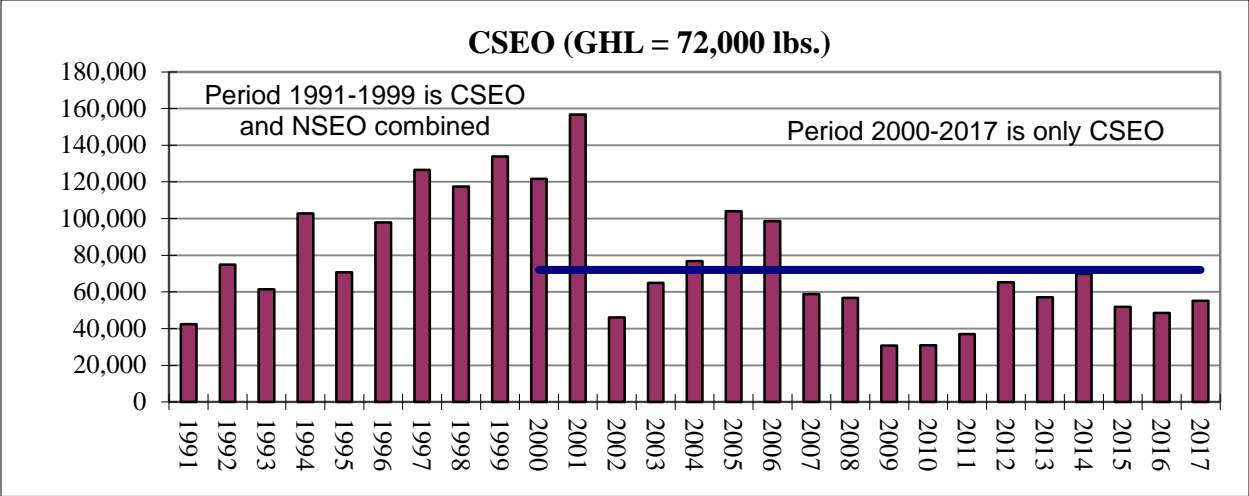


Figure 9.—Lingcod harvests in the Central Southeast Outside (CSEO; top), Northern Southeast Outside (NSEO; middle), and Icy Bay–East Yakutat subdistrict (bottom) areas.

Note: Estimates for 2017 are preliminary.

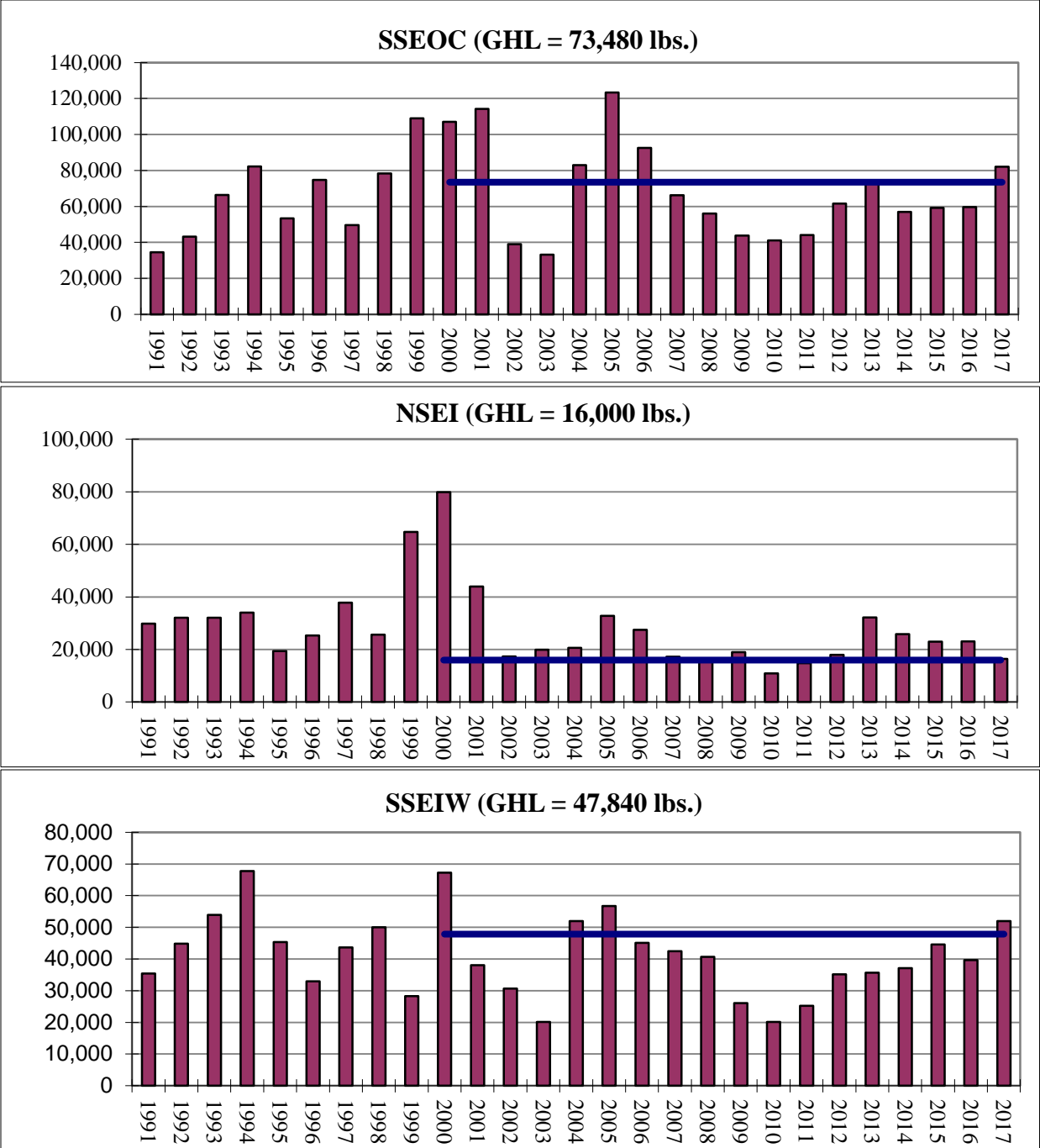


Figure 10.—Lingcod harvests in the Southern Southeast Outside (SSEOC; top), Northern Southeast Inside (NSEI; middle), and Southern Southeast Inside (SSEIW; bottom) areas.

Note: Estimates for 2017 are preliminary.

