Technical Paper No. 342

Subsistence Harvests of Pacific Halibut in Alaska, 2007

Public Review Draft

by

James A. Fall

and

David Koster

November 2008

Alaska Department of Fish and Game **Division of Subsistence**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the reports by the Division of Subsistence. 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.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
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

General

all commonly-accepted abbreviations e.g., Mr., Mrs., AM, PM, etc.	
all commonly-accepted professional titles e.g., Dr., Ph.D., R.N., etc.	
Alaska Administrative Code	AAC
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters (Jan,...,Dec)	
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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James A. Fall
Alaska Department of Fish and Game, Division of Subsistence, Anchorage

and

David Koster
Alaska Department of Fish and Game, Division of Subsistence, Anchorage

Alaska Department of Fish and Game
Division of Subsistence
333 Raspberry Road, Anchorage, AK 99518-1599

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The Division of Subsistence Technical Paper series was established in 1979 and represents the most complete collection of information about customary and traditional uses of fish and wildlife resources in Alaska. The papers cover all regions of the state. Some papers were written in response to specific fish and game management issues. Others provide detailed, basic information on the subsistence uses of particular communities which pertain to a large number of scientific and policy questions.

Technical Paper series reports are available through the Alaska State Library and on the Internet: http://www.subsistence.adfg.state.ak.us. This publication has undergone editorial and professional review.

James A. Fall
Alaska Department of Fish and Game, Division of Subsistence
333 Raspberry Road, Anchorage, AK 99518-1599, USA

and
David Koster
Alaska Department of Fish and Game, Division of Subsistence
333 Raspberry Road, Anchorage, AK 99518-1599, USA

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ABSTRACT

This report describes the results of the fifth annual study to estimate the subsistence halibut harvest in Alaska since the National Marine Fisheries Service adopted rules governing subsistence halibut fishing in 2003. Data were collected through a voluntary postal (mailed) survey of all holders of subsistence halibut registration certificates (SHARC). The survey response rate was 58% (8,682 surveyed of 15,047 SHARC holders.). An estimated 5,933 individuals participated in the subsistence fishery for halibut in 2007, compared to 5,909 in 2006; 5,621 in 2005; 5,984 in 2004; and 4,942 in 2003. The estimated harvest in 2007 was 53,697 halibut, comprising 1,032,293 pounds (+/- 4.1%) net weight. This compares to a harvest estimate of 54,089 halibut comprising 1,125,312 pounds (+/- 2.9%) in 2006; 55,875 fish comprising 1,178,222 pounds (+/-3.0%) in 2005; 52,412 fish comprising 1,193,162 pounds (+/-1.5%) in 2004; and 43,926 halibut comprising 1,041,330 pounds (+/- 3.9%) in 2003. Of the total subsistence halibut harvested in 2007, 69% was harvested with setline gear and 31% with hand-operated gear. As in 2003-2006, the largest portion of the Alaska subsistence halibut harvest in 2007 occurred in Regulatory Area 2C (Southeast Alaska), 51%, followed by Area 3A (Southcentral Alaska), 36%. Subsistence harvests represented about 1.4% of the total halibut removals in Alaska in 2007. The harvest estimates based on the surveys for 2003-2007 serve as a basis for understanding the overall harvest, annual variability in catch, and whether any increase in harvest may be associated with implementation of the 2003 regulations. Although the 2007 harvest estimate is about the same as the 2004-2006 estimates and somewhat higher than the 2003 estimate, there are no certain trends in the fishery based on these 5 study years. The report recommends that monitoring of the subsistence harvest of halibut in Alaska be continued.

Key words: Pacific halibut, *Hippoglossus stenolepis*, subsistence harvests, Alaska, rockfish, *Sebastes*, lingcod *Ophiodon elongatus*.

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EXECUTIVE SUMMARY

This report presents findings of a study designed to estimate the subsistence harvest of Pacific halibut *Hippoglossus stenolepis* in Alaska in 2007. The Division of Subsistence of the Alaska Department of Fish and Game (ADF&G) conducted the study through National Oceanic and Atmospheric Administration (NOAA) Award No. NA04NMF4370170 through the U.S. Department of Commerce, NOAA National Marine Fisheries Service (NMFS). In May 2003, NMFS published federal regulations implementing a subsistence halibut fishery in Alaska for qualified individuals who are residents of 117 rural communities or members of 123 Alaska Native tribes with traditional uses of halibut. The year 2007 was the fifth in which subsistence halibut fishing took place under these regulations. Subsistence fishers are required to obtain a subsistence halibut registration certificate (SHARC) from NMFS before fishing. During 2007, 15,047 individuals held SHARCs, compared to 14,206 at the end of 2006 (an increase of 6%); 14,306 by the end of 2005 (an increase of 5% from 2005 to 2007); 13,813 by the end of 2004 (an increase of 9% from 2004 to 2007); and 11,635 by the end of 2003 (a 29% increase from 2003 to 2007).

Harvest information was collected by means of a postal (mailed) survey. The one-page survey form was mailed to all SHARC holders in early 2008, with 2 follow-up mailings. Household visits supplemented the mailings in selected communities. In total, 8,682 surveys were returned, a response rate of 58%. Participation in the survey was voluntary.

According to the study findings, an estimated 5,933 individuals participated in the subsistence halibut fishery in 2007, compared to an estimated 5,909 in 2006; 5,621 in 2005; 5,984 in 2004; and 4,942 in 2003. The estimated harvest in 2007 was 53,697 halibut (+/- 3.3%) comprising 1,032,293 pounds (+/- 4.1%) net weight. ("Net weight" is 75% of "round" or live weight; the

estimated harvest was 1,500,416 pounds round weight.) This compares to a harvest estimate of 54,089 halibut (+/- 2.8%) comprising 1,125,312 pounds (+/- 2.9%) net weight in 2006; 55,875 fish (+/- 3.0%) comprising 1,178,222 pounds (+/- 3.0%) net weight in 2005; 52,412 fish (+/- 1.6%) comprising 1,193,162 pounds (+/-1.5%) in 2004; and 43,926 halibut comprising 1,041,330 pounds net weight (+/- 3.9%) in 2003. As measured in pounds, the 2007 harvest was about 8% lower than the estimated harvest in 2006. The 2006 harvest was about 4% lower than the estimated harvest for 2005. The 2005 harvest was about 1% lower than the estimated harvest for 2004, whereas the 2004 harvest estimate was 15% higher than the 2003 harvest estimate. The 2007 estimated harvest was 1% lower than the estimate for 2003.

Of the total subsistence halibut harvest in 2007, 714,344 pounds (69%) were harvested with setline (stationary) gear (i.e., longlines or skates) and 317,949 pounds (31%) were harvested with hand-operated gear (i.e., rod and reel or handline). This was similar to the harvest by gear type in 2006 (70% setline and 30% hand-operated gear); 2005 (70% setline and 30% hand-operated gear), 2004 (74% setline and 26% hand-operated gear), and 2003 (72% setline and 28% hand-operated gear). Of those subsistence fishers using setline gear in 2006, the most (38%) usually fished with 30 hooks, the maximum number allowed by regulation in all areas except Areas 4C, 4D, and 4E, where regulations establish no hook limit.

Subsistence fishers also harvested an estimated 15,266 rockfish *Sebastes* spp. and 3,392 lingcod *Ophiodon elongatus* in 2007 while fishing for halibut. In 2006, subsistence halibut fishers harvested an estimated 16,945 rockfish and 3,486 lingcod. In 2005, subsistence halibut fishers harvested an estimated 12,395 rockfish and 2,355 lingcod. In 2004, subsistence halibut fishers harvested 19,001 rockfish and 4,407 lingcod. In 2003, subsistence halibut fishers had an estimated incidental harvest of 14,870 rockfish and 3,298 lingcod.

Based upon fishing locations, the largest portion of the Alaska subsistence halibut harvest in 2007 occurred in Regulatory Area 2C (Southeast Alaska), 51% (524,897 pounds); followed by:

- Area 3A (Southcentral Alaska), 36% (372,289 pounds);
- Area 4E (East Bering Sea Coast), 5% (52,135 pounds);
- Area 3B (Alaska Peninsula), 5% (47,748 pounds);
- Area 4C (Pribilof Islands), 1% (15,077 pounds);
- Area 4A (Eastern Aleutian Islands), 1% (14,946 pounds);
- Area 4D (Central Bering Sea), less than 1% (3,204 pounds); and
- Area 4B (Western Aleutian Islands), less than 1% (1,997 pounds).

In 2003-2006 as well, Area 2C and Area 3A accounted for over 85% of the subsistence halibut harvests. The proportion of the statewide subsistence halibut harvest occurring in Area 2C declined to 51% in 2007, 52% in 2006, and 51% in 2005, compared to 57% in 2004 and 60% in 2003. Correspondingly, the portion occurring in Area 3A increased to 36% in 2007, 34% in 2006, 36% in 2005, and 34% in 2004, compared to 27% in 2003.

Preliminary data from the International Pacific Halibut Commission (IPHC) combined with the findings of this study indicate that 74.389 million pounds (net weight) of halibut were removed from Alaskan waters in 2007. Of this total, the subsistence harvest accounted for 1.4%. Commercial harvests took 70.3% of the halibut, followed by bycatch in other commercial fisheries (15.4%), sport harvests (10.3%), and wastage in the commercial fishery (2.6%).

This report describes the results of the fifth annual study to estimate the subsistence halibut harvest in Alaska since NMFS adopted rules governing subsistence halibut fishing in May 2003.

The harvest estimates based on the SHARC surveys for the 2003-2007 fishing seasons serve as a basis for understanding the overall harvest, annual variability in catch, and whether any increase in harvest may be associated with implementation of the new regulations. Demonstrating changes in the magnitude of the Alaska subsistence halibut harvest resulting from the new regulations using the results of the SHARC surveys for 2003-2007 is problematic, however, because of the limitations of earlier harvest estimates at the statewide level. The subsistence harvest estimates for 2003-2007 for some of the larger communities, such as Sitka, Petersburg, and Kodiak, which account for the majority of the harvest, are similar to harvest estimates based on household surveys prior to the new regulations. The higher overall harvest estimates for 2004-2006 compared to 2003 may be due to more thorough registration of subsistence fishers, hence better harvest documentation. The lower total harvest in net pounds in 2007 compared to 2003 appears to be the result of a decline in the average size of the harvested halibut over the 5 years of the study, from 23.7 pounds per fish in 2003 to 19.2 pounds per fish in 2007. Additional years of harvest data will be necessary for shedding light on these and other factors that shape the subsistence halibut harvest in Alaska.

The report concludes that 1.033 million net pounds is a sound estimate of the Alaska subsistence halibut harvest in 2007. The estimate is based upon a scientific sampling of SHARC holders and a relatively high response rate. The total estimated harvest falls below the 1.5 million net pounds estimated for the subsistence harvest when the current regulations were developed by the North Pacific Fishery Management Council (see www.fakr.noaa.gov/frules/70fr16742.pdf, page 16748). The 2007 harvest estimate is generally within the range of annual harvests in the other 4 study years, and there are no certain trends in the harvest based on these 5 study years. The report recommends that monitoring of the subsistence halibut harvest in Alaska continue so that

trends in the fishery in terms of participation, location of harvests, and harvest quantities can be better understood.

CHAPTER 1: BACKGROUND AND METHODS

BACKGROUND

The primary goal of this project was to estimate the subsistence harvests of Pacific halibut *Hippoglossus stenolepis* in Alaska in 2007 through a survey mailed to registered subsistence halibut fishers; the survey was supplemented by a number of face-to-face interviews in selected communities. This was the fifth year for which this research was conducted. (See Fall et al. 2004 for the results for 2003, Fall et al. 2005 for the results for 2004, Fall et al. 2006 for the results for 2005, and Fall et al. 2007 for the results for 2006.) The Alaska Department of Fish and Game (ADF&G) Division of Subsistence administered the project through a grant from the National Marine Fisheries Service (NMFS) (Award Number NA04NMF4370170).

In Alaska's coastal areas, subsistence halibut fisheries are local, noncommercial, customary and traditional food fisheries, as noted by Wolfe (2002) and described in *Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a Regulatory Amendment for Defining a Halibut Subsistence Fishery Category* (an "EA/RIR/IRFA") by the North Pacific Fishery Management Council (NPFMC), ADF&G, International Pacific Halibut Commission (IPHC), and NMFS, August 11, 2000 (NMFS 2000; see also NMFS 2003). The EA/RIR/IRFA summarizes information about the subsistence halibut fishery in Alaska. This background information is not repeated here but provided the basis for the NPFMC's recommendation for subsistence halibut fishing regulations in Alaska. Figure 1 illustrates federal halibut regulatory areas in Alaska.

In April 2003, the National Marine Fisheries Service, Alaska Region, published federal regulations implementing a subsistence halibut fishery for qualified individuals in the waters in and off Alaska (68 FR 18145, April 15, 2003) (see www.fakr.noaa.gov/frules/fr18145.pdf). Current regulations state that persons eligible to subsistence halibut fish include: 1) residents of

rural communities with customary and traditional uses of halibut (rural); and 2) members of federally-recognized Alaska Native tribes with customary and traditional uses of halibut (tribal). In total, residents of 117 rural communities[1] and members of 123 Alaska Native tribes are eligible to participate in the fishery.[2] (See Appendix A for a list of eligible tribes and communities as they appear in the Federal Register.) Subsistence halibut fishers are required to obtain a Subsistence Halibut Registration Certificate (SHARC) from the Restricted Access Management Program (RAM) office of NMFS prior to fishing.[3] Federal regulations (50 CFR Part 300.65(h)(4)) also authorize periodic surveys of SHARC holders in order to estimate annual subsistence harvests and related catch and effort information. The regulation states that, "Responding to a subsistence halibut harvest survey will be voluntary."

Table 1 provides population estimates for the eligible rural communities for 2000 based on the federal decennial census. The total population of these communities in 2000 was 82,572, of which 38,977 were Alaska Natives. As also shown in Table 1, estimates published by the State of Alaska for 2007 report a total population of 80,330 for eligible rural communities. In addition, the nonrural communities of Juneau and Ketchikan in 2000 had Alaska Native populations of 5,084 and 2,689, respectively (U.S. Census Bureau 2001), most of whom were eligible to participate in the federal subsistence halibut fishery through their tribal membership. Also, an unknown number of eligible tribal members lived in other nonrural communities such as Anchorage and the Kenai Peninsula Borough. Updated population estimates by ethnicity are not available.

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[1] In December 2004, the NPFMC adopted a recommendation to the Secretary of Commerce to add Naukati Bay to the list of eligible rural communities. Regulations implementing this change did not go into effect until 2008.

[2] Note that the Northern Pacific Halibut Act of 1982, under which the Alaska subsistence halibut fishery regulations are authorized, provides for fair and equitable allocations of halibut among U.S. fishers, but does not establish priorities for those allocations (see www.fakr.noaa.gov/frules/70fr16742.pdf, page 16747).

[3] The subsistence rules were amended in 2005 by regulations published in the Federal Register at 70 FR 16742, April 1, 2005. Among other things, this amendment provides for obtaining Community Harvest Permits, Ceremonial Permits, and Educational Permits.

PROJECT OBJECTIVES

The primary goal of the project was to estimate the subsistence harvest of halibut in Alaska in the calendar year 2007. Objectives included:

1. An estimate of the subsistence harvest of halibut in Alaska in 2007 by community, tribe, gear type, and federal regulatory area, along with an estimate of the number of individuals who subsistence fished for halibut in 2007.
2. An estimate of the harvest of halibut by SHARC holders while sport fishing in 2007.
3. An estimate of the number of lingcod *Ophiodon elongatus* and rockfish *Sebastes* spp. taken by subsistence fishers while subsistence fishing for halibut in 2007.

DATA COLLECTION METHODS

Public Outreach

In December 2007, the Division of Subsistence sent a letter to all eligible tribes informing them about the fifth year of the research. This communication also included a copy of the short summary of the findings for 2006. (Appendix B is a copy of the letter sent to all eligible tribes.) Each tribe also received a copy of the full final report for 2006. In January 2008, announcements were made through the media (local newspapers and radio stations) about the upcoming mailing of halibut survey forms to SHARC holders. Appendix C is a copy of an announcement that ran in the following Alaska newspapers in late January 2008: Kodiak Daily Mirror, Bristol Bay Times (Dillingham), the Dutch Harbor Fisherman, the Tundra Drums (Bethel), the Cordova Times, the Sitka Sentinel, the Ketchikan Daily News, the Petersburg Pilot, the Wrangell Sentinel, the Chilkat Valley News (Haines), the Juneau Empire, and the Capital City Weekly. Information was also available on the NMFS web site for subsistence halibut fishing in Alaska (http://www.fakr.noaa.gov/ram/subsistence/halibut.htm).

Postal Household Survey

As noted, this was the fifth year of a harvest assessment program for the subsistence halibut fishery in Alaska. Because the subsistence halibut regulations came into effect in 2003, the first 5 years of collecting harvest data were exploratory. Especially in the first study year, when the new subsistence regulations were not effective until May, it was expected that harvest estimates for some communities and tribes would be incomplete, based upon relatively low response rates or incomplete registration of halibut fishers with NMFS. Subsequent study years have built upon the lessons learned in the first years of the project and have benefited from outreach efforts to improve response rates. (See recommendations in Chapter 4.)

As recommended by Wolfe (2002), survey methodology was based upon the registration system for all subsistence halibut fishers, which requires fishers to obtain a SHARC before fishing. All 15,047 individuals who held a SHARC for any portion of 2007, as of December 31, 2007, were mailed a retrospective recall survey covering a 12-month harvest period: calendar year 2007.[4]

The 2007 survey instrument was virtually identical to the form used for the 2003-2006 study years. It is based on recommendations by Wolfe (2002) (Appendix A), with slight modifications such as study year and return address. (See Appendix D in this report for a copy of the 2007 survey instrument.) Wolfe (2002:15-18) provided justification for the kinds of data to be collected, which include name and address of the fisher; halibut harvests in numbers and pounds round (whole) weight by gear type in 2007; number of hooks usually set; and harvests of lingcod and rockfish taken while subsistence fishing for halibut. In 2003, a question addressing the water body fished (primary location) while subsistence fishing was added at the recommendation of NMFS staff. This question was retained for 2004-2007. Another was added in 2004 to record the

[4] SHARCs issued to non-tribal residents of eligible rural communities are valid for 2 years and tribal SHARCs are valid for 4 years. Therefore, SHARCs issued in May 2003 began to expire in May 2005 and had to be renewed. Some SHARC holders did not renew and therefore were not eligible to participate in the subsistence halibut fishery for all of 2007. See also the section on data analysis, below.

location of sport halibut fishing by SHARC holders. The survey was designed to reduce the potential double-counting of halibut taken with rod and reel gear, which could be reported in both the subsistence survey and in the ADF&G Division of Sport Fish Statewide Harvest Survey (Wolfe 2002:19).

A short explanatory letter with instructions on the back for completing the survey was included in the mailings (Appendix E). The survey was designed so that it could be directly returned to the Division of Subsistence, postage paid.

Presently under IPHC regulations, Community Development Quota (CDQ) fishers may retain halibut under 32 inches ("shorts") while commercial CDQ fishing in Areas 4D and 4E only. These regulations require the CDQ organization to report this harvest to the IPHC. To avoid double-counting, subsistence fishers were instructed not to include these fish on their subsistence halibut survey.

During an October 2003 meeting of the Alaska Native Subsistence Halibut Working Group (ANSHWG), held before the mailed survey for the first study year, community representatives expressed concern that not all fishers would know what fish were to be included under the category "rockfish" for the incidental harvest question on the survey. This would have led to an overestimation of this harvest if fishers reported fish such as Pacific cod or sculpins in response to this question. The instructions mailed with the survey provided guidance on this question.[5]

Table 2 provides a chronology of key activities during the project. Table 3 provides a summary of response rates by mailing, SHARC type (rural or tribal), and place of residence. The first mailing to 15,047 SHARC holders occurred on February 8, 2008. The second mailing to 9,192

[5] The principal investigators for this study are aware that more than 30 species of rockfish inhabit Alaska waters. (See Alaska Administrative Code 5 AAC 39.975 for definitions of management assemblages of rockfishes.) The goal of this study was to keep the questions about incidental harvests simple. As discussed in the recommendations section (see Chapter 4), if more precise harvest data for various rockfish are needed for particular areas, future research should be designed and funded to address these data needs.

SHARC holders occurred on March 27, 2008. The third mailing to 4,875 SHARC holders took place on May 27, 2008.

The Division of Subsistence created a dedicated e-mail address that recipients of the postal survey could use if they had questions about how to respond. Also, the RAM Program set up a toll-free telephone number (1-800-304-4846) to provide information about the subsistence halibut program, including the harvest assessment program. Both the e-mail address and 1-800 telephone number appeared on the survey. A set of "frequently asked questions" and responses was developed by ADF&G and NMFS staff members to guide staff responses to telephone calls and e-mail inquiries about how to fill out the survey form (Appendix F).

Community Visits and In-Person Surveys

Because the response rate to the postal survey varied by community and tribe in the first 4 study years, the mailings were again supplemented in selected communities with face-to-face household surveys conducted by Division of Subsistence staff or local research assistants. The latter were hired through subcontracts with tribes or Alaska Native regional organizations. Because of the large number of eligible communities and tribes, it was not possible to conduct face-to-face surveys in most communities.

Through a contract with the Alaska Native Harbor Seal Commission (ANHSC), the Division of Subsistence and the ANHSC conduct annual in-person surveys in approximately 60 communities in order to collect harbor seal and sea lion harvest data from Alaska Native subsistence hunters. For the 2007 study year, most of these interviews took place in February, March, and April 2008. In many of the study communities (especially in Southeast Alaska), only known marine mammal hunters were interviewed, but in others (primarily the smaller communities), the goal was to

interview all Alaska Native households.[6] In most communities, local assistants hired to conduct the marine mammal interviews were also asked to remind people they were interviewing to return the halibut survey. In most cases, the marine mammal hunters had received the halibut survey in the mail before the community visits took place.

A continuing goal of the project was to contact subsistence halibut fishers in person in selected communities that had relatively high numbers of SHARC holders and in which good response rates were especially important. As in the 2006 study year, this included Sand Point, Akutan, Unalaska, Mekoryuk, Toksook Bay, Nanwalek, Port Graham, Sitka, Hydaburg, Angoon, Ketchikan, and Saxman. Cooperative agreements with Sitka Tribe of Alaska, the Angoon Cooperative Association, Hydaburg Cooperative Association, and the Tununak Indian Reorganization Act (IRA) Council supported interviewing in Sitka, Angoon, Hydaburg, and Tununak, respectively. Through another cooperative agreement, the Southeast Alaska Inter-Tribal Fish and Wildlife Commission conducted outreach and interviews in Ketchikan and Saxman. In each community, the surveys were administered face-to-face or by phone.

As noted in the final report for 2003 (Fall et al. 2004:8), in Toksook Bay, the number of SHARCs issued (534 tribal SHARCs were valid in 2007 [Table 3]) approximates the community's total population. Meetings with community leaders in early 2004 determined that there were at the time about 90 to 100 active halibut fishers in Toksook Bay, but only about one-third to one-half fished in a particular year. Therefore, as for 2003-2006, Division of Subsistence staff members Sverre Pedersen and Amy Russell visited the community in March 2008. With the assistance of Native Village of Toksook Bay staff and after reviewing findings for 2006, Pedersen and Russell identified and interviewed most of the subsistence halibut fishers in

[6] For a description of this project, including a complete list of study communities and sampling goals, see Wolfe et al. 2005.

Toksook Bay. They also traveled to Tununak and Mekoryuk, where they worked with local IRA council officials to interview most of the subsistence halibut fishers. In Tununak, they trained 2 IRA council employees to conduct subsistence halibut fishing interviews, supported by a small contract with the division. In addition, Russell conducted telephone interviews with Hooper Bay SHARC holders in April 2008.

In May 2008, the division entered into an agreement with the Aleut Marine Mammal Commission (AMMC) to support conducting interviews with SHARC holders in coordination with marine mammal and migratory bird surveys. Division staff members Liliana Naves and Victoria Ciccone traveled to Sand Point and Unalaska, respectively, to train local assistants and conduct surveys. An employee of the AMMC conducted subsistence halibut fishing surveys in Akutan.

In-season Harvest Monitoring in St. Paul

In January 2005, principal investigator James Fall met with several representatives of the St. Paul tribal government while attending the annual meeting of the International Pacific Halibut Commission in Victoria, British Columbia. These tribal representatives were concerned about the very low response rate to the 2003 postal survey by SHARC holders from St. Paul (17%; see Figure 3 in Fall et al. 2004:61), and supported actions that would improve the response rate and result in a reliable estimate of the subsistence halibut harvest for 2004. Subsequently in March 2005, Fall and division information management coordinator Bridget Easley developed an informal agreement with the Central Bering Sea Fishermen's Association (CBSFA) for outreach and evaluation of the survey results. This informal agreement was renewed for the 2005 study year. In March 2006, staff at the CBSFA reviewed the list of St. Paul SHARC holders. They identified individuals who had left the community. They then divided the remaining names on

the list into 2 groups: those who were active subsistence or commercial halibut fishers, and those who did not actively participate in either fishery (131 SHARC holders for 2005). This list was used during analysis of the survey results for St. Paul. In addition, CBSFA staff posted flyers urging return of the postal survey, ran an announcement about the survey on the local radio station, and were otherwise available to answer questions about the survey and the subsistence halibut program.

In 2006, the Division of Subsistence and the CBSFA entered into a formal agreement to conduct a pilot in-season harvest monitoring program for subsistence halibut fishing in St. Paul for 2006. The CBSFA developed a list of subsistence halibut fishers and hired a staff person to distribute and collect harvest calendars bi-weekly during June, July, and August 2006. An additional survey form was distributed and collected to record any late season harvests. Most subsistence fishers participated in the project, although collection of in-season harvest data in September was incomplete and had to be supplemented by recall. CBSFA reviewed sample achievement and preliminary results. Because of the in-season project, no surveys were mailed to SHARC holders with St. Paul mailing addresses for the 2006 study year. St. Paul tribal SHARC holders living in other communities were mailed surveys. SHARC holders not identified by CBSFA staff as subsistence fishers were classified as returned surveys (staff administered) that did not fish.

For 2007, the CBSFA again attempted to collect subsistence harvest data in-season in St. Paul, but was unsuccessful in hiring a research assistant. Instead, CBSFA staff administered a different survey to halibut fishers in fall 2007. All St. Paul SHARC holders were also mailed an ADF&G survey in early 2008, and the results of the CBSFA survey and the postal survey were integrated. As in other years, the list of St. Paul SHARC holders that CBSFA had reviewed was used to

identify those who did not fish in 2007. These SHARC holders were classified as part of the "staff administered" (i.e., CBSFA) set of returned surveys.

SAMPLE ACHIEVEMENT

Table 3 reports sample achievement by tribe, rural community, and community of residence. Overall, 8,682 surveys were returned by 15,047 SHARC holders, a response rate of 58% (Figure 2). For residents of the 117 eligible rural communities who did not register as tribal members, 5,372 of 7,601 surveys were returned (71%). As shown in Figure 3, in 2007 there were 12 communities with more than 100 nontribal SHARC holders, accounting in total for 85% of all nontribal SHARCs issued in rural communities. Return rates were 62% or more in all 12 of these communities, and were 70% or more in 8 of them.

Of the 7,446 individual tribal members who held SHARCs in 2007, 3,310 (44%) returned surveys. As shown in Figure 3, there were 17 tribes with more than 100 members who obtained SHARCs. Return rates for these 17 tribes varied widely, from 81% in St. Paul (where CBSFA staff identified non-fishing SHARC holders and facilitated data collection with fishers) to 28% in Metlakatla (where no directed outreach occurred). In total, these 17 tribes accounted for 73% of all tribal SHARCs.

Figure 4 illustrates survey response rates by place of residence of SHARC holders for the 23 communities with 100 or more SHARC holders in 2007. These communities accounted for 82% of all SHARCs and 84% of all returned surveys.

Figure 5 shows the survey return rate by response category (see also Table 3). After the first mailing, 5,581 surveys were returned, for a response rate of 37%. Responses to the second mailing added 1,413 surveys, a total response rate of 46% up to that point. Responses to the third and final mailing added 599 surveys, for a total response to the postal survey of 7,593 surveys,

50% of the 15,047 SHARC holders. In addition, surveys administered by staff, either ADF&G personnel or representatives of tribal organizations working with ADF&G, added 1,089 surveys. Most of these were in Angoon, Hydaburg, Ketchikan, Sitka, Nanwalek, Port Graham, Sand Point, King Cove, Akutan, Unalaska, St. Paul, Tununak, Mekoryuk, and Toksook Bay. This brought the total response to 8,682 surveys, 58% of all individuals who held SHARCs in 2007.

The overall response rate for the survey for 2007 declined slightly compared to 2006, from 59% to 58%. The return rate for 2003, the first year of the survey, was 65%; the return rate for 2004, the second year of the survey, was 62%; and the return rate for 2005, the third year of the survey, was 60%. The number of returned surveys increased over the first 3 years of the project, from 7,593 in 2003, to 8,524 in 2004, and 8,565 in 2005, reflecting the larger number of SHARC holders in 2004 and 2005 and the larger number of staff administered surveys in 2005. The total number of surveys dropped slightly in 2006, to 8,426, but increased again to 8,682 surveys in 2007, the largest annual total for the 5 years of the project.[7] The response rate by mail declined from 62% in 2003 to 59% in 2004, 55% in 2005, 52% in 2006, and 50% in 2007. However, the number of surveys returned as "undeliverable" increased from 208 in 2003 (Fall et al. 2004:45), to 617 in 2004 (Fall et al. 2005:48), 613 in 2005 (Fall et al. 2006), 1,194 in 2006 (Fall et al. 2007:7), and 1,700 in 2007 (Table 3). Subtracting "undeliverables" from the postal survey totals gives a response rate by mail of 57% in 2007, compared to 62% in 2004, 63% in 2003, 57% in 2005, 57% in 2006, and 57% in 2007. More surveys were administered in person or through phoning in 2007 (1,089) compared to 2005 (755 surveys), 2004 (355 surveys), or 2003 (392 surveys), but fewer than in 2006 (1,522). The lack of an in-season harvesting monitoring

[7] See Table 18 for sample sizes and fractions and selected study findings for the 5 study years.

program in Kodiak and Sitka in 2007 (such a program took place in 2006 only) accounted for most of the decrease.

DATA ANALYSIS

Data Entry

All returned surveys were reviewed for completeness prior to data entry. Responses were coded following standardized codebook conventions used by Division of Subsistence. Staff within the Information Management Section of the division set up database structures within an MS SQL Server[8] at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to insure that data were entered completely and accurately. Data entry screens were available on a secure Internet site. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than one hour of data entry would be lost in the unlikely event of a catastrophic failure.

Survey responses were manually entered twice, and survey forms were electronically scanned. All data were compared programmatically for inconsistent data entry. Double data entry ensured a more accurate transfer of information from the coded survey forms into the database, and is a standard practice with data processing for the Division of Subsistence. Data did not pass to the processing phase until inconsistencies between the twice-entered data set were eliminated. The scanned survey forms also facilitated efficient data correction and editing.

Information was processed and analyzed using MS SQL programming. Initial processing included the performance of standardized logic checks of the data. Logic checks are often needed

[8] Product names are included for scientific completeness and do not constitute an endorsement.

in complex data sets where rules, constraints, and referential integrity do not capture all of the possible inconsistencies that may appear.

Analysis: Development of Harvest Estimates

Analysis included review of raw data frequencies, cross tabulations, table generation, and estimates of population parameters. Missing information was dealt with on a case-by-case basis. The Division of Subsistence has standard practices for dealing with missing information, such as minimal value substitution or use of an average response for similarly characterized households or communities. Typically, missing data are an uncommon, randomly occurring phenomenon in household surveys conducted by the division, as was the case in this project.

In general, estimates of harvests, levels of participation, and other findings were calculated based upon the application of weighted means (Cochran 1977). These calculations are standard methods for extrapolating sampled data. In this study, each tribe and rural community was a separate stratum for purposes of estimating total harvests. In most cases, the mean for returned SHARC surveys was applied to the total number of SHARCs issued for the tribe or community to calculate the estimated harvest. (See Appendix Table 1 in Appendix G for the reported harvests for each tribe and community.) The formula for standard expansion of community harvests is

$$H_t = \sum H_i \qquad (1)$$

where $H_i = h_i W_i$ (2)

and $W_i = \frac{N_i}{n_i}$ (Harvest weight factor per strata i) (3)

H_t = the total harvest (numbers of fish or pounds),

H_i = the total harvest, numbers or pounds, for tribe or community i

W_i = the weight factor for tribe or community i,

h_i = the total harvest, numbers or pounds, reported in returned surveys for tribe or community,

n_i = the number of returned surveys in each tribe or community, and

N_i = the number of SHARCs issued for tribe or community.

There were 5 exceptions. As discussed above, in 2007, 534 SHARCs were held by members of the Native Village of Toksook Bay, most of whom do not fish for halibut. Expanding the reported harvest based on in-person interviews and postal survey returns (218 returns, or 41% of all SHARCs issued [Table 3]) would result in a large overestimate of the subsistence halibut harvest for the community. Therefore, the estimated harvest is the reported harvest for Toksook Bay.

Second, as discussed above, CBSFA staff in St. Paul divided the list of SHARC holders living in that community into 2 strata: potential subsistence halibut fishers (33 SHARC holders) and others (201 SHARC holders). All SHARC holders in the second category were classified as "staff administered surveys, did not fish." Of the potential fisher category, 12 of 33 participated in the in-season harvest monitoring project. Survey results for respondents in this stratum were used to estimate harvests for the 21 non-participants in this strata. One participant in the in-season project was a member of the Native Village of Atka. There were 12 other St. Paul tribal SHARC holders living outside the community of St. Paul. Attempts were made through the

postal survey to contact these SHARC holders, but none responded and all were treated as potential fishers.

Third, 253 SHARCs were held by eligible tribal members living outside of Alaska. Only 34% of the postal surveys were returned from this group, and none of these returned surveys indicated any subsistence fishing activity. Rather than assign the mean value for their tribe (which would likely result in an overestimate of the harvest), all non-returned surveys for SHARC holders with out-of-state addresses were coded as "did not fish."

Fourth, rural community SHARC holders were divided into 2 categories based upon the expiration date of their SHARC. SHARCs having an expiration date falling within the study period and that were not renewed were treated as separate strata from other SHARCs for the purpose of generating harvest estimates. This was done to account for potential bias and resulting overestimation of harvest for SHARCs that only fished for part of the year. During 2007, 1,509 rural and 3,627 tribal SHARCs expired; of those, 599 (40%) rural SHARCs and 1,196 (33%) tribal SHARCs participated in the survey**.**

The RAM division issued 2 community harvest permits to tribes in Area 2C that were valid in 2007. Holders of these permits reported no subsistence halibut harvests to RAM. No educational or ceremonial permits were issued for 2007. If harvests under any of these permits had occurred, the totals would have been added to the estimates for the tribe of the permit holder because they are not reported by individuals in their response to the SHARC postal survey.

It should also be noted that not every individual who obtained a SHARC as a tribal member resided in the community where his or her tribe's headquarters is located. Therefore, the sum of harvest estimates for tribal SHARC holders and rural resident SHARC holders does not necessarily equal the halibut harvest for particular communities. Rather, an additional analysis

was necessary to estimate harvests by community of residence that assigned tribal SHARC holders to a community based on their mailing addresses. Appendix Tables 4, 5, and 6 report study results by place of residence of the SHARC holders.

The standard deviation (SD) (or Variance [V], which is the SD squared) of the harvest was calculated with the raw, unexpanded data. The Standard Error (SE), or SD of the mean, was also calculated for each community or tribe. This was used to calculate the relative precision of the mean, or the likelihood an unknown value falls within a certain distance from the mean. In this study, the relative precision of the mean is shown in the tables as a confidence interval (CI), expressed as a percentage. Once the standard error was calculated, the CI was determined by multiplying the SE by a constant that reflected the level of significance desired, based on a normal distribution. The constant for 95% confidence intervals is 1.96. Though there are numerous ways to express the formula below, it contains the components of a SD, V, and SE.

Relative Precision of the Mean (CI%):

$$C.I.\%(\pm) = \frac{t_{\alpha/2} \times \frac{s}{\sqrt{n}} \times \sqrt{\frac{N-n}{N-1}}}{\bar{x}} \tag{4}$$

Where $s = \sqrt{\sum_{i=1}^{t} \frac{\sum (x - \bar{x}_i)^2}{n_i - 1}}$ (Sample standard deviation) (5)

s = sample standard deviation

n = total sample size

N = total population size

n_i = tribal or community sample size

N_i = tribal or community population size

$t_{\alpha/2}$ = *Student's t* statistic for alpha level (α=.95) with n-1 degrees of freedom.

Project staff explored the possibility of non-response bias for returned mail out surveys and its effect on harvest estimates**.** However, it was determined that responses to the survey, including harvest levels and involvement in the fishery, were not significantly different between any of the response categories (responses to the first mailing, the second mailing, the third mailing, and staff administered surveys) (see Appendix Table 2).

As noted above, survey respondents provided harvest estimates in pounds round (whole, live) weight. For ease of comparison with estimates of halibut removals in other fisheries, we have converted these estimates to pounds net (dressed, head off) weight, where (0.75) (round weight) = net weight.[9]

Products

This public review draft was completed in November 2008 and circulated for review and comments without the appendices, which will be included in the final draft. The draft report was also posted at the Division of Subsistence web site. A presentation of the study findings and recommendations will occur at the December 2008 meetings of the ANSHWG and the NPFMC in Anchorage, Alaska. The final report will be revised in consideration of comments and suggestions received from reviewers of the public review draft and those received during the NPFMC and ANSHWG meetings. In addition to the final report, a short findings summary was prepared (Appendix H). The summary will be sent to tribal government representatives and other

[9] The factor of 0.75 for converting halibut round weight to net weight is the standard used by the International Pacific Halibut Commission and the ADF&G Division of Sport Fish. Division of Subsistence studies, as reported in the Technical Paper series and in the Community Subsistence Information System (ADF&G 2007) (formerly the Community Profile Database [Scott et al. 2001]), generally use a factor of 0.72 for converting halibut round weights to net weights, based on Crapo et al. (1993:7), who reports that on average, the weight of a dressed halibut with the head removed is 72% of the round weight, with a range of 68% to 80%. In Division of Subsistence Technical Papers, "net" weight (dressed, head off) is usually referred to as "usable weight."

interested individuals and groups. This report and the project summary will be posted on the Division of Subsistence web site and the RAM website in PDF format for downloading and printing by the public. Printed copies of this report will also be sent to the Alaska Resources Library and Information Services as well as the Alaska State Library.

CHAPTER 2: FINDINGS

SUBSISTENCE HALIBUT HARVESTS IN 2007

Estimated Number of Subsistence Halibut Fishers

Of the 15,047 individuals who held valid SHARCs for any portion of 2007, an estimated 5,933 (39%) participated in the subsistence halibut fishery in 2007 (Table 4, Figure 6). Of the 7,446 individuals who held SHARCs as members of an eligible tribe, an estimated 2,222 participated in the fishery (30%). Of the 7,601 individuals who held SHARCs as residents of qualifying rural communities, an estimated 3,710 (49%) participated in the subsistence fishery for halibut in 2006. In 2006, 5,909 of 14,206 SHARC holders fished in the subsistence halibut fishery (42%), including 2,329 of 7,123 tribal SHARC holders (33%) and 3,580 of 7,083 rural SHARC holders (51%). In 2005, 5,621 of 14,306 SHARC holders fished in the fishery (39%) including 2,035 of 6,437 tribal SHARC holders (32%) and 3,349 of 7,869 non-tribal rural SHARC holders (43%). In 2004, 5,984 of 13,813 SHARC holders participated in the fishery (43%), including 2,157 of 6,533 tribal SHARC holders (33%) and 3,827 of 7,280 non-tribal rural SHARC holders (53%). In 2003, 4,924 of 11,635 SHARC holders participated in the subsistence fishery (42%), including 1,836 of 5,578 tribal SHARC holders (33%) and 3,106 of 6,057 non-tribal rural SHARC holders (51%) (Figure 6).

In 2007, as in 2003-2006, demography may account for the difference in the rate of participation in the subsistence halibut fishery between tribal SHARC holders and rural SHARC holders. As shown in Table 5 and illustrated in Figure 7, in 2007, 13% of tribal SHARC holders were younger than 20 years of age, compared to 5% of rural SHARC holders. This may reflect a policy on the part of some eligible tribes to register all or most tribal members, including younger people who were less likely to participate in the subsistence fishery than adults. For example, 534 members of the Native Village of Toksook Bay held SHARCs in 2007; of these,

35% were younger than 20 years of age (Table 5). Excluding Toksook Bay from the statewide tribal SHARC totals does not substantially alter the contrast in the younger age cohorts between tribal (11% without Toksook Bay in totals) and rural resident SHARC holders (Table 5).