## SABLEFISH

Sablefish *Anoplopoma fimbria* are a long-lived, deep water species that can be found from Baja California to the Aleutian Islands and Bering Sea. There were no bag or possession limits for sablefish in the Southeast Alaska sport fishery prior to 2009. During the board's 2009 meeting, the board acted to limit sport anglers a bag limit of two fish with a possession limit of four fish and an annual limit of eight fish for all anglers. During the same year, the board generated a proposal and changed the bag limit from 2 fish to 4 fish and rescinded the resident annual limit. In 2012 the board modified the sablefish nonresident annual limit of 8 fish to only apply to the waters of Lower Lynn Canal and Chatham Strait (District 12). SWHS estimates of sablefish harvest in the Southeast Alaska sport fishery ranged from 6,705–13,338 fish from 2010 to 2016 (Figure 11).

In SEI waters, the state manages sablefish fisheries in SEI waters and manages the sport fishery in state and federal SEO waters. The federal government sets a TAC for SEO federal waters. The estimated sport harvest of sablefish in SEO in 2016 was 5,200 fish, equating to 22.5 t, or about 1% of the 2,317 t TAC.

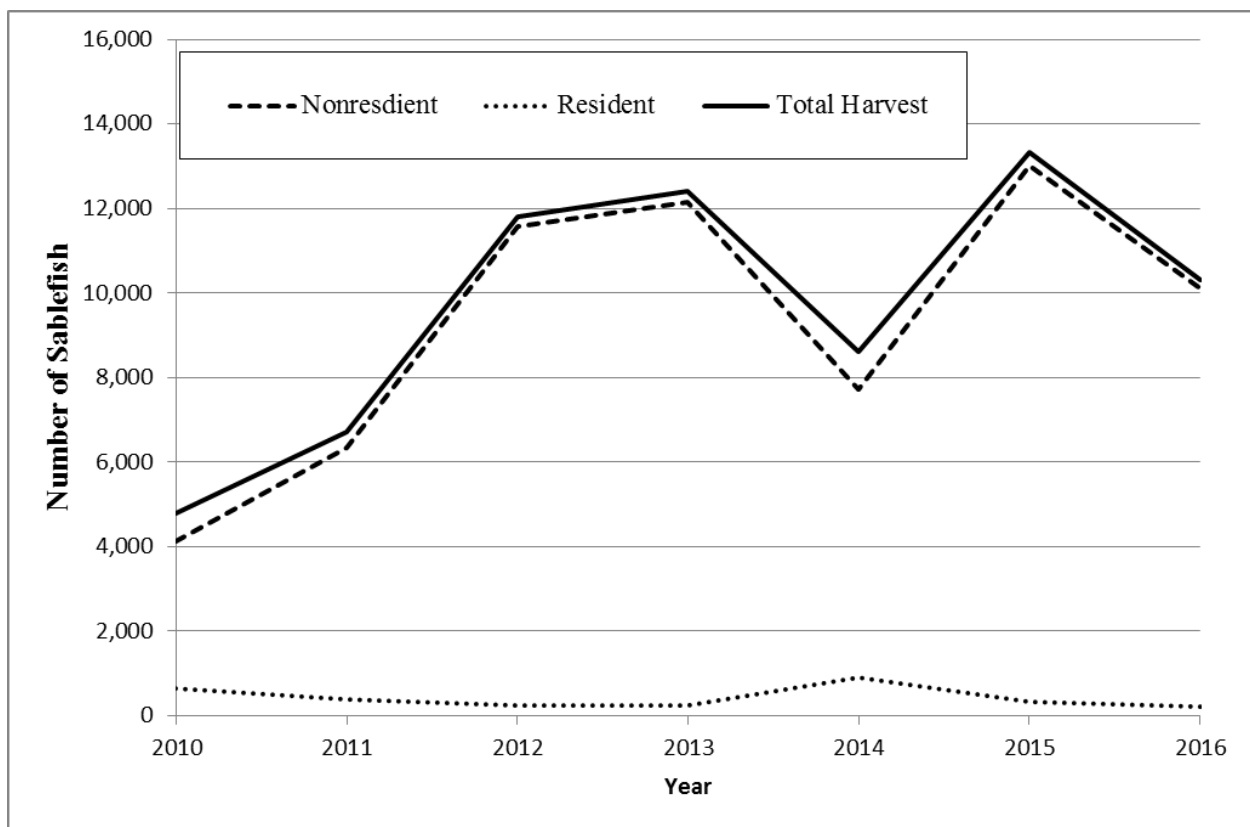


Figure 11.—Final sport harvest estimates (numbers of fish) of sablefish in Southeast Alaska 2010–2016.

## 2018 SABLEFISH PROPOSALS

There is one proposal in 2018 that would directly affect sablefish management.

- **Proposal 116** would establish a nonresident annual limit of eight fish in the Southeast Alaska Area, rather than just in District 12.

Sablefish harvest outside of District 12 (Lower Lynn Canal) represented 65-71% of the total Southeast sport harvest of sablefish in 2015 and 2016. Nonresidents currently harvest an average of 95% of sablefish and although 55-60% percent of chartered nonresident anglers met their eight-sablefish annual limit in District 12 (in 2015 and 2016), only 2.5% of chartered nonresident anglers outside of District 12 (the rest of Southeast Alaska) harvested more than eight sablefish. Therefore, extending the nonresident annual limit outside of District 12 would likely reduce harvest by no more than 3% in those areas, given current levels of effort.

## SHELLFISH

The Southeast Alaska sport shellfish fishery includes all waters of Alaska east of the longitude of Cape Suckling and north of the International Boundary at Dixon Entrance. The sport shellfish fishery includes provisions for all species of shellfish and marine invertebrates except abalone, geoducks, and king crab, which are closed to sport fishing. The primary species harvested in the sport fishery are Dungeness crab, shrimp, and clams.

In Southeast Alaska, noncommercial harvest of shellfish may occur under sport, personal use, and for most locations and species, subsistence fisheries. For all commonly harvested shellfish species, personal use and subsistence shellfish regulations either duplicate sport fishing regulations or provide additional opportunity through increased bag and possession limits and/or more liberal methods and means. This overlap between sport, personal use, and subsistence fisheries has resulted in a regulatory environment where Alaska residents harvest shellfish under personal use or subsistence regulations while generally nonresidents participate in the sport shellfish fishery. To reduce confusion for the average angler, Southeast Alaska shellfish regulations are presented in department literature, including the “Southeast Alaska Sport Fish Regulation Summary”, as resident regulations (personal use) and nonresident regulations (sport fish). Sport shellfish fisheries are managed by the Division of Sport Fish while personal use and subsistence shellfish fisheries are managed by the Division of Commercial Fisheries.

In general, the majority of non-commercial shellfish harvest in Southeast Alaska occurs from Alaska residents fishing under personal use or subsistence regulations. Only a small proportion of nonresident anglers fishing in Southeast Alaska participate in a shellfish fishery (Table 3).