As illustrated in Figure 8 (see also Table 4), the largest number of Alaska subsistence halibut fishers in 2007 were from tribes and rural communities in Regulatory Area 2C (Southeast Alaska), 3,294 (56%). There were 1,818 subsistence halibut fishers (31%) from tribes and communities in Regulatory Area 3A (Southcentral Alaska); 376 (6%) from Regulatory Area 4E (East Bering Sea Coast) tribes and communities; and 268 (5%) from Area 3B (Alaska Peninsula) tribes and communities. Additionally, there were 176 (3%) halibut fishers who were members of tribes and residents of communities in the 4 other regulatory areas. As also shown in Figure 8, the distribution of subsistence fishers by regulatory area in 2007 was similar to that of 2003-2006. Compared to 2006, the estimated number of halibut fishers from tribes and rural communities in Areas 2C and 4E was about the same in 2007. The estimated number of fishers increased slightly by 6% in Area 3A, but decreased by 11% in Area 3B and by 21% in Area 4A.

Alaska Native tribes with the most subsistence halibut fishers in 2007 included the Central Council of Tlingit and Haida Indians (213 subsistence halibut fishers), the Sitka Tribe of Alaska (151), the Ketchikan Indian Corporation (146), the Native Village of Toksook Bay (111), the Qagan Tayagungin Tribe of Sand Point Village (107), the Metlakatla Indian Community (99), the Shoonaq' Tribe of Kodiak (90), the Hydaburg Cooperative Association (71), the Hoonah Indian Association (68), the Native Village of Kipnuk (64), the Klawock Cooperative Association (54), and the Wrangell Cooperative Association (54). Of the SHARC holders who registered as residents of eligible rural communities, the most subsistence fishers lived in Kodiak (862), followed by Sitka (754), Petersburg (350), Cordova (247), Haines (245), Wrangell (195),

and Craig (166). Appendix Table 3 provides details for each tribe and community regarding participation in the subsistence fishery and subsistence halibut harvests in 2007.

As noted above, not every tribal SHARC holder lives in his or her tribe's headquarters community. After assigning tribal members to a community based on their place of residence, an estimate of participation in the subsistence halibut fishery in 2007 by community can be obtained. Appendix Table 4 provides study findings based on place of residence. Communities with 100 or more resident SHARC holders who participated in the subsistence halibut fishery in 2007 were Kodiak (945), Sitka (921), Petersburg (386), Cordova (282), Wrangell (261), Haines (250), Craig (247), Ketchikan (200), Sand Point (138), Klawock (137), Hoonah (117), Metlakatla (117), Toksook Bay (112), Juneau (106), and Seldovia (102). Of the 15 Alaska communities with 100 or more subsistence halibut fishers in 2007, most had about the same or slightly fewer fishers than in 2006. Participation by Kodiak residents increased each of the first 4 years of the fishery, but remained stable in 2007. Notable increases in participation from 2006 to 2007 occurred in Seldovia (80 fishers in 2006, 102 fishers in 2007; 28% increase); Juneau (89 fishers in 2006, 106 fishers in 2007; 19% increase); and Cordova (248 subsistence halibut fishers in 2006, 282 in 2007; 14% increase). The estimated number of subsistence halibut fishers in Hoonah declined by 16% (from 139 in 2006 to 117 in 2007), and the estimated number of fishers in Petersburg was down by 9% (from 426 in 2006 to 386 in 2007) (Figure 9). (See Chapter 3 for further discussion of Kodiak, Petersburg, and Cordova as case study communities.) No non-Alaska resident tribal SHARC holders subsistence fished for halibut in Alaska in 2007, compared to 7 in 2006, zero in 2005, 24 in 2004, and 5 in 2003.

Estimated Alaska Subsistence Halibut Harvests in 2007 by SHARC Type and Regulatory Area

Table 4 reports estimated Alaska subsistence halibut harvests for 2007 by SHARC type, regulatory area, and gear type. The total estimated subsistence halibut harvest in Alaska in 2007 was 53,697 fish (+/- 3%) for 1,032,293 pounds (+/- 4%) net weight.[10] As estimated in pounds net weight, 52% of the subsistence halibut harvest (532,229 pounds [+/- 6%]) was taken by fishers registered with tribes or rural communities in Regulatory Area 2C (Figure 10). (Note that because some SHARC holders may fish in a regulatory area different from the location of their tribal headquarters or rural community of registration, the area totals in Table 4 do not precisely represent harvest locations. See the section on harvests by location, below.) Fishers from Area 3A tribes and rural communities harvested 361,134 pounds (+/- 6%) (35% of the state total). For Regulatory Area 4E,[11] the estimated harvest for tribal and rural SHARC holders was 47,583 pounds (+/- 21%) (5%). Harvests totaled 51,057 pounds (+/- 20%) (5%) for communities and tribes of Regulatory Area 3B. For tribal and rural SHARC holders in Area 4A, the estimated harvest was 16,028 pounds (+/- 19%) (2%). Tribes and communities in the remaining 3 regulatory areas (4B, 4C, and 4D) harvested 24,261 pounds (about 2%).

The estimated subsistence harvest of 1,032,293 pounds of halibut in 2007 represents a decrease of 8% compared to the estimated harvest of 1,125,312 pounds in 2006 (Figure 11). Harvests by tribal SHARC holders decreased by 14%, from 510,740 pounds in 2006 to 441,506 pounds in 2007. Tribal SHARC holders harvested 43% of the Alaska subsistence halibut harvest in 2007, compared to 45% in 2006. Subsistence halibut harvests by non-tribal, rural resident SHARC

[10] This approximates 1,376,391 pounds round (live or whole) weight. See footnote 9 in Chapter 1 for an explanation of the factor used to convert round weight to net weight.

[11] Community Development Quota (CDQ) organizations operating exclusively in Areas 4D and 4E may retain sublegal halibut (less than 32 inches) from their commercial catches for home use**.** In 2007, a total of 19,049 pounds net weight of halibut was retained by 3 organizations: Coastal Villages Regional Fund (11,398 pounds), Bristol Bay Economic Development Corporation (3,135 pounds), and Norton Sound Economic Development Corporation (4,516 pounds) (Williams 2008). The IPHC includes these fish within the "personal use" removal category, a category that also includes subsistence harvests (Gilroy 2005:64). See also the section in Chapter 3, "Comparisons with Nonsubsistence Harvests."

holders decreased by 4%, from 614,572 pounds in 2006 to 590,787 pounds in 2007. This group accounted for 57% of the statewide subsistence halibut harvests in 2007, compared to 55% in 2006.

Members of 72 Alaska tribes harvested subsistence halibut in 2007. In 2 others, SHARC holders fished but had no harvest. In 28 others, tribal members obtained SHARCs, but no one fished. No one in the remaining 21 eligible tribes held a valid SHARC in 2007. All but one of these tribes were in Regulatory Area 4E (East Bering Sea Coast). As shown in Figure 12, members of the 13 tribes with harvests of 10,000 pounds or more accounted for 59% of the total subsistence halibut harvest by tribal SHARC holders in 2007. These 13 tribes accounted for 56% of the tribal SHARCs (4,196 of 7,446). Members of the other 59 tribes with harvests accounted for about 41% of the total harvest by tribal members.

Residents of 59 eligible rural communities harvested subsistence halibut in 2007.[12] In 5 others, SHARC holders fished unsuccessfully. In 18 others, individuals obtained SHARCs but no one fished. No one in the remaining 35 eligible rural communities held a valid SHARC as a non-tribal member in 2007. Most of these communities (28) were in Regulatory Area 4E (East Bering Sea Coast).[13] As shown in Figure 13, 10 rural communities with harvests of over 10,000 pounds accounted for 81% of the subsistence halibut harvest by the holders of rural (non-tribal) SHARCs in 2007. Residents of the other 49 communities with harvests accounted for 19% of the total harvest by rural SHARC holders.

As also shown in Figure 13, rural SHARC holders from 2 communities accounted for 49% the total harvest by this group: Kodiak (31%) and Sitka (18%). Adding Petersburg, the next highest

[12] In this tally, Chiniak, listed separately in tables in this report, is counted as part of Kodiak, as it is for eligibility.
[13] Note that residents of these communities may have obtained SHARCs as tribal members.

rural community harvest at 7%, the top 3 rural communities accounted for over one-half (56%) of the rural community (non-tribal) subsistence halibut harvest in Alaska in 2007.

Estimated Alaska Subsistence Halibut Harvests in 2007 by Harvest Location

Survey respondents were asked to report the "water body, bay, or sound [that they] usually fished" for subsistence halibut in 2007. Multiple responses were permitted. In Table 6, estimated subsistence halibut harvests are reported for the 8 Alaska halibut regulatory areas and 21 subdivisions within these areas. It should be noted that regulatory area totals in Table 6 differ slightly from those reported in Table 4 because not all SHARC holders fished within the regulatory area in which their tribal headquarters or residence is located.

Subsistence halibut harvests in Regulatory Area 2C (Southeast Alaska) accounted for 51% of the Alaska subsistence halibut harvest in 2007 (524,897 pounds net weight) (Figure 14; Table 6). Also, 3 of the 4 geographic subareas with the largest subsistence halibut harvests in 2006 were in Area 2C: southern Southeast Alaska (283,422 pounds net weight; 28% of the state total); the Sitka Local Area Management Plan (LAMP) area (132,190 pounds; 13%), and northern Southeast Alaska other than the Sitka LAMP area (109,286 pounds; 11%), as shown in Figure 15 and Figure 16.[14] Regulatory Area 3A (Southcentral Alaska) ranked second, with 36% of the state's total subsistence halibut harvest (372,289 pounds net weight). Waters bordering the Kodiak Island road system (including Chiniak Bay) ranked third among subareas, with a subsistence halibut harvest of 130,538 pounds (13% of the state total), followed by the remainder of the Kodiak Island area, which ranked fifth (96,206 pounds; 9%). Harvests within Cook Inlet waters of Area 3A accounted for 7% of the state total (75,623 pounds), those within Prince William Sound added 52,407 pounds (5% of the statewide total), and the Yakutat Area added

[14] For this study, "northern Southeast Alaska" includes those waters of Regulatory Area 2C north of Frederick Sound, including waters surrounding Baranof Island and excluding the Sitka LAMP area. For a description of the Sitka LAMP area, see FR 68 18156, April 15, 2003, § 300.65(d)(1). The remaining waters of Area 2C are referred to as "southern Southeast Alaska" in this report.

17,516 pounds (2%). Among regulatory areas, Area 4E (Bering Sea Coast) ranked third with 5% (52,135 pounds). Combined, the Bristol Bay area, the Yukon/Kuskokwim Delta, area and Area 4E accounted for all of this area's harvest, with no reported harvests from Norton Sound. Area 3B (Alaska Peninsula including the Chignik Area) ranked fourth with 5% of the Alaska total (47,748 pounds). In descending order, subsistence halibut harvests in the other regulatory areas in 2007 were as follows: Area 4C (Pribilof Islands), 15,077 pounds (1%); Area 4A (eastern Aleutian Islands), 14,946 pounds (1%); Area 4D (St. Lawrence Island), 3,204 pounds (less than 1%); and Area 4B (western Aleutian Islands), 1,997 pounds (less than 1%).

Figure 17 reports estimated harvests in pounds net weight by location fished at the regulatory area level in 2003-2007. Table 7 compares estimated subsistence halibut harvests by regulatory area and geographic area in 2007 with those estimated for 2003-2006. As noted previously, for the state overall, the estimated harvest in pounds decreased by about 8% in 2007 from 2006 (Figure 18). However, the estimated harvest in 2007 was only 0.9% lower than the estimate for 2003 (1,041,330 pounds), the first year of the subsistence halibut harvest monitoring program (Figure 19).

Estimated subsistence halibut harvests decreased in 7 of the 8 regulatory areas in 2007 compared to 2006 (Figure 17; Figure 18; Table 7). The largest proportional decrease was in Area 4D (Central Bering Sea), where estimated harvests decreased 61%, from 8,297 pounds in 2006 to 3,204 pounds in 2007. The 2007 estimate was also notably lower than the 2004 estimate (10,923 pounds), and lower than the estimates for 2003 and 2005 (Figure 17; Figure 19; Table 7). Estimated subsistence harvests of halibut decreased by 45% in Area 4A (Eastern Aleutians) from 27,062 pounds in 2006 to 14,946 pounds in 2007. The 2007 estimate for Area 4A was also notably lower than estimates for the other study years. A substantial drop in the harvest estimates

for Akutan (3,603 pounds in 2007 [Appendix Table 5] compared to 12,412 in 2006 [Fall et al. 2007:138], for example) accounted for most of this change. Sample achievement in Akutan has been low in every year of the project, and estimates for this small community are likely influenced by survey participation by just a few key fishers.

In Area 4E (East Bering Sea Coast), the estimated harvest of 52,135 pounds was a 26% decrease from the 70,743 pounds estimated for 2006 (Figure 17; Figure 18; Table 7). The 2007 harvest in this area was notably higher than the estimate for 2004 (28,501 pounds) but approximately the same as the estimate for 2003 (53,775 pounds) and 2005 (54,119 pounds).

In Area 4B (Western Aleutians) there was a decline of 28% in the estimated subsistence harvest of halibut in 2007 (1,997 pounds) compared to 2006 (2,761 pounds) (Table 7; Figure 17; Figure 18). The 2007 estimate was still higher than those for 2004 (916 pounds) and 2005 (1,351 pounds) but lower than the 2003 estimate (2,582 pounds).

There was a small decrease of 2% in Area 3B (Alaska Peninsula) harvests from 2006 (48,547 pounds) to 2007 (47,748 pounds) (Figure 17; Figure 18; Table 7). In Area 3B, the 2007 estimated harvest was notably higher than that for 2004 (33,519 pounds) and 2003 (27,477 pounds) (Table 7; Figure 17; Figure 19). Improved participation in the SHARC program in 2006 and 2007 likely accounts for some of the increase in the estimated harvests in Area 3B (see discussion of Sand Point in Chapter 3).

Estimated harvests in Area 3A (Southcentral Alaska) dropped slightly, by 2% (from 379,258 pounds in 2006 to 372,289 pounds in 2007), for the second straight year. In terms of total pounds, the largest increase in estimated harvests over the first 3 years of the project took place in Area 3A, where the 2005 harvest of 429,275 pounds was 6% higher than the estimate for 2004 (403,610 pounds) and 50% higher than the estimate for 2003 (285,500 pounds) (Table 7). The

estimated harvest for 2006 (379,258 pounds) declined by 12% compared to 2005, and the 2007 estimate was down 13% compared to 2005, but both 2006 and 2007 remained about one-third higher than the estimate for 2003 (Figure 17; Figure 18). As a consequence, Area 3A accounted for 36% of the statewide subsistence halibut harvest in 2007, 34% in 2006, 36% in 2005, and 34% in 2004, compared to 27% in 2003 (Table 7). In Area 3A in 2007 compared to 2006, subsistence halibut harvests increased in the Cook Inlet Area by 26% and in Prince William Sound by 9%. Decreases in harvests occurred in the Kodiak Island Road System (down 7%), other Kodiak Island (down 14%), and the Yakutat area (down 9%) (Table 7).

As in the first 4 years of the project, Area 2C (Southeast Alaska) accounted for the most subsistence halibut harvests in 2007 (524,897 pounds; 51% of the state total), but this harvest represents a decrease of 10% compared to 2006 (Table 7; Figure 17; Figure 18) and 16% compared to 2003 (Figure 19). The percentage of the total statewide subsistence halibut harvest that took place in Area 2C in 2007 was 51%, similar to 2006 (52%) and 2005 (51%), but a decline compared to 57% in 2004 and 60% in 2003. Harvests decreased in all 3 subareas within Area 2C in 2007 compared to 2006, with an 8% decrease in the southern southeast subarea, a 10% decrease in the Sitka LAMP area, and a 12% decrease in northern Southeast Alaska subarea (excluding the Sitka LAMP). The reasons for these changes in Area 2C are likely complex and beyond the scope of this report.[15]

Only in Area 4C (Pribilof Islands) did estimated harvest increase in 2007, to 15,077 pounds, from 8,527 pounds in 2006 (an increase of 77%). Estimated subsistence halibut harvests in the Pribilof Islands in 2007 were also higher than those for 2004 (9,734 pounds) and 2005 (7,716 pounds), but were 34% lower than the 22,881 pounds estimated for 2003 (Figure 19). However,

[15] Further discussion of differences between harvest estimates for 2003-2007 appears in Chapter 3 and Chapter 4.

as noted in the report for the 2004 study year (Fall et al. 2005:15), an improved response rate to the survey has likely resulted in better harvest estimates for St. Paul, the largest community in Area 4C. In retrospect, the harvest estimate for Area 3C for 2003 appears too high, the result of a small sample size with an overrepresentation of active fishers.

Figure 20 illustrates the average subsistence halibut harvest in pounds net weight for those SHARC holders who subsistence fished in 2007. Figure 21 illustrates the average harvest per fisher in numbers of halibut. For the state overall, the average subsistence halibut fisher harvested 174 pounds net weight or about 9.1 halibut in 2007. Average harvests per fisher at the regulatory area level ranged from 91 pounds net weight in Area 4B to 491 pounds per fisher in Area 4C**.** In 2003, subsistence fishers on average harvested 8.9 halibut (211 pounds) (Fall et al. 2004:12-13): in 2004 the average harvests were 8.8 halibut and 199 pounds (Fall et al. 2005:15); in 2005, the average harvests were 9.9 halibut and 210 pounds (Fall et al. 2006: 17); and in 2006, average harvests were 9.2 halibut and 190 pounds (Fall et al. 2007:18).

Subsistence Halibut Harvests by Place of Residence

As shown in Figure 22, there were 28 Alaska communities whose residents had combined estimated subsistence halibut harvests of approximately 7,500 pounds or more net weight (over 10,000 pounds round weight) in 2007. In this figure, community totals include harvests of all SHARC holders living in the community, regardless of type of SHARC (tribal or rural) or tribal affiliation.[16] Residents of these communities accounted for 85% of the total Alaska subsistence halibut harvest in 2007. Residents of Kodiak (Kodiak includes the city of Kodiak and other portions of the Kodiak Island Borough connected to it by roads) ranked first with 19% of the total Alaska harvest, and Sitka ranked second with about 14%. With 12,856 and 8,640 residents,

[16] Note that nonrural places, such as Anchorage, Juneau, Ketchikan, and Valdez, appear in Figure 22 and in Appendix Tables A-4, A-5, and A-6, because members of eligible Alaska Native tribes may participate in the fishery regardless of where they live.

respectively, these 2 communities included about 27% of the population of rural communities eligible to participate in the subsistence fishery. There were 72 other Alaska communities with at least one resident who participated in the subsistence halibut fishery in 2007. The total harvest for these other communities represented 15% of the state total.

For 2007, 253 SHARC holders provided out-of-state addresses from 183 communities in 39 states, provinces, and territories.[17] Seattle was the non-Alaska community with the most SHARC holders, with 13. No non-Alaska-resident SHARC holders subsistence fished for halibut in 2007 (see Appendix Table 4). In 2006, 7 non-Alaska resident SHARC holders subsistence fished for halibut, reporting a harvest of 72 fish and 2,346 pounds net weight (0.2% of the sate total). No non-Alaska resident SHARC holders subsistence fished for halibut in 2005. In 2004, 24 non-Alaska residents reported subsistence fishing for halibut in Alaska, with an estimated total harvest of 169 fish and 4,845 pounds net weight (about 0.4% of state total). In 2003, five non-Alaska residents participated in the Alaska subsistence halibut fishery, harvesting 5 fish.

Subsistence Harvests by Gear Type

Table 6 and Figure 23 report the estimated subsistence harvests of halibut in Alaska in 2007 by gear type and regulatory area fished. In total, 714,344 pounds (69%) of halibut (net weight) were harvested using setline (stationary) gear (i.e., longlines or skates) and 317,949 pounds (31%) were harvested using hand-operated gear (i.e., handlines or lines attached to a rod or pole). There were notable differences between regulatory areas (Table 6, Figure 23). Harvests using setline gear predominated in Area 4D (Central Bering Sea) (91% of the area's total subsistence harvest), 4C (Pribilof Islands) (88%), 2C (Southeast Alaska) (77%), 3A (Southcentral Alaska) (66%), and 4B (Western Aleutian Islands) (61%). In contrast, hand-operated gear accounted for most of the

[17] Note that members of eligible tribes may obtain SHARCs regardless of their place of residence.

subsistence halibut harvests in Area 4E (East Bering Sea Coast) (77%). Harvests were about equally divided across the 2 gear types in Area 3B (Alaska Peninsula) (54% setline gear and 46% hand operated gear) and in Area 4A (Eastern Aleutian Islands) (56% setline gear, 44% hand operated gear). In 2006, 70% of the total Alaska subsistence halibut harvest was taken with setline gear and 30% with hand-operated gear (Fall et al. 2007:18-19). In 2005 also, 70% of the total Alaska subsistence harvest was taken with setline gear and 30% with hand-operated gear (Fall et al. 2006: 18). In 2004, 74% of the Alaska subsistence halibut harvest was taken with setline gear and 26% with hand operated gear (Fall et al. 2005:16). In 2003, 72% was taken with setline gear and 28% with hand operated gear (Fall et al. 2004:13).

Number of Hooks Fished with Setline Gear

Respondents who fished with setline (stationary) gear (longline or skate) were asked to report how many hooks they "usually set." The findings by regulatory area are reported in Table 8. For the fishery overall, most setline fishers (41%) used 30 hooks, the maximum number allowed by regulation in Areas 2C, 3A, 3B, 4A, and 4B (there is no hook limit in Areas 4C, 4D, and 4E) (Figure 24). The next most-frequently reported number was 20 hooks, usually used by 20% of the fishers who used setline gear. Twenty-five hooks (8%) ranked third, followed by 15 hooks (8%) and 10 hooks (8%). This pattern is similar to that recorded for 2006, when 38% of setline fishers used 30 or more hooks and 20% used 20 hooks (Fall et al. 2007:19); 2005, when 42% of setline fishers used 30 or more hooks and 20% used 20 hooks (Fall et al. 2006:18-19); 2004, when 44% of setline fishers used 30 hooks and 19% used 20 hooks (Fall et al. 2005:16), and 2003, when 43% of setline fishers used 30 hooks and 20% used 20 hooks (Fall et al. 2004:13).

Thirty was the most frequently used number of hooks with setline gear in 7 of the 8 regulatory areas (Table 8): 2C (Southeast Alaska), 41%; 3A (Southcentral Alaska), 40%; 3B (Alaska

Peninsula), 39%; 4A (Eastern Aleutian Islands), 42%; Area 4C (Pribilof Islands), 84%; Area 4D (Central Bering Sea), 51%; and 4E (East Bering Sea Coast), 40%. In Area 4B (Western Aleutians), 25% of fishers who used setline gear used 5 hooks and 21% used 15 hooks.

Sport Harvests of Halibut by SHARC Holders

Survey respondents were asked to report the number of halibut and pounds of halibut they harvested "while sport fishing during 2007." They were instructed not to include fish they included as part of their subsistence harvests as sport-caught. The goal of this question was to avoid double-counting harvested halibut in this survey and in the statewide survey of sport fishers administered by ADF&G's Division of Sport Fish. Answering this question required respondents to classify their hand-operated gear (i.e., hook and line and rod and reel) harvests as either subsistence or sport; these gear types are legal gear for both sport fishing and subsistence fishing. Fish reported in the survey as "sport harvests" are not included in the estimated subsistence harvests discussed above. If SHARC holders also received the sport fish survey for 2006, they would be expected to report the same number of halibut as sport-caught as in their response in the SHARC survey and not include any halibut they reported as subsistence harvests, even if taken with rod and reel or handheld line with two or fewer hooks. Note that the study findings do not represent the total recreational halibut harvest by residents of eligible communities and tribes in 2007, because individuals from these tribes and communities who did not obtain SHARCs could have sport fished.

As shown in Table 4 and Table 6, the estimated total sport halibut harvest by holders of SHARCs in 2007 was 10,959 fish and 196,198 pounds net weight. By area fished, most of the sport halibut harvest by SHARC holders occurred in Area 3A (Southcentral Alaska) (96,327 pounds; 49%) and Area 2C (Southeast Alaska) (91,953 pounds; 47%) (Table 6). In total, an estimated 2,566

SHARC holders (17%) reported that they sport fished for halibut in 2007. A very large majority of these fishers fished in either Area 2C (1,504; 59%) or Area 3A (1,050; 41%) (Table 6). (See Appendix Table 7 for estimated sport halibut harvests by tribe and non-tribal rural community SHARC holders.)[18]

Estimated Average Net Weights of Subsistence and Sport-Caught Halibut

Table 9 reports the average net weight of subsistence and sport-caught halibut by SHARC holders in 2007, based upon estimates provided by survey respondents. For the state, the estimated average net weight of subsistence-caught halibut was 19.2 pounds and the average net weight of sport-harvested halibut by SHARC holders was 17.9 pounds. For all halibut harvested by SHARC holders in 2007, the average net weight per harvested halibut was 19.0 pounds. Between regulatory areas, there was a range of average weights per halibut. The halibut harvested by the communities of Area 4D (St. Lawrence Island), averaged 27.7 pounds net weight per fish, about 50% higher than the statewide average. In Area 4E, halibut averaged 12.5 pounds net weight, about 65% of the statewide average. The average weight of halibut declined steadily over the 5 years of this project. In 2006, the estimated average weight of halibut harvested in the subsistence fishery was 20.8 pounds, the average halibut harvested by SHARC holders while sport fishing weighed 19.9 pounds, and the average of all halibut was 20.7 pounds (Fall et al. 2007:20). In 2005, the estimated average weight of halibut harvested in the subsistence fishery was 21.1 pounds, the average halibut taken by SHARC holders while sport fishing weighed 20.8 pounds, and the average of all halibut was 21.0 pounds (Fall et al.

[18] The ADF&G postal survey did not investigate the criteria by which survey respondents classified their rod and reel (hook and line attached to a rod or pole) halibut harvests as subsistence or sport. However, a supplemental mailing to 1,098 SHARC holders from Kodiak and Sitka who fished for halibut in 2004 asked respondents to provide reasons for classifying their halibut harvests as sport or subsistence. For a discussion of the findings, see Fall et al. 2006:19-20, 123-138. In short, the primary factor (for 69% of respondents) was the gear used to harvest the fish: respondents viewed rod and reel as "sport gear" and setline gear as "subsistence gear." Another factor, reported by 12%, concerned the composition of the fishing group. If the SHARC holders had fished with relatives or friends who did not possess a SHARC, they classified their fishing as recreational. Harvest amounts were also a consideration: harvests or one or two halibut with a rod and reel were considered "sport" by some respondents, but if they harvested more than 2 fish with rod and reel in one day, they classified the harvest as subsistence. Finally, about 19% of the respondents gave reasons related to the uses of the fish or other cultural and lifestyle explanations.

2006:20). In 2004, the statewide average for subsistence-harvested halibut was estimated at 22.8 pounds, the average sport-harvested halibut by SHARC holders was 20.0 pounds, and the average for all halibut was 22.2 pounds (Fall et al. 2005:17). In 2003, the statewide average for subsistence-harvested halibut was 23.7 pounds, the average sport-harvested halibut by SHARC holders was 22.8 pounds, and the average for all halibut was 23.5 pounds (Fall et al. 2004:14).

ROCKFISH HARVESTS

Survey respondents were asked to estimate the number of rockfish they harvested while subsistence fishing for halibut in 2007. Harvest data at the species level were not collected as part of this survey.

Note that these survey results do not represent an estimate for the total subsistence rockfish harvest by SHARC holders in 2007 because they might have harvested rockfish while fishing for species other than halibut, and other fishers in the communities who did not obtain SHARCs might have harvested rockfish. The Division of Subsistence Community Subsistence Information System (CSIS) (ADF&G 2006)[19] includes estimates of rockfish harvests for communities in which comprehensive household surveys have been administered.

It should also be noted that the label "bycatch" for these harvests is misleading.[20] Rockfish are used for subsistence purposes in rural communities throughout their range in Alaska (ADF&G 2006). It is highly likely that rockfish harvested incidentally in the subsistence halibut fishery are utilized as a subsistence food. It is highly unlikely that many incidentally caught rockfish are discarded in this subsistence fishery.

[19] This was formerly the Community Profile Database (Scott et al. 2001).

[20] The Magnuson-Stevens Fishery Conservation and Management Act (Section 3) defines "bycatch" as "fish harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch and release fishery management program." Federal regulations (50 CFR 679.2) define "bycatch" or "bycatch species" as fish caught and released while targeting another species or caught and released while targeting the same species; under 50 CFR 600.10 "discard" means to release or return fish to the sea, whether or not such fish are brought fully on board a fishing vessel. In all cases, "bycatch" means to discard fish and excludes retaining fish for use. The federal definition of "incidental catch" or "incidental species" is "fish caught and retained while targeting on some other species, but does not include discard of fish that were returned to the sea" (50 CFR 679.2).

As shown in Table 10, the statewide estimated rockfish incidental harvest in the subsistence halibut fishery in 2007 was 15,266 fish by 1,568 fishers (10% of all SHARC holders, and 26% of all SHARC holders who subsistence fished for halibut in 2007). This is an average of about 2.6 rockfish per fisher for all subsistence halibut fishers and about 9.7 rockfish per fisher for those who had a rockfish harvest. Most of the subsistence halibut fishers who caught rockfish fished in Area 2C (Southeast Alaska) (1,141 fishers; 73%) and Area 3A (375 fishers; 24%). In Area 2C, about 34% of subsistence halibut fishers incidentally harvested rockfish, as did 20% in Area 3A (Southcentral Alaska). (See Appendix Table 7 for estimated rockfish harvests by tribe and by non-tribal rural community SHARC holders.)

As illustrated in Figure 25 and Figure 26, most of the incidental rockfish harvest in 2007 was harvested in Area 2C: 10,331 rockfish, 68% of the statewide total. Area 3A accounted for the second-highest total: 3,706 rockfish, 24% of the total. Harvests were very small by SHARC holders fishing in other regulatory areas; their combined harvested 1,229 rockfish was about 8% of the statewide total. Compared to 2006, when 16,945 rockfish were harvested, the incidental rockfish harvest in the subsistence halibut fishery in 2007 was down by 10%. The 2007 estimated rockfish harvest was lower than the estimate for 2004 (19,001 rockfish) but higher than 2003, when 14,870 rockfish were harvested in the subsistence halibut fishery, and 2005, when the incidental rockfish harvest was 12,395.

Table 10 also reports location of harvests within geographic subareas. Most of the harvest occurred in southern Southeast Alaska (5,108 fish), the Sitka LAMP area (3,964 rockfish), northern Southeast Alaska (1,259 rockfish), other Kodiak Island locations (1,093 rockfish), and the Kodiak Island Road System (1,089 rockfish). Incidental rockfish harvests totaled 640 fish in

Prince William Sound and 720 rockfish in Cook Inlet. In Lower Alaska Peninsula waters, there was an incidental harvest of 338 rockfish, and a harvest of 328 rockfish in the Chignik area.

LINGCOD HARVESTS

Survey respondents were asked to estimate the number of lingcod they harvested while subsistence fishing for halibut in 2007. Note that these survey results do not provide an estimate of the total subsistence lingcod harvest by SHARC holders in 2007 because they might have harvested lingcod while fishing for species other than halibut. Also, other fishers in the communities who did not hold SHARCs might have fished for or harvested lingcod, so that these incidental harvests represent only a portion of the total 2007 subsistence harvest. The Division of Subsistence Community Subsistence Information System (ADF&G 2006) includes estimates of lingcod harvests for communities in which comprehensive household surveys have been administered.

It should also be noted that the label "bycatch" for these harvests might be misleading.[21] Lingcod are used for subsistence purposes throughout their range (ADF&G 2006). It is highly likely that lingcod harvested incidentally in the subsistence halibut fishery are utilized as a subsistence food. It is very unlikely that many lingcod caught in this subsistence fishery are discarded.

The statewide estimated incidental lingcod harvest in the subsistence halibut fishery in 2007 was 3,402 fish by 959 fishers (Table 10). This is an average of about 0.6 lingcod per fisher for all subsistence halibut fishers and 3.5 lingcod per fisher for those who had a lingcod harvest. Of all SHARC holders who subsistence fished for halibut in 2007, 16% harvested at least one lingcod while halibut fishing. Most of the subsistence halibut fishers who harvested lingcod fished in Area 2C (Southeast Alaska) (677; 71%) and Area 3A (Southcentral Alaska) (232; 24%). (See

[21] See footnote 20 for definitions of "bycatch" and "incidental catch".

Appendix Table 7 for estimated lingcod harvests by tribe and by non-tribal rural community SHARC holders.)

As illustrated in Figure 27 and Figure 28, most of the incidental lingcod were harvested in Area 2C: 2,241 lingcod, 66%. Area 3A fishing locations accounted for the second-highest total: 810 lingcod, 24%. In 2003-2006, an estimated 3,298, 4,407, 2,355, and 3,486 lingcod, respectively, were harvested in the subsistence halibut fishery. The 2007 estimated harvest represents decrease of 3% in the incidental lingcod harvest compared to 2006, an increase of 44% compared to 2005, a decrease of 23% compared to 2004, and a 3% increase compared to 2003.

Table 10 also reports the location of incidental lingcod harvests by geographic subarea. Most of this harvest occurred in Area 2C (Southeast Alaska): the Sitka LAMP area (1,163 lingcod), southern Southeast Alaska (824 lingcod), and northern Southeast Alaska waters outside the Sitka LAMP (254 lingcod). Incidental lingcod harvests totaled 228 lingcod in the Kodiak Island Road system area, 222 in the other Kodiak Island area, and 208 in the Yukon Delta area. Harvests totaled fewer than 200 lingcod in each of the other geographic subareas.

CHAPTER 3: DISCUSSION

COMPARISONS WITH OTHER HARVEST ESTIMATES

As discussed in the report for the first year of the SHARC survey pertaining to fishing in 2003 (Fall et al. 2004:19-22), comparing the statewide harvest estimate for the Alaska subsistence halibut fishery based on the SHARC survey with estimates for previous years is difficult for several reasons. As noted in Chapter One, regulations that allow subsistence halibut fishing in Alaska waters using traditional gear such as longlines with more than 2 hooks, and that removed the restrictive daily harvest limit of 2 fish, have only been in place since May 2003. Also, 2003-2007 were the first 5 years for which a study was implemented to develop a comprehensive estimate of subsistence halibut harvests in Alaska.

Although the Division of Subsistence of ADF&G has conducted systematic household surveys in many of the rural Alaska communities with traditional uses of halibut, these studies pertain to different harvest years. There are many communities, especially in western Alaska, where such surveys have not been conducted. Division of Subsistence studies have attempted to estimate the total halibut harvest for home use in communities, including harvests conducted under sport fishing rules and harvests removed from commercial fisheries for home use. Typically, these studies collected harvests by gear type, such as rod and reel or "other gear." Therefore, it is not possible to separate the "sport harvest" from the "subsistence harvest" for past harvest years, especially in the larger rural communities with a diverse population.

In contrast, the statewide estimates of subsistence halibut harvests for 2003-2007 based on the SHARC postal survey include only subsistence harvests by individuals who obtained SHARCs. The estimates do not include total harvests accomplished under sport fishing regulations or halibut removed by commercial fishers for their households' use or for noncommercial sharing. Thus they are only partial estimates of the total harvest of halibut for home use by rural Alaska

residents and are not directly comparable to previous estimates from Division of Subsistence studies.

The report for the first year of this study included a detailed discussion of previous efforts to develop an estimate of subsistence halibut harvests at the regional and statewide level. The report suggested that the 2003 SHARC survey estimates were not markedly different from estimates based on Division of Subsistence household survey data as reported in the Community Subsistence Information System (ADF&G 2006). We will not repeat that full discussion here.[22] However the report also concluded that because of the limitations associated with the previous subsistence harvest estimates at the statewide level, until a time series is developed based upon the SHARC survey results, discussion of harvest trends in the subsistence halibut fishery will remain speculative. A discussion comparing the study findings for 2007 with those for 2003-2006 appears in Chapter 4.

COMMUNITY CASE STUDIES

To evaluate the subsistence halibut harvest estimate for 2007, comparisons can be made with previous harvest estimates for particular communities where Division of Subsistence household harvest surveys have been administered. These comparisons are subject to several limitations, including different sampling methods, uncertainty in the separation of subsistence and recreational harvests, and the potential effects of the subsistence regulatory changes beginning in 2003. The following communities were selected as case studies to represent communities of

[22] For example for 2000, the IPHC estimated 439,000 pounds net weight for Alaska "personal use" (noncommercial, non-recreational) harvests (*in* Wolfe 2001). The IPHC estimate is based upon a methodology described by Trumble (1999). The IPHC method assumed that 50% of Alaska Native rod and reel halibut harvests as reported in ADF&G household surveys are "sport" and 50% "personal use," and that 75% of the non-Native rod and reel harvests are "sport" and 25% "personal use" (Trumble 1999:62). No justification for these assumptions is provided, and changing these sport-to-personal-use ratios can result in a very different estimate for the "personal use" halibut harvest. In a report to the Alaska Board of Fisheries in May 2001, using the same data source as the IPHC, Wolfe (2001) estimated that the subsistence halibut harvest in Alaska "probably ranges between 400,000 and 1,000,000 pounds (round weight) annually," based on harvest data in the Division of Subsistence Community Profile Database (Scott et al. 2001). This is an estimated harvest of 300,000 to 750,000 pounds net weight. See Fall et al. 2004:19-21 for discussion of Wolfe's methods. In the original analysis for the subsistence halibut program, the NPFMC estimated the Alaska subsistence halibut harvest at 1.5 million pounds net weight (68 FR 18145, April 15, 2003, EA/RIR (NMFS 2003)).

similar size and geographic location. In this evaluation, an emphasis is placed on larger communities, since, as discussed in Chapter 2, a small number of large communities accounted for most of the statewide subsistence halibut harvest in 2003-2007. The quality of the harvest estimates for these places largely determines the reliability of the statewide estimate and the performance of the harvest assessment program. Also, as noted in Chapter 1, not all tribal SHARC holders live in the community where their tribal headquarters is located. The following comparisons are based upon place of residence of the SHARC holder to be consistent with earlier division studies. Table 11 reports selected study findings for the case study communities discussed below for 2003-2007. Appendix Tables 4, 5, and 6 report study results for 2007 for all communities based upon residence of SHARC holders.

Sitka (Regulatory Area 2C)

Sitka had a population of 8,835 people in 2000, 2,178 of whom were Alaska Native (U.S. Census Bureau 2001). In 2007, the estimated population of Sitka was 8,640 (ADLWD 2008). Sitka was the second largest rural community eligible to participate in the subsistence halibut fishery in 2007, and had the most SHARCs issued, 1,954 (Table 11) (about 13% of the Alaska total). Of these, 1,484 were issued to non-tribal residents of Sitka, and 470 to tribal members. Members of the Sitka Tribe of Alaska (STA) obtained 485 SHARCs; some STA members live in communities other than Sitka. Members of other Alaska tribes also live in Sitka. Because of the relatively large number of SHARC holders who live there, developing a reliable subsistence halibut harvest estimate for Sitka is essential for the success of the subsistence harvest assessment program. It is important to note that Sitka residents' response rates to the survey have been high in the 5 years of the project: 75% in 2003, 72% in 2004, 68% in 2005, 69% in 2006, and 68% in 2007.

Based on Division of Subsistence research, there are 2 estimates of halibut harvests for home use for Sitka prior to the authorization of subsistence halibut fishing by the NPFMC in May 2003 (Table 12). For 1987, the estimated total halibut harvest was 193,335 pounds (+/- 22%) (net weight); or 180,982 pounds if fish removed from commercial harvests are deleted. This noncommercial total includes only harvests reported by surveyed persons as taken with rod and reel; data on any harvests using "other methods" such as longlines (not allowed at that time in the subsistence fishery) were not collected. An estimated 1,252 Sitka households had at least one member who fished for halibut in 1987. For 1996, the total estimated harvest was 165,772 pounds net weight (+/- 28%), 149,244 pounds with commercial removals deleted. In 1996, an estimated 943 Sitka households had at least one member who fished for halibut.