Table 3.—Statewide Harvest Survey estimates of the number of nonresident anglers participating in a shellfish fishery within Southeast Alaska.

Year	Nonresident shellfish anglers	Nonresident anglers	Percentage of nonresident anglers participating in a shellfish fishery
2011	5,532	78,614	7.00%
2012	6,033	80,396	7.50%
2013	6,694	84,467	7.90%
2014	6,378	90,236	7.10%
2015	6,658	97,662	6.80%
2016	5,824	90,599	6.40%
Average	6,187	86,996	7.10%

## HARVEST MONITORING

The primary tool to estimate sport shellfish harvest and effort data is collected through the Statewide Harvest Survey (SWHS), which collects information for Dungeness crab, Tanner crab, shrimp, razor clams, clams, and “other shellfish” (Romberg 2016). Recipients of the SWHS are selected from anglers who have purchased sport fishing licenses, which are required to participate in both sport and personal use fisheries. The SWHS has been designed as a tool to estimate activity in the sport fishery only; however, in the case of Southeast Alaska shellfish fisheries, the SWHS also collects information from resident anglers who would only be participating in personal use or subsistence shellfish fisheries. Although SWHS instructions ask anglers to only report activity occurring under sport fishing regulations and specifically instruct anglers not to report subsistence harvest, many resident anglers in Southeast Alaska may not understand this regulatory distinction for shellfish fisheries.

Nonresident shellfish harvest estimates produced by the SWHS for Southeast Alaska can be used to represent sport harvest. Resident harvest estimates should be considered a minimum estimate because some recipients of the SWHS may not report their personal use shellfish harvest according to their understanding of the SWHS instructions to include only sport harvest. Although the SWHS was not designed to produce estimates of personal use harvest in Southeast Alaska shellfish fisheries, the regulatory structure has created an environment where all resident harvest reported in the SWHS can be assumed to be non-sport harvest. SWHS estimates of resident shellfish harvest in Southeast Alaska should be viewed as a minimum estimate of non-sport harvest.

The SWHS requires a minimum number of survey responses to produce statistically viable estimates. In some cases the number of responses received is not sufficient to stratify estimates by residency and thereby distinguish sport harvest from personal use harvest. In these situations harvest estimates are presented in this report as “mixed” sport and personal use harvest estimates.

On-site creel surveys do not currently collect shellfish harvest information but have been used to collect shellfish effort and harvest data for selected species in the Juneau and Ketchikan management areas from 1988–2007. A permit and reporting system for shrimp has been established for area 11-A, near Juneau, but this area has remained closed to sport fishing since this system was established in 2013. Shellfish harvest data is not collected in sport fish charter logbooks.

# SHRIMP

## LIFE HISTORY

The five species of pandalid shrimp commonly harvested in Southeast Alaska are northern (*Pandalus borealis*), humpy (*Pandalus goniurus*), sidestripe (*Pandalopsis dispar*), coonstripe (*Pandalus hypsinotis*), and spot shrimp (*Pandalus platyceros*). Spot shrimp are the largest species, followed by coonstripe shrimp. Spot and coonstripe shrimp are generally found in rock piles, coral gardens, and debris-covered bottoms; northern, sidestripe, and humpy shrimp are typically associated with muddy bottoms.

Each of these species are protandric hermaphrodites, with most individuals beginning life as males then transitioning to females for the remainder of their lives. After hatching and progressing through planktonic stages, juvenile shrimp settle to the bottom before migrating to preferred adult habitat. Mating occurs in the fall after female mottling and eggs hatch in the spring. Pandalid shrimp are opportunistic bottom feeders which eat a wide variety of items such as worms, diatoms, detritus, algae, and invertebrates.

Spot shrimp in British Columbia have been found to reach sexual maturity at 1.5 years of age and measure 28 mm in carapace length (Butler 1970); however, growth and maturity rates are likely different in Southeast Alaska. The age and size at which the sex transition to female occurs is variable and related to growth rate but is thought to occur between 2.5 and 3.5 years of age and has been observed to occur at a size of 37–42mm carapace length in Southeast Alaska (Love and Bishop 2005).

## REGULATORY HISTORY

Sport fishing regulations for shrimp in Southeast Alaska were first established in 1989 with a bag and possession limit of 10 lb or 10 quarts. Prior to 1989, there were no sport bag or possession limits established for shrimp in Southeast Alaska. Allowable gear for shrimp was limited to pots or ring nets and no more than four pots per person or ten per vessel could be used to take shellfish, including shrimp, at any time. A biodegradable escape mechanism has been required on all sport shellfish pots since 1989.

In 1994, the number of shrimp pots which could be used in the sport fishery increased when a separate pot limit was established for shrimp pots in addition to other shellfish gear. The new pot limits allowed up to 10 shrimp pots per person and 20 per vessel in addition to other shellfish pots.

In 2000, in order to limit oversized commercial shrimp gear from entering the sport fishery, pot size restrictions were adopted in Southeast Alaska which limited sport shrimp pots to a bottom perimeter of no more than 153 in and a volume of 25 cubic ft. In addition, the number of shrimp pot tunnel eye openings was restricted to no more than four, each of which may not exceed 15 inches in perimeter.

In 2006, in response to hearing testimony that a growing sport fishery could displace opportunity for personal use harvesters in waters where the commercial pot shrimp fishery was closed, the board closed the following areas to sport shrimp harvest: Sitka Sound Special Use Area, Twelve Mile Arm near Hollis, and a small portion of west Behm Canal near Ketchikan.

The bag and possession limit for the sport shrimp fishery was reduced in 2009 from 10 lb or quarts to three lb or quarts. This was followed in 2012 by a reduction in the quantity of pots allowed in the sport fishery from 10 pots per person and 20 per vessel to five pots per person and 10 per vessel.

## **MANAGEMENT**

The species composition in the sport harvest is unknown but spot shrimp are likely the primary target of most sport anglers while coonstripe, sidestripe, and northern shrimp are also harvested. Shrimp may only be taken with the use of pots in the sport fishery and gear must meet size requirements (5AAC 47.035(k)) and biodegradable escape mechanism requirements (5AAC 39.145), and buoy markings must include the angler's first initial, last name, address, and vessel name or AK numbers used to operate the pot.

The Southeast Alaska sport shrimp fishery is managed as a species assemblage with regional bag and possession limits, gear limits, and specific area closures when necessary. The current bag and possession limit is three lb or quarts of shrimp and gear used in the sport fishery is limited to five shrimp pots per person and 10 per vessel.