For 2007, the estimated subsistence harvest of halibut by tribal SHARC holders who live in Sitka (most, but not all, of whom are members of the STA) and other residents of Sitka (1,954 SHARC holders) was 142,049 pounds net weight (6,304 fish). This was the second highest of any community (Kodiak ranked first), and accounted for 14% of the statewide total subsistence halibut harvest. Of Sitka's total subsistence halibut harvest, 115,162 pounds (81%) was taken with setline gear, and 26,886 pounds (19%) was taken with hand-operated gear. Adding sport harvests by Sitka SHARC holders (16,200 pounds) increases the estimate to 158,249 pounds net weight. Of all SHARC holders from Sitka, 921 subsistence fished for halibut in 2007. Of these, 839 used setline gear and 270 used hand-operated gear. Also, 315 SHARC holders from Sitka sport-fished for halibut in 2006. The total number of SHARC holders living in Sitka who fished for halibut in either the subsistence or recreational fishery in 2007 was 1,010 (Table 11).

Estimated subsistence and sport halibut harvests by Sitka SHARC holders in 2007 were lower than estimates for 2003-2006 (Table 11). A total of 1,639 Sitka residents had SHARCs in 2003;

1,871 in 2004; 1,974 in 2005; and 1,895 in 2006. Subsistence harvests were 174,880 pounds net weight in 2003 compared to 166,474 pounds in 2004 (a decline of 5%), 146,319 pounds in 2005 (a decline of 16%), 163,372 pounds in 2006 (7% lower than 2003), and 142,049 pounds in 2007 (19 % lower than 2003). The change was less in terms of number of halibut harvested: 6,621 in 2003, 6,583 in 2004, 6,062 in 2005, 6,691 in 2006, and 6,304. Adding sport harvests of halibut by SHARC holders to subsistence harvest totals results in similar harvest estimates for Sitka for the first 4 years of the study: 207,288 pounds for 2003, 192,303 pounds in 2004, 202,232 pounds for 2005, and 186,404 pounds in 2006. However, this total was notably lower in 2007, at 158,249 pounds. More Sitka residents participated in the subsistence halibut fishery in 2007 (921) compared to 2003 (821 SHARC holders) or 2005 (814 SHARC holders), and about the same number participated in 2004 (904 SHARC holders) and 2006 (915); 1,010 participated in either subsistence or sport fishing for halibut in 2006 compared to 956 SHARC holders in 2003, 1,026 SHARC holders in 2004, 987 SHARC holders in 2005, and 1,036 SHARC holders in 2006.[23]

In summary, this comparison of harvest estimates from face-to-face comprehensive household surveys and the SHARC survey, although it has limitations because of the different survey and sampling methods used, suggests that the 2003-2007 subsistence halibut harvest estimates for Sitka based on the SHARC survey returns appear reasonable. They are generally in line with the face-to-face household survey results from 1987 and 1996.

Petersburg (Regulatory Area 2C)

In 2000, Petersburg had a population of 3,224, including 388 Alaska Natives (U.S. Census Bureau 2001). In 2007, the estimated population had dropped to 3,071 (ADLWD 2008). Before the authorization of subsistence halibut fishing under federal regulations in May 2003, there were

[23] Following a recommendation from the first study year (Fall et al. 2004:31), data from the ADF&G Division of Sport Fish Statewide Harvest Survey (SWHS) about sport halibut harvests by Sitka residents were analyzed for additional background on halibut fishing in the community and discussed in the report for the 2004 study year (Fall et al. 2005:23-24). An updated analysis was not prepared for this report.

2 estimates for halibut harvests by Petersburg residents based on household surveys conducted by the Division of Subsistence in 1987 and 2000 (Table 13). In the 1987 study, a random sample of 49 of the 1,123 households in Petersburg was interviewed (4%). In that year, Petersburg residents harvested an estimated 119,176 pounds of halibut (net weight) (+/-51%); of this, 11,728 pounds were removed from commercial harvests, giving a noncommercial harvest of 107,448 pounds. As with Sitka, the 1987 study in Petersburg only collected noncommercial harvest data for halibut taken with rod and reel. Of the 1,123 households in Petersburg, 54% had at least one member who fished for halibut noncommercially, for a minimum of 604 halibut fishers in the community in 1987 (Scott et al. 2001). In 2000, Petersburg residents harvested an estimated 55,974 pounds net weight of halibut (+/-39%). Of this, 6,951 pounds were removed from commercial harvests, for a noncommercial harvest of 49,023 pounds, all of which was taken with rod and reel. In 2000, 468 Petersburg households had at least one member who fished for halibut for home use.

For 2007, the estimated subsistence harvest of halibut by Petersburg residents with SHARCs (1,123 SHARC holders) was 47,517 pounds net weight (Table 11). In 2006, 1,082 SHARC holders in Petersburg harvested 53,682 pounds of halibut in the subsistence fishery; in 2005, 1,197 SHARC holders in Petersburg harvested 61,372 pounds of halibut in the subsistence fishery; in 2004, 1,187 SHARC holders harvested 71,784 pounds of halibut in the subsistence fishery; and in 2003, 1,047 Petersburg SHARC holders harvested 55,718 pounds. Of the total 2007 subsistence halibut harvest, 32,026 pounds (67%) was harvested with setline gear and 15,491 pounds (33%) was harvested with hand operated gear. In 2006, 66% of the subsistence halibut harvest by Petersburg residents was taken with setline gear, and 34% with hand operated gear. In 2005, 72% of the subsistence halibut harvest by Petersburg SHARC holders was

harvested with setline gear and 28% with hand operated gear. In both 2003 and 2004, about 75% of Petersburg's subsistence halibut harvest was taken with setline gear and 25% with hand operated gear.

In 2007, Petersburg SHARC holders also harvested 15,177 pounds of halibut they classified as sport harvested. This gives a total halibut harvest by Petersburg SHARC holders of 62,694 pounds in 2007. In 2006, the sport harvest of halibut by Petersburg residents with SHARCs was 17,351 and the total halibut harvest was 71,033 pounds. In 2005, the sport harvest of halibut by Petersburg SHARC holders was 23,289 pounds for a total harvest of 84,661 pounds of halibut. In 2004, the sport harvest of halibut by Petersburg SHARC holders was 26,408 pounds for a total harvest of 98,192 pounds of halibut. In 2003, the sport harvest was 19,611 pounds, giving a total halibut harvest of 75,329 pounds (Table 11).

In 2007, 386 Petersburg SHARC holders harvested halibut in the subsistence fishery (274 used setline gear and 191 used hand operated gear). This compares to 416 fish in 2006 (300 used setline gear and 222 used hand operated gear); 436 fishers in 2005 (338 used setline gear and 175 used hand operated gear); 482 fishers in 2004 (322 used set line gear, 206 used hand operated gear); and 415 subsistence halibut fishers in 2003 (330 used setline gear, 138 used hand operated gear). In 2006, 246 Petersburg SHARC holders sport fished for halibut, as did 312 in 2005, 351 in 2004, and 268 in 2003. A total of 529 Petersburg SHARC holders either subsistence or sport fished for halibut in 2006; the estimated total halibut fishers among Petersburg SHARC holders was 569 in 2005, 617 in 2004, and 523 in 2003 (Table 11).

Given that some Petersburg residents without SHARC cards likely sport fished for halibut, the 2003-2007 estimates of noncommercial halibut harvests in the community based on the SHARC survey appear consistent with the 1987 estimate based on household interviews, but are slightly

higher than the estimate for 2000. Note that in 2000, when state regulations restricted subsistence fishing to handlines or rod and reel using no more than 2 hooks, no Petersburg households reported taking halibut for home use with any gear other than rod and reel, while 330 used setline gear in 2003, 322 did so in 2004, 338 did so in 2005, 300 did so in 2006, and 274 did so in 2007 (Table 11, Table 13).

Cordova (Regulatory Area 3A)

In 2000, Cordova had a population of 2,454 people, including 368 Alaska Natives (U.S. Census Bureau 2001). Cordova's estimated population in 2007 was 2,192 (ADLWD 2008). Before 2003, there were 6 Division of Subsistence household surveys that estimated home-use halibut harvests (Table 14). After subtracting fish removed from commercial harvests for home use, estimated noncommercial halibut harvests by Cordova residents ranged from 25,609 pounds (+/-33%) net weight in 1991 to 120,221 pounds (+/- 62%) in 1988, with an average over the 6 study years of 57,285 pounds. The estimated number of Cordova households with at least one member fishing noncommercially for halibut ranged from 228 in 1985 to 401 in 1992, with a mean of 325 households (ADF&G 2006).

Subsistence halibut harvest estimates and participation estimates for Cordova residents for 2003 were lower than might be expected from previous research (Fall et al. 2004:24-25). In 2003, 358 residents of Cordova obtained SHARCs (Table 11). Of these, 102 subsistence-fished (68 with setline gear, 40 with hand operated gear), 144 reported that they sport fished for halibut, and 194 fished for halibut either under the new federal subsistence halibut provisions or in the sport fishery. The estimated subsistence harvest was 15,498 pounds net weight (7,613 pounds [49%] with setline gear, 7,885 pounds [51%] with hand operated gear), with an additional 11,534

pounds taken by SHARC holders while sport fishing. The total of 27,032 pounds was about 47% of the average for previous study years.

Based on these comparisons, the final report for 2003 suggested that the SHARC survey had underestimated the amount of halibut harvested by Cordova residents for home use, perhaps because not all subsistence fishers in Cordova obtained SHARCs in 2003. The results of the survey for 2004 supported this conclusion (Fall et al. 2005:25-26). A total of 526 Cordova residents had obtained SHARCs by the end of 2004 (an increase of 47%) (Table 11). An estimated 262 Cordova SHARC holders subsistence fished for halibut in 2004, up 157% from 2003. Of these, 174 fished with setline gear (up 156%) and 97 used hand-operated gear. The estimated subsistence halibut harvest by Cordova residents in 2004 was 40,640 pounds net weight, an increase of 163% over 2003. Sport harvests by Cordova SHARC holders (174 of whom sport fished for halibut in 2004) added 12,149 pounds to the community harvest for 2004, for a total of 52,789 pounds of halibut by 325 fishers. This total was an increase of 95% over 2003, and was about 92% of the average for the 6 survey years prior to 2003 (and exceeded the total for 3 of those 6 years). Given that some Cordova residents likely obtained halibut for home use exclusively in the sport fishery without obtaining SHARCs, the SHARC survey estimate for 2004 appeared consistent with earlier estimates of subsistence halibut harvests in Cordova.

Findings for Cordova for 2005 were much like those for 2004 and supported the conclusions of the 2004 final report. As shown in Table 11, 602 Cordova residents held SHARCs in 2005, continuing the growth that had occurred in 2004, but at a slower pace. Subsistence halibut harvests totaled 47,141 pounds, up about 16% from 40,640 pounds in 2004. In 2004, 73% of the total was harvested with setline gear, as was 74% in 2005. In 2005, 281 Cordova residents participated in the subsistence halibut fishery, compared to 262 in 2004. Cordova SHARC

holders harvested 10,519 pounds of halibut while sport fishing in 2005, for a total harvest for home use of 57,660 pounds. This total was similar to the estimate for 2004 (a combined total of 52,789 pounds in the subsistence and sport fishery) and approximated the mean harvest of 57,285 pounds estimated in the 6 harvest survey study years.

The estimated subsistence halibut harvest for Cordova in 2006 was 29,027 pounds, a decline from 2004 (40,640 pounds) and 2005 (47,141 pounds) but still about double the 2003 estimated harvest (15,498 pounds) (Table 11). The reasons for this decline remain uncertain. The estimated sport halibut harvest by Cordova SHARC holders in 2006 was 7,020 pounds, lower than any of the first 3 years of the harvest monitoring program. In total, Cordova SHARC holders harvested an estimated 36,047 pounds of halibut in 2006. This total was substantially lower than the estimates for 2004 (52,789 pounds) and 2005 (57,660) pounds, but was higher than that for 2003 (27,032 pounds) (Table 11). The 2006 estimate was higher than survey estimates for 1985 and 1991, but lower than the average for the 6 years for which survey data are available (Table 14).

Estimated halibut harvests by Cordova SHARC holders declined slightly in 2007 from 2006 levels, to 28,716 pounds, with most of this (21,683 pounds; 76%) taken with setline gear. Sport harvests of halibut by Cordova SHARC holders declined to 4,203 pounds in 2007, the lowest of the 5 study years. In total, Cordova SHARC holders harvested 32,919 pounds of halibut, lower than any study year except 2003 and also lower than the average for the 6 earlier surveys (Table 11, Table 14).

About the same number of Cordova residents held SHARCs in 2007 (615) as in 2006 (607) and 2005 (602). More Cordova residents participated in the subsistence halibut fishery in 2007 (282) than in any of the previous 4 years; conversely, the number of Cordova SHARC holders who sport-fished for halibut (123) was the lowest of the 5 study years. In total 315 Cordova SHARC

holders fished for halibut in 2007, up from 301 in 2006. In 2006, fewer Cordova SHARC holders participated in the subsistence halibut fishery (248), the sport halibut fishery (152), or in any noncommercial halibut fishing (301) than in either 2004 or 2005, although estimated participation in the halibut fishery exceeded that for 2003 (Table 11).

Port Graham (Regulatory Area 3A)

Located in lower Cook Inlet, Port Graham had a population of 171 in 2000, including 151 Alaska Natives (U.S. Census Bureau 2001). Port Graham's population in 2007 was estimated at 134 (ADLWD 2008). It is included here as a case example to represent the small, predominantly Alaska Native communities in Regulatory Areas 3A and 3B that depend heavily on subsistence harvests of fish and wildlife resources. There are estimates of subsistence halibut harvests by Port Graham residents based on household surveys for 7 study years (Table 15). Excluding 1989, the year of the *Exxon Valdez* oil spill, Port Graham's halibut harvests ranged from 4,451 pounds (+/-14%) net weight in 1993 to 11,232 pounds (+/-14%) in 1992, with a six-year average of 7,591 pounds (net weight) (Figure 29). Again excluding 1989, an average of 38 Port Graham households had at least one member who subsistence fished for halibut in the study years in the late 1980s and 1990s.

During 2007, a total of 59 Port Graham residents held SHARCs. (Recall that this total does not include Port Graham tribal members who do not live in Port Graham.) In 2007, an estimated 36 Port Graham residents subsistence fished for halibut, with 22 using setline gear and 28 using hand operated gear. Also, 4 said they sport-fished for halibut in 2007. In 2006, 30 Port Graham SHARC holders subsistence fished for halibut, with 9 using setline gear and 24 using hand operated gear. In 2005, 18 Port Graham SHARC holders subsistence fished for halibut, with 8 using setline gear and 18 using hand operated gear. Nine Port Graham SHARC holders sport

fished for halibut in 2005. In 2004, 42 Port Graham SHARC holders subsistence fished for halibut, with 15 using setline gear and 31 using hand operated gear; 11 said they sport fished for halibut. In 2003, 35 Port Graham SHARC holders subsistence fished for halibut (10 used setline gear, 28 used hand operated gear), and 3 said they sport fished for halibut (Table 11). The findings for 2003-2007 were consistent with levels of participation in the halibut fishery that could be expected from the previous studies in Port Graham, but the estimated participation level in 2005 was lower.

The subsistence halibut harvest estimate for Port Graham in 2007 was 8,493 pounds (Table 11). Of this, 5,347 pounds (63%) were harvested with setline gear and 3,146 pounds (37%) with hand-operated gear. Harvests in 2007 were up from 2006, when Port Graham SHARC holders harvested an estimated 6,194 pounds of halibut, with 2,397 pounds taken with setline gear and 3,797 pounds with hand operated gear. In the first 3 years of the harvest monitoring program (2003-2005), estimated subsistence halibut harvests were higher in Port Graham than in 2006 or 2007. In 2005, Port Graham SHARC holders harvested an estimated 11,127 pounds of halibut, with 7,938 pounds taken with setline gear and 3,190 pounds with hand operated gear. In 2004, Port Graham's estimated subsistence halibut harvest was 9,181 pounds net weight with 4,425 pounds (48%) harvested with setline gear and 4,755 pounds (52%) with hand-operated gear. In 2003, the estimated halibut harvest was 11,454 pounds net weight, with 4,398 pounds (38%) harvested with setline gear and 7,056 pounds (62%) with hand operated gear. Only 2 Port Graham SHARC holders reported sport fishing halibut for 2007, but had no harvest. (Table 11).

While halibut harvest estimates for Port Graham for 2003-2005 were similar to the previous highest estimate (11,232 pounds in 1992) (Table 11), they exceeded the average of previous study years of 7,591 pounds. These findings were not unexpected: Port Graham has traditionally

used setlines with multiple hooks to harvest halibut as well as hand-operated gear (Stanek 1985:67-69,151). With regulations in place beginning in May 2003 consistent with traditional harvest methods, residents of Port Graham and other communities with similar traditions have fished with setline gear and hand operated gear, and reported subsistence halibut harvests that are probably similar to historical levels.[24] The estimate for 2006 of 6,194 pounds was lower than those for the previous 3 years, and was lower than the average of the survey estimates for 1987 through 1997. The 2007 estimate was also lower than 2003-2005, but slightly above the average of the earlier survey years (Table 15). The reasons for the lower harvests in 2006 and 2007 are uncertain, but a drop in the community's population may be part of the explanation.

Kodiak City and Road System (Regulatory Area 3A)

"Kodiak" in this report includes the city of Kodiak (population 6,334 in 2000, including 829 Alaska Natives) and those portions of the Kodiak Island Borough connected to Kodiak city by road. This area had a population of 12,973 people in 2000, including 1,697 Alaska Natives (U.S. Census Bureau 2001). The estimated population in 2007 was 12,856 (ADLWD 2007). This is the largest rural community eligible to participate in the Alaska subsistence halibut fishery.

Based on Division of Subsistence household surveys, estimates of halibut harvests for home use are available for the entire Kodiak road system population for 1982 and 1991 (ADF&G 2006). Estimates for Kodiak city residents alone are available for 1992 and 1993, but these can be used to develop a projected total for the entire road system population (Table 16). Excluding fish removed from commercial catches for home use, halibut harvests by Kodiak road system residents ranged from 247,283 pounds usable weight (+/-30%) in 1991 to 511,254 pounds (+/-33%) in 1993. The average for the 4 available study years was 366,682 pounds; of this, 338,476

[24] A cautionary note for Port Graham for 2005 concerned response rate. Only 16 of 52 SHARC holders responded to the 2005 survey (31%) (Fall et al. 2006:52). Further outreach in this community was necessary to improve the response rate and build confidence in the harvest estimates. As noted in Chapter 1, this outreach occurred in 2007 for the 2006 study year, and a response rate of 66% was achieved.

pounds (92%) was taken with rod and reel, most likely consistent with sport fishing regulations. On average for the 4 study years, 1,306 Kodiak road system households had at least one member who fished for halibut for home use.

Kodiak residents held 1,880 SHARCs during 2007, the highest of any year since 2003 (Table 11). In 2007, 945 Kodiak SHARC holders subsistence fished for halibut; most (707; 75%) used set line gear. This compares to an estimated 961 subsistence halibut fishers in Kodiak in 2006, of whom 684 (71%) used setline gear; 871 subsistence halibut fishers in 2005, 650 of whom (75%) used setline gear; 802 subsistence halibut fishers in Kodiak in 2004, 554 (69%) of whom used setline gear; and 646 subsistence halibut fishers in 2003, 438 of whom (68%) used setline gear. In 2007, 648 Kodiak SHARC holders sport fished for halibut, and 1,157 fished for halibut under either subsistence or sport fishing rules. This compares to 2006, when 562 Kodiak SHARC holders sport fished for halibut and 1,092 were involved in noncommercial halibut fishing; 2005 when 669 Kodiak SHARC holders sport fished for halibut and 1,116 were involved in any noncommercial halibut fishing; 2004, when 581 Kodiak SHARC holders sport fished for halibut, and 971 fished for halibut under either subsistence or sport regulations, and 2003, when 498 Kodiak SHARC holders sport fished for halibut, and 858 either subsistence or sport fished for halibut (Table 11). Given the likelihood that many Kodiak residents continued to fish for halibut under sport fishing regulations in 2003-2007 without obtaining SHARCs, the estimated level of participation in the subsistence fishery based on the SHARC survey appears reasonable when compared to the earlier household survey results.

The estimated subsistence harvest of halibut in 2007 for Kodiak road system area residents was 193,633 pounds net weight, slightly lower than the 205,822 pounds estimated for 2006 and 210,828 pounds estimated for 2005, but higher than the 187,214 pounds for 2004 and 153,254

pounds estimated for 2003 (Table 11). In 2007, Kodiak subsistence fishers harvested 135,351 pounds of halibut with setline gear (70%) and 58,282 pounds (30%) with hand operated gear. This compares to 142,326 pounds (69%) harvest with setline gear and 63,496 pounds (31%) with hand operated gear in 2006; 146,781 pounds (70%) harvest with setline gear and 64,047 pounds (30%) with hand operated gear in 2005; 131,719 pounds (70%) harvested with setline gear and 55,605 pounds (30%) with hand operated gear in 2004; and 101,575 pounds taken in 2003 with setline gear (66%) and 51,678 pounds (34%) with hand-operated gear. In addition, Kodiak road system SHARC holders harvested an estimated 68,556 pounds net weight of halibut in 2007 they classified as sport-caught, within the range of harvests in other years: 64,320 pounds in 2006, 82,455 pounds in 2005, 73,181 pounds in 2004, and 68,170 pounds in 2003. In total, Kodiak SHARC holders harvested 262,189 pounds of halibut in 2007, compared to 270,142 pounds in 2006, 293,283 pounds in 2005, 260,395 pounds in 2004, and 221,424 pounds net weight in 2003 (Table 11). Not surprisingly, the totals for all 5 years are lower than those based on household surveys for previous years (except that the 2004, 2005, 2006, and 2007 SHARC survey estimates are higher than the household survey estimate for 1991) because, as just noted, many Kodiak road system residents who fish for halibut likely have not obtained SHARCs and continue to harvest halibut under sport fishing rules. Overall, the 2003-2007 subsistence harvest estimates for Kodiak appear reasonable, but they should be further evaluated using ADF&G Division of Sport Fish Statewide Harvest Survey data and with additional years of subsistence harvest survey data.

Sand Point (Regulatory Area 3B)

In 2000, the population of Sand Point was 952, with an Alaska Native population of 421 (U.S. Census Bureau 2001). The population estimate for 2007 was 992 (ADLWD 2006). Prior to 2003, there was one estimate of 1992 halibut harvests for home use by Sand Point residents based on

Division of Subsistence household surveys (Fall et al. 1993). The estimated total harvest was 13,981 pounds net weight. Of this, 6,240 pounds were removed from commercial harvests, 6,934 pounds were taken with subsistence methods (setline or jigging with a hand-held line) and 807 pounds were harvested with rod and reel. The total harvest with noncommercial methods was 7,741 pounds. Of the 204 permanent households in the community, 122 harvested halibut for home use; 65 used "subsistence methods," 16 fished with rod and reel, and the rest obtained halibut for home use from their commercial harvests.

At the end of 2003, 73 residents of Sand Point had obtained SHARCs. The estimated subsistence halibut harvest for 2003 was 4,819 pounds net weight. Of this, 3,409 pounds were harvested with setline gear and 1,410 pounds with hand operated gear. Twenty-one Sand Point residents subsistence fished for halibut in 2003. In addition, 11 Sand Point SHARC holders harvested an estimated 410 pounds of halibut while sport fishing, for a total estimated harvest of 5,229 pounds of halibut (Table 11). These are lower harvests and levels of participation than might be expected based on the 1992 survey findings.

By December 31, 2004, 351 Sand Point residents had obtained SHARCs, a very substantial increase over 2003, when 73 obtained SHARCs. The estimated total subsistence halibut harvest was 11,355 pounds net weight. Of this total, 4,360 pounds were harvested with setline gear (38%) and 6,996 pounds (61%) with hand operated gear. In total, an estimated 109 Sand Point SHARC holders subsistence fished for halibut in 2004, about 5 times the estimate for 2003. Also, 50 Sand Point SHARC holders sport fished for halibut, with an estimated total harvest of 1,384 pounds. In total, 121 Sand Point SHARC holders fished for halibut for home use in 2004 with a total harvest of 12,739 pounds net weight (Table 11). This is more than double the 2003 estimate, and similar to the total community estimate for 1992 (which included halibut removed

from commercial harvests). It is likely that the higher estimate for 2004 does not indicate an increased harvest by Sand Point residents over 2003, but rather a more complete estimate due to much larger number of participants in the SHARC program.

A total of 321 Sand Point residents held SHARCs in 2005. The estimated subsistence harvest of halibut increased to 21,901 pounds, with 12,201 pounds (56%) taken with setline gear and 9,700 pounds (44%) caught with hand operated gear. One hundred Sand Point residents subsistence fished for halibut in 2005. In addition, 23 sport-fished for halibut, adding 1,281 pounds to the total halibut harvest for home use of 23,182 pounds (Table 11). The increase in the total halibut harvest and especially in the increase in setline harvests suggested that Sand Point residents were increasingly participating in the opportunities provided by the subsistence halibut fishery.

In 2006, the number of Sand Point residents with SHARCs increased to 365. The estimated number of subsistence halibut fishers also increased, to 133 (from 100 in 2005 and 109 in 2004). The estimated number of Sand Point SHARC holders subsistence fishing with setlines increased notably in 2006, to 59, compared to 35 in 2005 and 25 in 2004; the number fishing with hand operated gear rose slightly, to 87 in 2006 from 77 in 2005 and 74 in 2004. The estimated subsistence halibut harvest by Sand Point residents in 2006 was 20,214, similar to the estimate for 2005 of 21,901. In 2006, 37% (7,406 pounds) of the subsistence halibut were harvested with setline gear and 63% (12,809 pounds) with hand operated gear. In addition, an estimated 29 Sand Point SHARC holders sport fished for halibut in 2006, with an estimated harvest of 6,300 pounds, up substantially from 1,281 pounds of sport-harvested halibut in 2005 and 1,384 pounds in 2004. As a result of the higher estimated sport harvests of halibut by Sand Point SHARC holders in 2006, the total estimated harvest increased to 26,514 pounds, from 23,182 pounds in 2005 and 12,739 pounds in 2004 (Table 11).

Subsistence halibut fishing patterns in Sand Point in 2007 were generally similar to those of 2006. During any part of 2007, 364 Sand Point residents held SHARCs, and 138 subsistence fished for halibut. Of these, 49 used setline gear and 113 used hand-operated gear. The total estimated subsistence halibut harvest in 2007 was 24,615 pounds, up slightly from 2006 and the highest estimate for the 5 years of the project. The subsistence harvest was about evenly split between setline gear (13,278 pounds; 54%) and hand-operated gear (11,337 pounds; 46%). Sixteen Sand Point SHARC holders also went sport fishing for halibut and harvested 3,034. In total, the noncommercial halibut harvest at Sand Point in 2007 was 27,649 pounds, with 138 people involved in this harvest (Table 11).

Unalaska/Dutch Harbor (Regulatory Area 4A)

The city of Unalaska (which includes the city of Dutch Harbor) had a population of 4,283 in 2000, including 397 Alaska Natives (U.S. Census Bureau 2001). The estimated population in 2007 was 3,677 (ADLWD 2008). The Division of Subsistence conducted a household harvest survey in Unalaska/Dutch Harbor for the 1994 data year. The estimated total halibut harvest was 97,601 pounds net weight (3,049 fish) (+/-34%), excluding 10,606 pounds (331 fish) removed from commercial catches for home use. Of the 700 households in the community, an estimated 391 (56%) had at least one member who fished for halibut in 1994. Most of the noncommercial harvest, 88,142 pounds (90%), was taken with rod and reel (ADF&G 2006).

By the close of 2003, only 92 residents of Unalaska and Dutch Harbor had obtained SHARCs (Table 11). Notably, only 14 members of the Qawalangin Tribe of Unalaska registered to subsistence fish for halibut in 2003. For the community overall and for the tribe, this was far fewer registrants than might have been predicted from the 1994 survey results. By the end of 2004, 131 Unalaska/Dutch Harbor residents had obtained SHARCs, as had 25 Qawalangin Tribe

members. In 2005, 150 community members held SHARCs, as did 31 Qawalangin Tribe members. While a notable increase over 2003, this total continued to appear lower than expected. The total increased to 171 SHARC holders in 2006, including 43 Qawalangin Tribe members. During 2007, 176 Unalaska/Dutch Harbor residents held SHARCs, including 46 Qawalangin Tribe members.

In 2007, 83 Unalaska/Dutch Harbor residents participated in the subsistence halibut fishery and 33 sport-fished; 92 participated in either fishery. In comparison, in 2006, 81 Unalaska/Dutch Harbor residents participated in the subsistence halibut fishery, 50 sport fished, and 101 participated in either fishery. In 2005, 88 community members participated in the subsistence halibut fishery and 28 sport fished; 97 participated in either fishery. In 2004, 81 community members subsistence fished for halibut and 34 sport fished; 93 participated in either fishery. In 2003, 50 Unalaska/Dutch Harbor SHARC holders subsistence fished for halibut, 33 sport fished, and 70 fished in either fishery (Table 11).

In 2007, SHARC holders in Unalaska/Dutch Harbor harvested an estimated 13,250 pounds of halibut in the subsistence fishery. Of this, 9,012 pounds was harvested with setlines (68%) and 4,238 pounds with hand-operated gear (32%). Additionally, they harvested 2,287 pounds of halibut in the sport fishery, for a total noncommercial harvest of 15,537 pounds (Table 11). In 2006, the estimated subsistence halibut harvest in Unalaska/Dutch Harbor was 16,331 pounds. This total was divided between harvests with setline gear (7,526 pounds; 46%) and hand operated gear (8,805; 54%). The estimated sport harvest of halibut by Unalaska SHARC holders in 2006 was 3,768 pounds, giving a total harvest for home use by SHARC holders of 20,100 pounds. In 2005, the estimated subsistence harvest of halibut for Unalaska/Dutch Harbor residents with SHARCs was 18,108 pounds net weight, with most (9,573 pounds; 53%) taken

with setline gear and the balance with hand operated gear. In addition, in 2005 Unalaska/Dutch Harbor SHARC holders harvested 2,439 pounds of halibut while sport fishing, for a total halibut harvest of 20,547 pounds. In 2004, the estimated subsistence harvest of halibut for Unalaska/Dutch Harbor residents with SHARCs was 15,530 pounds net weight, with most (9,557 pounds; 62%) taken with setline gear and the balance with hand operated gear. In addition, Unalaska/Dutch Harbor SHARC holders harvested 2,165 pounds of halibut while sport fishing in 2004, for a total halibut harvest of 17,695 pounds. The estimated subsistence harvest for Unalaska and Dutch Harbor residents with SHARCs for 2003 was 10,860 pounds net weight, and these SHARC holders harvested an additional 5,519 pounds of halibut while sport fishing, for a total noncommercial harvest of 16,379 pounds.

The 2007 total halibut harvest by Unalaska/Dutch Harbor residents represented just 16% of the harvest estimate for 1994. Similarly, the 2006 total halibut harvest was 21% of the harvest estimate for 1994, the 2005 total halibut harvest was 21% of the harvest estimate for 1994, the 2004 total halibut harvest was 18% of the 1994 harvest estimate, and the 2003 estimate was 17% of the 1994 estimate. There are at least 5 possible explanations for these differences. One, halibut harvests in Unalaska may have declined since 1994, although an actual level of decline of this magnitude appears unlikely. Second, the SHARC survey may have underestimated the subsistence halibut harvest if many fishers had not obtained a SHARC. A third possible explanation is that the 1994 survey might have overestimated the halibut harvest. A fourth potential explanation is that many halibut fishers in Unalaska perhaps prefer to harvest halibut under sport fishing regulations and therefore did not obtain a SHARC. A fifth possibility that may account for a decline in subsistence halibut harvests is stock abundance. The IPHC has noted a decline in abundance in Area 4A since 1994 (Gregg Williams, IPHC, personal

communication, 2005). A combination of all 5 factors could be responsible for the unexpectedly low subsistence halibut harvest estimated for Unalaska from the SHARC surveys in all 4 study years. Further outreach in Unalaska is clearly appropriate, as well as additional research to better understand patterns of halibut fishing in the community.

Toksook Bay (Regulatory Area 4E)

Toksook Bay had a population of 532 in 2000 and 609 in 2006 (U.S. Census Bureau 2001; ADLWD 2007). As discussed in Chapter 1, the number of SHARCs valid in 2007 (534) approximated the community's total population. The Division of Subsistence has not conducted a household harvest survey in this community. Wolfe (2002) estimated a subsistence halibut harvest of 12,600 pounds net weight (16,800 pounds round weight) for this community for 2000, based upon the per capita estimate for the neighboring community of Tununak from 1986. As also discussed in Chapter 1, with the assistance of the tribal government in Toksook Bay, Division of Subsistence staff evaluated the list of SHARC holders in the community, estimated the total number of subsistence halibut fishers, and conducted interviews with likely fishers. Based upon this collaboration with the tribal government, it is highly likely that most community residents who subsistence fished for halibut in 2003-2006 provided harvest data through the SHARC survey. Therefore, harvest estimates for Toksook Bay represent the harvests reported by respondents to the survey, and are not expanded to the total number of SHARC holders in the community.

The estimated harvest for Toksook Bay for 2003 was 24,500 pounds net weight by 54 fishers (Table 11). In the assessment by project staff, this was considered a reliable subsistence harvest estimate for the community. It should be noted that Toksook Bay is a member of the Coastal

Villages Regional Fund (CVRF) CDQ organization[25]. The majority of the 5,034 pounds of sublegal halibut retained for home use by members of this CDQ organization in 2003 was landed at Toksook Bay and Mekoryuk (Williams 2004:59-60).

For 2004, 56 Toksook Bay SHARC holders reported a harvest of 6,596 pounds of halibut, with most of this (5,737 pounds) harvested with hand operated gear (Table 11). This suggests a substantial decline in subsistence halibut harvests compared to 2003. As in 2003, a majority (69% of 7,120 pounds net weight) of the sublegal halibut retained for home use by the CVRF was landed at Toksook Bay and Mekoryuk (Williams 2005), but this cannot account for the decline in subsistence harvests.

In 2005, subsistence harvests by Toksook Bay residents rebounded to 14,870 pounds; adding 98 pounds of sport-caught halibut produces a community total of 14,968 pounds (Table 11). Almost all (14,269 pounds; 96%) of the subsistence harvest was taken with hand-operated gear. Sixty-one Toksook Bay residents participated in the subsistence halibut fishery in 2005.

The estimated subsistence halibut harvest by Toksook Bay residents increased substantially in 2006, to 36,481 pounds, all harvested with subsistence gear and most (34,149 pounds; 94%) caught with hand-operated gear (Table 11). In 2006, the estimated number of participants in the subsistence fishery also increased, to 113 SHARC holders; the previous highest estimate was 61 subsistence halibut fishers in 2005. During interviews in the community in April 2007, halibut fishers in Toksook Bay reported that subsistence fishing had been very productive in 2006; halibut were abundant and there was a corresponding increase in subsistence fishing effort. This may account for the large increase in the estimated harvest in 2006. Also, in 2006, over 67% of the 19,710 pounds of sublegal halibut retained for home use in the CVRF CDQ fishery were

[25] See footnote 11 for more information about the CDQ program.

landed at Toksook Bay and Mekoryuk (Williams 2007). Division staff conducting interviews with SHARC holders in Toksook Bay reminded respondents to not include CDQ sublegal halibut in their subsistence estimates for the SHARC survey.

In 2007, the estimated subsistence harvest in Toksook Bay dropped to 7,921 pounds (from 36,481 pounds in 2006), with most of this harvest (6,469 pounds; 82%) taken with hand-operated gear. The estimated number of participants in the subsistence fishery was 112, with most of these (100; 89%) using hand-operated gear. Also in 2007, 59% of the 11,398 pounds of sublegal halibut retained from home use during the Coastal Villages Regional Fund CDQ fishery were landed at Toksook Bay and Mekoryuk (William 2008). When conducting interviews in Toksook Bay in early 2008 about 2007 subsistence halibut harvests, Division of Subsistence staff encountered several subsistence fishers who did not hold SHARCs. Therefore, the 2007 estimate based on the SHARC list likely underestimates the community's total by some unknown amount.

Tununak (Regulatory Area 4E)

Tununak had a population of 325 in 2000, 315 of whom were Alaska Native (U.S. Census Bureau 2001). The population for 2007 was 341 (ADLWD 2007). The Division of Subsistence conducted a comprehensive household harvest survey in Tununak in 1986, which provides the only estimate of subsistence halibut harvests for the community prior to the adoption of the new subsistence regulations. The harvest estimate was 1,532 fish and 30,643 pounds net (dressed) weight, with a 95% confidence limit of +/-26%. The harvest per capita was 93 pounds net weight (ADF&G 2006).

No residents of Tununak obtained SHARCs in 2003[26], and the Traditional Elders' Council in Tununak did not approve Division of Subsistence plans to conduct interviews with potential

[26] One tribal member obtained a SHARC, but this person was not a resident of Tununak.

subsistence halibut fishers for 2003. Therefore, there was no subsistence halibut harvest estimate for this community for 2003. By the close of 2004, however, 70 residents of Tununak had obtained SHARCs (Table 11). Because only 9 SHARC holders responded to the postal survey (13%), harvest estimates for Tununak for 2004 were based on a very low sampling fraction. The estimated total subsistence halibut harvest was 1,954 pounds net weight by 31 fishers, 878 pounds harvested with set line gear and 1,076 pounds with hand operated gear. No Tununak SHARC holders reported any sport fishing activity.

As noted in Chapter One, the tribal government supported Division of Subsistence interviewing of subsistence halibut fishers in Tununak for the 2005 study year. Thirty-three of 70 SHARC holders were interviewed (47%). As in Toksook Bay, reported harvests were not expanded for Tununak because most known halibut fishers were interviewed. The total subsistence harvest of halibut was 2,661 pounds by 20 fishers. Most of the harvest (88%) was taken with hand-operated gear. There were no sport harvests of halibut in Tununak in 2005.

In 2006, 70 Tununak residents held SHARCs. No interviewing took place in the community, but SHARC holders were attempted to be contacted by telephone. Sample achievement was low (10 of 70 SHARC holders; 14%). Based on this limited sample, the estimated subsistence halibut harvest at Tununak in 2006 was 4,032 pounds by 33 subsistence fishers. Almost all of this harvest (3,808 pounds; 94%) was with hand-operated gear.

In 2007, 69 Tununak residents held SHARCs for a least part of the year. Supported by a short-term contract, staff of the Tununak IRA council conducted interviews in their community to supplement mail returns. The estimated subsistence harvest in Tununak in 2007 was 7,015

pounds by 38 fishers. Most of this harvest (5,479 pounds; 78%) was taken with hand-operated gear.

Compared to the results of the 1986 survey, the harvest estimates for Tununak for 2004 through 2007 appear low. The reasons for this difference are uncertain. Several additional years of harvest data collection plus continuing outreach and community support will be necessary to understand subsistence halibut harvest trends in this community.

COMPARISONS WITH NONSUBSISTENCE HARVESTS IN 2007

As reported in Table 17, the preliminary estimated total halibut removal in Alaskan waters in 2007 was 74,389,003 pounds (net weight) based on data compiled by the IPHC (Williams 2008) and this study. In this total, the removal of 19,049 pounds of sublegal halibut for personal use by CDQ organizations in Areas 4D and 4E has been added to the subsistence harvest category. Commercial harvests accounted for 70.3% of halibut removals in Alaska in 2007 (Figure 30). Bycatch of halibut in various other commercial fisheries ranked second, with 15.4% of the statewide removals. Sport harvests ranked third, with 10.3%. Wastage in commercial fisheries added 2.6% to the total halibut removals. Finally, the subsistence fishery accounted for 1.4% of the total removals of halibut in Alaska waters in 2007.

Halibut harvests by fishery in 2007 at the regulatory area level did not differ substantially from the statewide pattern (Table 17, Figure 31). In all regulatory areas, commercial harvests accounted for 52% or more of the total pounds net weight of halibut removals. In Area 2C (Southeast Alaska) and Area 3A (Southcentral Alaska), sport fisheries took 20.9% and 14.2%, respectively, of the halibut harvest in 2007; however, sport fisheries were smaller than the subsistence harvests in Area 3B and Area 4. Commercial bycatch accounted for 45.5% of halibut removals in Area 4. As a percentage of the total removal, subsistence halibut harvests were

largest in Area 2C at 4.3% of the total (although they were less than one-quarter of the sport harvest and about 6.2% of the commercial harvest) and in Area 3A at 1.0%.

CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS

SUMMARY AND CONCLUSIONS

New federal regulations governing subsistence halibut fishing in Alaska went into effect in May 2003. The 2007 calendar year was the fifth for which a program was implemented to estimate the subsistence harvest of halibut under these regulations. By several measures, the program was a success. In 2007, 15,047 members of Alaska Native tribes with traditional uses of halibut and residents of eligible rural communities held subsistence halibut registration cards (SHARCs) from NMFS, 29% more than the number of SHARCs that had been issued by the end of 2003. Of all SHARC holders, 8,682 (58%) voluntarily provided information about their subsistence halibut fishing activities in 2007 by responding to the survey. This compares to a response rate of 59% (8,426 respondents of 14,206 SHARC holders) for the 2006 study year; 60% for the 2005 study year (8,565 respondents of 14,306 SHARC holders); 62% for the 2004 study year (8,524 respondents of 13,813 SHARC holders); and 65% for the 2003 study year (7,593 respondents of 11,625 SHARC holders) (Table 18).

Based on these survey returns, an estimated 5,933 individuals participated in the Alaska subsistence halibut fishery in 2007. This is an increase of 0.4% from the estimated 5,909 individuals who subsistence fished for halibut in Alaska in 2006 and is 20% higher than the estimated 4,942 SHARC holders who fished in 2003. The estimated subsistence harvest of halibut in Alaska in 2007 is 53,697 fish and 1,032,293 pounds (+/-4.1%) (net weight). In comparison, the 2006 estimated subsistence halibut harvest was 54,089 fish and 1,125,312 pounds (+/-2.9%); the 2005 estimated subsistence halibut harvest was 55,875 fish and 1,178,222 pounds (+/-3.0%) (net weight); the 2004 estimated subsistence harvest was 52,412 halibut and 1,193,162 net pounds (+/- 1.5%), and 43,926 halibut for 1,041,330 pounds (+/- 4%) were harvested in the subsistence fishery in 2003. As measured in pounds, the 2007 subsistence

halibut harvest was about 8% lower than the harvest in 2006 and 1% lower than the 2003 estimated harvest (Table 18). The total estimated harvests for 2003-2007 all fell below the 1.5 million net pounds estimated for the Alaska subsistence halibut harvest when the current regulations were developed by the North Pacific Fishery Management Council (see www.fakr.noaa.gov/frules/70fr16742.pdf, page 16748; NMFS 2003). The larger estimated harvest in 2004 compared to 2003 corresponded to the greater number of individuals who held SHARCs through December 2004 and a proportional increase in the number of individuals who subsistence fished for halibut. The leveling off and slight decline in the harvest in 2007, 2006 and 2005 compared to 2004 are consistent with the small decrease in individuals who held SHARCs for at least a portion of these years. Average harvests per fisher were slightly lower in 2007 (9.0 halibut per fisher for 174 pounds) compared to 2006 (9.2 halibut per fisher for 190 pounds). Of the 5 study years, average harvests were highest in 2005 (9.9 halibut per fisher for 210 pounds). In the first 2 years of the study, averages were 8.8 halibut per fisher for 199 pounds in 2004 and 8.9 halibut per fisher for 211 pounds in 2003. Of the 5 study years, the average weight of subsistence halibut declined from 23.7 pounds in 2003 to 19.2 pounds in 2007 (a decline of 19%) (Table 18).

After 5 years of the harvest assessment program, it appears likely that the overall larger statewide harvest estimates in 2004, 2005, and 2006 compared to 2003 were at least in part a consequence of more complete participation of subsistence fishers in the SHARC program after 2003 and, perhaps, increasing trust on the part of subsistence fishers in the survey. As the community case studies demonstrate, however, a number of factors appear to have caused the differences in harvest estimates over the 5 study years, and these differ by community. Some were methodological (St. Paul for example), while other factors were probably linked to more

thorough and accurate documentation of harvests (Cordova, Sand Point) rather than a true increase.

In 2007, most subsistence halibut were harvested with setline (stationary) gear (69%) and the rest with hand operated gear (31%). Similarly, in 2006, 70% of the subsistence halibut were taken with setline gear; in 2005, 70% of the subsistence halibut were harvested with setline gear; in 2004, 74% of the subsistence halibut were harvested with setline gear; and in 2003, setlines accounted for 72% of the harvest.

The largest portion of the Alaska subsistence halibut harvest in 2007 occurred in Regulatory Area 2C (Southeast Alaska), 51% (524,897 pounds); followed by Area 3A (Southcentral Alaska), 36% (372,289 pounds); Area 4E (East Bering Sea Coast), 5% (52,135 pounds); Area 3B (Alaska Peninsula), 5% (47,748 pounds); Area 4C (Pribilof Islands), 1% (15,077 pounds); Area 4A (Eastern Aleutian Islands), 1% (14,946 pounds); Area 4D (Central Bering Sea), less than 1% (3,204 pounds); and Area 4B (Western Aleutian Islands), less than 1% (1,997 pounds). In 2006, 2005, 2004, and 2003 also, Area 2C (Southeast Alaska) and Area 3A (Southcentral Alaska) accounted for most of the subsistence harvests. The proportion of the statewide subsistence halibut harvest occurring in Area 2C (Southeast Alaska) has declined from 60% in 2003 and 57% in 2004 to 51% in 2005, 52% in 2006, and 51% in 2007. Correspondingly, the portion occurring in Area 3A (Southcentral Alaska) increased from 27% in 2003 to 34% in 2004, 36% in 2005, 34% in 2006, and 36% in 2007. Subsistence harvests accounted for 1.4% of the total halibut removals in Alaska waters in 2006, compared to 1.5% in 2006, 1.5% in 2005, 1.5 % in 2004, and 1.3% in 2003.

Subsistence halibut fishers had an estimated incidental harvest of 15,266 rockfish in 2007. This a decrease of 10% from the estimate of 16,945 rockfish for 2006, an increase of 23% from the

estimate of 12,395 rockfish for 2005, a decline of 20% from the estimated harvest of 19,001 rockfish in 2004, and an increase of 3% from the 14,870 rockfish harvested in the fishery in 2003 (Table 18). There were 1,568 SHARC holders who harvested rockfish while subsistence halibut fishing in 2006, compared to 1,529 in 2006, 1,544 in 2005, 1,616 in 2004, and 1,239 in 2003. Most of the incidental rockfish harvests in 2007 occurred in Area 2C (68%), as they had in 2006 (68%), 2005 (63%), 2004 (68%), and 2003 (67%).

In 2007, subsistence halibut fishers harvested an estimated 3,392 lingcod in the subsistence halibut fishery. This is a decrease of 3% from the estimate of 3,486 lingcod harvested in the subsistence halibut fishery in 2006, an increase of 44% from the estimate of 2,355 lingcod harvested in the subsistence halibut fishery in 2005; a decline of 23% from the estimate of 4,407 lingcod harvested in the subsistence halibut fishery in 2004; and an increase of 3% from the 2003 estimate of 3,298 lingcod. In total, 959 SHARC holders harvested lingcod while subsistence halibut fishing in 2007. This is 3% higher than the 927 SHARC holders who had an incidental harvest of lingcod in 2006; 11% higher than the 862 SHARC holders who had an incidental harvest of lingcod in 2005; 1% higher than the 953 SHARC holders who had an incidental harvest of lingcod in 2004 and 37% higher than the estimate of 699 SHARC holders in 2003 (Table 18). As with rockfish, most of the incidental lingcod harvest took place in Area 2C in 2007 (66%), 2006 (59%), 2005 (56%), 2004 (56%) and 2003 (51%).

As discussed above, comparisons of the 2003-2007 harvest estimates with those from previous research by the Division of Subsistence are complicated by different research methods, but such comparisons are still instructive. Subsistence harvest estimates for most of the larger communities (combining tribal and rural SHARC holders) such as Sitka, Petersburg, and Kodiak for 2003-2007 are similar to earlier estimates based on household surveys. This is significant in

that these communities account for a very large percentage of the total harvest. We conclude that the 5 years of the survey of SHARC holders produced sound estimates of subsistence harvests of halibut in Alaska based on a scientific sample and a relatively high response rate. The estimates can be further evaluated in the future as the new subsistence regulations become more completely implemented and additional years of harvest data are collected. Continued documentation of the subsistence harvests is also necessary for any meaningful discussion of long-term trends in the fishery.

RECOMMENDATIONS

We conclude this report with the following recommendations based on experiences during the 5 years of this project. These suggestions are similar to those that were offered at the conclusion of the earlier years' reports (Fall et al. 2004:30-31; Fall et al. 2005:34-36; Fall et al. 2006:37-38; Fall et al. 2007:39-40; Fall et al. 2008:39-40).

1. The harvest assessment program for the Alaska subsistence halibut fishery should continue.[27] The five-year effort just completed developed a time series for assessment of harvest trends in the future. As discussed above, the methods used for 2003-2007 (a short postal survey with 3 mailings, supplemented by community outreach, interviewing in selected communities, and partnerships with tribal governments), were successful and should be retained to facilitate comparisons across study years. A recommendation in the final report for the third year of the program was that "implementation of a program to collect harvest data in-season in selected communities should be considered on a trial basis to help supplement and evaluate the data collected through the postal survey" (Fall et al. 2006:37). As noted in Chapter 1, the Division of Subsistence conducted an in-

[27] Through an amendment to award number NA07NMF4370170, the Division of Subsistence received funding in 2008 from NOAA to conduct a sixth year of surveys to document subsistence harvests that occurred in 2008 in regulatory areas 2C and 3A.

season harvest monitoring project for the subsistence halibut fishery in Sitka and Kodiak in 2006 with funding provided by NMFS. Findings will be presented in a separate report to be completed in 2009, and consideration should be given in the future to in-season monitoring programs in other communities.

2. Additional outreach is needed in several communities, including Unalaska/Dutch Harbor, Tununak, Toksook Bay, and Sand Point, based on relatively low response rates or unexpectedly low numbers of SHARCs issued. Contracts with tribal governments or local hiring in Sitka, Angoon, Hydaburg, Saxman, Ketchikan, and St. Paul should be continued in future harvest monitoring efforts in those communities.

3. Further community outreach should continue in Area 4E (East Bering Sea Coast). There are many communities in this very large geographic area but relatively few SHARCs were issued. For the 2007 study year (as discussed in Chapter 1), the focus of this outreach was on those communities that are known to have relatively large traditional harvests of halibut. Harvests in many other communities in this area are likely to be small. Although a major outreach effort that would include most of these other communities would be expensive and unnecessary, communications with tribal governments could result in more enrollments in the SHARC program and more confidence in the survey results.

4. Regulations were adopted by NMFS in late 2004 creating a community harvester program for subsistence halibut fishing. It is essential to continue to integrate this program into the SHARC harvest assessment program. This may entail further cooperative work with tribal governments.

5. If rockfish or lingcod incidental harvests in the halibut subsistence fishery continue to be of interest to managers in some areas, more specific data collection tools need to be developed to collect harvest data at the species level for rockfish in particular communities. This should only be done in selected areas of concern given the additional costs to data collection and analysis that this will entail (see Wolfe 2002 for more discussion of collection of rockfish harvest data through the SHARC survey). Such research should only occur through partnerships with local communities and tribes, and should include a combination of participant observation, key respondent interviewing, and survey methods.

6. Further evaluation of sport fish harvest data, achieved through the postal Statewide Harvest Survey administered by the Division of Sport Fish should take place for the larger rural communities participating in the subsistence halibut fishery for at least several years. (Analysis of these data for Sitka was conducted as a pilot effort for 2004. See Fall et al. 2005:22-24.) As discussed in Chapter 2 and Chapter 3, many SHARC holders also reported that they sport fished for halibut in 2003-2007. It will be important to try to determine if a shift in harvest from the "sport" category to the subsistence category is occurring, in order to evaluate trends in the subsistence fishery and the effect of the new subsistence halibut regulations on fishing patterns. Also, as also noted in Chapter 3, comparisons of community harvest estimates from previous research require consideration of sport harvests as well as harvests under the new subsistence regulations. Such comparisons are also important for evaluating the subsistence harvest assessment program and the performance of the new subsistence regulations.

7. Consideration should be given to funding and implementing ethnographic investigations in key halibut fishing communities to evaluate the effects of the new subsistence fishing regulations on fishing patterns. These studies would entail more detailed interviewing of fishers regarding any changes in gear choice, fishing effort, harvest amounts, incidental harvests of rockfish or lingcod, or other fishing activities that have resulted from the regulatory changes. These interviews could also investigate traditional knowledge about local halibut stocks (as well as local stocks of rockfish and lingcod) that might prove useful to management agencies, communities, and tribes for future management of the subsistence, sport, and commercial halibut fisheries in Alaska.

8. Results of the 5 years of survey data and the in-season project should be evaluated to design a sustainable harvest monitoring program for the Alaska subsistence halibut fishery. Such a program could be based on a postal survey linked with other data-gathering methods in selected communities or regulatory areas, such as face-to-face interviews, calendars, or limited in-season monitoring.

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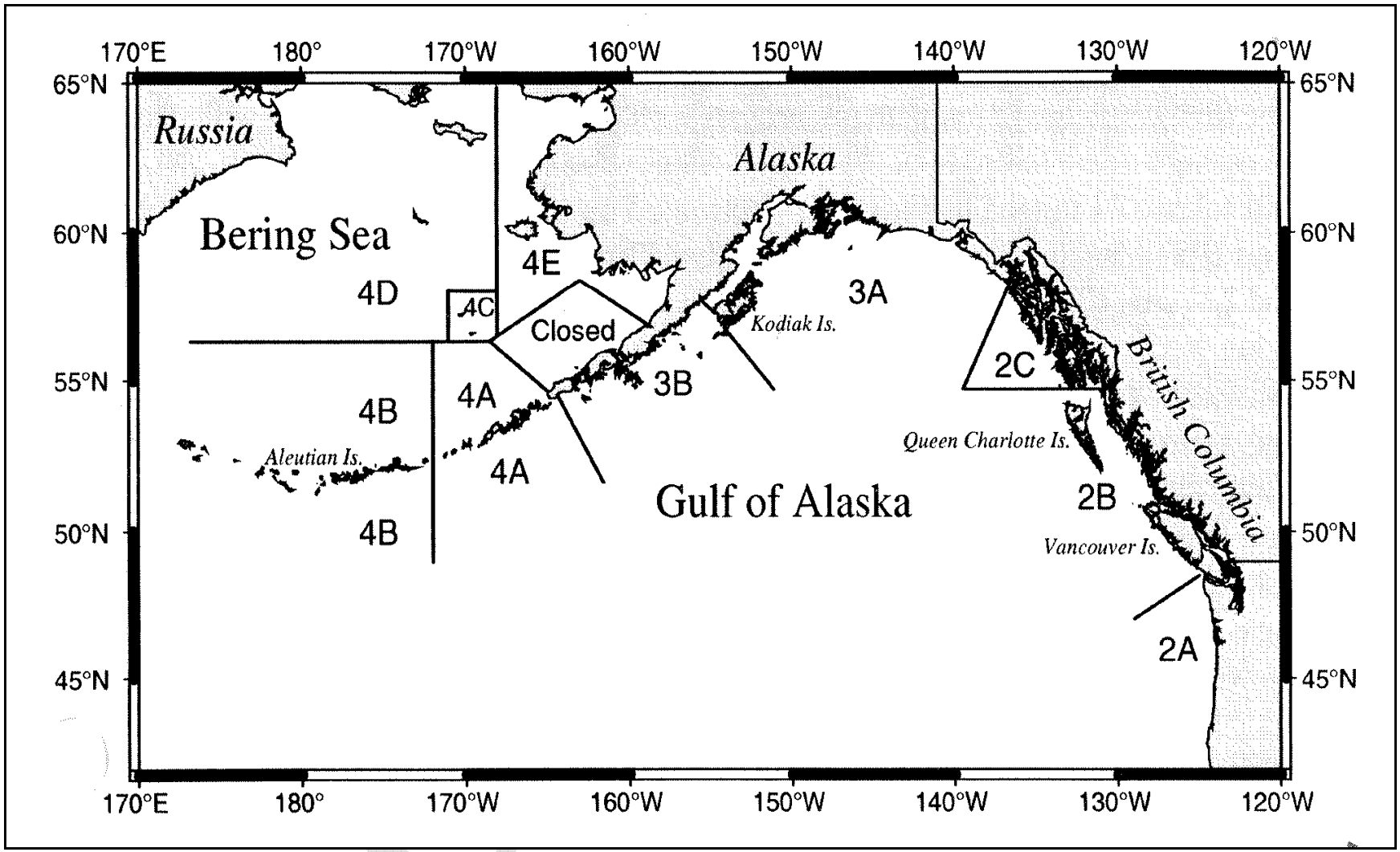

Figure 1.–Regulatory areas for the federal Pacific halibut subsistence fishery.

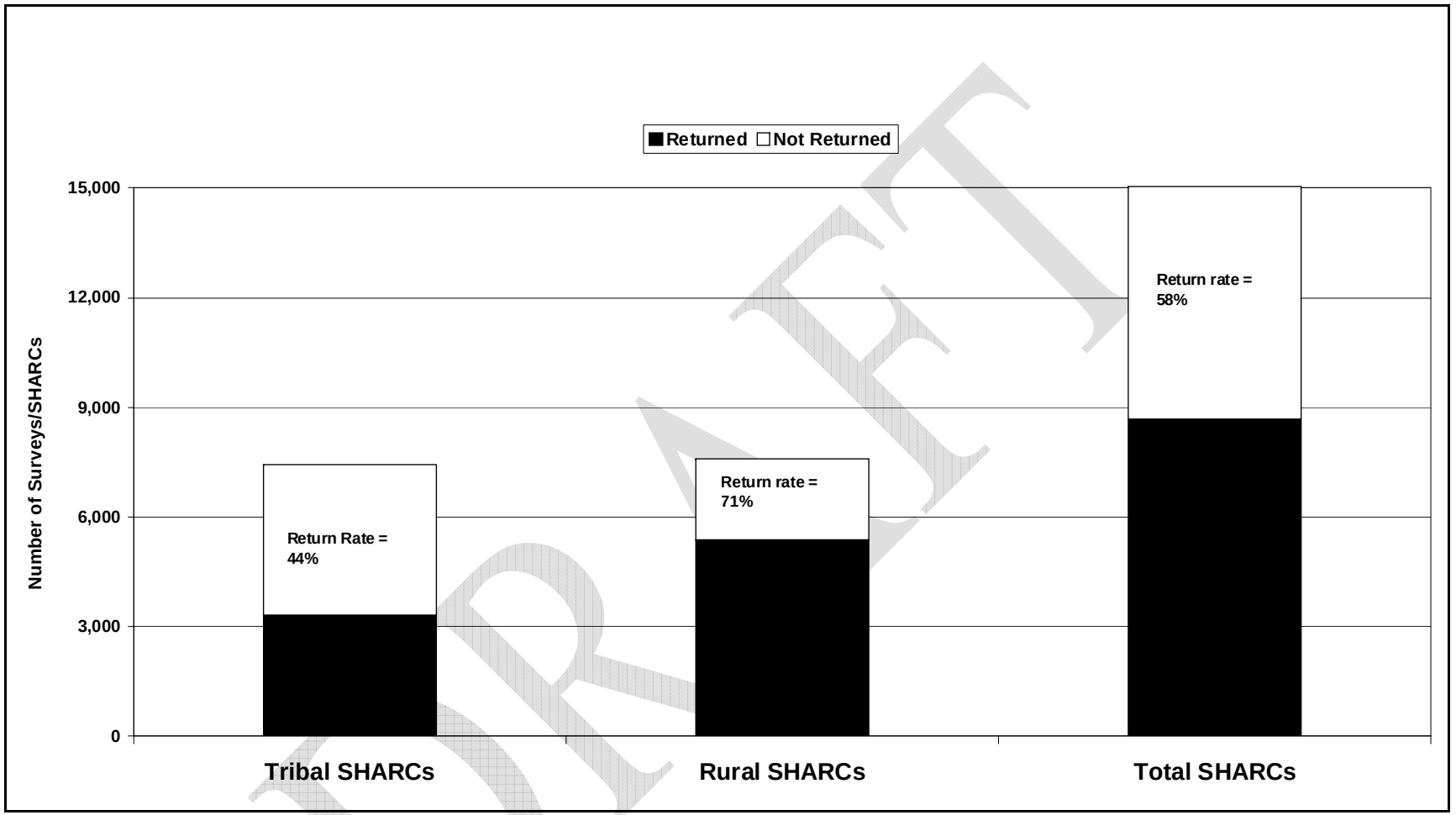

Figure 2.–Number of surveys returned and return rates for subsistence halibut surveys by SHARC type, 2007.

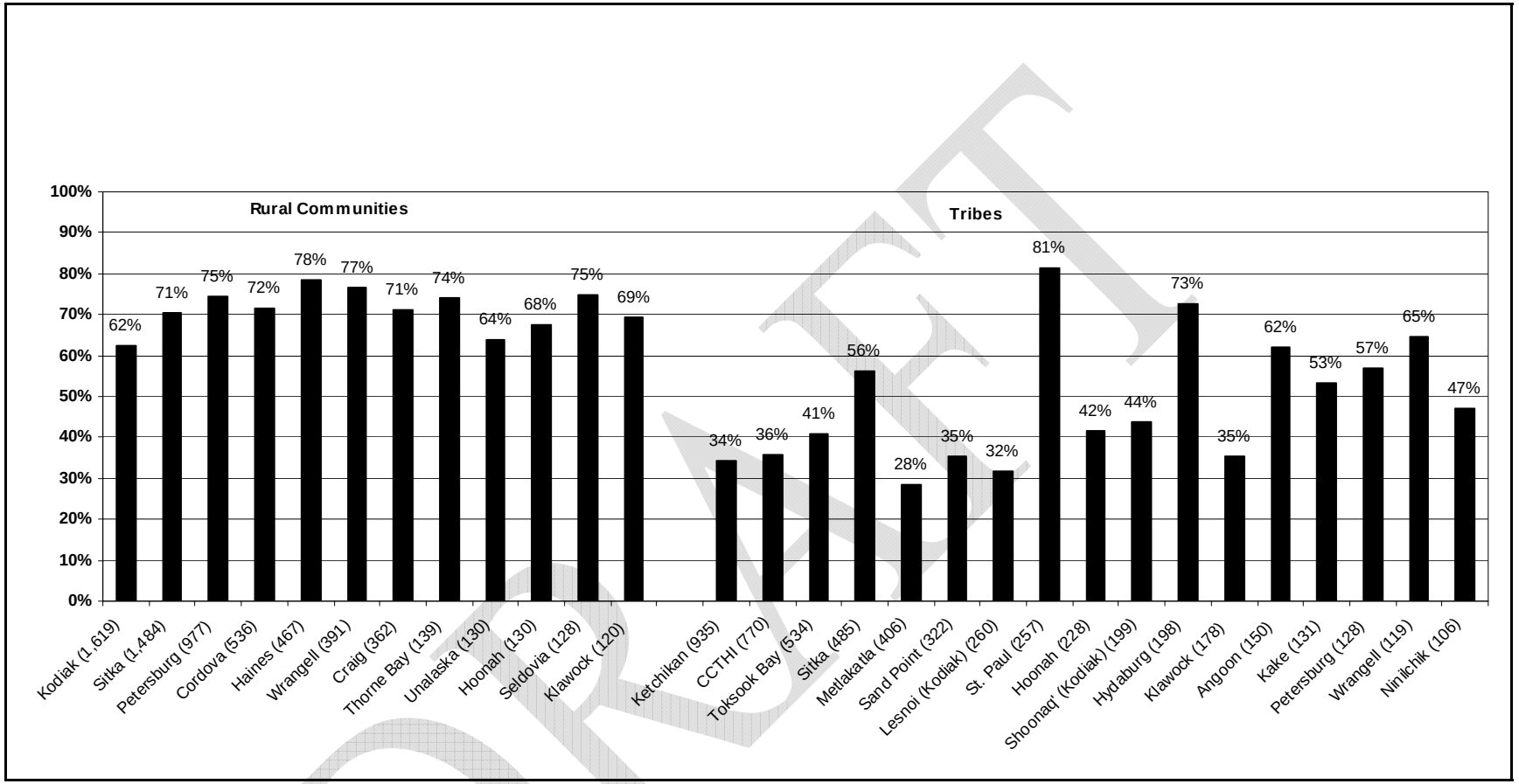

Figure 3.–Subsistence halibut harvest survey return rates, communities and tribes with more than 100 SHARCs issued, 2007.

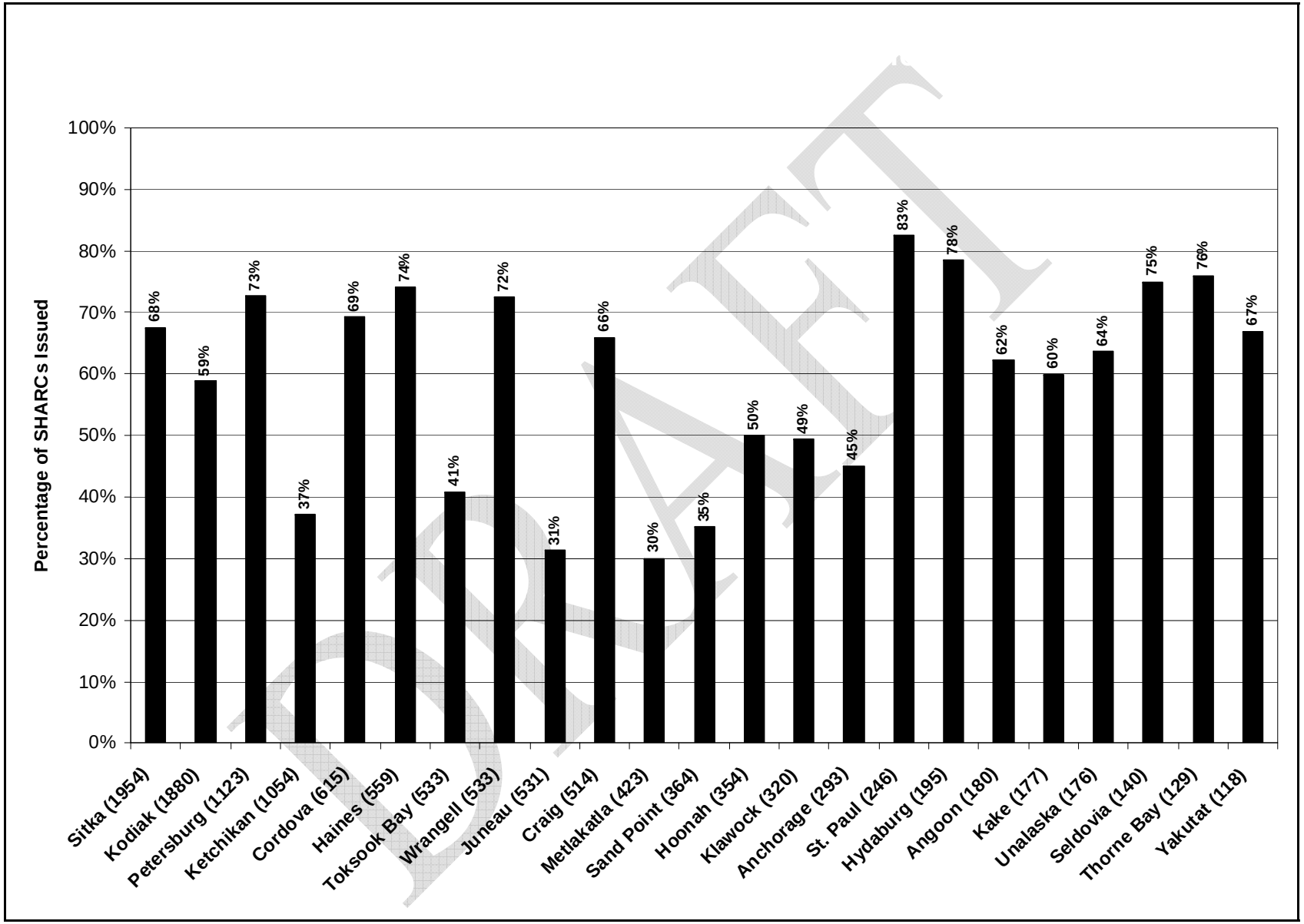

Figure 4.–Return rate by place of residence, 2007.

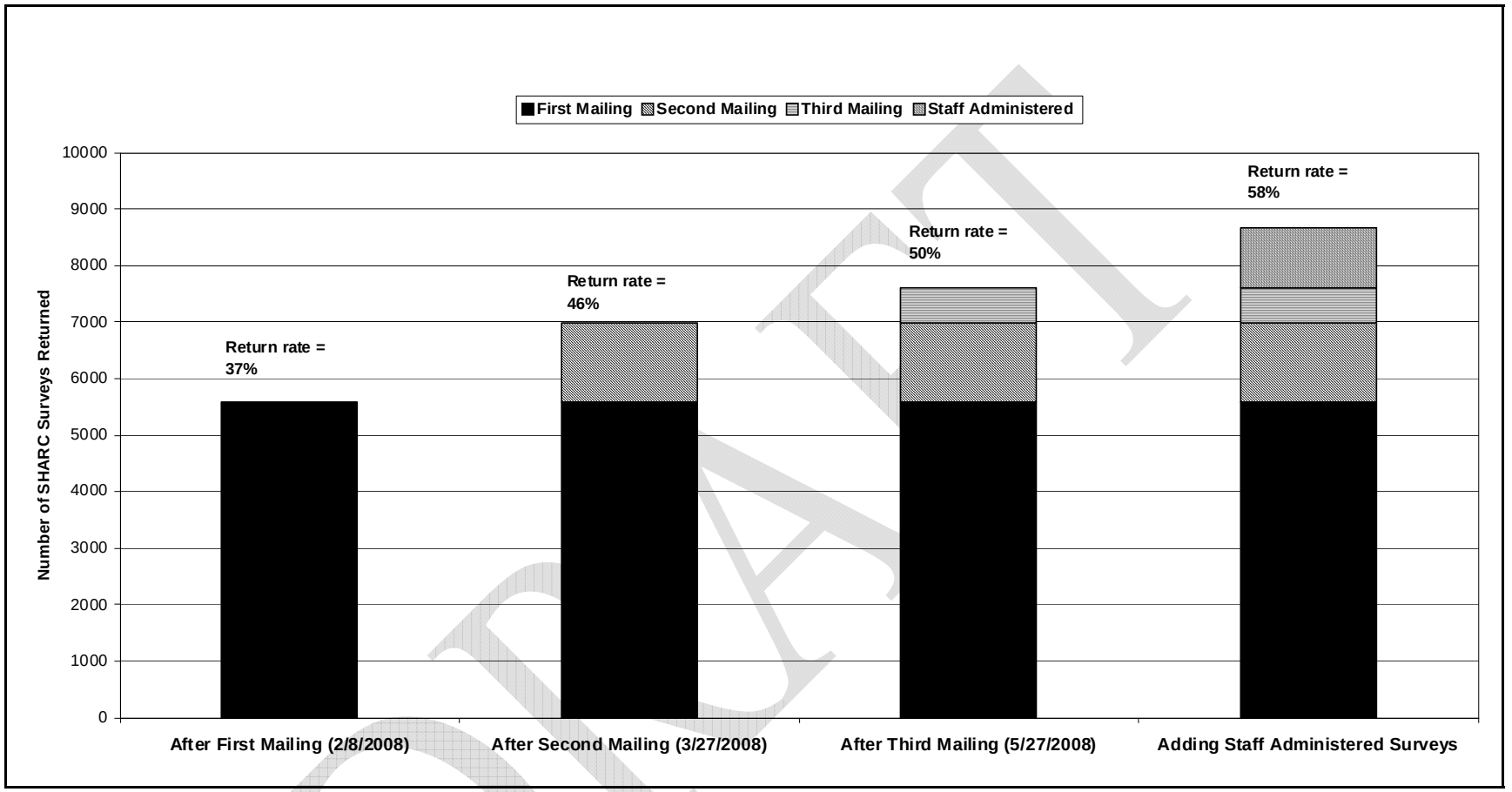

Figure 5.–Number of survey responses by response category, 2007.

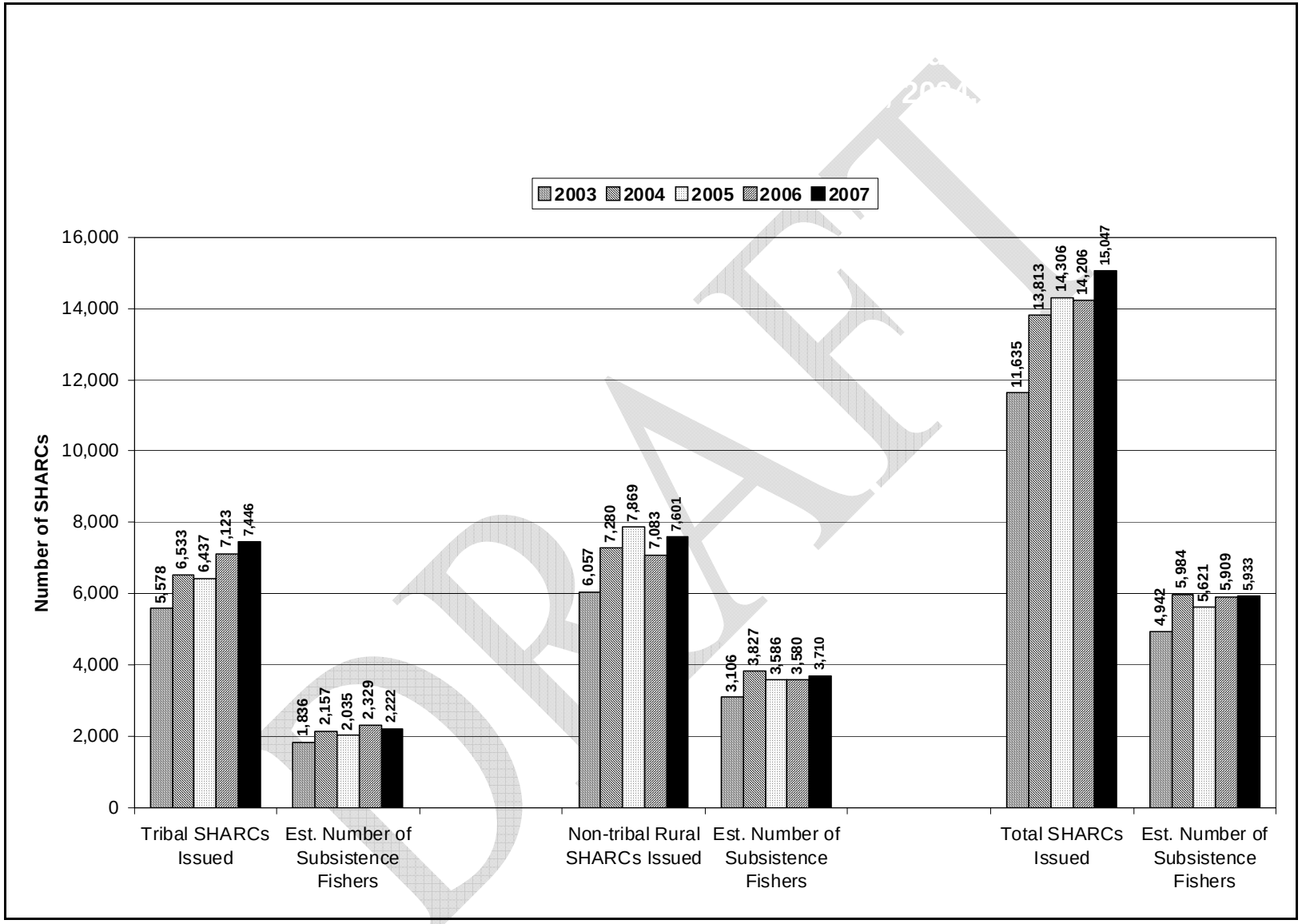

Figure 6.–Number of SHARCs issued and estimated number of subsistence halibut fishers by SHARC type, 2003-2007.

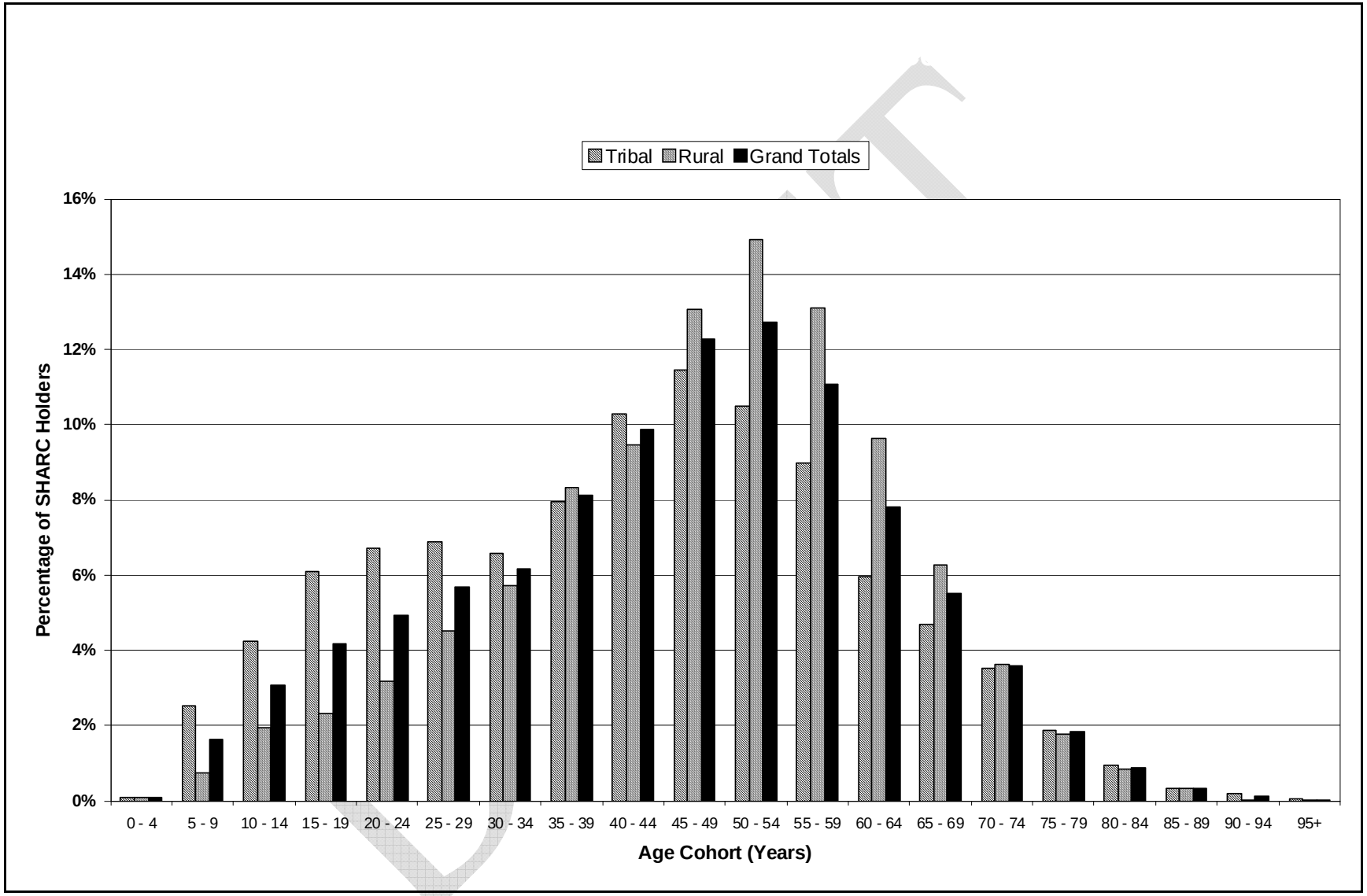

Figure 7.–Age of subsistence halibut registration certificate holders by SHARC type, 2007.