Currently, the best indicator of shrimp stock health in Southeast Alaska comes from fishery independent shrimp surveys conducted by the department along with harvest data and biological samples collected from commercial fisheries. Although the sport harvest of shrimp is a very small component of the regional shrimp harvest (Table 4), harvest is likely focused in areas adjacent to population centers. In areas where the department has noted concern for shrimp stocks and sport harvest is expected to be considerable, the sport fishery has been closed by EO; notably, Tenakee Inlet (2012–2017) and area 11-A (2013–2017).

## **HARVEST**

The SWHS collects shrimp harvest data by requesting anglers to report their shrimp harvest (all species combined) in gallons of shrimp. While anglers are asked to report in gallons of shrimp, anglers may be reporting gallons of shrimp with head-on or head-off. This variable can dramatically impact a conversion from gallons of shrimp to pounds. Department research in Prince William Sound calculated a conversion factor of 3.89 lb to the gallon of head-on shrimp harvested using pots with a minimum mesh size of 7/8 in (Wessel et al. 2015). At a minimum, the Southeast Alaska sport harvest estimate of 3,123 gallons could be converted to 12,150 lb but this should be viewed as a conservative estimate because this conversion will underestimate the poundage if anglers reported gallons of head-off shrimp. On average, between 2012-2016, the sport harvest of shrimp makes up 25% of the SWHS estimated mixed sport and personal use shrimp harvest in Southeast Alaska. Resident anglers harvesting shrimp under personal use or subsistence regulations is the largest source of noncommercial shrimp harvest in Southeast Alaska (Figure 12).



Table 4.—Shrimp harvest in Southeast Alaska commercial fisheries and Statewide harvest survey estimates of shrimp harvest by residency in sport and personal use fisheries.

Year <sup>a</sup>	Nonresident harvest <sup>b</sup> in gallons	Resident harvest <sup>b</sup> in gallons
1996	1,123 (207)	4,134 (1,063)
1997	1,678 (663)	9,355 (2,517)
1998	1,658 (430)	12,244 (6,925)
1999	1,763 (594)	20,790 (5,791)
2000	3,629 (776)	10,771 (2,113)
2001	4,674 (862)	9,929 (2,294)
2002	2,846 (538)	5,210 (1,154)
2003	6,686 (1,350)	19,107 (4,719)
2004	5,508 (1,012)	12,175 (2,906)
2005	10,947 (5,759)	30,228 (8,123)
2006	3,625 (876)	10,747 (2,074)
2007	1,809 (398)	7,597 (1,496)
2008	7,217 (2,344)	8,695 (2,740)
2009	2,436 (631)	9,272 (3,560)
2010	5,260 (1,370)	12,898 (4,115)
2011	3,774 (877)	11,317 (1,967)
2012	3,577 (572)	8,661 (1,519)
2013	3,603 (554)	7,985 (1,883)
2014	3,439 (1,520)	6,014 (1,192)
2015	3,132 (702)	10,619 (2,391)
2016	1,866 (277)	18,328 (3,236)
Average		
1996–2016 (all years)	3,821 (342)	11,718 (779)
2012–2016 (5-year)	3,123 (375)	10,321 (969)

<sup>a</sup> Sport and personal use estimates are based on the calendar year, and commercial fisheries estimates are based on the commercial season (pot fisheries: October–September) (beam trawl: May–April).

<sup>b</sup> Estimates are derived from the statewide harvest survey for Southeast Alaska, including Yakutat; estimated harvest is recorded in gallons. Standard error is presented in parentheses

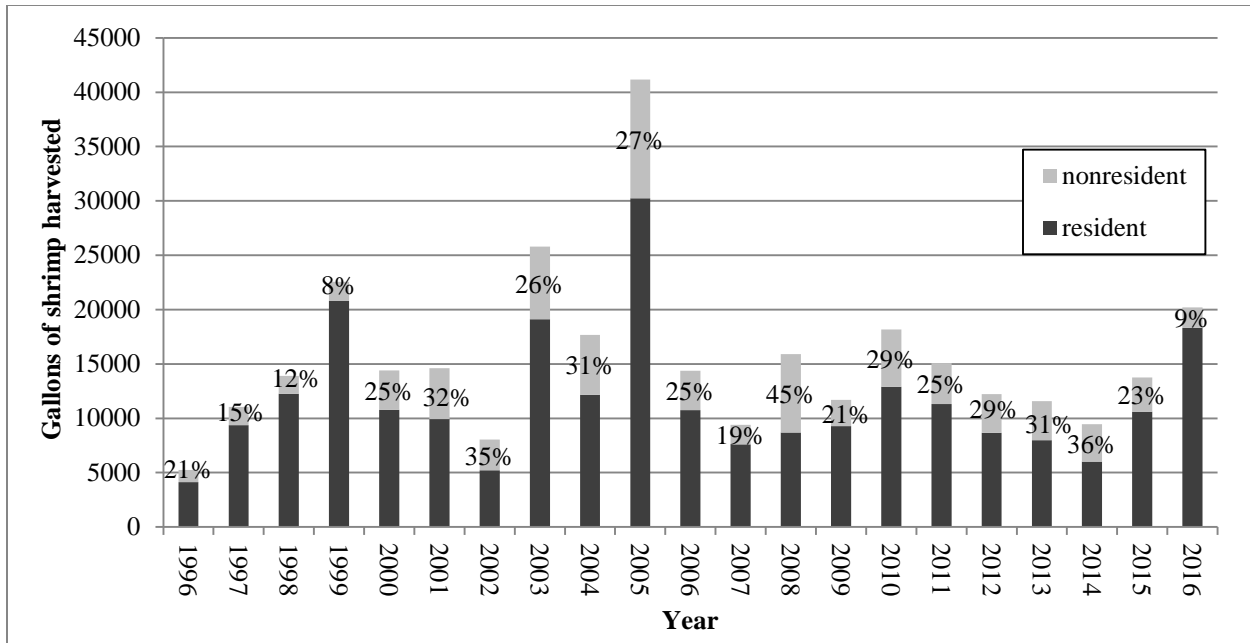


Figure 12.—Statewide harvest survey estimates of shrimp harvest in Southeast Alaska by residency.

## 2018 SHRIMP PROPOSALS

There is one proposal in 2018 that would directly affect shrimp management:

- **Proposal 76** seeks to establish a minimum mesh size restriction of 7/8 in for sport shrimp pots in Southeast Alaska.

Because the actual dimensions of the mesh opening can vary depending on how web is hung on the pot, the following regulatory language has been adopted in Prince William Sound (PWS) sport shrimp fishery to clearly define the parameters for pot construction:

5 AAC 55.022(b)(5)(C): all shrimp pots must have at least two adjacent vertical sides, or near-vertical sides, excluding tunnels, completely composed of uncovered net webbing or rigid mesh; pots that do not have a definable side, including round pots, must have net webbing or rigid mesh panels covering a minimum of 50 percent of the vertical, or near-vertical, surface area of the pot; the net webbing or rigid mesh on all pots must be large enough to allow the unaided passage of a maximum 12-inch long, seven-eighths inch diameter, round wooden peg without deforming the opening, except for the salvage.

A minimum mesh size restriction has been used as a management strategy in shrimp pot fisheries to reduce handling and harvest of non-target species and juvenile spot shrimp. After shrimp stock declines in PWS a 7/8 inch minimum mesh size was adopted for sport, personal use, and subsistence fisheries as part of the PWS spot shrimp stock rebuilding strategy.

Currently, all noncommercial shrimp pots in Southeast Alaska have identical construction requirements which include a biodegradable escape mechanism, limits on tunnel eye openings, and pot size restrictions. The mesh size restriction in this proposal would only apply to shrimp pots fished by nonresidents in the sport fishery.

# **DUNGENESS CRAB**

## **LIFE HISTORY**

Dungeness crab (*Cancer magister*) are found throughout Southeast Alaska in areas with mud and sand substrate typically above depths of 50 fathoms. Peak mating in Southeast Alaska occurs in late summer through early fall between hard shelled males and soft shell females (Shirley and Sturdevant 1987; Stone and O Clair 2001; Swiney et al. 2003). Egg fertilization occurs when oviparous females extrude eggs shortly after their shells harden, approximately one month after molting. There is evidence that female Dungeness crab in Southeast Alaska may not reproduce every year (Swiney et al. 2003), nor are female crab required to mate every year as they can store and utilize sperm for at least 2.5 years (Hankin et al. 1989). Eggs are held by the female until hatching in the spring or early summer.

Upon hatching, crab larvae transition through six stages before reaching the first juvenile stage. A male Dungeness crab may reach 6½ in, in shell width after four to five years (Bishop et al. 2007).

## **MANAGEMENT**

The Southeast Alaska Dungeness crab fishery is managed with regional bag and possession limits, size and sex requirements, and gear restrictions, and EO authority has been used to close areas when a conservation concern is identified. The current bag and possession limit is three male Dungeness/Tanner crab in combination. Dungeness crab must be a minimum of 6½ in across the carapace, not including spines. Up to four pots or 10 ring nets may be used to take Dungeness crab with a maximum of 10 crab pots or 20 ring nets per vessel. There is no closed season for Dungeness crab in the Southeast Alaska sport fishery.

Pots used to take Dungeness crab must meet requirements for a biodegradable escape mechanism defined in 5 AAC 39.145. Two escape rings with an inside diameter of 4¾ in or larger must be installed on opposing sides and within the upper half of the vertical plane of the pot. Bouy markings must include the angler's first initial, last name, address, and vessel name or AK numbers used to operate the pot. Dungeness crab may be taken by pots, ring nets, diving gear, dip nets, and hooked or hookless hand lines. The use of pots is the primary harvest method of Dungeness crab in the sport fishery.

## **REGULATORY HISTORY**

Sport fishing regulations for Dungeness crab in Southeast Alaska were first established in 1989 with a bag and possession limit of five male Dungeness/Tanner crab in combination and a minimum size limit of 6½ inches for Dungeness. In 2009, the bag and possession limit was lowered to three male Dungeness/Tanner crab in combination.

In 2012, the number of ring nets which could be fished in the sport Dungeness crab fishery was limited to 10 per person and 20 per vessel. Prior to 2012 there was no limit on the number of ring nets that could be fished.

## **HARVEST**

The nonresident (sport) harvest of Dungeness crab in Southeast Alaska has averaged roughly 1% of the combined regional harvest of sport, personal use, and commercial fisheries (Table 5).

Harvest occurs in every management area except Yakutat where the Dungeness crab sport fishery has been closed by EO (Table 6). The sport fishery contributes an average of 34% of the mixed sport and personal use Dungeness crab harvest in Southeast Alaska estimated by the SWHS (2012–2016). Resident anglers harvesting Dungeness crab under personal use or subsistence regulations are the largest source of noncommercial harvest in Southeast Alaska.

Table 5.–Dungeness crab harvest in the sport and personal use fisheries and commercial fisheries of Southeast Alaska (numbers of crab).

Year <sup>a</sup>	SWHS harvest estimates		
	Nonresident	Resident	Total
1996	16,120	71,433	87,553
1997	11,685	29,431	41,116
1998	5,289	26,248	31,537
1999	22,382	38,274	60,656
2000	16,410	46,355	62,765
2001	18,770	35,435	54,205
2002	12,103	21,717	33,820
2003	19,484	38,191	57,675
2004	48,426	40,199	88,625
2005	27,561	45,757	73,318
2006	31,571	48,135	79,706
2007	26,545	65,030	91,575
2008	25,578	54,192	79,770
2009	17,589	42,178	59,767
2010	18,311	37,952	56,263
2011	15,557	33,709	49,266
2012	25,059	36,563	61,622
2013	16,059	31,361	47,420
2014	21,217	51,448	72,665
2015	19,731	47,828	67,559
2016	17,379	29,937	47,316
Average			
2007–2016 (10-year)	20,303	43,020	63,322
2012–2016 (5-year)	19,889	39,427	59,316

<sup>a</sup> Sport and personal use harvest estimates are based on the calendar year.

Table 6.–SWHS estimates of nonresident Dungeness crab harvest by survey area, Standard error presented in parenthesis.

Year	Ketchikan (A)	Prince of Wales Island (B)	Petersburg–Wrangell (C)	Sitka (D)	Juneau (E)	Southeast Region total <sup>a</sup>
2012	4,381 (982)	7,160 (1,458)	3,229 (868)	4,214 (2,476)	2,573 (658)	25,059 (7,562)
2013	3,207 (867)	5,530 (1,001)	3,245 (719)	1,355 (516)	1,300 (350)	16,059 (3,975)
2014	3,304 (681)	8,250 (1,451)	3,864 (835)	3,034 (676)	1,845 (595)	21,217 (4,650)
2015	4,084 (959)	6,494 (1,424)	3,964 (891)	2,410 (689)	1,541 (669)	19,731 (5,169)
2016	2,448 (585)	6,943 (1,275)	4,526 (921)	941 (297)	1,552 (375)	17,379 (3,893)
Average	3,485 (371)	6,875 (596)	3,766 (380)	2,391 (545)	1,762 (245)	19,889 (2,337)

Note: SWHS survey area boundaries do not correspond exactly with management area boundaries, although these are generally minor discrepancies.