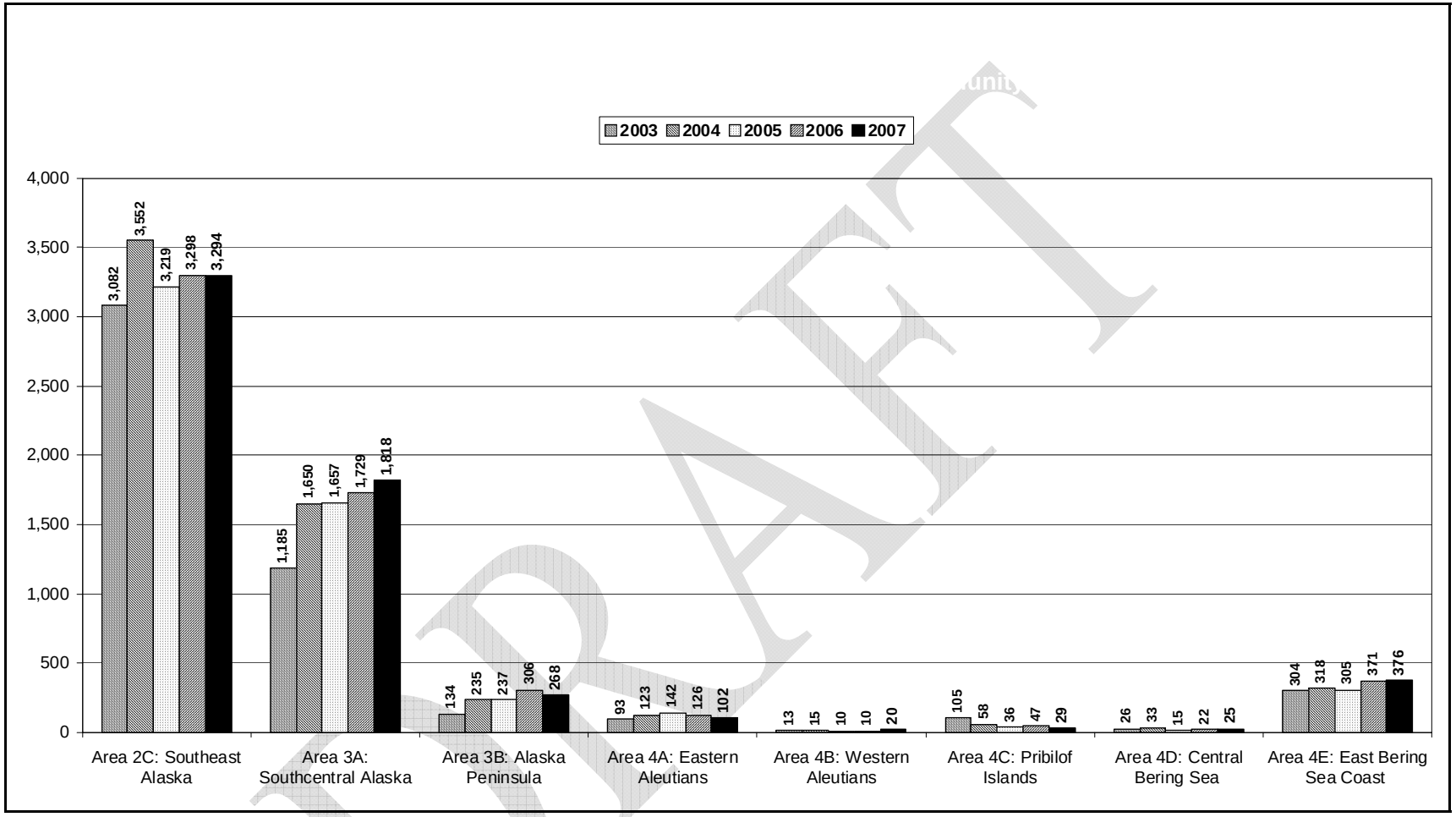

Figure 8.–Estimated number of Alaska subsistence halibut fishers, 2003-2007 by regulatory area of tribe or rural community.

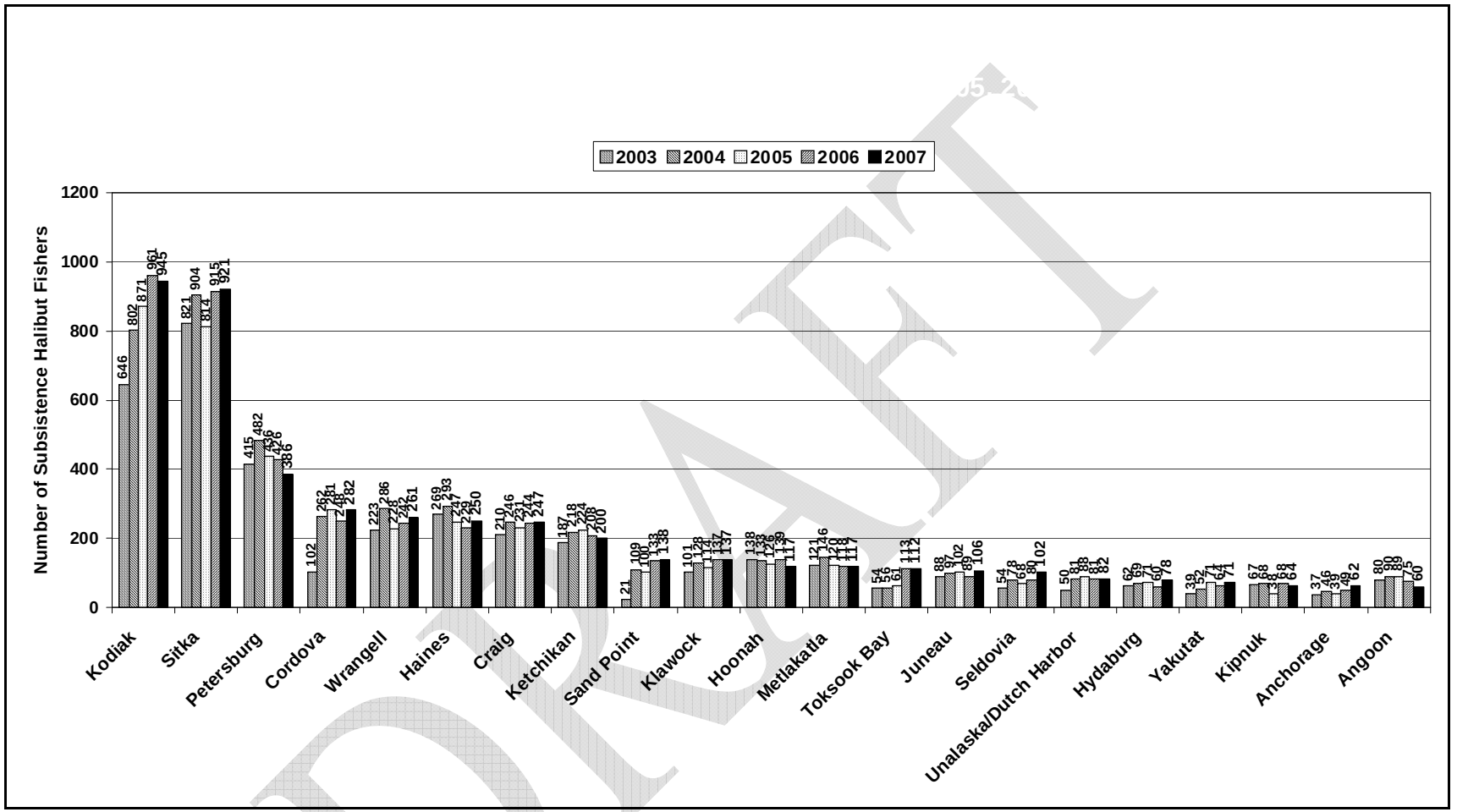

Figure 9.–Estimated number of subsistence halibut fishers by place of residence, communities with 60 or more fishers, 2003-2007.

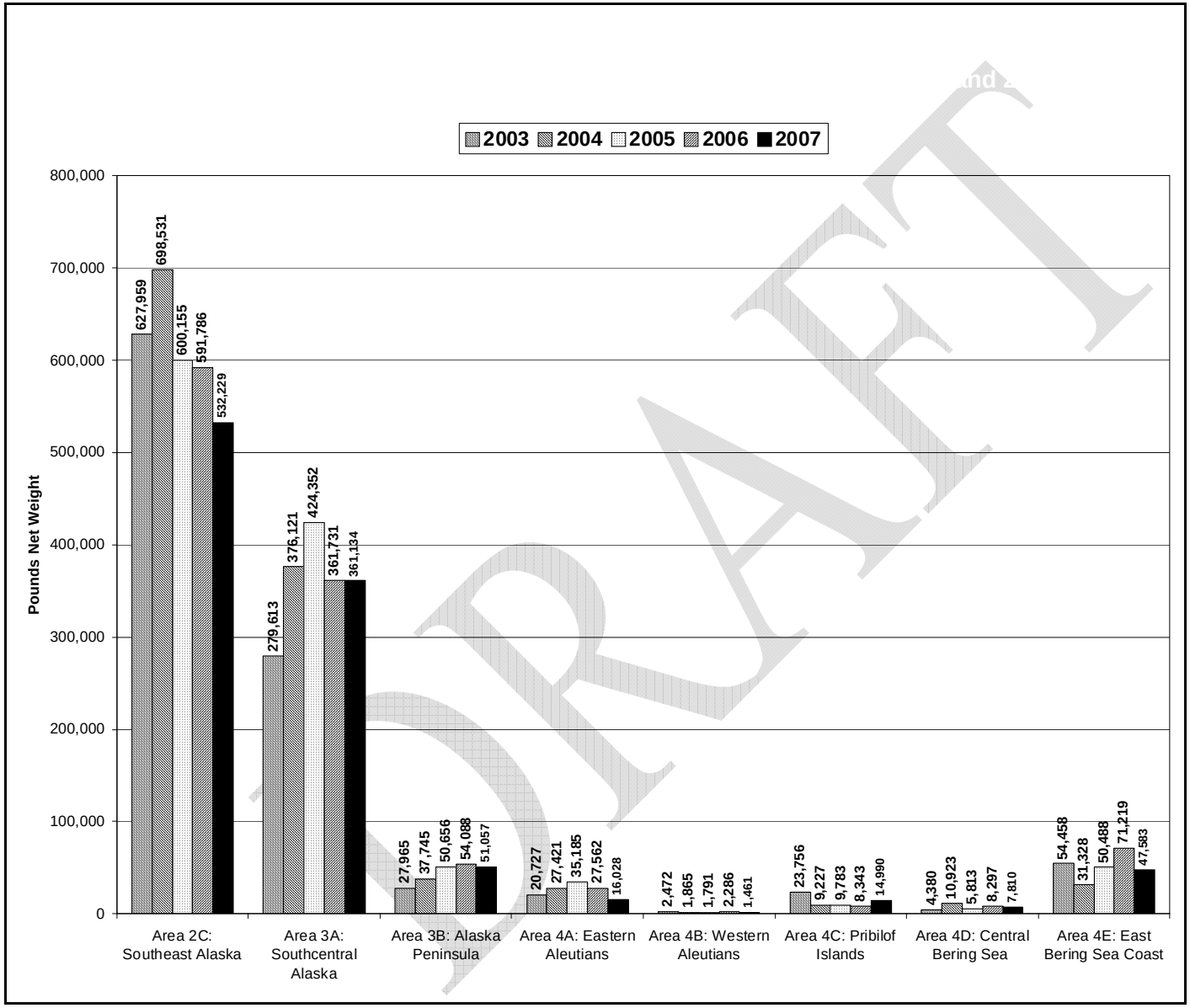

Figure 10.–Estimated subsistence halibut harvests, pounds net weight, by regulatory area of tribe and rural community, 2003-2007.

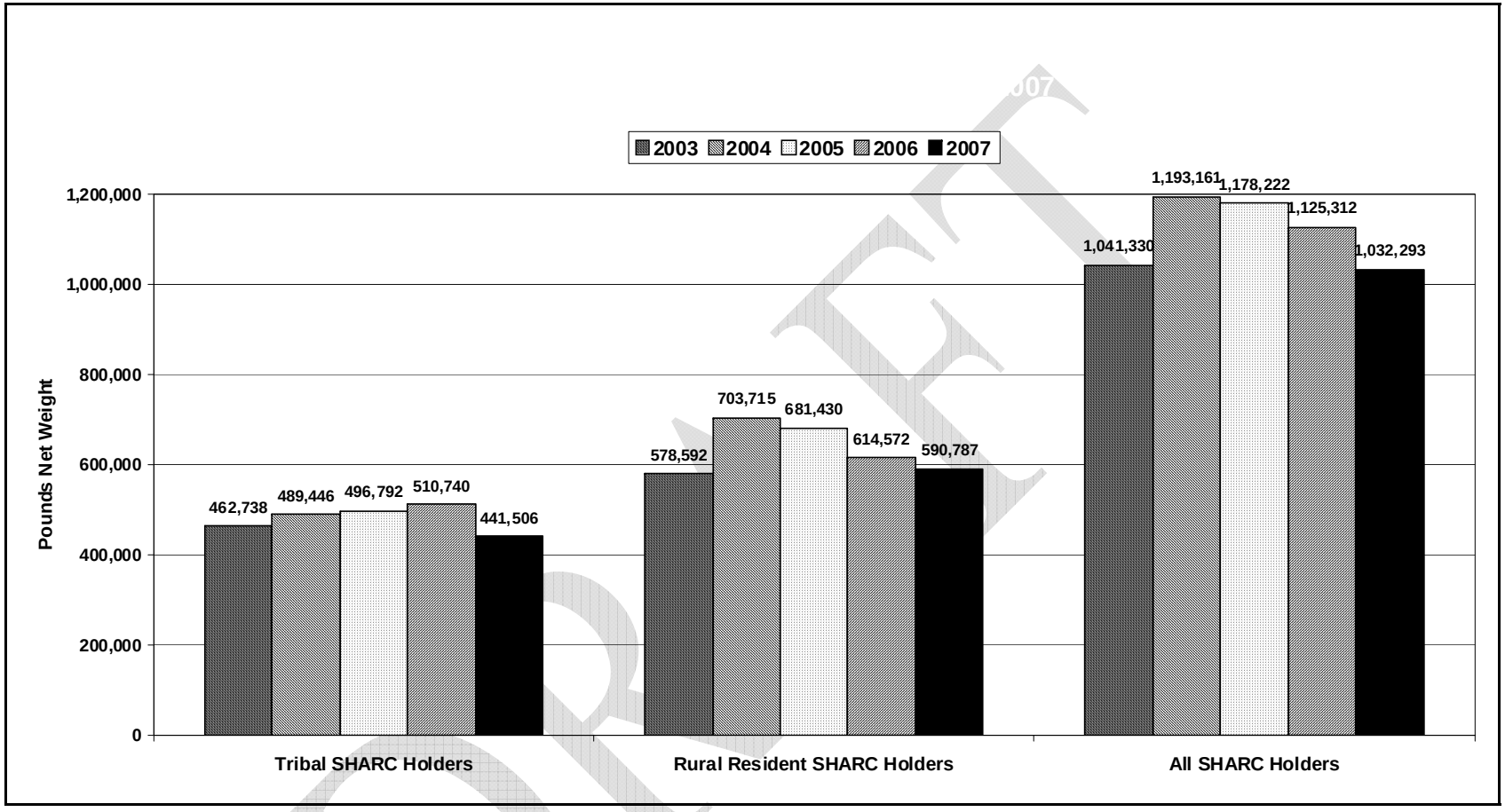

Figure 11.–Estimated Alaska subsistence halibut harvests in pounds net weight by SHARC type, 2003-2007.

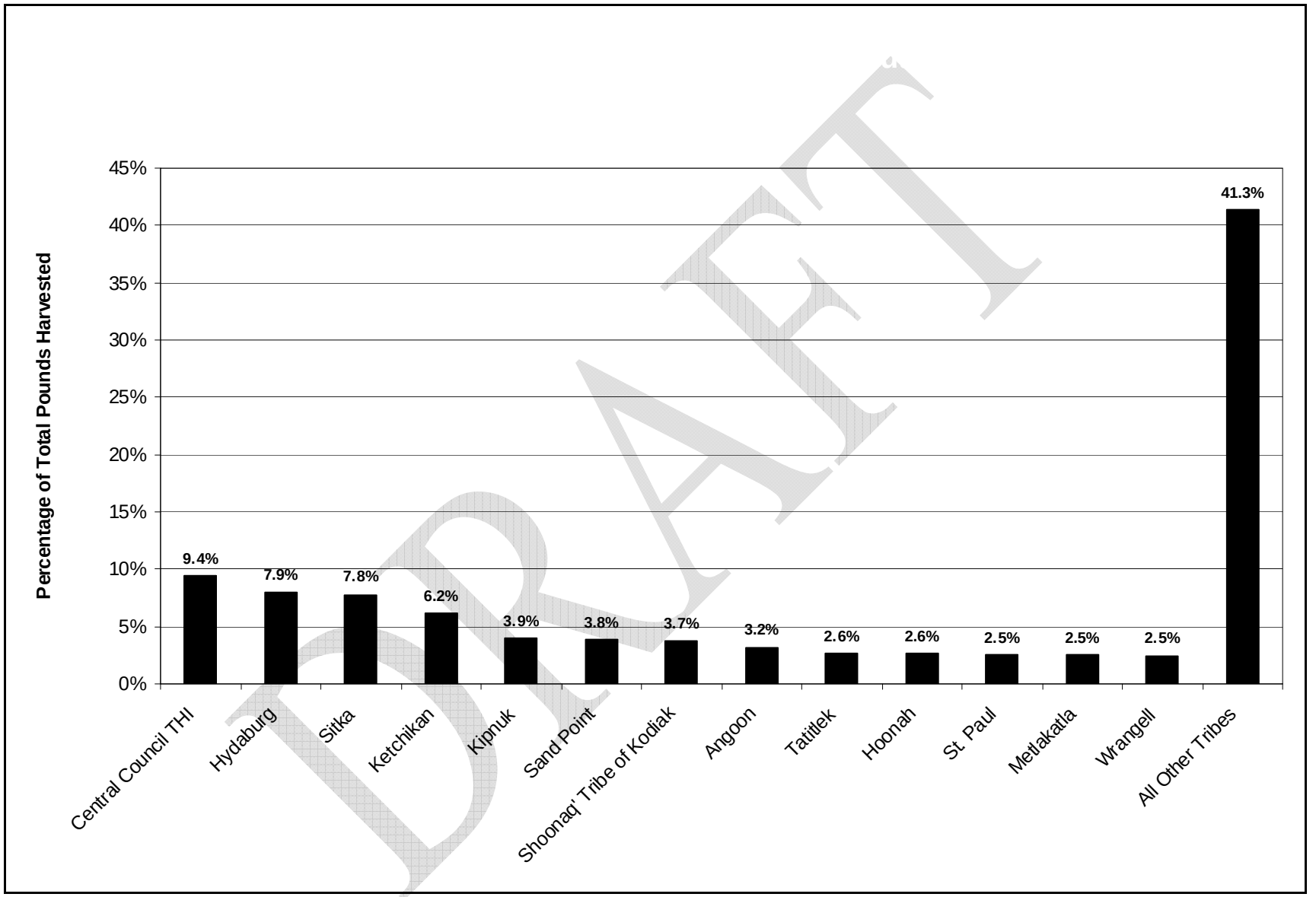

Figure 12.–Percentage of tribal subsistence halibut harvest by tribe, 2007.

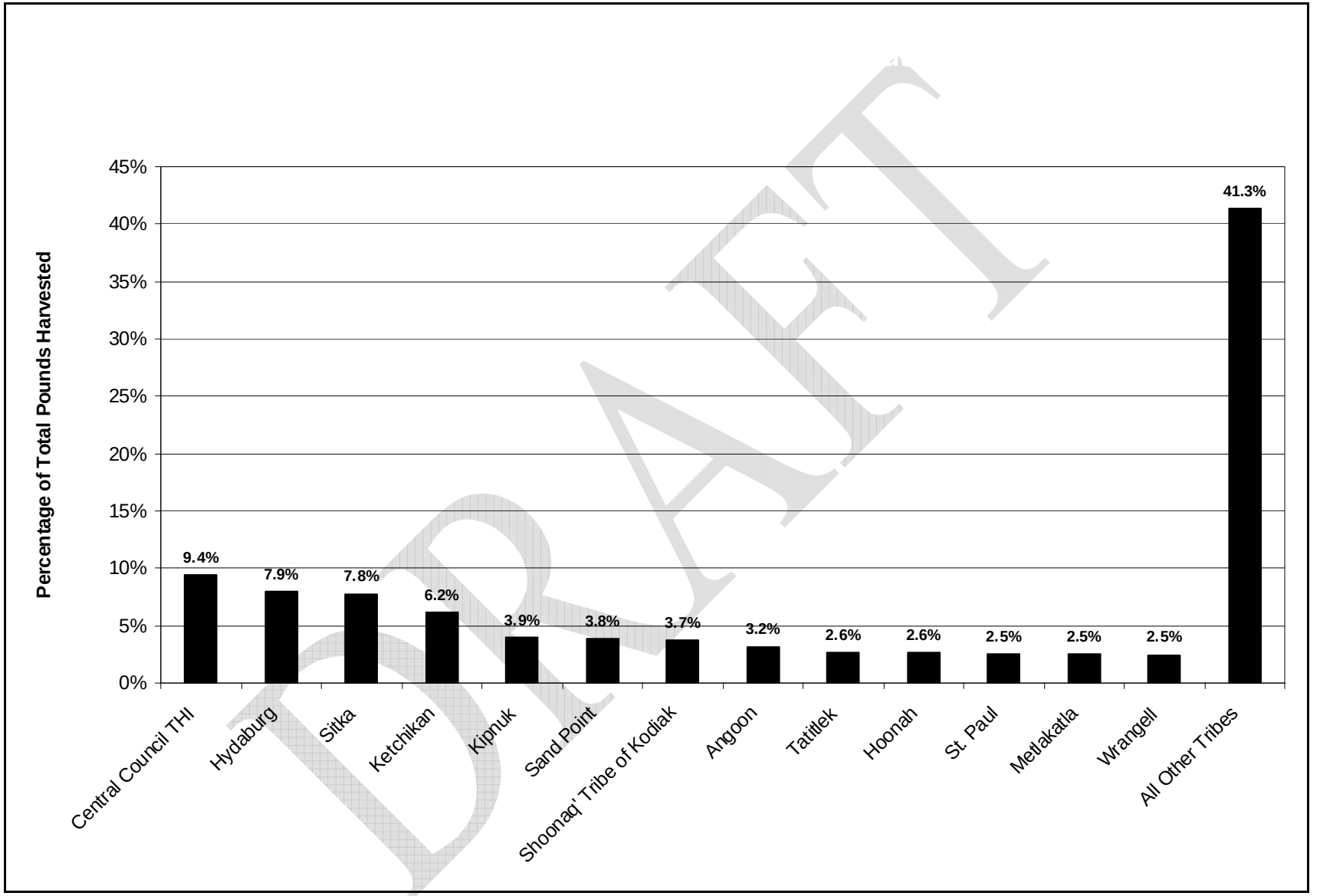

Figure 13.–Percentage of rural community subsistence halibut harvest by community, 2007.

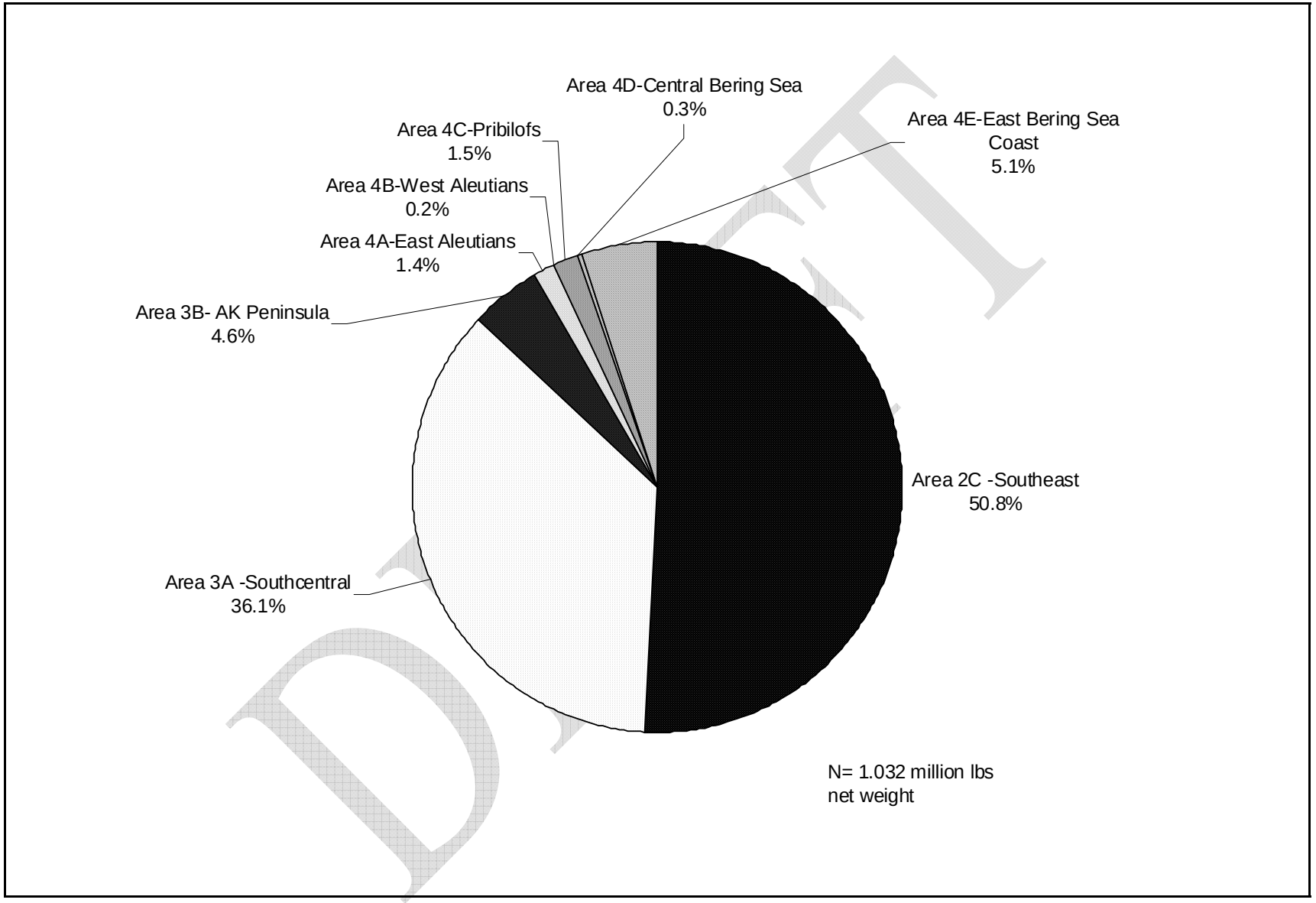

Figure 14.–Percentage of subsistence halibut harvest by regulatory area fished, 2007.

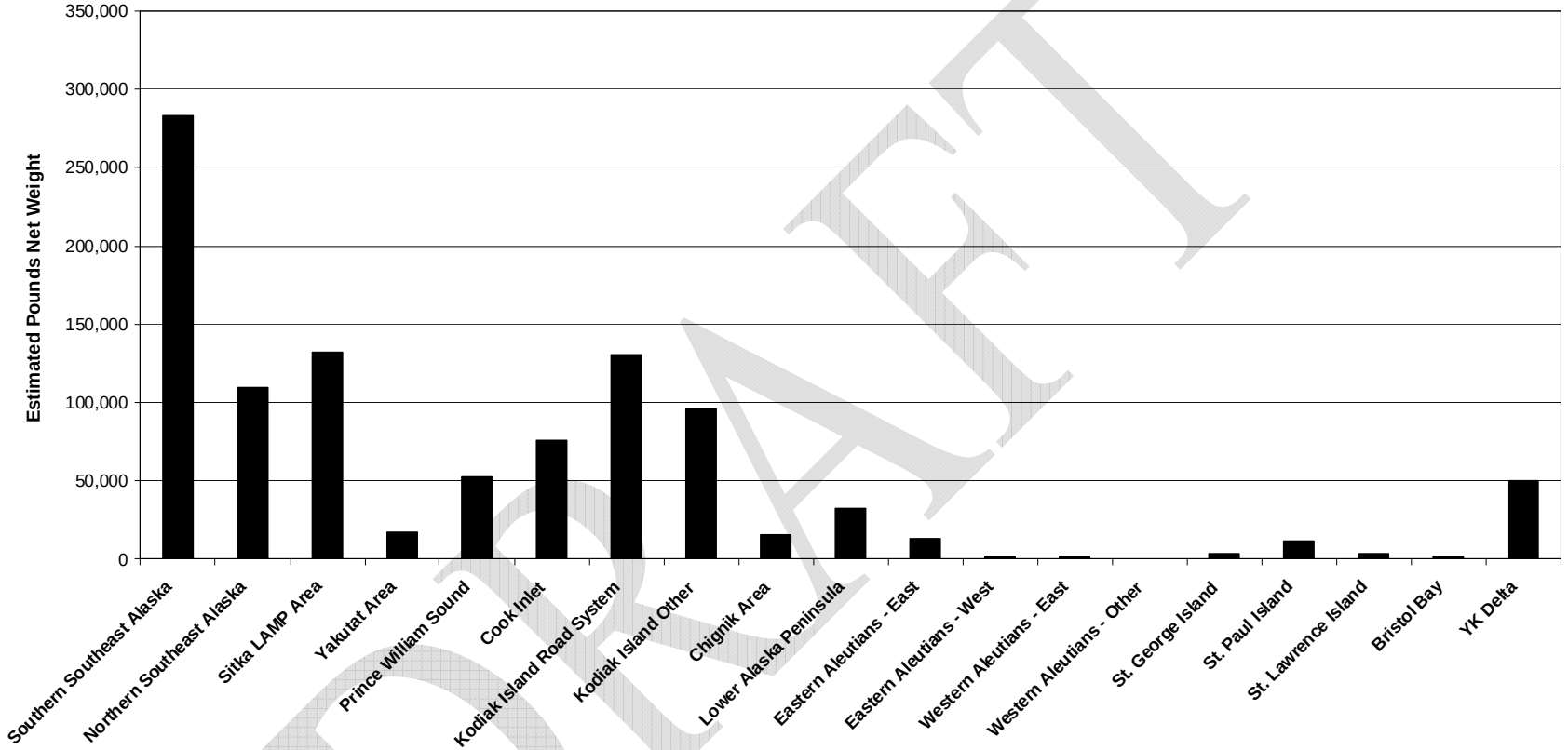

Figure 15.–Alaska subsistence halibut harvests by geographic area, 2007.

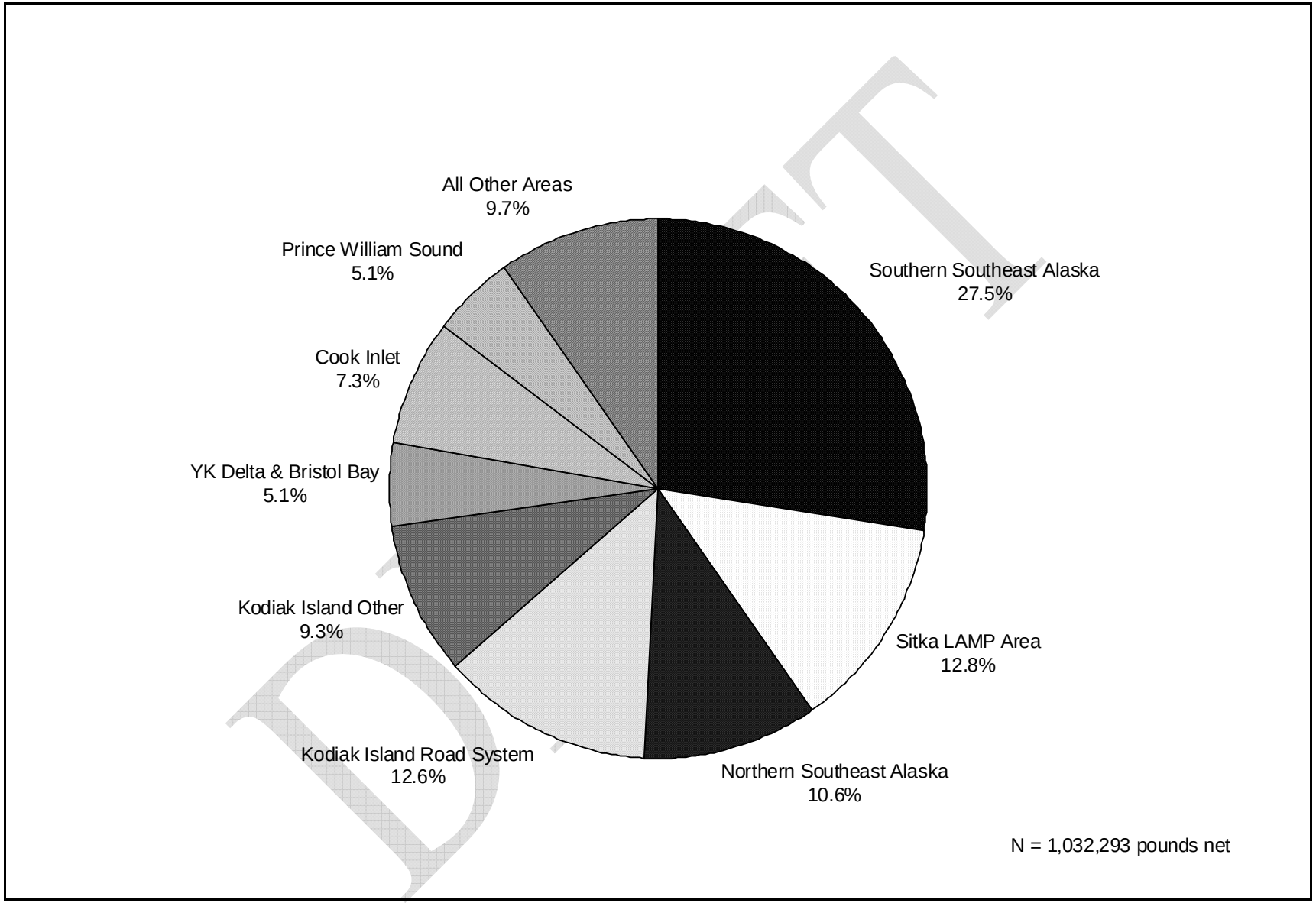

Figure 16.–Percentage of Alaska subsistence halibut harvest by geographic area, 2007.

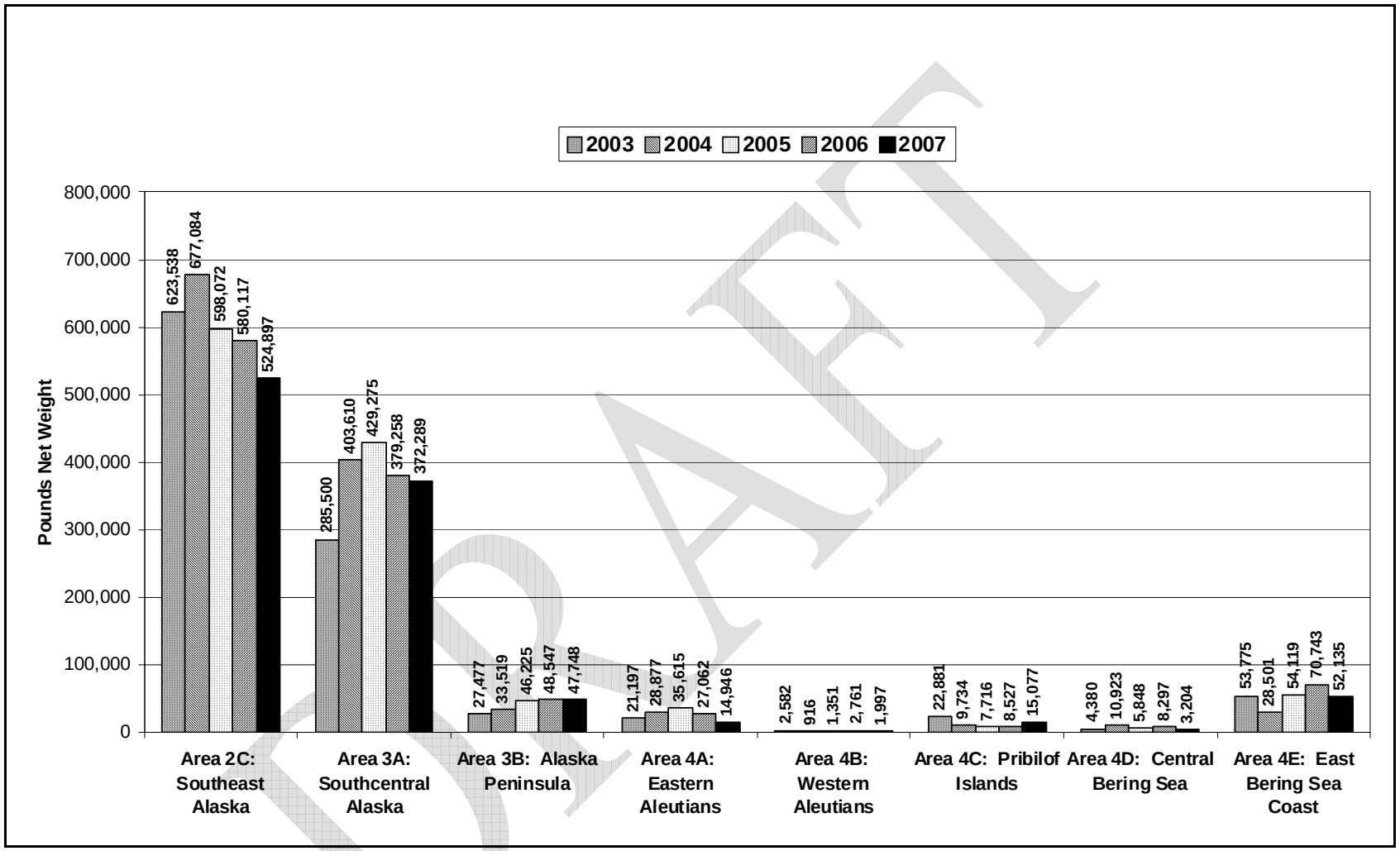

Figure 17.–Estimated subsistence halibut harvests, pounds net weight, by regulatory area fished, 2003-2007.

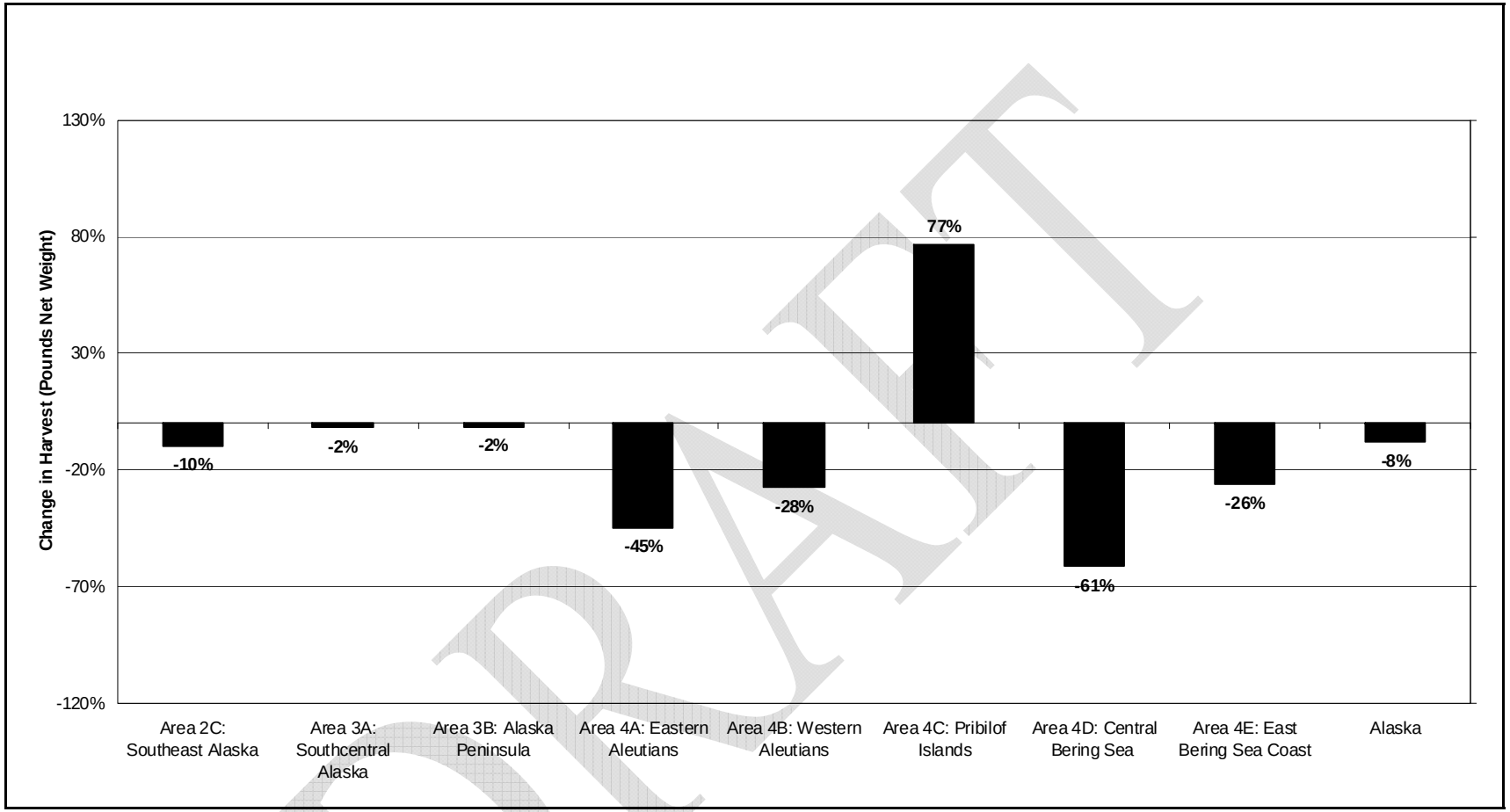

Figure 18.–Change in Alaska subsistence halibut harvests from 2006 to 2007 by regulatory area fished.