<sup>a</sup> Includes harvest from the remainder of Southeast Alaska in the Haines, Skagway, and Glacier Bay area's not otherwise presented in this table, low response rates prohibit survey area harvest estimates for these locations.

## 2018 DUNGENESS CRAB PROPOSALS

There is one proposal in 2018 that would directly affect Dungeness crab management:

- **Proposals 57 and 58** seek to establish a closed area near Craig and Klawock to the sport harvest of Dungeness crab.
- **Proposal 59** seeks to close the Yakutat area Dungeness crab sport fishery by regulation.
- **Proposal 60** seeks to establish a guided sport ecotourism Dungeness crab fishery in Sitka Sound (see Appendix C1 for regulatory history on this fishery).

Proposals 57 and 58 are described in the next two paragraphs.

Resident anglers fishing for Dungeness crab under personal use or subsistence regulations would be unaffected. In addition to sport, personal use, and subsistence harvest, some commercial harvest occurs annually in the waters immediately adjacent to Klawock and Craig (District 103-60) but with less than three permit holders making landings, reportable data is limited.

The proposers specifically reference concern for Dungeness crab harvest occurring in the local charter fleet. While the majority of anglers who charter sport fishing vessels in Southeast Alaska are nonresidents, charter vessels may also host Alaska residents who may be fishing under personal use or subsistence regulations. The harvest of Dungeness crab by charter vessels is not collected by charter logbooks. Harvest estimates for Dungeness crab are produced by the SWHS although estimates are only available for the larger area of “West coast of Prince of Wales”. In this area, the mixed sport and personal use harvest estimate averages 4,667 Dungeness crab (2011–2016). The proportion of harvest by nonresidents in this area cannot be determined due to insufficient responses rates in the statewide harvest survey. However, the nonresident harvest of Dungeness crab is available for the entire Prince of Wales management area and has averaged 50% of the SWHS estimates during the same period.

Proposal 60 is described in the following paragraph.

In 2012, the board took action to clarify regulatory language by explicitly prohibiting charter vessels and lodges from harvesting shellfish for clients or guests and clarified that sport, personal use and subsistence shellfish may only be served to a paying client or guest when it was

harvested by that client or guest and consumed in the presence of the client or guest. The captain and crew of a charter vessel may not deploy, set, or retrieve their own gear in a sport shellfish fishery when that vessel is being chartered. Shellfish gear must be set and retrieved by the client or guest and be marked with the client or guest's information.

## **OTHER SHELLFISH SPECIES**

### **INTRODUCTION**

In addition to Dungeness crab and shrimp discussed above, the Southeast Alaska sport shellfish fishery provides opportunity to harvest a wide variety of shellfish species, although angler interest in these species is very low. Specific provisions for shrimp, Dungeness crab, Tanner crab, razor clams, and scallops have been adopted, while the sport fishery is closed to the taking of king crab, geoducks, and abalone. All other shellfish species may be harvested with no bag or possession limits, although gear restrictions apply. Clams, other than razor clams, are the most commonly harvested shellfish species with no bag or possession limit while species such as octopus and squid are harvested in small numbers.

### **REGULATORY HISTORY**

When sport fishing regulations for shellfish were adopted in Southeast Alaska in 1989, bag and possession limits were established for razor clams, Dungeness and Tanner crab, shrimp, and abalone. The taking of king crab and geoducks was prohibited and for all other shellfish there was no bag or possession limit. Since 1989 specific provisions have been added for the following species, omitting Dungeness crab and shrimp discussed earlier in this report:

Scallops: In 1994 a bag and possession limit for scallops was established with a bag and possession limit of 10 weathervane scallops and five rock scallops.

Razor clams: The taking of razor clams was prohibited in waters near Sitka in 1994. A bag and possession limit of 10 continues in the remainder of Southeast Alaska.

Tanner crab: In 2009, the bag and possession limit was lowered from five to three Dungeness and Tanner crab in combination and a requirement for escape rings in Tanner crab pots was established. Also in 2009, a two-week closed season (June 16–June 30) was established by the board for sport and personal use Tanner crab fisheries to discourage prospecting and illegal harvest in the personal use red king crab fishery. In 2012, ring net limits were established at 10 per vessel for Tanner crab.

Abalone: In 2012 the board took action to close the Southeast Alaska sport abalone fishery after hearing concern that abalone stocks were in low abundance. Bag and possession limits were also reduced in the personal use and subsistence fishery at this time.

### **MANAGEMENT**

The SWHS collects sport fish effort, catch, and harvest information for clams, razor clams, Tanner crab and “other shellfish” in addition to Dungeness crab and shrimp discussed above. With the exception of clams, angler interest in these species is extremely low. The number of responses to the SWHS which report harvest of these species is below thresholds to derive reliable harvest estimates with the exception of the regional harvest of clams and Tanner crab and these estimates includes a mix of sport and personal use harvest. Although harvest estimates

may not be available, the SWHS response rates can be useful to monitor trends in the fishery and identify if effort is growing across the region (Table 7).

Table 7.–SWHS estimated harvest of hardshell clams and tanner crab in the mixed personal use and sport fisheries in Southeast Alaska.

Year	Hardshell clams (other than razor clams)	Tanner crab
2012	33,587 (12,217)	1,461 (414)
2013	36,533 (9,167)	936 (450)
2014	18,831 (4,476)	385 (190)
2015	19,628 (5,587)	2,082 (1,045)
2016	17,800 (6,001)	847 (262)
Average	25,276 (3,581)	1,142 (251)

*Note:* Standard error in parentheses.

## 2018 GENERAL SHELLFISH PROPOSALS

There is one proposal in 2018 that would directly affect general shellfish management:

- Proposal 77 would clarify sport fishing regulations by defining the methods and means which can be used to harvest shellfish species with no bag or possession limit in Southeast Alaska.

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**APPENDIX A: REGULATIONS AND BAROTRAUMA  
STUDIES FOR ROCKFISH**

Appendix A1.—Summary of sport fish regulations for nonpelagic rockfish in Southeast Alaska, 1989–2017.

Year	Bag, possession, and annual limits	
1989–1993	Daily bag limit of five fish (all rockfish), of which only two may be a yelloweye rockfish, possession limit of 10, of which only four may be a yelloweye rockfish.	
1994–2005	Daily bag limit of five fish, of which only two may be a yelloweye rockfish, possession limit of 10 fish, of which only four may be a yelloweye rockfish.	
2006 <sup>a,b</sup>	Daily bag limit of three fish, of which only one may be a yelloweye rockfish, possession limit of six fish, of which only two may be a yelloweye rockfish.	
	<u>Resident</u>	<u>Nonresident</u>
2007–2010 <sup>a,b</sup>	Bag limit of three fish, only one of which may be a yelloweye rockfish; possession limit of six.	Bag limit of two fish, only one of which can be a yelloweye rockfish, possession limit of four, which only two may be a yelloweye rockfish; annual limit of three yelloweye rockfish.
	<u>Resident</u>	<u>Nonresident</u>
2011–2012 <sup>a,b</sup>	<u>Southeast Outside Waters:</u> bag limit of two fish, only one of which may be a yelloweye rockfish; possession limit of four fish, of which only two may be a yelloweye rockfish.	<u>Southeast Outside Waters:</u> bag limit of two fish, only one of which can be a yelloweye rockfish, possession limit of four fish, of which only one may be a yelloweye rockfish; annual limit of one yelloweye rockfish.
	<u>Southeast Inside Waters:</u> bag limit of three fish, only one of which may be a yelloweye rockfish; possession limit of six fish, of which only two may be a yelloweye rockfish.	<u>Southeast Inside Waters:</u> bag limit of two fish, only one of which can be a yelloweye rockfish, possession limit of four fish, of which only two may be a yelloweye rockfish; annual limit of two yelloweye rockfish.
	<u>Resident</u>	<u>Nonresident</u>
2013–2015 <sup>a,b,c</sup>	<u>Southeast Outside Waters:</u> bag limit of two fish, only one of which may be a yelloweye rockfish; possession limit of four fish, of which only two may be a yelloweye rockfish.	<u>Southeast Outside Waters:</u> bag limit of two fish, only one of which can be a yelloweye rockfish, possession limit of four fish, of which only one may be a yelloweye rockfish; annual limit of one yelloweye rockfish.
	<u>Southeast Inside Waters:</u> bag limit of three fish, only one of which may be a yelloweye rockfish; possession limit of six fish, of which only two may be a yelloweye rockfish.	<u>Southeast Inside Waters:</u> bag limit of two fish, only one of which can be a yelloweye rockfish, possession limit of four fish, of which only two may be a yelloweye rockfish; annual limit of two yelloweye rockfish.

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Year	Bag, possession, and annual limits	
	<u>Resident</u>	<u>Nonresident</u>
2016 <sup>a,b,c</sup>	<u>Southeast Outside Waters:</u> bag limit of two fish, only one of which may be a yelloweye rockfish; possession limit of four fish, of which only two may be a yelloweye rockfish.	<u>Southeast Outside Waters:</u> bag limit of one fish, only one of which can be a yelloweye rockfish, possession limit of two fish, of which only one may be a yelloweye rockfish; annual limit of one yelloweye rockfish.
	<u>Southeast Inside Waters:</u> bag limit of three fish, only one of which may be a yelloweye rockfish; possession limit of six fish, of which only two may be a yelloweye rockfish.	<u>Southeast Inside Waters:</u> bag limit of two fish, only one of which can be a yelloweye rockfish, possession limit of four fish, of which only two may be a yelloweye rockfish; annual limit of two yelloweye rockfish.
<u>All Anglers</u>		
2017 <sup>a,b,c</sup>	Bag and possession limit of one fish. Nonresident annual limit of one yelloweye rockfish. <u>Southeast Outside Waters</u> - No retention from August 1 through August 21. All anglers must have release device (regardless of target species) and all nonpelagic rockfish must be released at depth.	

<sup>a</sup> Charter operators and crew are not allowed to retain nonpelagic rockfish.

<sup>b</sup> All nonpelagic rockfish caught must be retained until the bag limit is reached.

<sup>c</sup> Persons sport fishing from a charter vessel when releasing nonpelagic rockfish (e.g., after an angler reaches their bag limit) must be in possession of and utilize a deep water release mechanism to return the fish to the depth it was hooked or to a depth of at least 100 feet.

Appendix A2.–List of references for barotrauma studies on rockfish species that look at survival when returned to depth.

Author and citation	Species of rockfish studied	Depth of study	Location	Method summary	Survival rate examined	Survival rate reported	Species examined exists in Alaska sport fishery
Hochhalter and Reed 2011, NAJFM 31:852–860	Yelloweye	18 to 72 meters	Alaska	Released fish in environment directly as anglers would likely use recompression devices.	Yes	17-day survival of 98.8%	Yes
Jarvis and Lowe 2008, CJFAS 65:1286–1296	Vermillion, bocaccio, flag, squarespot, and honeycomb	55 to 89 meters	California	Released fish into cages first.	Yes	2-day survival of 62–73%; 690– day survival detected	Yes but small sample sizes (17–73 per species)
Pribyl. 2010, PhD Dissertation, OSU.	Black rockfish	35 meters	Oregon	Compression chamber in laboratory.	Yes	31–day survival of 100%	Yes
Parker et al. 2006, TAFS 135:1213–1223	Black rockfish	up to 30 meters	Oregon	Used compression chamber in laboratory only. Used pressures up to 4 atmospheres equivalent to 30 meters depth.	Yes	9-day survival of 97%	Yes
Hannah and Rankin 2011, NAJFM 31:483–494	Canary, yelloweye, quillback, China, copper	20 to 69 meters	Oregon	Surgically implanted acoustic tags in fish and released at depth.	Yes, inferred from those individuals that displayed movement throughout duration of the study	30+ day survival of 70–100%	Yes but very small sample sizes (1–23 per species).
GMT 2014 report to Pacific Fishery Management Council. March 2014	Cowcod, canary, yelloweye	0–75 fathoms		Examined use of Release Devices.	yes	yes	yes
Hannah et al. 2014, Fisheries Research 157:106–112	Canary, yelloweye			Post recompression of rockfish 2-days.	Yes	90–100%	Yes
Berry 2001, Report for Fisheries Renewal BC and Science Council of BC	Quillback	Unknown	British Columbia	Released fish with cages at 15 meters no information on depth of capture given.	Yes	35-day survival of 86%	Yes

## **APPENDIX B: SPORT LINGCOD FISHERY REGULATIONS**

Appendix B1.–Summary of sport lingcod regulations through 2017.