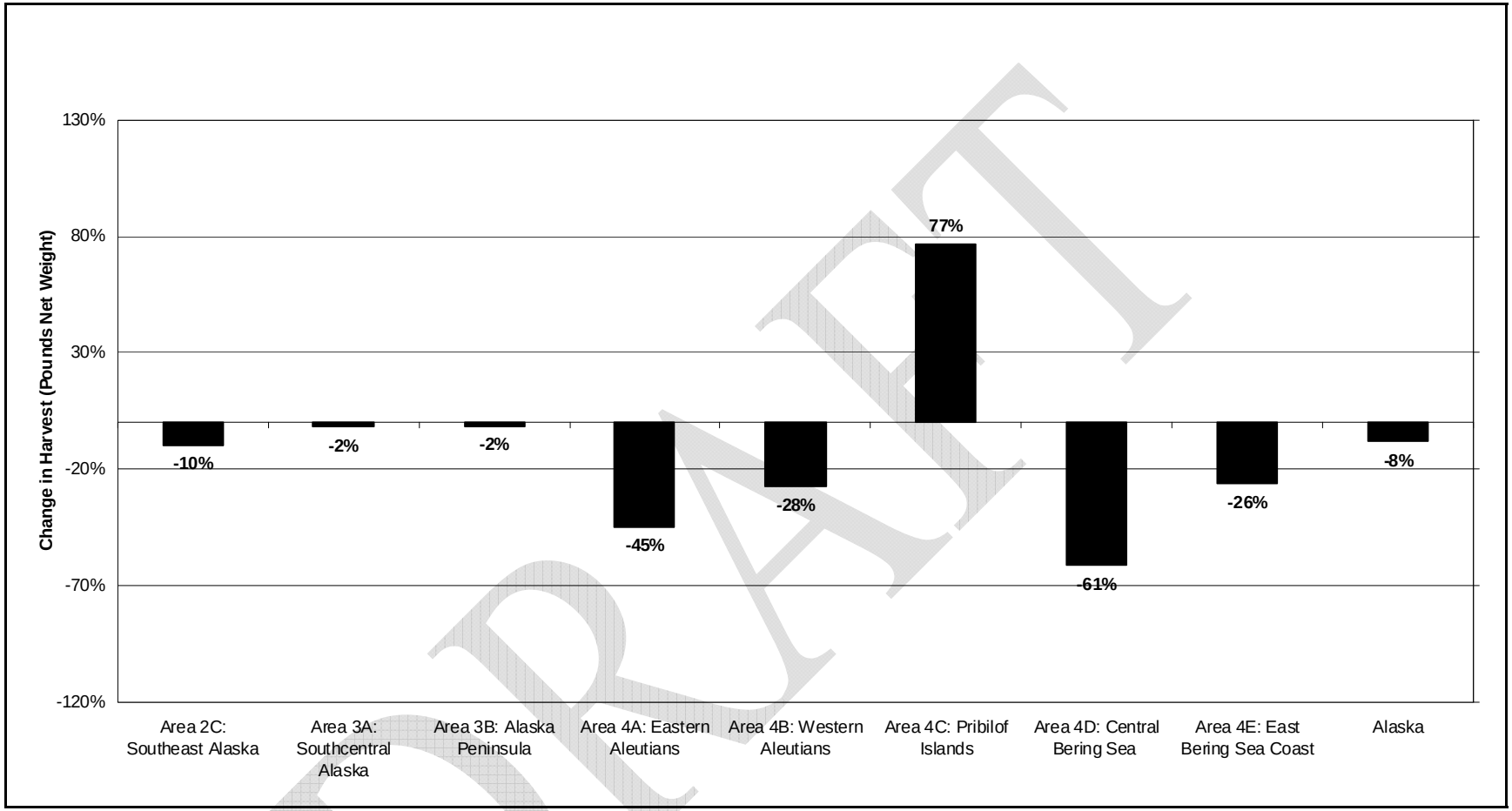

Figure 19.–Change in Alaska subsistence halibut harvests from 2003-2007 by regulatory area fished.

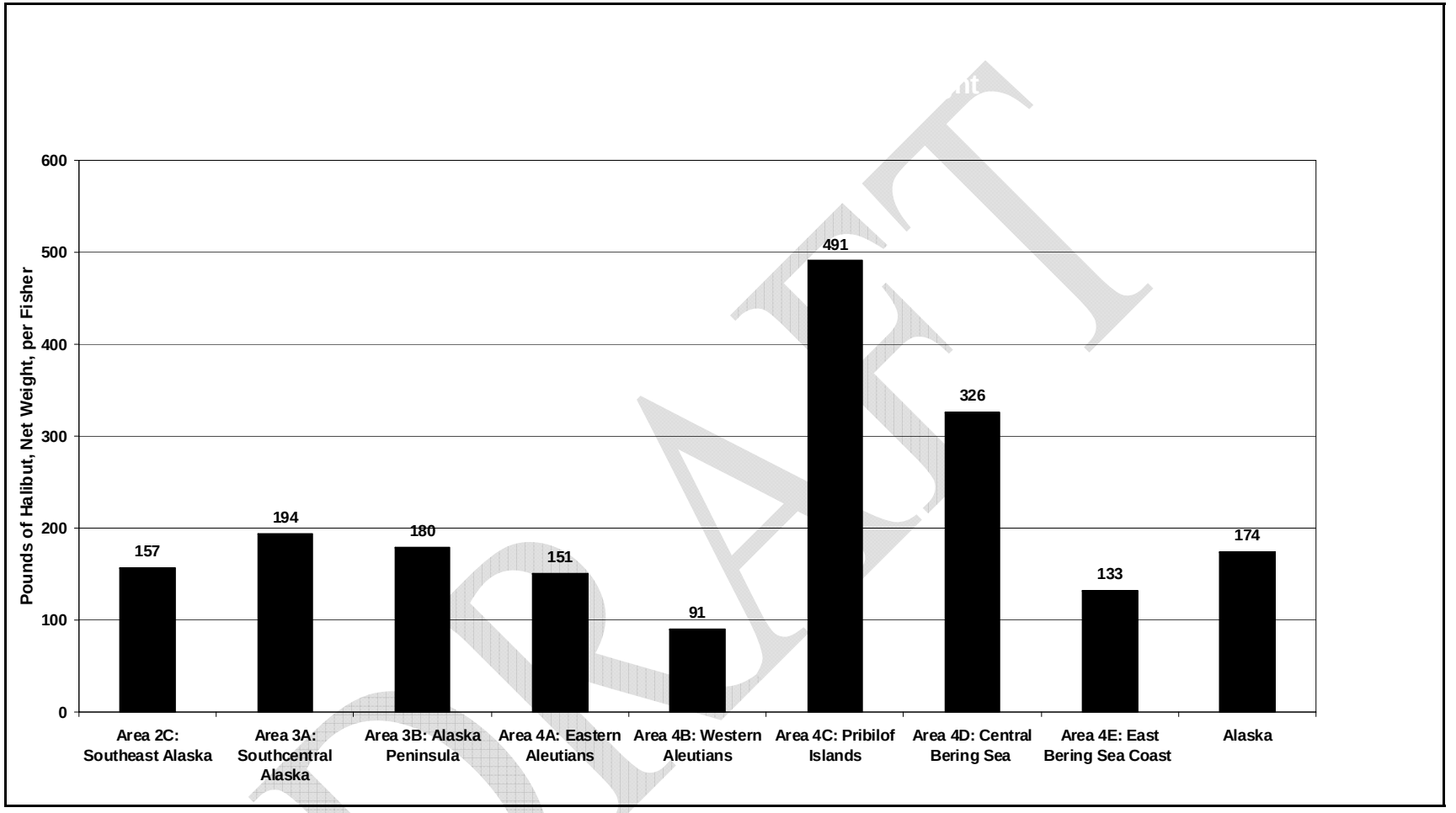

Figure 20.–Average subsistence harvest of halibut per fisher in Alaska, 2007, by regulatory area, in pounds net weight.

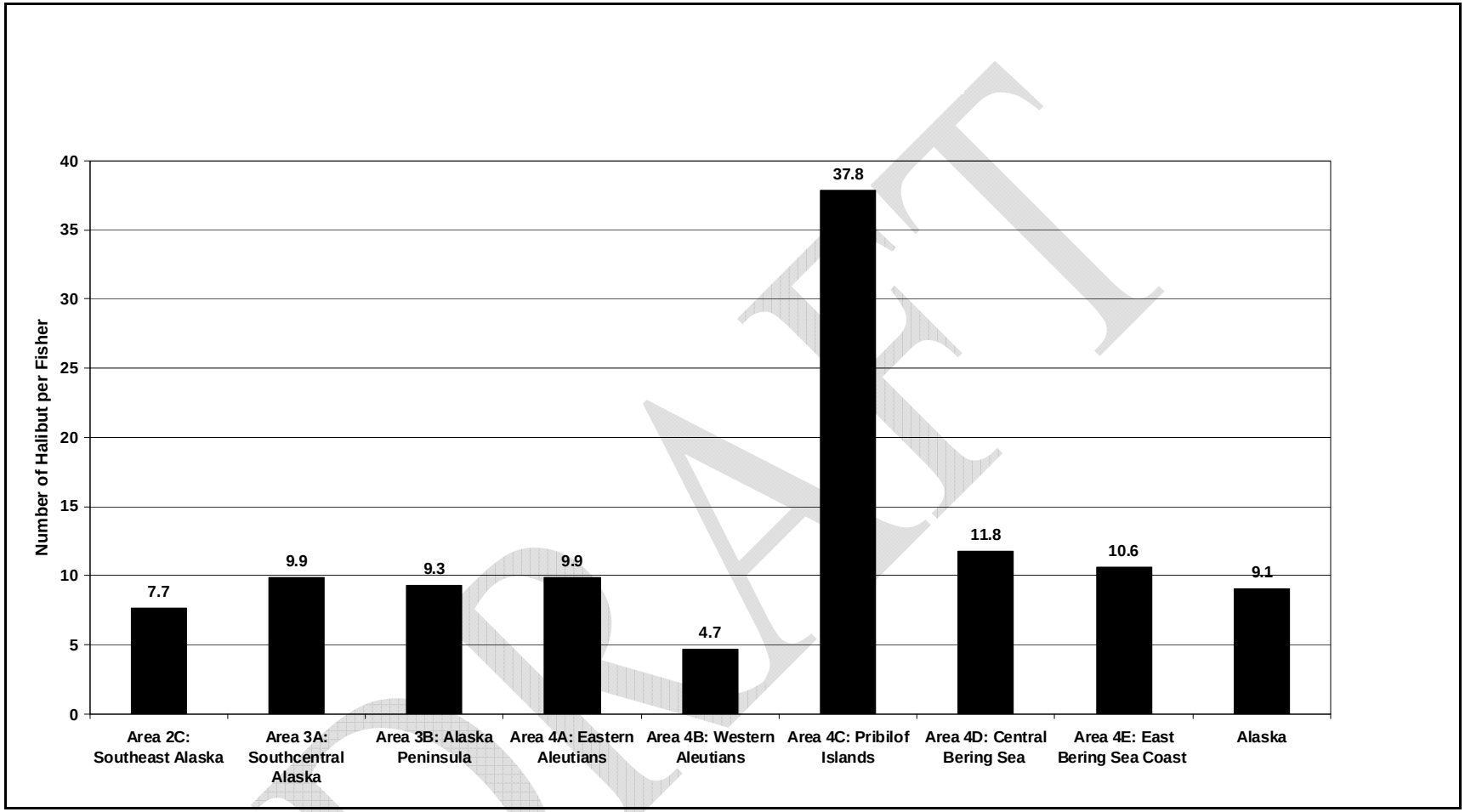

Figure 21.–Average subsistence harvest of halibut per fisher in Alaska, 2007, by regulatory area, in numbers of fish.

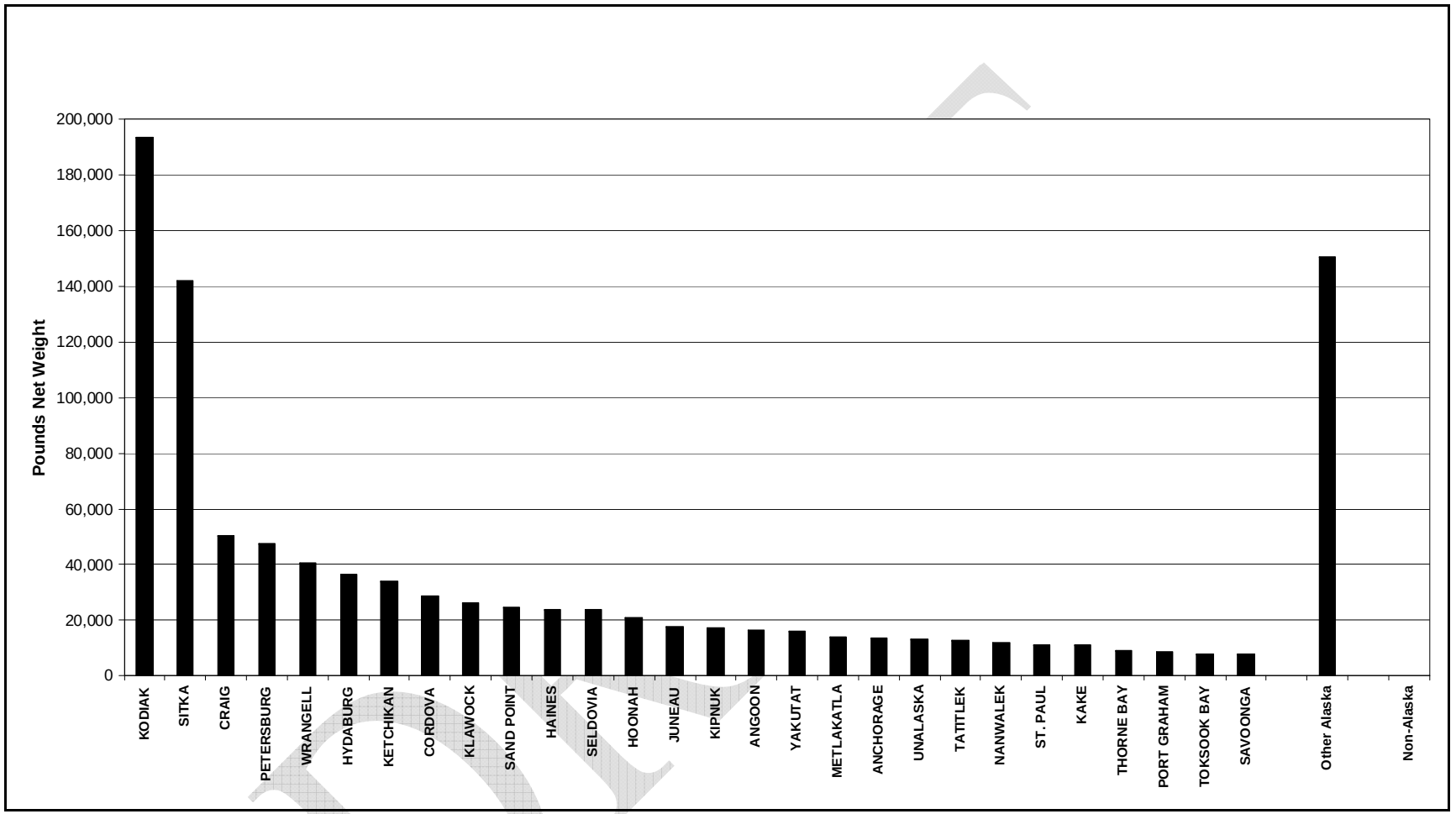

Figure 22.–Alaska subsistence halibut harvests by place of residence, 2007.

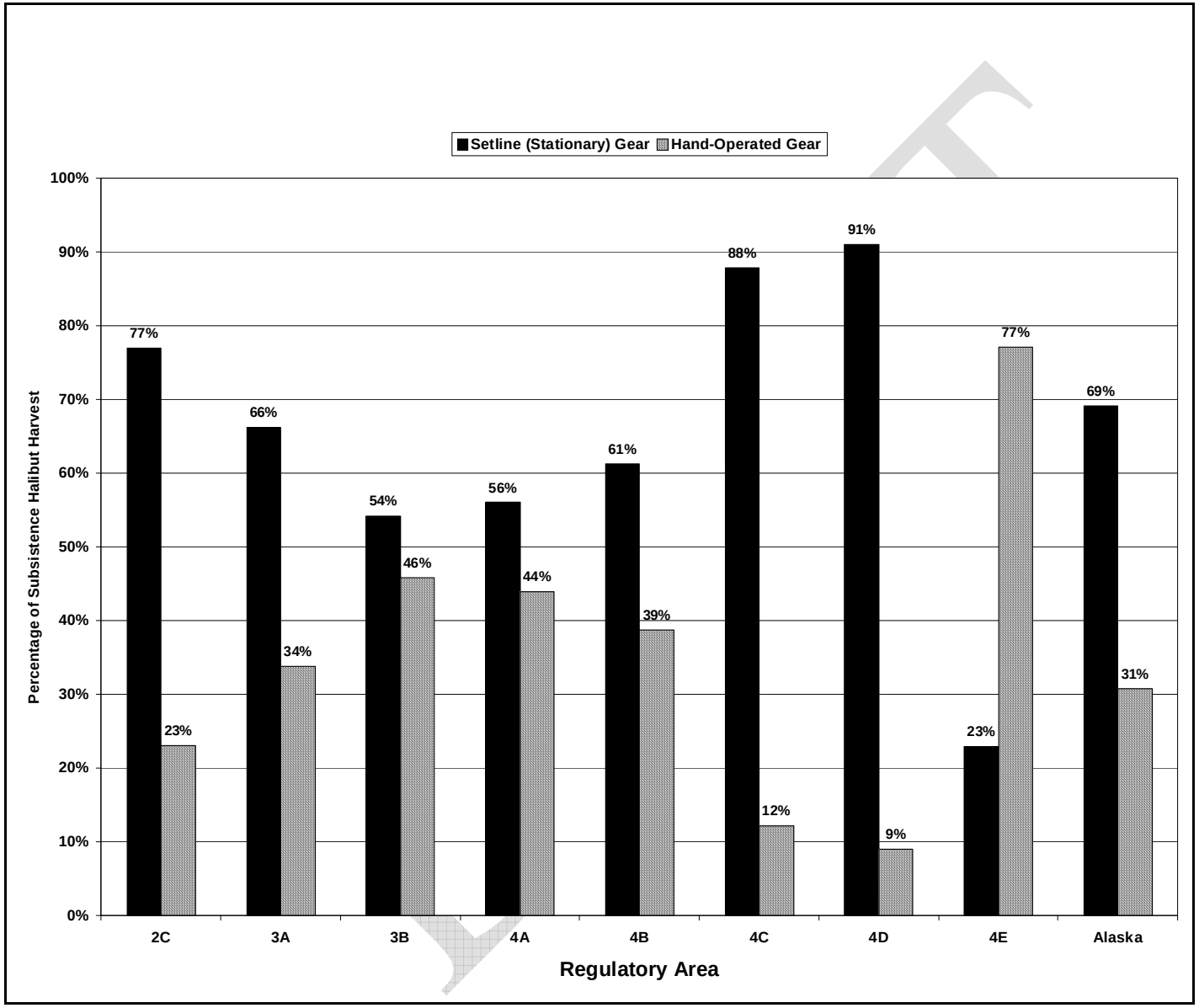

Figure 23.–Percentage of subsistence halibut harvest by gear type by regulatory area, 2007.

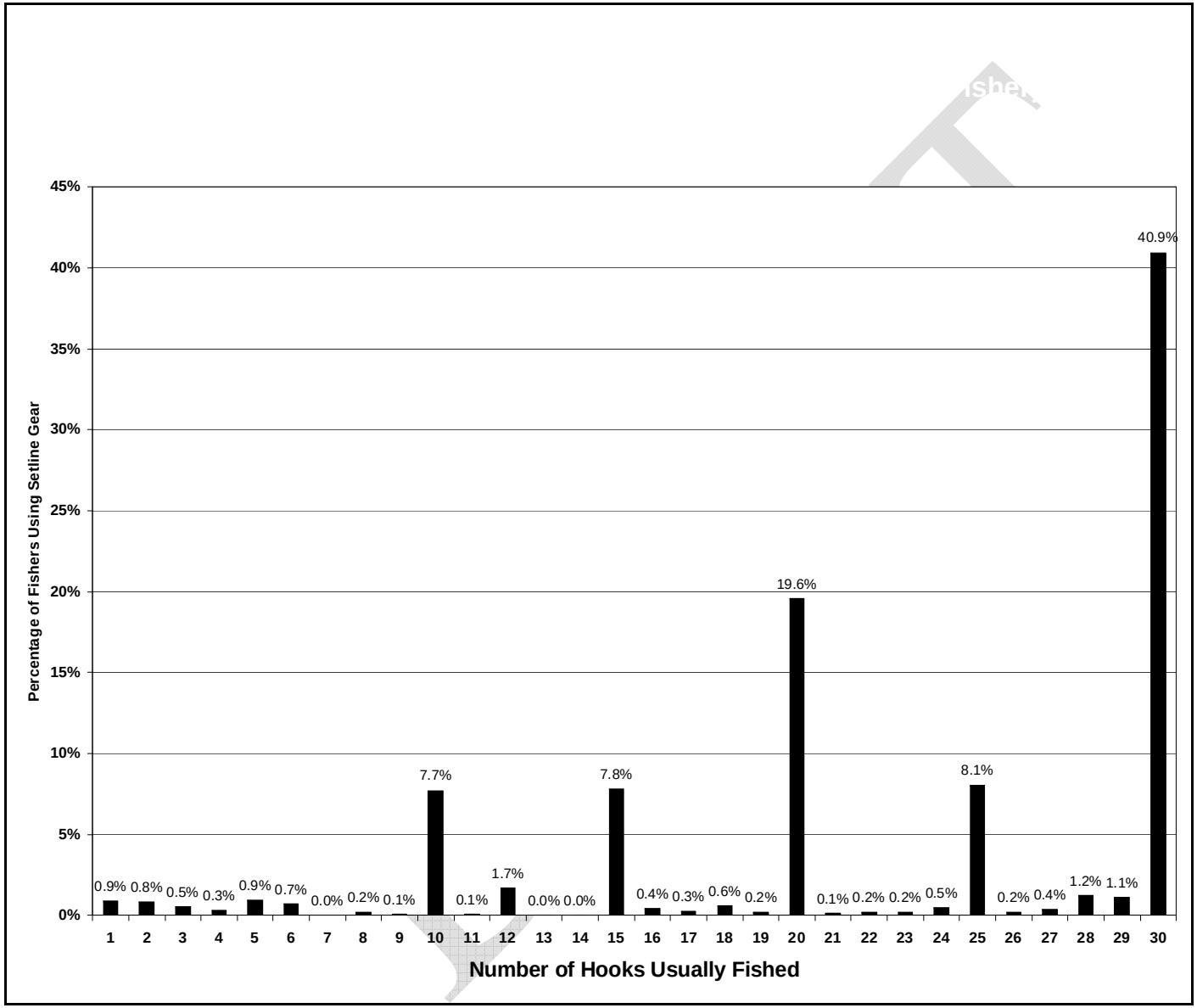

Figure 24.–Number of hooks usually fished, percentage of fishers using setline (stationary) gear, Alaska subsistence halibut fishery, 2007.

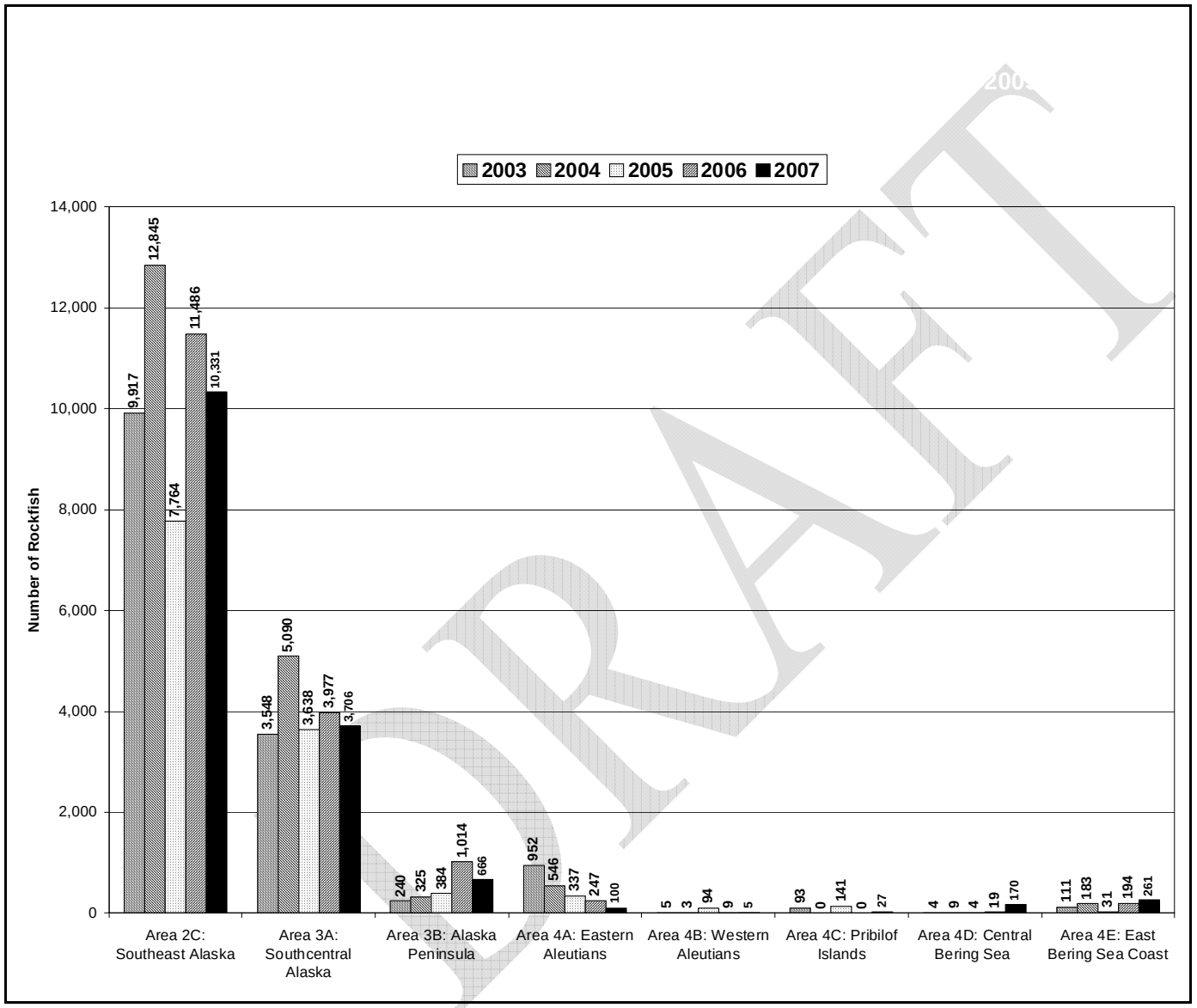

Figure 25.–Estimated incidental harvests of rockfish in Alaska subsistence halibut fisheries, number of fish, by regulatory area fished, 2003-2007.

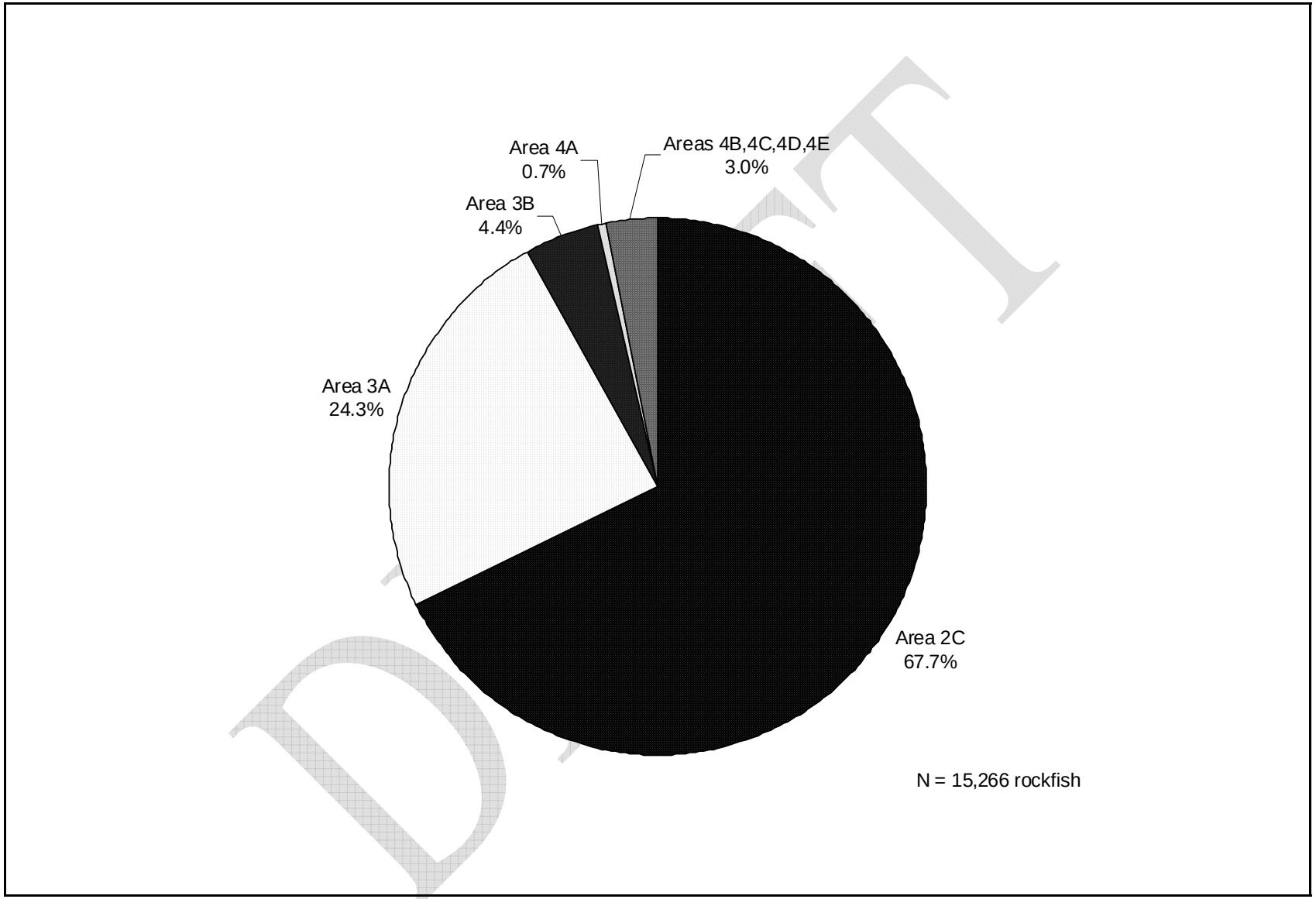

Figure 26.–Percentage of incidental harvest of rockfish by regulatory area fished, 2007.

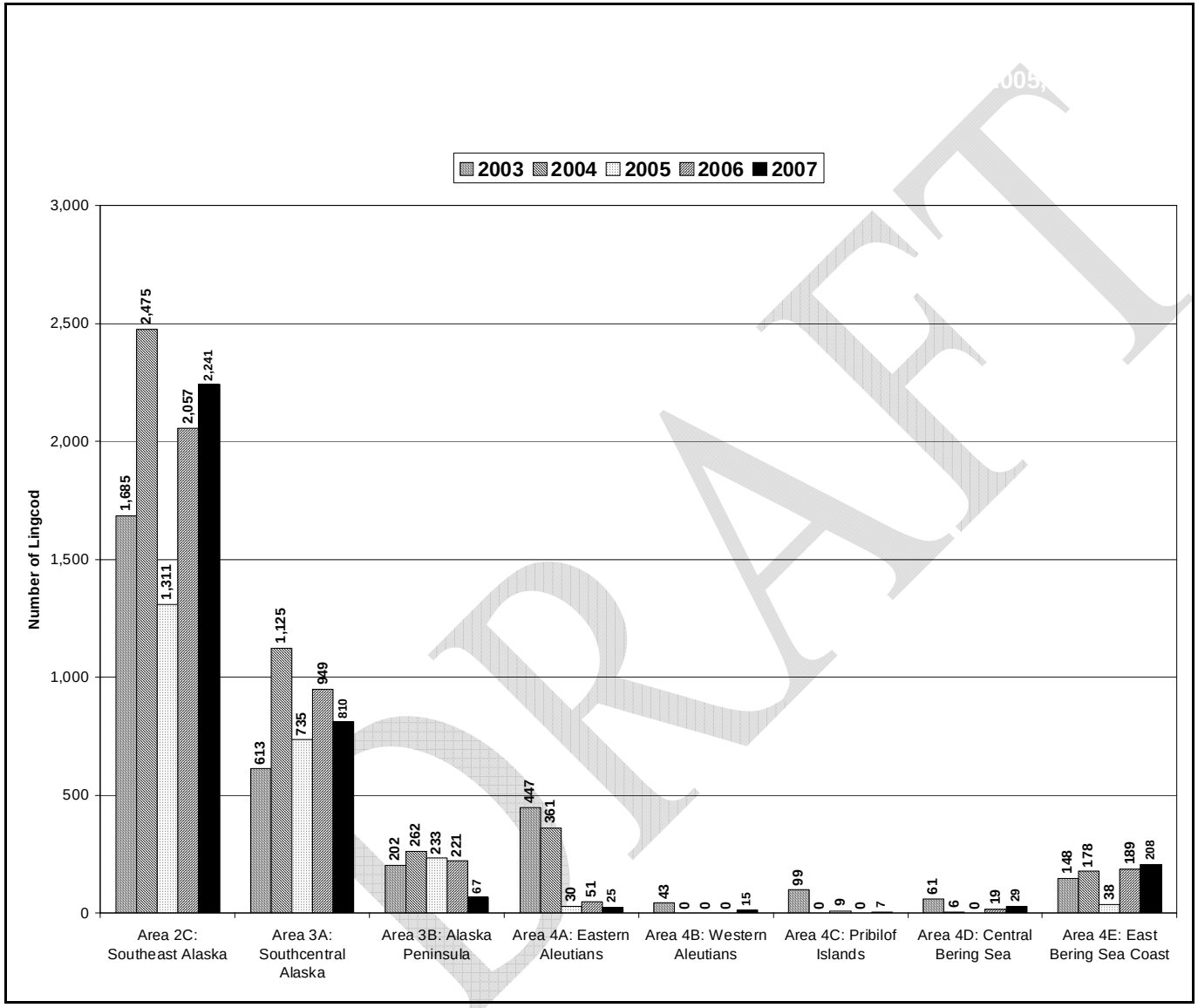

Figure 27.–Estimated incidental harvests of lingcod in the Alaska subsistence halibut fishery, numbers of fish, by regulatory area fished, 2003-2007.

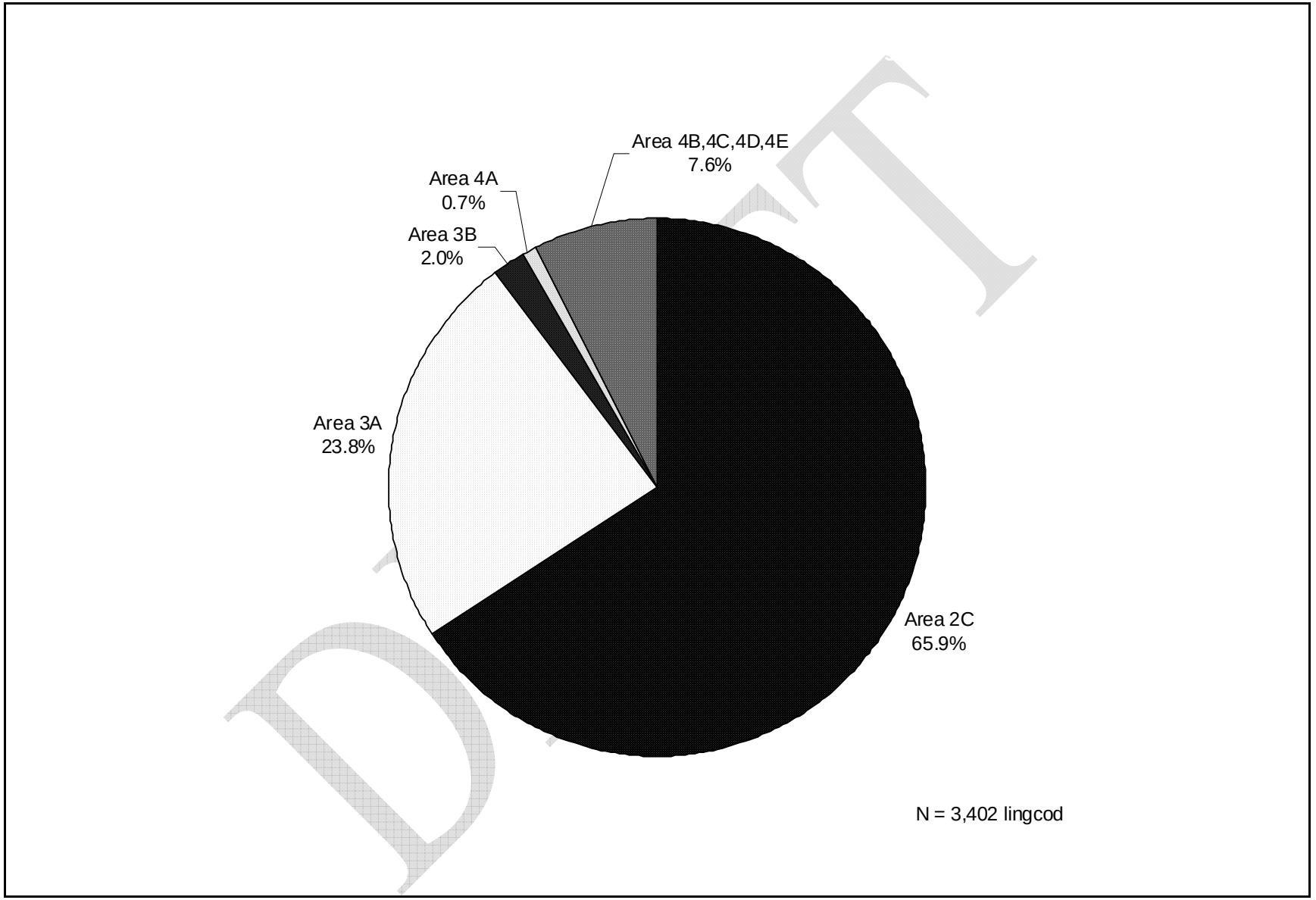

Figure 28.–Percentage of incidental harvest of lingcod by regulatory area, 2007.

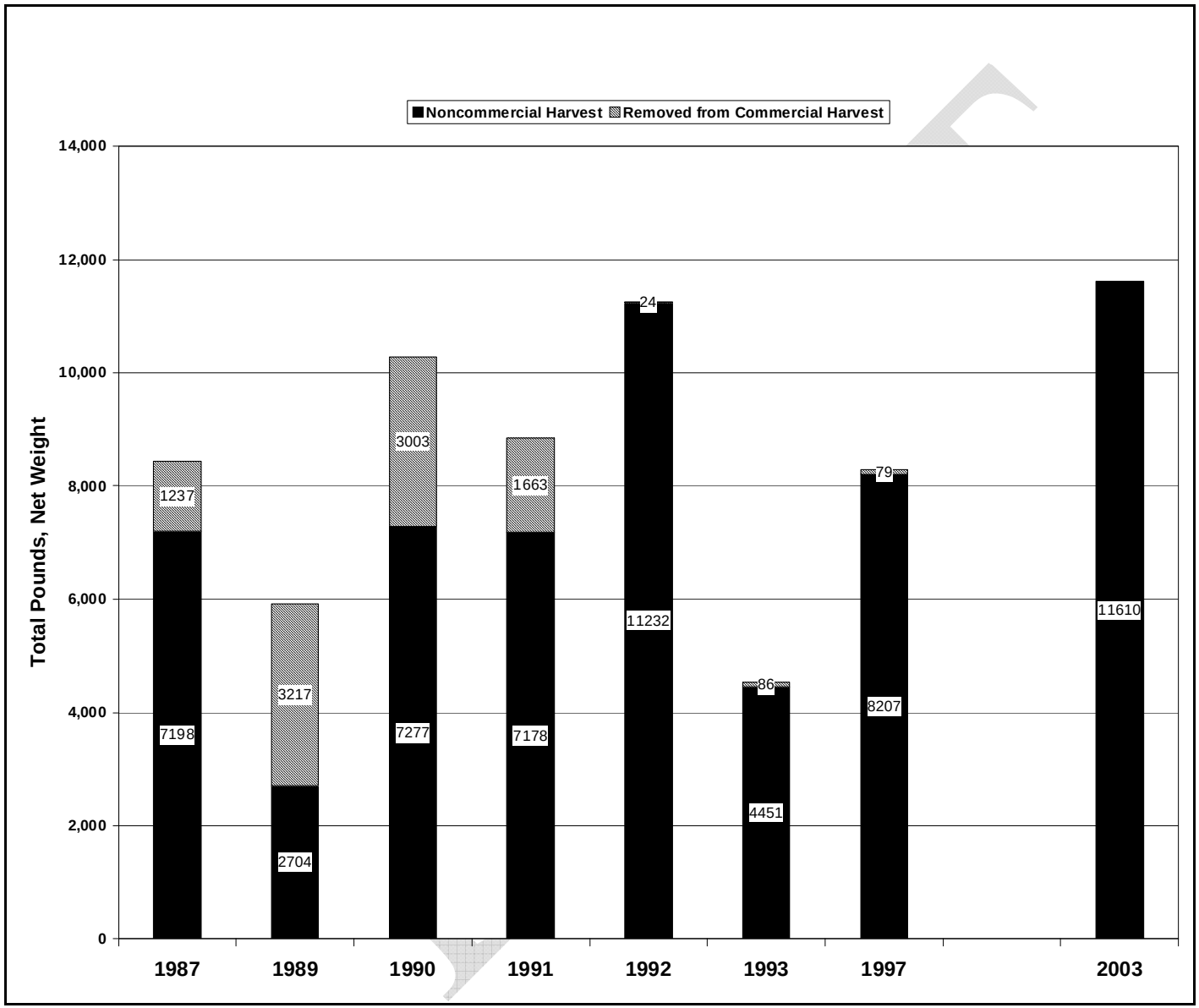

Figure 29.–Estimated harvests of halibut for home use, Port Graham.

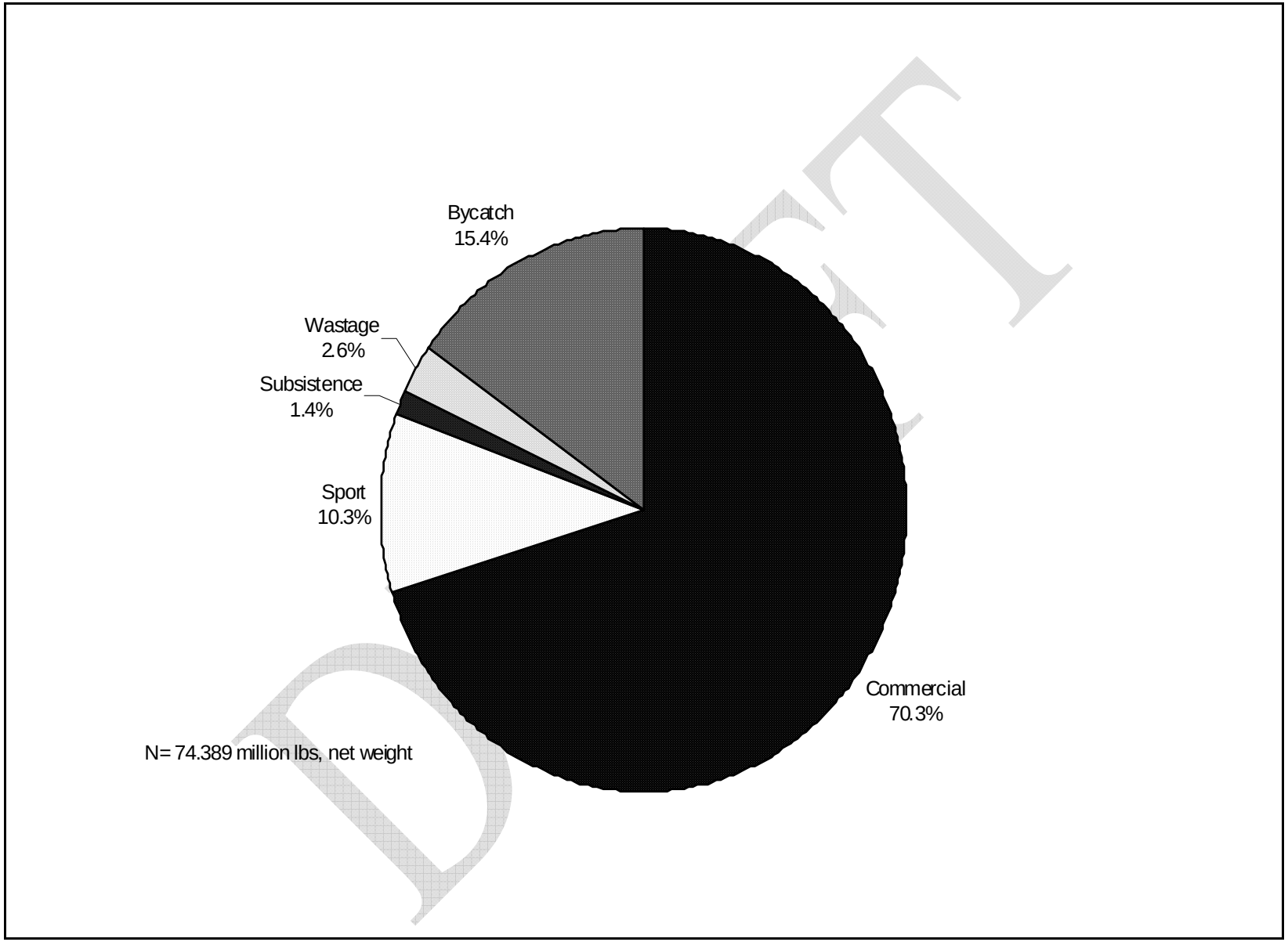

Figure 30.–Halibut removals, Alaska, 2007.

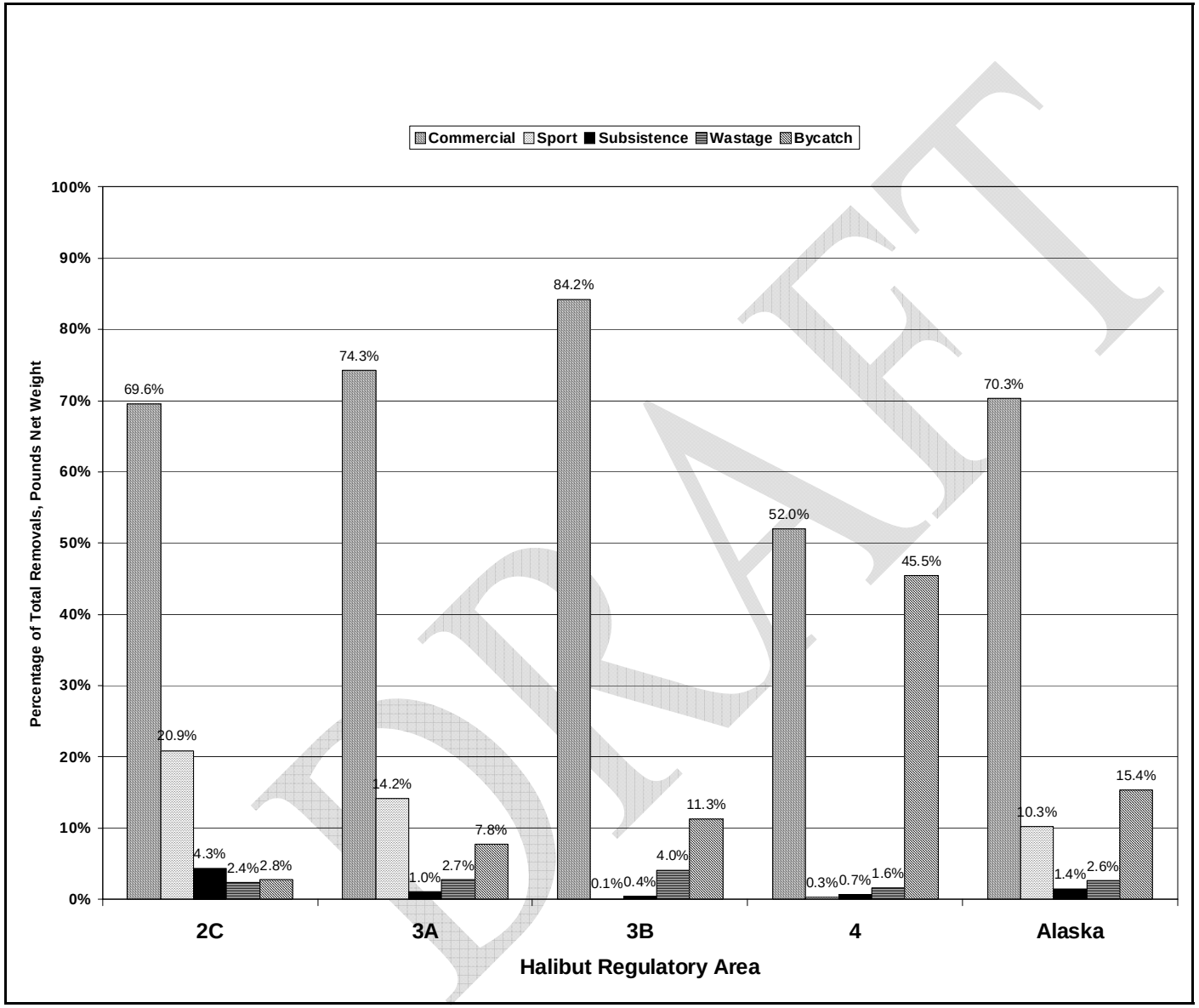

Figure 31.–Halibut removals in Alaska by regulatory area and removal category, 2007.

Table 1.–Population of rural communities eligible to participate in the Alaska subsistence halibut fishery, 2000 and 2007.

Community[1]	Regulatory Area	Population: 2000		Population: 2007
		Total	Alaska Native	
ANGOON	2C	572	419	478
COFFMAN COVE	2C	199	12	147
CRAIG	2C	1,397	432	1,359
EDNA BAY	2C	49	2	43
ELFIN COVE	2C	32	0	21
GUSTAVUS	2C	429	32	442
HAINES	2C	1,811	332	1,474
HOLLIS	2C	139	13	186
HOONAH	2C	860	597	852
HYDABURG	2C	382	342	353
HYDER	2C	97	4	72
KAKE	2C	710	530	535
KASAAN	2C	39	19	63
KLAWOCK	2C	854	496	743
KLUKWAN	2C	139	123	101
METLAKATLA	2C	1,375	1,125	1,335
MEYERS CHUCK	2C	21	2	20
PELICAN	2C	163	42	110
PETERSBURG	2C	3,224	388	3,071
POINT BAKER	2C	35	3	16
PORT ALEXANDER	2C	81	11	60
PORT PROTECTION	2C	63	7	56
SAXMAN	2C	431	302	438
SITKA	2C	8,835	2,178	8,640
SKAGWAY	2C	862	44	845
TENAKEE SPRINGS	2C	104	5	102
THORNE BAY	2C	552	27	467
WHALE PASS	2C	58	2	56
WRANGELL	2C	2,308	550	1,947
Regulatory Area 2C Subtotals[5]		25,821	8,039	24,032
AKHIOK	3A	80	75	33
CHENEGA BAY	3A	86	67	79
CORDOVA	3A	2,454	368	2,192
KARLUK	3A	27	26	27
KODIAK[2]	3A	12,973	1,697	12,856
LARSEN BAY	3A	115	91	83
NANWALEK	3A	177	165	217
OLD HARBOR	3A	237	203	187
OUZINKIE	3A	225	197	155
PORT GRAHAM	3A	171	151	134
PORT LIONS	3A	253	163	179
SELDOVIA	3A	286	66	429
TATITLEK	3A	107	91	113

YAKUTAT	3A	680	375	596
Regulatory Area 3A Subtotals		17,871	3,735	17,280

[continued]

Table 1. [continued]

Community[1]	Regulatory Area	Population: 2000		Population: 2007
		Total	Alaska Native	
CHIGNIK	3B	79	48	81
CHIGNIK LAGOON	3B	103	85	68
CHIGNIK LAKE	3B	145	127	128
COLD BAY	3B	88	15	72
FALSE PASS	3B	64	42	46
IVANOF BAY	3B	22	21	0
KING COVE	3B	792	379	756
NELSON LAGOON	3B	83	68	69
PERRYVILLE	3B	107	105	119
SAND POINT	3B	952	421	992
Regulatory Area 3B Subtotals		2,435	1,311	2,331
AKUTAN	4A	713	117	859
NIKOLSKI	4A	39	27	33
UNALASKA	4A	4,283	397	3,677
Regulatory Area 4A Subtotals		5,035	541	4,569
ADAK	4B	316	118	136
ATKA	4B	92	84	74
Regulatory Area 4B Subtotals		408	202	210
ST GEORGE ISLAND	4C	152	140	114
ST PAUL ISLAND	4C	532	460	447
Regulatory Area 4C Subtotals		684	600	561
GAMBELL	4D	649	622	662
SAVOONGA	4D	643	614	712
DIOMEDE	4D	146	137	144
Regulatory Area 4D Subtotals		1,438	1,373	1,518
ALAKANUK	4E	652	638	680
ALEKNAGIK	4E	221	187	237
BREVIG MISSION	4E	276	254	328
BETHEL	4E	5,471	3,719	5,650
CHEFORNAK	4E	394	386	449
CHEVAK	4E	765	734	941

CLARK'S POINT	4E	75	69	66
COUNCIL ANVSA[3]	4E	0	0	7
DILLINGHAM	4E	2,466	1,503	2,404
EEK	4E	280	271	284
EGEGIK	4E	116	89	64
ELIM	4E	313	297	309
EMMONAK	4E	767	720	777
GOLOVIN	4E	144	133	167
GOODNEWS BAY	4E	230	216	235
HOOPER BAY	4E	1,014	971	1,150
KING SALMON	4E	442	133	426

[continued]

Table 1. [continued]

Community[1]	Regulatory Area	Population: 2000		Population: 2007
		Total	Alaska Native	
KIPNUK	4E	644	631	664
KONGIGANAK	4E	359	349	436
KOTLIK	4E	591	568	599
KOYUK	4E	297	280	347
KWIGILLINGOK	4E	338	331	361
LEVELOCK	4E	122	116	71
MANOKOTAK	4E	399	378	431
MEKORYUK	4E	210	203	208
NAKNEK	4E	678	319	543
NAPAKIAK	4E	353	341	378
NAPASKIAK	4E	390	383	434
NEWTOK	4E	321	311	353
NIGHTMUTE	4E	208	197	244
NOME	4E	3,505	2,057	3,495
OSCARVILLE	4E	61	61	80
PILOT POINT	4E	100	86	61
PLATINUM	4E	41	38	35
PORT HEIDEN	4E	119	93	87
QUINHAGAK	4E	555	540	643
SCAMMON BAY	4E	465	453	517
ST. MICHAEL	4E	368	343	444
SHAKTOOLIK	4E	230	218	214
SHELDON POINT	4E	164	154	152
SHISHMAREF	4E	562	531	608
SOLOMON ANVSA	4E	4	3	2
SOUTH NAKNEK	4E	137	115	66
STEBBINS	4E	547	518	598
TELLER	4E	268	248	256
TOGIAK	4E	809	750	787
TOKSOOK BAY	4E	532	519	609
TUNTUTULIAK	4E	370	366	422
TUNUNAK	4E	325	315	341

TWIN HILLS	4E	69	65	81
UGASHIK	4E	11	9	13
UNALAKLEET	4E	747	655	724
WALES	4E	152	137	136
WHITE MOUNTAIN	4E	203	175	215
Regulatory Area 4E Subtotals		28,880	23,176	29,829
Grand Total		82,572	38,977	80,330

Source: U.S. Census Bureau 2001; Alaska Department of Labor and Workforce Development population estimates for 2007 (http://www.labor.state.ak.us/research/pop/estimates on November 5, 2008)

[1] Alaska Native Village statistical Area populations were used whenever no city or census designated place (CDP) populations were present in the census.

[2] Total population for Kodiak Island road system area; includes Kodiak City, Kodiak Station, Chiniak, and other areas on the road system.

[3] There is no census table for a Council CDP or municipality in 2000. The Council ANVSA table indicated that all 40 housing units were vacant in 2000.

[4] No Alaska Native population data are available for 2006.

[5] Non-tribal residents of Naukati Bay were not eligible for SHARCs in 2004. The NPFMC in late 2004 recommended that Naukati Bay be added to the eligible list, but regulatory action had not occurred by late 2007. Naukati Bay had a population of 135, including 13 Alaska Natives, in 2000, and a total population of 131 in 2007.

Table 2.–Project chronology, 2007 study year.

Date	Event/Action
October 1, 2007	Award No. NA04NMF4370170 finalized between NMFS and ADF&G to support the research for study year 2007
December 28, 2007	Mailing of letter to tribes concerning postal surveys for the fifth year of the project
Mid January 2008	Running of newspaper ads
February 8, 2008	First mailing of survey forms
March 13 to 23, 2008	Survey administration in Toksook Bay, Tununak, and Mekoryuk
March 27, 2008	Second mailing of survey forms
April 2008	Phone calls to SHARC holders in Hooper Bay
April through June 2007	Administration of surveys in Sitka, Hydaburg, Angoon, and Ketchikan
April 28, 2008	Submission of semi-annual report on project progress to NMFS
May 2008	Interviewing in Sand Point and Unalaska;
May 27, 2008	Third mailing of survey forms
October 27, 2008	Submission of semi-annual report on project progress to NMFS
November 20, 2008	Release of public review draft of final report
December 9, 2008	Presentation of study findings, ANSHWG, Anchorage
December 10, 2008	Presentation of study findings, NPFMC, Anchorage
December 31, 2008	Completion of revised, final report

Table 3.–Sample achievement, Alaska subsistence halibut survey for 2007 by eligible tribe, eligible Alaska rural community, and place of residence of SHARC holders.

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
ANGOON COMMUNITY ASSOCIATION	2C	150	34	5	122	12	3	4	0	0	150	46	47	93	62.0%	7
AUKQUAN TRADITIONAL COUNCIL	2C	2														
CENTRAL COUNCIL TLINGIT AND HAIDA INDIAN TRIBES	2C	770	184	128	500	55	32	359	25	8	770	264	10	274	35.6%	162
CHILKAT INDIAN VILLAGE	2C	42	17	6	25	5	1	13	0	0	42	22	0	22	52.4%	7
CHILKOOT INDIAN ASSOCIATION	2C	52	25	3	28	3	4	17	3	1	52	31	0	31	59.6%	8
CRAIG COMMUNITY ASSOCIATION	2C	62	31	7	28	1	0	21	2	1	62	34	0	34	54.8%	8
DOUGLAS INDIAN ASSOCIATION	2C	25	5	3	18	1	0	16	0	0	25	6	0	6	24.0%	3
HOONAH INDIAN ASSOCIATION	2C	228	59	22	153	29	0	118	7	3	228	95	0	95	41.7%	25
HYDABURG COOPERATIVE ASSOCIATION	2C	198	44	21	144	10	1	12	0	0	198	54	90	144	72.7%	22
KETCHIKAN INDIAN CORPORATION	2C	935	176	182	627	39	38	47	6	2	935	221	100	321	34.3%	215
KLAWOCK COOPERATIVE ASSOCIATION	2C	178	35	6	144	15	6	117	13	5	178	63	0	63	35.4%	17
METLAKATLA INDIAN COMMUNITY,	2C	406	61	32	328	30	2	278	22	0	406	113	2	115	28.3%	34

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
ANNETTE ISLAND RESERVE																
ORGANIZED VILLAGE OF KAKE	2C	131	42	13	80	22	0	58	6	2	131	70	0	70	53.4%	15
ORGANIZED VILLAGE OF KASAAN	2C	16	2	0	15	6	0	6	2	0	16	10	0	10	62.5%	0
ORGANIZED VILLAGE OF SAXMAN	2C	63	14	5	44	3	0	6	0	0	63	17	1	18	28.6%	5
PETERSBURG INDIAN ASSOCIATION	2C	128	44	15	88	15	1	54	14	1	128	73	0	73	57.0%	16
SITKA TRIBE OF ALASKA	2C	485	133	76	302	35	6	239	18	10	485	186	86	272	56.1%	91
SKAGWAY VILLAGE	2C	2														
WRANGELL COOPERATIVE ASSOCIATION	2C	119	63	11	50	12	2	33	2	0	119	77	0	77	64.7%	13
	2C Totals	**3,992**	**970**	**536**	**2,697**	**293**	**96**	**1,399**	**121**	**33**	**3,992**	**1,384**	**337**	**1,721**	**43.11%**	**649**
KENAITZE INDIAN TRIBE	3A	91	29	8	61	16	2	39	4	0	91	49	0	49	53.8%	9
LESNOI VILLAGE (WOODY ISLAND)	3A	260	58	56	161	15	17	123	9	6	260	82	1	83	31.9%	75
NATIVE VILLAGE OF AFOGNAK	3A	30	16	6	11	0	0	9	0	0	30	16	0	16	53.3%	6
NATIVE VILLAGE OF AKHIOK	3A	23	4	5	14	2	0	13	2	1	23	8	0	8	34.8%	6
NATIVE VILLAGE OF CHENEGA	3A	30	4	0	26	0	1	25	4	0	30	8	0	8	26.7%	1
NATIVE VILLAGE OF EYAK	3A	88	32	6	54	11	3	38	1	0	88	44	0	44	50.0%	9

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
NATIVE VILLAGE OF KARLUK	3A	5														
NATIVE VILLAGE OF LARSEN BAY	3A	48	15	5	33	5	3	24	0	1	48	20	0	20	41.7%	8
NATIVE VILLAGE OF NANWALEK	3A	51	8	2	44	8	1	34	3	0	51	19	17	36	70.6%	3
NATIVE VILLAGE OF OUZINKIE	3A	45	17	4	24	3	1	21	1	0	45	21	0	21	46.7%	5
NATIVE VILLAGE OF PORT GRAHAM	3A	55	18	5	39	4	0	30	1	0	55	23	19	42	76.4%	5
NATIVE VILLAGE OF PORT LIONS	3A	56	17	6	42	5	3	29	2	0	56	24	0	24	42.9%	8
NATIVE VILLAGE OF TATITLEK	3A	37	7	2	33	2	1	25	2	3	37	11	0	11	29.7%	6
NINILCHIK VILLAGE	3A	106	29	2	80	17	1	58	4	1	106	50	0	50	47.2%	4
SELDOVIA VILLAGE TRIBE	3A	52	23	6	27	3	1	20	6	1	52	32	1	33	63.5%	6
SHOONAQ' TRIBE OF KODIAK	3A	199	64	27	119	15	4	95	8	0	199	87	0	87	43.7%	31
VILLAGE OF OLD HARBOR	3A	65	24	1	44	4	2	34	4	1	65	32	0	32	49.2%	4
VILLAGE OF SALAMATOFF	3A	20	9	6	10	5	0	3	0	0	20	14	0	14	70.0%	6
YAKUTAT TLINGIT TRIBE	3A	63	19	1	45	12	0	32	2	0	63	33	0	33	52.4%	1
	3A Totals	**1,324**	**393**	**149**	**871**	**129**	**40**	**654**	**53**	**14**	**1,324**	**575**	**38**	**613**	**46.30%**	**194**
AGDAAGUX TRIBE OF KING COVE	3B	55	18	1	37	10	0	3	0	0	55	28	13	41	74.5%	1
CHIGNIK LAKE VILLAGE	3B	10	4	1	6	1	1	3	0	0	10	5	0	5	50.0%	2

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
IVANOFF BAY VILLAGE	3B	15	3	6	7	3	0	4	2	0	15	8	0	8	53.3%	6
NATIVE VILLAGE OF BELKOFSKI	3B	4														
NATIVE VILLAGE OF CHIGNIK	3B	13	7	0	6	1	0	5	0	0	13	8	0	8	61.5%	0
NATIVE VILLAGE OF CHIGNIK LAGOON	3B	43	5	3	35	3	0	32	5	0	43	13	0	13	30.2%	3
NATIVE VILLAGE OF FALSE PASS	3B	13	2	3	12	2	1	3	0	0	13	4	0	4	30.8%	4
NATIVE VILLAGE OF NELSON LAGOON	3B	3														
NATIVE VILLAGE OF PERRYVILLE	3B	39	16	4	19	5	1	13	2	0	39	23	0	23	59.0%	5
NATIVE VILLAGE OF UNGA	3B	15	7	0	9	0	0	0	0	0	15	7	3	10	66.7%	0
PAULOFF HARBOR VILLAGE	3B	56	14	8	39	0	1	5	0	0	56	14	6	20	35.7%	8
QAGAN TOYAGUNGIN TRIBE OF SAND POINT VILLAGE	3B	322	73	63	204	15	8	8	2	0	322	90	24	114	35.4%	68
VILLAGE OF KANATAK	3B	16	0	4	12	0	1	11	0	0	16	0	0	0	0.0%	5
	3B Totals	**604**	**152**	**94**	**390**	**40**	**13**	**87**	**11**	**0**	**604**	**203**	**46**	**249**	**41.23%**	**103**
NATIVE VILLAGE OF AKUTAN	4A	46	7	0	41	2	0	0	0	0	46	9	25	34	73.9%	0
NATIVE VILLAGE OF NIKOLSKI	4A	12	3	0	10	0	0	0	0	0	12	3	0	3	25.0%	0

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
QAWALINGIN TRIBE OF UNALASKA	4A	46	14	1	33	8	0	0	0	0	46	22	7	29	63.0%	1
	4A Totals	**104**	**24**	**1**	**84**	**10**	**0**	**0**	**0**	**0**	**104**	**34**	**32**	**66**	**63.46%**	**1**
NATIVE VILLAGE OF ATKA	4B	7	2	1	4	2	0	1	0	0	7	4	1	5	71.4%	1
	4B Totals	**7**	**2**	**1**	**4**	**2**	**0**	**1**	**0**	**0**	**7**	**4**	**1**	**5**	**71.43%**	**1**
PRIBILOF ISLANDS ALEUT COMMUNITY OF ST GEORGE	4C	27	4	0	23	1	0	22	0	0	27	5	0	5	18.5%	0
PRIBILOF ISLANDS ALEUT COMMUNITY OF ST PAUL	4C	257	0	4	223	2	3	203	0	1	257	2	207	209	81.3%	6
	4C Totals	**284**	**4**	**4**	**246**	**3**	**3**	**225**	**0**	**1**	**284**	**7**	**207**	**214**	**75.35%**	**6**
NATIVE VILLAGE OF GAMBELL	4D	6	1	0	5	0	0	5	0	0	6	1	0	1	16.7%	0
NATIVE VILLAGE OF SAVOONGA	4D	44	14	0	31	1	0	29	3	0	44	18	0	18	40.9%	0
	4D Totals	**50**	**15**	**0**	**36**	**1**	**0**	**34**	**3**	**0**	**50**	**19**	**0**	**19**	**38.00%**	**0**
CHEVAK NATIVE VILLAGE (KASHUNAMIUT)	4E	7	2	1	4	0	0	4	0	0	7	2	0	2	28.6%	1
CHINIK ESKIMO COMMUNITY	4E	1														
EGEGIK VILLAGE	4E	6	1	0	5	4	0	5	0	0	6	5	0	5	83.3%	0
KING ISLAND NATIVE	4E	2														

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
COMMUNITY																
LEVELOCK VILLAGE	4E	1														
NAKNEK NATIVE VILLAGE	4E	8	2	0	6	1	0	5	0	0	8	3	0	3	37.5%	0
NATIVE VILLAGE OF ALEKNAGIK	4E	6	1	0	5	2	0	3	2	1	6	5	0	5	83.3%	1
NATIVE VILLAGE OF COUNCIL	4E	1														
NATIVE VILLAGE OF DILLINGHAM (CURYUNG)	4E	23	6	1	16	4	0	12	1	1	23	11	0	11	47.8%	2
NATIVE VILLAGE OF EEK	4E	21	5	0	16	4	0	12	0	0	21	9	0	9	42.9%	0
NATIVE VILLAGE OF EKUK	4E	3														
NATIVE VILLAGE OF ELIM	4E	1														
NATIVE VILLAGE OF GOODNEWS BAY (MUMTRAQ)	4E	16	1	0	15	1	0	14	2	0	16	4	0	4	25.0%	0
NATIVE VILLAGE OF HOOPER BAY	4E	91	14	2	78	11	1	65	3	0	91	28	11	39	42.9%	2
NATIVE VILLAGE OF KANAKANAK	4E	1														
NATIVE VILLAGE OF KIPNUK	4E	90	6	1	85	1	0	83	2	0	90	9	0	9	10.0%	1
NATIVE VILLAGE OF KONGIGANAK	4E	10	2	0	8	1	0	8	0	0	10	3	0	3	30.0%	0
NATIVE VILLAGE OF	4E	1														

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
KOYUK NATIVE VILLAGE OF KWIGILLINGOK	4E	48	2	0	47	0	0	46	1	0	48	3	0	3	6.3%	0
NATIVE VILLAGE OF KWINHAGAK	4E	11	1	1	9	0	0	9	1	0	11	2	0	2	18.2%	1
NATIVE VILLAGE OF MEKORYUK	4E	16	2	1	12	2	0	1	1	0	16	5	7	12	75.0%	1
NATIVE VILLAGE OF NAPAKIAK	4E	3														
NATIVE VILLAGE OF NIGHTMUTE	4E	8	1	0	8	0	0	7	1	0	8	2	0	2	25.0%	0
NATIVE VILLAGE OF PORT HEIDEN	4E	1														
NATIVE VILLAGE OF SCAMMON BAY	4E	6	0	3	3	0	0	3	0	0	6	0	0	0	0.0%	3
NATIVE VILLAGE OF SHAKTOOLIK	4E	1														
NATIVE VILLAGE OF SHISHMAREF	4E	1														
NATIVE VILLAGE OF TOKSOOK BAY (NUNAKAUYAK)	4E	534	12	1	522	3	0	0	0	0	534	15	203	218	40.8%	1
NATIVE VILLAGE OF TUNUNAK	4E	72	6	1	66	1	0	2	0	0	72	7	38	45	62.5%	1
NATIVE VILLAGE OF UNALAKLEET	4E	6	2	0	4	1	0	3	1	0	6	4	0	4	66.7%	0
NATIVE VILLAGE OF	4E	2														

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
WHITE MOUNTAIN NEWTOK VILLAGE	4E	3														
NOME ESKIMO COMMUNITY	4E	18	8	2	9	0	0	9	1	1	18	9	0	9	50.0%	3
ORUTSARARMUIT NATIVE VILLAGE	4E	9	2	0	7	2	0	5	2	0	9	6	0	6	66.7%	0
PLATINUM TRADITIONAL VILLAGE	4E	2														
SOUTH NAKNEK VILLAGE	4E	3														
STEBBINS COMMUNITY ASSOCIATION	4E	4														
TRADITIONAL VILLAGE OF TOGIAK	4E	11	3	0	8	1	0	7	0	0	11	4	0	4	36.4%	0
TWIN HILLS VILLAGE	4E	1														
UGASHIK VILLAGE	4E	4														
VILLAGE OF CHEFORNAK	4E	25	3	0	23	5	0	17	1	0	25	9	0	9	36.0%	0
VILLAGE OF CLARK'S POINT	4E	3														
	4E Totals	**1,081**	**96**	**19**	**977**	**47**	**1**	**336**	**19**	**3**	**1,081**	**162**	**261**	**423**	**39.13%**	**22**
Tribal Name Subtotals		**7,446**	**1,656**	**804**	**5,305**	**525**	**153**	**2,736**	**207**	**51**	**7,446**	**2,388**	**922**	**3,310**	**44.5%**	**976**

Rural		First Mailing	Second Mailing	Third Mailing	Totals

Tribal Name / Community	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
Community	Regulatory Areas	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
ANGOON	2C	23	7	0	18	3	0	0	0	0	23	10	3	13	56.5%	0
COFFMAN COVE	2C	47	27	3	26	9	0	8	3	0	47	39	0	39	83.0%	3
CRAIG	2C	362	191	23	189	56	2	100	10	2	362	257	0	257	71.0%	25
EDNA BAY	2C	51	33	1	31	5	0	8	1	1	51	39	5	44	86.3%	2
ELFIN COVE	2C	22	11	1	14	4	0	7	1	0	22	16	0	16	72.7%	1
GUSTAVUS	2C	71	43	3	32	11	0	17	5	1	71	59	0	59	83.1%	4
HAINES	2C	467	278	25	206	64	14	91	24	1	467	366	0	366	78.4%	37
HOLLIS	2C	54	25	9	27	8	3	17	5	3	54	38	0	38	70.4%	11
HOONAH	2C	130	63	11	68	16	0	43	9	5	130	88	0	88	67.7%	16
HYDABURG	2C	14	8	1	7	1	0	0	0	0	14	9	3	12	85.7%	1
HYDER	2C	40	23	1	21	9	1	8	0	2	40	32	0	32	80.0%	2
KAKE	2C	50	22	5	26	10	1	14	2	0	50	34	0	34	68.0%	6
KASAAN	2C	13	4	0	9	3	0	6	0	0	13	7	0	7	53.8%	0
KLAWOCK	2C	120	71	8	49	10	2	28	2	1	120	83	0	83	69.2%	11
KLUKWAN	2C	1														
METLAKATLA	2C	35	8	4	27	5	0	21	3	1	35	16	0	16	45.7%	5
MEYERS CHUCK	2C	9	7	2	2	0	0	0	0	0	9	7	0	7	77.8%	2
PELICAN	2C	46	27	3	20	3	1	14	3	2	46	33	0	33	71.7%	4
PETERSBURG	2C	977	536	53	454	131	8	269	60	11	977	727	1	728	74.5%	67
PORT ALEXANDER	2C	29	23	0	12	3	0	3	0	0	29	26	0	26	89.7%	0
PORT PROTECTION	2C	22	9	0	16	3	0	4	3	0	22	15	1	16	72.7%	0
PT. BAKER	2C	18	9	1	10	4	0	6	1	0	18	14	0	14	77.8%	1
SAXMAN	2C	22	11	1	11	3	0	0	0	0	22	14	1	15	68.2%	1
SITKA	2C	1,484	716	142	796	140	21	476	66	15	1,484	922	126	1,048	70.6%	174
SKAGWAY	2C	57	32	2	26	7	2	15	0	1	57	39	0	39	68.4%	4
TENAKEE SPRINGS	2C	40	31	0	18	4	0	7	3	0	40	38	0	38	95.0%	0

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
THORNE BAY	2C	139	80	23	63	16	1	20	5	0	139	101	2	103	74.1%	23
WHALE PASS	2C	30	22	2	10	3	0	0	0	0	30	25	0	25	83.3%	2
WRANGELL	2C	391	226	15	195	54	5	99	19	2	391	299	1	300	76.7%	20
	2C Totals	**4,764**	**2,543**	**339**	**2,384**	**585**	**61**	**1,282**	**226**	**48**	**4,764**	**3,354**	**143**	**3,497**	**73.40%**	**422**
AKHIOK	3A	2														
CHENEGA BAY	3A	12	7	1	7	2	1	3	1	1	12	10	0	10	83.3%	1
CORDOVA	3A	536	271	31	278	82	4	150	31	4	536	384	0	384	71.6%	38
KODIAK	3A	1,619	758	169	869	142	27	565	107	27	1,619	1,007	3	1,010	62.4%	207
LARSEN BAY	3A	11	10	1	5	0	0	3	0	0	11	10	0	10	90.9%	1
NANWALEK	3A	10	2	0	8	1	1	6	1	0	10	4	5	9	90.0%	1
OLD HARBOR	3A	21	13	0	8	3	0	5	0	0	21	16	0	16	76.2%	0
OUZINKIE	3A	28	17	1	11	3	0	8	1	0	28	21	0	21	75.0%	1
PORT GRAHAM	3A	12	4	0	8	2	2	4	2	0	12	8	2	10	83.3%	2
PORT LIONS	3A	24	10	5	16	1	1	8	1	0	24	12	0	12	50.0%	5
SELDOVIA	3A	128	71	6	68	14	0	40	11	3	128	96	0	96	75.0%	9
TATITLEK	3A	12	3	5	5	0	0	4	1	0	12	4	0	4	33.3%	5
YAKUTAT	3A	55	36	0	27	7	0	16	1	0	55	44	0	44	80.0%	0
	3A Totals	**2,470**	**1,203**	**219**	**1,311**	**257**	**36**	**813**	**157**	**35**	**2,470**	**1,617**	**10**	**1,627**	**65.87%**	**270**
CHIGNIK	3B	8	4	2	5	1	0	1	0	0	8	5	0	5	62.5%	2
CHIGNIK LAGOON	3B	6	1	4	1	0	0	1	0	1	6	1	0	1	16.7%	5
CHIGNIK LAKE	3B	4														
COLD BAY	3B	24	16	2	6	2	1	3	0	0	24	18	0	18	75.0%	3
FALSE PASS	3B	3														
KING COVE	3B	23	15	1	8	1	0	0	0	0	23	16	2	18	78.3%	1
PERRYVILLE	3B	2														
SAND POINT	3B	19	11	1	8	0	0	0	0	0	19	11	2	13	68.4%	1
	3B Totals	**89**	**52**	**10**	**34**	**4**	**1**	**7**	**0**	**2**	**89**	**56**	**4**	**60**	**67.42%**	**13**
AKUTAN	4A	1														

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
NIKOLSKI	4A	4														
UNALASKA	4A	130	57	14	77	20	3	0	0	0	130	77	6	83	63.8%	15
	4A Totals	**135**	**60**	**14**	**79**	**20**	**3**	**0**	**0**	**0**	**135**	**80**	**7**	**87**	**64.44%**	**15**
ADAK	4B	28	12	2	22	3	0	2	0	0	28	15	0	15	53.6%	2
ATKA	4B	3														
	4B Totals	**31**	**13**	**2**	**24**	**3**	**0**	**2**	**0**	**0**	**31**	**16**	**0**	**16**	**51.61%**	**2**
ST PAUL ISLAND	4C	2	1	0	2	0	0	0	0	0	2	1	1	2	100.0%	0
	4C Totals	**2**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**1**	**2**	**100.00%**	**0**
ALAKANUK	4E	1														
ALEKNAGIK	4E	2														
BETHEL	4E	4														
CHEFORNAK	4E	1														
CHEVAK	4E	1														
CLARKS POINT	4E	1														
DILLINGHAM	4E	54	38	0	18	7	0	9	3	0	54	48	0	48	88.9%	0
EMMONAK	4E	1														
HOOPER BAY	4E	2														
KING SALMON	4E	2														
KOTLIK	4E	1														
KWIGILLINGOK	4E	1														
MANOKOTAK	4E	2														
MEKORYUK	4E	1														
NAKNEK	4E	6	2	1	3	1	0	2	0	0	6	3	1	4	66.7%	1
NIGHTMUTE	4E	7	1	0	7	1	0	5	1	0	7	3	0	3	42.9%	0
NOME	4E	7	2	0	5	4	0	1	0	0	7	6	0	6	85.7%	0
PLATINUM	4E	1														
PORT HEIDEN	4E	2														
QUINHAGAK	4E	2														

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
SHELDON POINT	4E	1														
SOUTH NAKNEK	4E	2														
TELLER	4E	2														
TOGIAK	4E	3														
TOKSOOK BAY	4E	1														
WHITE MOUNTAIN	4E	2														
	4E Totals	**110**	**53**	**1**	**63**	**19**	**1**	**35**	**9**	**0**	**110**	**81**	**2**	**83**	**75.5%**	**2**
Rural Community Subtotals		**7,601**	**3,925**	**585**	**3,897**	**888**	**102**	**2,139**	**392**	**85**	**7,601**	**5,205**	**167**	**5,372**	**70.7%**	**724**
TRIBAL/RURAL GRAND TOTALS		**15,047**	**5,581**	**1,389**	**9,202**	**1,413**	**255**	**4,875**	**599**	**136**	**15,047**	**7,593**	**1,089**	**8,682**	**57.7%**	**1,700**

City of Residence	State of Residence	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
ADAK	AK	30	14	1	24	3	0	1	0	0	30	17	0	17	56.7%	1
AKHIOK	AK	22	4	5	13	2	0	12	2	1	22	8	0	8	36.4%	6
AKUTAN	AK	46	6	0	41	1	0	0	0	0	46	7	27	34	73.9%	0
ALAKANUK	AK	1														
ALEKNAGIK	AK	3														
ANCHOR POINT	AK	15	3	0	12	8	0	6	0	2	15	11	0	11	73.3%	2
ANCHORAGE	AK	293	83	40	190	24	20	132	21	8	293	128	4	132	45.1%	67
ANGOON	AK	180	42	6	145	17	3	0	0	0	180	59	53	112	62.2%	8