Year	SSEI	SSEO	CSEO/NSEO/NSEI	YAK
1994 to 1999	season: May 1–Nov 30 2 fish per day, 4 in possession	season: May 1–Nov 30 2 fish per day, 4 in possession	season: May 1–Nov 30 2 fish per day, 4 in possession	season: May 1–Nov 30 2 fish per day, 4 in possession
2000	season: May 16–Nov 30 2 fish per day, 4 in possession no size limit	season: May 16–Nov 30 2 fish per day, 4 in possession no size limit	season: May 16–June 15, Aug 16 - Nov 30 2 per day, 4 in possession prior to June 6, 2000 After June 6: 1 per day, 2 in possession and: non-guided residents: no size limit guided and nonresidents: 38 in minimum size	season: May 16–Nov 30 2 fish per day, 4 in possession no size limit
2001	season: May 16–Nov 30 1 per day, 2 in possession no size limit	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 34 in minimum size	season: May 16–June 15, Aug 16 – Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 39 in minimum size	season: May 16–June 15, Aug 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 39 in minimum size
2002	season: May 16–Nov 30 1 per day, 2 in possession no size limit	season: May 16–June 15, Aug 16 - Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–June 15, Aug 16 - Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 32 in– 42 in slot limit

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Year	SSEI	SSEO	CSEO/NSEO/NSEI	YAK
2003	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–June 15, August 16 - Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–June 15, August 16 - Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 32 in–42 in slot limit
2004	season: May 16–Nov 30 1 per day, 2 in possession no size limit	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–June 15, August 16 - Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 32 in–42 in slot limit
2005	season: May 16–Nov 30 1 per day, 2 in possession no size limit	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–June 15, August 16 - Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 32 in–42 in slot limit
2006	season: May 16–Nov 30 1 per day, 2 in possession no size limit guided and nonresidents: annual limit of two no retention by charter operators/crew	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit guided and nonresidents: annual limit of two no retention by charter operators/crew	season: May 16–June 15, August 16 - Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit guided and nonresidents: annual limit of two no retention by charter operators/crew	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 32 in–42 in slot limit no retention by charter operators/crew

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Year	SSEI	SSEO	CSEO/NSEO/NSEI	YAK
2007–2008	season: May 16–Nov 30 non-guided resident: 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–40 in slot limit guided and nonresidents: annual limit of one no retention by charter operators/crew	season: May 16–June 15, August 16 - Nov 30 non-guided resident: 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–35 in slot limit guided and nonresidents: annual limit of one no retention by charter operators/crew	season: May 16–June 15, August 16 - Nov 30 non-guided resident: 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 30 in–35 in slot limit guided and nonresidents: annual limit of one no retention by charter operators/crew	season: May 16–Nov 30 1 per day, 2 in possession non-guided residents: no size limit guided and nonresidents: 32 in–42 in slot limit no retention by charter operators/crew
2009	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–June 15, August 16 - Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel

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Year	SSEI	SSEO	CSEO/NSEO/NSEI	YAK
2010	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–June 15, August 16 - Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–40 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–40 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel
2011	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–40 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–40 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–40 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–40 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–June 30, August 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel	season: May 16–Nov 30 resident: 1 per day, 2 in possession, no size limit nonresidents: 1 per day, 1 in possession, 30–45 in slot limit OR 55 inches or greater. must land lingcod by hand or with a landing net nonresident angler annual limit of two lingcod, one of which is 30–45 inches in length and one that is 55 inches or greater in length no captain/crew lingcod retention while clients are on board the vessel

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Year	SSEI	SSEO	CSEO/NSEO/NSEI	YAK
2012–2017	<p>season: May 16–Nov 30</p> <p>resident: 1 per day, 2 in possession, no size limit</p> <p>nonresidents: 1 per day, 1 in possession, 30–45 in slot limit OR 55 inches or greater.</p> <p>must land lingcod by hand or with a landing net</p> <p>nonresident angler annual limit of two lingcod, one of which is 30–45 inches in length and one that is 55 inches or greater in length</p> <p>no captain/crew lingcod retention while clients are on board the vessel</p>	<p>season: May 16–Nov 30</p> <p>resident: 1 per day, 2 in possession, no size limit</p> <p>nonresidents: 1 per day, 1 in possession, 30–45 in slot limit OR 55 inches or greater.</p> <p>must land lingcod by hand or with a landing net</p> <p>nonresident angler annual limit of two lingcod, one of which is 30–45 inches in length and one that is 55 inches or greater in length</p> <p>no captain/crew lingcod retention while clients are on board the vessel</p>	<p>season: May 16–Nov 30</p> <p>resident: 1 per day, 2 in possession, no size limit</p> <p>nonresidents: 1 per day, 1 in possession, 30–35 in slot limit OR 55 inches or greater.</p> <p>must land lingcod by hand or with a landing net</p> <p>nonresident angler annual limit of two lingcod, one of which is 30–35 inches in length and one that is 55 inches or greater in length</p> <p>no captain/crew lingcod retention while clients are on board the vessel</p>	<p>season: May 16–Nov 30</p> <p>resident: 1 per day, 2 in possession, no size limit</p> <p>nonresidents: 1 per day, 1 in possession, 30–45 in slot limit OR 55 inches or greater.</p> <p>must land lingcod by hand or with a landing net</p> <p>nonresident angler annual limit of two lingcod, one of which is 30–45 inches in length and one that is 55 inches or greater in length</p> <p>no captain/crew lingcod retention while clients are on board the vessel</p>

**APPENDIX C: REGULATORY HISTORY OF SPORT  
DUNGENESS CRAB FISHERY**

Appendix C1.–Regulatory history of the George Inlet superexclusive guided sport ecotourism Dungeness crab fishery.

Year	Description
2003–2007	Experience Alaska Tours/George Inlet Lodge in Ketchikan conducted Dungeness Crab ecotourism tours under the Commissioner’s authority to issue permits for scientific and educational purposes.
2007	After additional operators expressed interest in this fishery, department review determined that scientific and educational permits to conduct ecotourism were erroneously issued and there was a need to establish regulatory framework
2008	Statewide sport ecotourism regulations in 5 AAC 75.085 were adopted and specific provisions for the George Inlet superexclusive guided sport ecotourism Dungeness crab fishery was established in 5 AAC 47.090
2009	Regulations were modified by the Board allowing greater flexibility for the department to limit the number of pots and pot lifts when more than three vessels registered for this fishery.
2012	Registration requirements were amended by allowing a guide to register for this fishery at any time prior to participating in this fishery. Prior to this amendment, guides were required to register between December 1 and January 3 in order to participate in this fishery.
2015	Pot limits were modified from two per vessel to six per operator, buoy marking requirements were modified, a definition of “operator” was established, management provisions were modified to allow the department to reduce pot limits and/or number of lifts if more than one operator registered, and language was added to identify the responsible party in the event a fishery violation occurred in this fishery.
2015	Guide registration requirements were modified to allow guides to deregister from this fishery in order to allow participation in other guided sport or Dungeness crab fisheries. Prior to this time sport fishing guides registered in this fishery were prohibited from participating in any other guided sport fishery or Dungeness crab fishery during the same year.