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ATKA	AK	4														
AUKE BAY	AK	5														
BARROW	AK	1														
BETHEL	AK	15	4	0	11	1	2	8	0	0	15	5	0	5	33.3%	2
BIG LAKE	AK	2														
CHEFORNAK	AK	25	3	0	23	4	0	18	1	0	25	8	0	8	32.0%	0
CHENEGA BAY	AK	19	9	1	12	2	2	7	1	1	19	12	0	12	63.2%	2
CHEVAK	AK	9	2	0	7	1	0	6	0	0	9	3	0	3	33.3%	0
CHIGNIK	AK	26	13	1	13	1	0	11	0	0	26	14	0	14	53.8%	1
CHIGNIK BAY	AK	1														
CHIGNIK LAGOON	AK	39	5	5	29	1	0	28	5	1	39	11	0	11	28.2%	6
CHIGNIK LAKE	AK	8	5	0	4	1	0	2	0	1	8	6	0	6	75.0%	1
CHINIAK	AK	22	10	3	10	4	0	5	2	0	22	16	0	16	72.7%	3
CHUGIAK	AK	10	2	6	2	0	0	2	0	0	10	2	0	2	20.0%	6
CLARKS POINT	AK	4														
COFFMAN COVE	AK	46	26	3	26	9	0	8	3	0	46	38	0	38	82.6%	3
COLD BAY	AK	28	21	2	5	2	1	2	0	0	28	23	0	23	82.1%	3
CORDOVA	AK	615	302	37	323	92	2	186	32	2	615	426	0	426	69.3%	40
CRAIG	AK	514	252	39	270	65	4	169	22	2	514	339	0	339	66.0%	43
DEERING	AK	1														
DILLINGHAM	AK	75	41	2	35	13	0	19	5	1	75	59	0	59	78.7%	3
DOUGLAS	AK	29	4	16	9	0	1	8	0	0	29	4	0	4	13.8%	17
DUTCH HARBOR	AK	79	29	8	49	15	3	0	0	0	79	44	0	44	55.7%	8
EAGLE RIVER	AK	11	4	0	7	3	0	4	0	0	11	7	0	7	63.6%	0
EDNA BAY	AK	27	17	0	20	4	0	8	1	1	27	22	0	22	81.5%	1
EEK	AK	20	4	0	16	4	0	12	0	0	20	8	0	8	40.0%	0
ELFIN COVE	AK	21	11	1	13	3	0	7	1	0	21	15	0	15	71.4%	1
EXCURSION INLET	AK	2														
FAIRBANKS	AK	11	3	5	6	2	1	1	0	0	11	5	0	5	45.5%	6

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FALSE PASS	AK	8	1	2	6	1	0	0	0	0	8	2	0	2	25.0%	2
FRITZ CREEK	AK	2														
GAKONA	AK	1														
GAMBELL	AK	6	1	0	5	0	0	5	0	0	6	1	0	1	16.7%	0
GOLOVIN	AK	2														
GOODNEWS BAY	AK	16	1	0	15	1	0	14	2	0	16	4	0	4	25.0%	0
GUSTAVUS	AK	70	45	1	29	8	0	17	5	1	70	58	0	58	82.9%	2
HAINES	AK	559	314	36	259	72	18	125	28	1	559	414	0	414	74.1%	51
HOLLIS	AK	4														
HOMER	AK	33	10	0	26	4	1	22	4	0	33	18	0	18	54.5%	1
HOONAH	AK	354	117	31	224	44	2	163	16	7	354	177	0	177	50.0%	40
HOOPER BAY	AK	89	14	2	77	12	1	62	3	0	89	29	11	40	44.9%	2
HYDABURG	AK	195	49	18	142	11	2	0	0	0	195	60	93	153	78.5%	20
HYDER	AK	39	23	1	20	8	1	8	0	2	39	31	0	31	79.5%	2
JUNEAU	AK	531	112	92	361	35	22	276	16	8	531	163	3	166	31.3%	118
KAKE	AK	177	65	19	101	33	1	65	8	1	177	106	0	106	59.9%	21
KARLUK	AK	1														
KASAAN	AK	22	4	0	18	7	0	11	1	0	22	12	0	12	54.5%	0
KASILOF	AK	11	0	1	10	2	0	8	0	0	11	2	0	2	18.2%	1
KENAI	AK	80	30	13	41	14	1	25	1	0	80	45	0	45	56.3%	13
KETCHIKAN	AK	1,054	225	197	687	52	37	2	0	0	1,054	277	114	391	37.1%	228
KING COVE	AK	78	30	2	49	7	1	0	0	0	78	37	21	58	74.4%	3
KING SALMON	AK	2														
KIPNUK	AK	88	6	0	84	1	0	82	2	0	88	9	0	9	10.2%	0
KLAWOCK	AK	320	112	13	214	33	9	162	13	6	320	158	0	158	49.4%	26
KODIAK	AK	1,880	837	206	1,025	153	42	690	113	26	1,880	1,103	3	1,106	58.8%	255
KONGIGANAK	AK	9	2	0	7	1	0	7	0	0	9	3	0	3	33.3%	0
KOTZEBUE	AK	1														
KWIGILLINGOK	AK	48	2	0	47	0	0	46	1	0	48	3	0	3	6.3%	0
LARSEN BAY	AK	42	21	4	27	3	1	20	0	0	42	24	0	24	57.1%	5
MANOKOTAK	AK	2														

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MARSHALL	AK	1														
MC GRATH	AK	1														
MEKORYUK	AK	14	3	0	10	1	0	0	0	0	14	4	7	11	78.6%	0
METLAKATLA	AK	423	66	26	348	34	0	299	26	0	423	126	1	127	30.0%	26
MEYERS CHUCK	AK	9	7	2	2	0	0	0	0	0	9	7	0	7	77.8%	2
NAKNEK	AK	10	4	0	6	1	0	5	0	0	10	5	0	5	50.0%	0
NANWALEK	AK	58	9	2	49	9	1	39	4	0	58	22	22	44	75.9%	3
NAPAKIAK	AK	2														
NAUKATI	AK	13	10	2	3	0	0	1	0	0	13	10	0	10	76.9%	2
NELSON LAGOON	AK	1														
NEWTOK	AK	3														
NIGHTMUTE	AK	15	2	0	15	1	0	12	2	0	15	5	0	5	33.3%	0
NIKISKI	AK	10	4	1	6	2	0	3	0	0	10	6	0	6	60.0%	1
NIKOLSKI	AK	16	6	0	11	0	0	0	0	0	16	6	0	6	37.5%	0
NINILCHIK	AK	67	19	2	50	10	2	36	2	1	67	31	0	31	46.3%	3
NOME	AK	11	4	0	7	4	0	3	0	1	11	8	0	8	72.7%	1
NORTH POLE	AK	3														
OLD HARBOR	AK	73	34	1	38	6	2	30	3	0	73	43	0	43	58.9%	3
OUZINKIE	AK	66	32	2	34	8	0	26	2	0	66	42	0	42	63.6%	2
PALMER	AK	6	3	1	2	0	0	2	0	0	6	3	0	3	50.0%	1
PELICAN	AK	57	28	6	27	7	1	18	5	3	57	40	0	40	70.2%	8
PERRYVILLE	AK	45	18	10	19	4	0	13	1	0	45	23	0	23	51.1%	10
PETERSBURG	AK	1,123	593	67	544	147	7	331	75	10	1,123	815	1	816	72.7%	78
PLATINUM	AK	2														
POINT BAKER	AK	26	11	1	16	5	0	11	3	0	26	19	0	19	73.1%	1
PORT ALEXANDER	AK	26	20	0	12	3	0	3	0	0	26	23	0	23	88.5%	0
PORT GRAHAM	AK	59	21	4	42	6	0	30	3	0	59	30	21	51	86.4%	4
PORT HEIDEN	AK	1														
PORT LIONS	AK	66	25	2	51	6	0	36	3	0	66	34	0	34	51.5%	2
PORT	AK	1														

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PROTECTION																
PORT WILLIAM	AK	2														
QUINHAGAK	AK	14	1	1	12	1	0	11	1	0	14	3	0	3	21.4%	1
SAND POINT	AK	364	85	64	237	14	7	2	0	0	364	99	29	128	35.2%	67
SAVOONGA	AK	43	14	0	30	1	0	28	3	0	43	18	0	18	41.9%	0
SAXMAN	AK	16	3	0	14	1	0	6	0	0	16	4	0	4	25.0%	0
SCAMMON BAY	AK	2														
SELDOVIA	AK	140	76	6	75	13	0	45	15	0	140	104	1	105	75.0%	6
SEWARD	AK	14	5	0	9	2	0	8	0	1	14	7	0	7	50.0%	1
SHISHMAREF	AK	1														
SITKA	AK	1,954	852	213	1,077	168	25	710	85	17	1,954	1,105	215	1,320	67.6%	250
SKAGWAY	AK	60	33	3	28	8	2	15	0	1	60	41	0	41	68.3%	5
SOLDOTNA	AK	23	8	4	15	2	0	10	0	0	23	10	0	10	43.5%	4
SOUTH NAKNEK	AK	3														
ST GEORGE ISLAND	AK	26	4	0	22	1	0	20	0	0	26	5	1	6	23.1%	0
ST PAUL ISLAND	AK	246	1	1	214	2	1	201	0	1	246	3	200	203	82.5%	2
STERLING	AK	6	1	0	5	3	0	2	1	0	6	5	0	5	83.3%	0
SUTTON	AK	1														
TATITLEK	AK	28	6	5	20	0	0	17	3	0	28	9	0	9	32.1%	5
TELLER	AK	2														
TENAKEE SPRINGS	AK	40	31	0	18	4	0	7	3	0	40	38	0	38	95.0%	0
THORNE BAY	AK	129	78	19	54	13	1	20	5	0	129	96	2	98	76.0%	19
TOGIAK	AK	10	4	0	7	1	0	5	1	0	10	6	0	6	60.0%	0
TOKSOOK BAY	AK	533	11	0	522	3	0	0	0	0	533	14	204	218	40.9%	0
TRAPPER CREEK	AK	1														
TUNUNAK	AK	69	5	1	64	1	0	0	0	0	69	6	38	44	63.8%	1
TWIN HILLS	AK	2														
UNALAKLEET	AK	1														

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UNALASKA	AK	97	38	7	61	14	1	0	0	0	97	52	16	68	70.1%	8
VALDEZ	AK	37	7	3	31	4	1	24	3	0	37	14	0	14	37.8%	4
WARD COVE	AK	44	12	3	35	0	1	29	3	2	44	15	0	15	34.1%	5
WASILLA	AK	37	5	8	28	2	1	21	4	3	37	11	0	11	29.7%	12
WATERFALL	AK	1														
WHALE PASS	AK	3														
WHITE MOUNTAIN	AK	1														
WHITTIER	AK	1														
WILLOW	AK	1														
WRANGELL	AK	533	296	28	258	67	8	144	22	6	533	385	1	386	72.4%	39
YAKUTAT	AK	118	56	1	71	20	0	46	3	0	118	79	0	79	66.9%	1
	AK Totals	14,794	5,521	1,318	9,038	1,390	241	4,775	596	119	14,794	7,507	1,089	8,596	58.1%	1,601
APACHE JCT	AZ	2														
GLENDALE	AZ	1														
HIGLEY	AZ	1														
LAKE HAVASU CITY	AZ	1														
MESA	AZ	1														
PEORIA	AZ	1														
PINETOP	AZ	2														
YUMA	AZ	1														
	AZ Totals	10	5	2	5	1	0	2	0	0	10	6	0	6	60.0%	2
SKIDEGATE, CANADA	BC	1														
	BC Totals	1	0	1	1	0	0	0	0	0	1	0	0	0	0.0%	1
ALISO VIEJO	CA	1														
ALPINE	CA	1														
COLEVILLE	CA	1														
CRESCENT CITY	CA	1														
EUREKA	CA	2														

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GUALALA	CA	1														
HARBOR CITY	CA	1														
IMPERIAL BCH	CA	1														
LA MESA	CA	1														
LONG BEACH	CA	1														
LOS ANGELES	CA	2														
MIDDLETOWN	CA	1														
MORRO BAY	CA	1														
OXNARD	CA	2														
PENN VALLEY	CA	1														
REDLANDS	CA	1														
RIO DELL	CA	1														
SACRAMENTO	CA	1														
SAN CLEMENTE	CA	1														
SAN FRANCISCO	CA	1														
UKIAH	CA	1														
VALLEJO	CA	1														
VICTORVILLE	CA	1														
WALNUT CREEK	CA	2														
	CA Totals	28	7	6	18	1	3	13	1	2	28	9	0	9	32.1%	10
BERTHOUD	CO	1														
DENVER	CO	1														
LITTLETON	CO	1														
LONGMONT	CO	1														
OURAY	CO	2														
PARKER	CO	1														
	CO Totals	7	1	2	6	1	0	3	0	0	7	2	0	2	28.6%	2
WASHINGTON	DC	1														

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	DC Totals	1	0	0	1	0	0	1	0	0	1	0	0	0	0.0%	0
NEW CASTLE	DE	1														
	DE Totals	1	0	0	1	0	0	1	0	1	1	0	0	0	0.0%	1
DAYTONA BEACH	FL	2														
FLORIDA	FL	1														
MARGATE	FL	1														
	FL Totals	4	0	2	2	1	0	1	0	0	4	1	0	1	25.0%	2
SUMMERVILLE	GA	1														
	GA Totals	1	0	0	1	0	0	1	0	1	1	0	0	0	0.0%	1
KAISERSLAUTERN	GE	1														
	GE Totals	1	0	1	1	0	1	0	0	0	1	0	0	0	0.0%	1
HAWI	HI	1														
KAPOLEI	HI	1														
LAHAINA MAUI	HI	1														
PEARL CITY	HI	2														
	HI Totals	5	1	1	4	0	0	3	0	2	5	1	0	1	20.0%	3
SIOUX CITY	IA	1														
	IA Totals	1	0	0	1	0	0	1	0	0	1	0	0	0	0.0%	0
CASCADE	ID	1														
IDAHO FALLS	ID	1														
LOWMAN	ID	1														
NAMPA	ID	1														
NEW PLYMOUTH	ID	1														
OROFINO	ID	1														
SAGLE	ID	1														

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	ID Totals	7	3	3	5	0	1	1	0	0	7	3	0	3	42.9%	4
DUNLAP	IL	1														
WARRENVILLE	IL	1														
	IL Totals	2	0	1	1	1	0	0	0	0	2	1	0	1	50.0%	1
SOUTH BEND	IN	1														
	IN Totals	1	0	0	1	1	0	0	0	0	1	1	0	1	100.0%	0
HUTCHINSON	KS	1														
	KS Totals	1	0	0	1	0	1	0	0	0	1	0	0	0	0.0%	1
WESTLAKE	LA	1														
	LA Totals	1	0	1	0	0	0	0	0	0	1	0	0	0	0.0%	1
AMESBURY	MA	1														
CAPE COD	MA	1														
FORESTDALE	MA	1														
NORTH ADAMS	MA	1														
	MA Totals	4	1	0	3	1	0	2	0	1	4	2	0	2	50.0%	1
NORTH EAST	MD	1														
NORTH WEST	MD	1														
RISING SUN	MD	1														
	MD Totals	3	0	2	2	0	2	0	0	0	3	0	0	0	0.0%	0
COLEMAN	MI	1														
MIDLAND	MI	1														
PETOSKEY	MI	3														
SANFORD	MI	1														
WHITE LAKE	MI	1														
	MI Totals	7	2	0	5	1	0	4	0	0	7	3	0	3	42.9%	0
COLE CAMP	MO	1														

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HANNIBAL	MO	1														
KAHOKA	MO	1														
ST LOUIS	MO	1														
	MO Totals	4	0	0	4	0	1	3	1	1	4	1	0	1	25.0%	2
PEERLESS	MT	1														
REED POINT	MT	1														
	MT Totals	2	2	0	0	0	0	0	0	0	2	2	0	2	100.0%	0
ELIZABETH CITY	NC	3														
ELKIN	NC	1														
WEST END	NC	1														
	NC Totals	5	1	1	4	1	0	3	0	3	5	2	0	2	40.0%	4
FARGO	ND	1														
FINGAL	ND	2														
	ND Totals	3	0	2	2	0	0	1	0	0	3	0	0	0	0.0%	2
MAGNET	NE	1														
	NE Totals	1	0	0	1	0	0	1	0	0	1	0	0	0	0.0%	0
BAYONNE	NJ	1														
VINELAND	NJ	1														
	NJ Totals	2	0	0	2	0	0	2	0	0	2	0	0	0	0.0%	0
LAS VEGAS	NV	1														
	NV Totals	1	0	0	1	0	1	0	0	0	1	0	0	0	0.0%	1
HAMILTON	NY	1														
	NY Totals	1	1	0	0	0	0	0	0	0	1	1	0	1	100.0%	0
TULSA	OK	1														

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	OK Totals	1	0	0	1	0	0	1	0	0	1	0	0	0	0.0%	0
BEAVERTON	OR	1														
BEND	OR	1														
BROGAN	OR	2														
CARLTON	OR	1														
CHRISTMAS VLY	OR	2														
COOS BAY	OR	1														
CORBETT	OR	1														
CORVALLIS	OR	1														
ESTACADA	OR	2														
EUGENE	OR	3														
FAIRVIEW	OR	1														
HAPPY VALLEY	OR	1														
HARRISBURG	OR	1														
JOSEPH	OR	1														
LA GRANDE	OR	2														
LEBANON	OR	1														
MCMINVILLE	OR	2														
OREGON CITY	OR	2														
PAULINA	OR	1														
PHILOMATH	OR	1														
PORTLAND	OR	3														
SALEM	OR	2														
SILVERTON	OR	1														
SWEET HOME	OR	1														
	OR Totals	35	7	14	22	4	0	13	0	0	35	11	0	11	31.4%	14
ASPERS	PA	1														
TIDIOUTE	PA	1														
	PA Totals	2	1	1	1	1	0	0	0	0	2	2	0	2	100.0%	1

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
BARCELONETA	PR	2														
	PR Totals	2	0	0	2	0	0	2	0	0	2	0	0	0	0.0%	0
SIOUX FALLS	SD	1														
	SD Totals	1	0	0	1	0	0	1	0	1	1	0	0	0	0.0%	1
CHATTANOOGA	TN	1														
CHURCHILL	TN	1														
	TN Totals	2	1	0	1	1	0	0	0	0	2	2	0	2	100.0%	0
LEWISVILLE	TX	1														
STEPHENVILLE	TX	1														
	TX Totals	2	0	2	1	1	0	0	0	0	2	1	0	1	50.0%	2
BRIGHAM CITY	UT	2														
KEMS	UT	1														
SALT LAKE CITY	UT	2														
WEST JORDON	UT	1														
	UT Totals	6	0	0	6	0	1	5	0	1	6	0	0	0	0.0%	2
FAIRFAX	VA	1														
NEWPORT NEWS	VA	1														
NORVOLK	VA	1														
PALMYRA	VA	1														
WOODBRIDGE	VA	1														
	VA Totals	5	2	1	2	0	2	0	0	0	5	2	0	2	40.0%	3
AMANDA PARK	WA	3														
ARLINGTON	WA	3														
AUBURN	WA	2														

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
BELLEVUE	WA	1														
BELLINGHAM	WA	4														
BONNEY LAKE	WA	1														
BOTHELL	WA	2														
CAMANO ISLAND	WA	1														
CARNATION	WA	1														
CLINTON	WA	1														
COULEE DAM	WA	1														
DEER PARK	WA	1														
EDMONDS	WA	3														
ELMA	WA	2														
ENUMELAW	WA	1														
FEDERAL WAY	WA	1														
FERNDALE	WA	2														
ILWACO	WA	1														
KETTLE FALLS	WA	1														
LACEY	WA	2														
LACONNER	WA	1														
LAKEWOOD	WA	1														
LONGVIEW	WA	1														
LYNDEN	WA	1														
LYNNWOOD	WA	2														
MARYSVILLE	WA	1														
MERCER ISLAND	WA	1														
MILL CREEK	WA	2														
OAK HARBOR	WA	1														
OCEAN SHORES	WA	1														
OLYMPIA	WA	1														
OMAK	WA	1														
PORT	WA	1														

Tribal Name	Regulatory Areas	First Mailing			Second Mailing			Third Mailing			Totals					
		Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	Surveys Mailed	Surveys Returned	Surveys Returned Undeliverable	SHARCs Issued	Returned by Mail	Returned through Staff	Response	Response Rate	Undeliverable
ANGELES																
PORT ORCHARD	WA	7	2	3	4	0	1	2	0	0	7	2	0	2	28.6%	4
REDMOND	WA	2														
RIDGEFIELD	WA	1														
SEATAC	WA	2														
SEATTLE	WA	13	1	7	6	1	0	5	1	0	13	3	0	3	23.1%	7
SEQUIM	WA	1														
SHELTON	WA	1														
SPOKANE	WA	1														
STANFORD	WA	1														
STANWOOD	WA	2														
TACOMA	WA	3														
UNION	WA	1														
VANCOUVER	WA	4														
WESTPORT	WA	1														
YELM	WA	1														
	WA Totals	90	24	28	47	7	1	34	1	3	90	32	0	32	35.6%	32
OSHKOSH	WI	1														
	WI Totals	1	1	0	1	0	0	0	0	0	1	1	0	1	100.0%	0
CAMDEN ON GAULEY	WV	1														
	WV Totals	1	0	0	1	0	0	1	0	1	1	0	0	0	0.0%	1
CITY GRAND TOTALS		**15,047**	**5,581**	**1,389**	**9,197**	**1,413**	**255**	**4,875**	**599**	**136**	**15,047**	**7,593**	**1,089**	**8,682**	**57.7%**	**1,697**

Table 4.–Estimated Alaska subsistence harvests of halibut, sport halibut harvests by SHARC holders, and incidental harvests of lingcod and rockfish by SHARC type and regulatory area of the tribe or rural community of registration by the SHARC holder, 2007.

SHARC[1] Type	Halibut Regulatory Area	Return Rate			Subsistence Fished for Halibut		Subsistence Halibut Harvest		Sport Fished for Halibut		Sport Halibut Harvest		Lingcod Incidental Harvest		Rockfish Incidental Harvest	
		SHARCs Issued	Surveys Returned	Percent	Estimated Number of Fishers	Percent of SHARCs Issued	Estimated Number of Fish	Estimated Number of Pounds[3]	Estimated Number	Percent of SHARCs	Estimated Number of Fish	Estimated Number of Pounds[3]	Estimated Number of Fishers	Estimated Number of Fish	Estimated Number of Fishers	Estimated Number of Fish
Tribal[2]	2C	3,992	1,721	43.1%	1,031	25.8%	9,501	213,957	382	9.6%	1,384	24,352	208	812	314	3,307
Tribal	3A	1,324	613	46.3%	516	39.0%	5,571	110,003	178	13.4%	581	10,358	60	243	105	1,579
Tribal	3B	604	249	41.2%	222	36.7%	2,175	42,114	37	6.1%	183	4,133	16	47	35	481
Tribal	4A	104	66	63.5%	44	42.2%	347	6,223	6	5.3%	41	882	3	34	8	66
Tribal	4B	7	5	71.4%	6	85.7%	16	288	1	17.9%	1	35	0	0	1	25
Tribal	4C	284	214	75.4%	28	10.0%	1,157	14,990	0	0.0%	0	0	1	7	1	27
Tribal	4D	50	19	38.0%	25	50.9%	244	7,810	0	0.0%	0	0	9	77	11	194
Tribal	4E	1,081	423	39.1%	350	32.4%	3,725	46,120	14	1.3%	75	1,398	39	154	27	196
Tribal	All	7,446	3,310	44.5%	2,222	29.8%	22,738	441,506	617	8.3%	2,266	41,158	336	1,374	503	5,874
Rural[2]	2C	4,764	3,497	73.4%	2,263	47.5%	16,244	318,271	1,083	22.7%	4,029	66,054	461	1,454	825	7,193
Rural	3A	2,470	1,627	65.9%	1,302	52.7%	13,145	251,132	810	32.8%	4,468	85,273	153	544	229	1,952
Rural	3B	89	60	67.4%	46	51.4%	458	8,943	17	19.4%	67	1,016	3	14	6	194
Rural	4A	135	87	64.4%	58	43.1%	665	9,805	31	24.0%	108	2,290	4	7	2	11
Rural	4B	31	16	51.6%	14	43.8%	62	1,173	4	12.4%	15	338	0	0	0	0
Rural	4C	2	2	100.0%	1	50.0%	0	0	0	0.0%	0	0	0	0	0	0
Rural	4D	0	0	0.0%	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0
Rural	4E	110	83	75.5%	26	23.6%	385	1,463	5	4.2%	4	68	3	9	3	42
Rural	All	7,601	5,372	70.7%	3,710	48.8%	30,959	590,787	1,950	25.6%	8,693	155,039	623	2,028	1,066	9,392
All[3]	2C	8,756	5,218	59.6%	3,294	37.6%	25,745	532,229	1,464	16.7%	5,413	90,406	668	2,266	1,140	10,500
All	3A	3,794	2,240	59.0%	1,818	47.9%	18,716	361,134	988	26.0%	5,050	95,631	213	787	334	3,531
All	3B	693	309	44.6%	268	38.6%	2,633	51,057	54	7.8%	251	5,149	18	62	41	675
All	4A	239	153	64.0%	102	42.7%	1,013	16,028	37	15.4%	150	3,173	7	41	10	76

All	4B	38	21	55.3%	20	51.5%	78	1,461	5	13.4%	17	373	0	0	1	25
All	4C	286	216	75.5%	29	10.3%	1,157	14,990	0	0.0%	0	0	1	7	1	27
All	4D	50	19	38.0%	25	50.9%	244	7,810	0	0.0%	0	0	9	77	11	194
All	4E	1,191	506	42.5%	376	31.6%	4,110	47,583	19	1.6%	79	1,466	42	163	30	238
All	All	15,047	8,682	57.7%	5,933	39.4%	53,697	1,032,293	2,566	17.1%	10,959	196,198	959	3,402	1,568	15,266

[1] SHARC = Subsistence Halibut Registration Certificate.

[2] "Tribal" = individuals who obtained SHARCs as members of an eligible tribe, sorted by location of tribal headquarters. "Rural" = individuals who obtained SHARCs as residents of an eligible rural community. "All" = sum of tribal and rural SHARC holders for a regulator area based on location of tribal headquarters or rural community. Because some SHARC holders may fish in regulatory areas other than the location of the area of their tribal headquarters or rural residence, area totals in this table different slightly from those in Table 6, Table 7, and Table 9.

[3] Pounds net (dressed) weight = 75% of round (whole) weight.

Source: ADF&G Division of Subsistence SHARC survey, 2008.

Table 5.–Age of subsistence halibut registration certificate holders by SHARC type, 2007.

SHARC Type	Age in Years (Number of SHARC Holders)																				
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	80 - 84	85 - 89	90 - 94	95+	totals
Tribal	7	188	317	455	501	512	491	592	766	854	782	668	445	350	263	141	70	25	15	4	7,446
	0.1%	2.5%	4.3%	6.1%	6.7%	6.9%	6.6%	8.0%	10.3%	11.5%	10.5%	9.0%	6.0%	4.7%	3.5%	1.9%	0.9%	0.3%	0.2%	0.1%	
Rural	8	57	149	176	241	344	436	632	718	993	1135	996	733	478	276	136	64	25	2	2	7,601
	0.1%	0.7%	2.0%	2.3%	3.2%	4.5%	5.7%	8.3%	9.4%	13.1%	14.9%	13.1%	9.6%	6.3%	3.6%	1.8%	0.8%	0.3%	0.0%	0.0%	
Grand Totals	15	245	466	631	742	856	927	1224	1484	1847	1917	1664	1178	828	539	277	134	50	17	6	15,047
	0.1%	1.6%	3.1%	4.2%	4.9%	5.7%	6.2%	8.1%	9.9%	12.3%	12.7%	11.1%	7.8%	5.5%	3.6%	1.8%	0.9%	0.3%	0.1%	0.0%	
Toksook Bay	0	24	80	85	53	38	38	41	47	30	19	22	16	20	8	7	2	0	3	1	534
	0.0%	4.5%	15.0%	15.9%	9.9%	7.1%	7.1%	7.7%	8.8%	5.6%	3.6%	4.1%	3.0%	3.7%	1.5%	1.3%	0.4%	0.0%	0.6%	0.2%	
Tribal, w/o Toksook Bay	7	164	237	370	448	474	453	551	719	824	763	646	429	330	255	134	68	25	12	3	6,912
	0.1%	2.4%	3.4%	5.4%	6.5%	6.9%	6.6%	8.0%	10.4%	11.9%	11.0%	9.3%	6.2%	4.8%	3.7%	1.9%	1.0%	0.4%	0.2%	0.0%	

Source: SHARC database, Restricted Access Management Program, NMFS, Juneau, as of 12/31/2007.

Table 6.–Estimated Alaska subsistence harvests of halibut by halibut regulatory area and subarea fished and by gear type, and estimated sport harvests by SHARC holders, 2007.

Subarea	Halibut Regulatory Area	Number of SHARCs Fished[3] (any halibut fishing)	Estimated Subsistence Harvest by Gear Type[1]									Estimated Sport Harvest		
			Setline (fixed) Gear			Hand-Operated Gear			All Subsistence Gear					
			Estimated Number Fished	Estimated Number Harvested	Estimated Pounds Harvested[2]	Estimated Number Fished	Estimated Number Harvested	Estimated Pounds Harvested[2]	Estimated Number Fished	Estimated Number Harvested	Estimated Pounds Harvested[2]	Estimated Number Fished	Estimated Number Harvested	Estimated Pounds Harvested[2]
Southern Southeast Alaska	2C	1,772	1,382	10,121	213,808	858	4,212	69,614	1,772	14,333	283,422	926	3,481	59,806
Sitka LAMP Area	2C	913	828	4,893	105,616	288	1,007	26,574	913	5,900	132,190	340	1,029	15,744
Northern Southeast Alaska	2C	807	700	4,125	84,798	342	1,384	24,488	807	5,509	109,286	312	941	16,403
Subtotal	2C	3,349	2,781	19,139	404,221	1,423	6,604	120,676	3,349	25,743	524,897	1,504	5,452	91,953
Yakutat Area	3A	84	75	734	13,222	36	235	4,293	84	970	17,516	17	102	1,814
Prince William Sound	3A	401	342	2,048	43,728	177	556	8,678	401	2,604	52,407	174	367	6,151
Cook Inlet	3A	296	139	1,727	34,897	230	2,684	40,725	296	4,411	75,623	146	613	10,404
Kodiak Island Road System	3A	762	597	4,458	93,650	386	1,997	36,889	762	6,455	130,538	556	2,422	47,121
Kodiak Island Other	3A	627	437	2,891	61,023	356	1,635	35,183	627	4,526	96,206	350	1,590	30,836
Subtotal	3A	1,917	1,387	11,858	246,521	1,060	7,107	125,768	1,917	18,965	372,289	1,050	5,094	96,327
Chignik Area	3B	80	57	439	9,254	55	277	6,144	80	717	15,397	10	27	528
Lower Alaska Peninsula	3B	190	78	862	16,626	155	890	15,724	190	1,752	32,351	39	195	3,785
Subtotal	3B	266	131	1,301	25,880	208	1,168	21,868	266	2,469	47,748	49	222	4,313
Eastern Aleutians - East	4A	87	63	490	7,667	45	358	5,086	87	848	12,753	31	109	2,327
Eastern Aleutians - West	4A	13	5	50	704	11	76	1,489	13	126	2,193	7	41	881
Subtotal	4A	99	67	540	8,372	55	435	6,574	99	974	14,946	38	151	3,208
Western Aleutians - East	4B	22	16	62	1,224	17	40	774	22	102	1,997	4	15	338
Western Aleutians - Other	4B	0	0	0	0	0	0	0	0	0	0	0	0	0

Subtotal	4B	22	16	62	1,224	17	40	774	22	102	1,997	4	15	338
St. George Island	4C	14	6	133	2,217	14	129	1,519	14	262	3,736	0	0	0
St. Paul Island	4C	17	15	887	11,030	3	14	311	17	901	11,342	0	0	0
Subtotal	4C	31	22	1,020	13,247	17	143	1,830	31	1,162	15,077	0	0	0
St. Lawrence Island	4D	10	7	110	2,915	4	6	289	10	116	3,204	0	0	0
Area 4D, Other	4D	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	4D	10	7	110	2,915	4	6	289	10	116	3,204	0	0	0
Bristol Bay	4E	30	30	88	2,015	12	4	100	30	92	2,116	3	0	0
Yukon/Kuskokwim Delta	4E	362	87	995	9,950	331	3,078	40,069	362	4,073	50,019	5	24	60
Norton Sound	4E	1	1	0	0	0	0	0	1	0	0	1	0	0
Subtotal	4E	393	118	1,083	11,965	343	3,082	40,170	393	4,165	52,135	9	24	60
Grand totals[1]	Alaska	5,933	4,405	35,113	714,344	3,031	18,584	317,949	5,933	53,697	1,032,293	2,566	10,959	196,198

Source: Alaska Department of Fish and Game, Division of Subsistence, SHARC Survey, 2008.

[1] Setline = longline or skate. Hand-operated gear = rod and reel or handline.

[2] Pounds are net (dressed) weight. Net weight = 75% of round weight.

[3] Because fishers might fish in more than one area, subtotals for regulatory areas and the state total might exceed the sum of the subarea values. Includes subsistence and sport fishing.

Table 7.–Alaska subsistence halibut harvests in 2003-2007 by geographic area fished.

	Subsistence Halibut Harvests, Net Lbs					% Change between Years					Percentage of State Total				
	2003	2004	2005	2006	2007	2003 to 2004	2004 to 2005	2005 to 2006	2006 to 2007	2003 to 2007	2003	2004	2005	2006	2007
Southern Southeast Alaska	290,443	369,319	328,658	307,921	283,422	27.2%	-11.0%	-6.3%	-8.0%	-2.4%	27.9%	31.0%	27.9%	27.4%	27.5%
Sitka LAMP Area	173,323	147,312	133,545	147,526	132,190	-15.0%	-9.3%	10.5%	-10.4%	-23.7%	16.6%	12.3%	11.3%	13.1%	12.8%
Northern Southeast Alaska	159,772	160,453	135,869	124,670	109,286	0.4%	-15.3%	-8.2%	-12.3%	-31.6%	15.3%	13.4%	11.5%	11.1%	10.6%
Area 2C Subtotal	623,538	677,084	598,072	580,117	524,897	8.6%	-11.7%	-3.0%	-9.5%	-15.8%	59.9%	56.7%	50.8%	51.6%	50.8%
Yakutat Area	11,198	20,153	36,515	19,187	17,516	80.0%	81.2%	-47.5%	-8.7%	56.4%	1.1%	1.7%	3.1%	1.7%	1.7%
Prince William Sound	28,409	58,429	68,063	47,965	52,407	105.7%	16.5%	-29.5%	9.3%	84.5%	2.7%	4.9%	5.8%	4.3%	5.1%
Cook Inlet	52,609	83,939	79,024	59,965	75,623	59.6%	-5.9%	-24.1%	26.1%	43.7%	5.1%	7.0%	6.7%	5.3%	7.3%
Kodiak Island Road System	114,028	129,145	134,849	140,388	130,538	13.3%	4.4%	4.1%	-7.0%	14.5%	11.0%	10.8%	11.4%	12.5%	12.6%
Kodiak Island Other	79,256	111,944	110,824	111,752	96,206	41.2%	-1.0%	0.8%	-13.9%	21.4%	7.6%	9.4%	9.4%	9.9%	9.3%
Area 3A Subtotal	285,500	403,610	429,275	379,258	372,289	41.4%	6.4%	-11.7%	-1.8%	30.4%	27.4%	33.8%	36.4%	33.7%	36.1%
Chignik Area	10,500	12,053	14,783	17,780	15,397	14.8%	22.7%	20.3%	-13.4%	46.6%	1.0%	1.0%	1.3%	1.6%	1.5%
Lower Alaska Peninsula	16,977	21,467	31,442	30,767	32,351	26.4%	46.5%	-2.1%	5.1%	90.6%	1.6%	1.8%	2.7%	2.7%	3.1%
Area 3B Subtotal	27,477	33,519	46,225	48,547	47,748	22.0%	37.9%	5.0%	-1.6%	73.8%	2.6%	2.8%	3.9%	4.3%	4.6%
Eastern Aleutians - East	19,345	26,715	33,882	25,993	12,753	38.1%	26.8%	-23.3%	-50.9%	-34.1%	1.9%	2.2%	2.9%	2.3%	1.2%
Eastern Aleutians - West	1,852	2,162	1,734	1,069	2,193	16.7%	-19.8%	-38.4%	105.2%	18.4%	0.2%	0.2%	0.1%	0.1%	0.2%
Area 4A Subtotal	21,197	28,877	35,615	27,062	14,946	36.2%	23.3%	-24.0%	-44.8%	-29.5%	2.0%	2.4%	3.0%	2.4%	1.4%
Western Aleutians - East	2,582	916	1,351	2,761	1,997	-64.5%	47.5%	104.4%	-27.7%	-22.7%	0.2%	0.1%	0.1%	0.2%	0.2%
Western Aleutians - Other	0	0	0	0	0						0.0%	0.0%	0.0%	0.0%	0.0%
Area 4B Subtotal	2,582	916	1,351	2,761	1,997	-64.5%	47.5%	104.4%	-27.7%	-22.7%	0.2%	0.1%	0.1%	0.2%	0.2%
St. George Island	2,042	1,823	2,145	3,443	3,736	-10.7%	17.7%	60.5%	8.5%	82.9%	0.2%	0.2%	0.2%	0.3%	0.4%

St. Paul Island	20,839	7,911	5,571	5,085	11,342	-62.0%	-29.6%	-8.7%	123.1%	-45.6%	2.0%	0.7%	0.5%	0.5%	1.1%
Area 4C Subtotal	22,881	9,734	7,716	8,527	15,077	-57.5%	-20.7%	10.5%	76.8%	-34.1%	2.2%	0.8%	0.7%	0.8%	1.5%
St. Lawrence Island	4,380	10,923	5,848	8,297	3,204	149.4%	-46.5%	41.9%	-61.4%	-26.9%	0.4%	0.9%	0.5%	0.7%	0.3%
Area 4D, Other	0	0	0	0							0.0%	0.0%	0.0%	0.0%	0.0%
Area 4D Subtotal	4,380	10,923	5,848	8,297	3,204	149.4%	-46.5%	41.9%	-61.4%	-26.9%	0.4%	0.9%	0.5%	0.7%	0.3%
Bristol Bay	435	203	2,169	1,336	2,116	-53.3%	967.2%	-38.4%	58.3%	386.4%	0.0%	0.0%	0.2%	0.1%	0.2%
YK Delta	53,284	28,298	51,950	69,407	50,019	-46.9%	83.6%	33.6%	-27.9%	-6.1%	5.1%	2.4%	4.4%	6.2%	4.8%
Norton Sound	56	0	0	0	0	-100.0%				-100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Area 4E Subtotal	53,775	28,501	54,119	70,743	52,135	-47.0%	89.9%	30.7%	-26.3%	-3.0%	5.2%	2.4%	4.6%	6.3%	5.1%
Alaska grand totals[1]	1,041,330	1,193,162	1,178,222	1,125,312	1,032,293	14.6%	-1.3%	-4.5%	-8.3%	-0.9%	100.0%	100.0%	100.0%	100.0%	100.0%

[1] The sum of the harvests by geographic areas for 2003 reported here differs slightly from that reported in Table 8 in Fall et al (2004:50) due to rounding.

Table 8.–Number of hooks usually fished, setline (stationary) gear, Alaska halibut subsistence fishery, 2007.

Regulatory Area	SHARC holders	Number of Hooks[2]																															Grand Total[1]
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Missing	
2C	8,756	15	26	14	6	31	18	0	5	3	196	3	42	1	1	238	11	6	17	6	551	2	3	4	18	226	7	15	40	31	1,134	76	2,746
		0.6%	0.9%	0.5%	0.2%	1.1%	0.6%	0.0%	0.2%	0.1%	7.1%	0.1%	1.5%	0.0%	0.0%	8.7%	0.4%	0.2%	0.6%	0.2%	20.1%	0.1%	0.1%	0.1%	0.7%	8.2%	0.3%	0.5%	1.4%	1.1%	41.3%	2.9%	
3A	3,794	8	7	6	6	6	11	0	3	0	108	0	25	0	0	85	5	5	8	1	283	3	5	5	2	114	1	1	11	15	519	55	1,298
		0.6%	0.5%	0.4%	0.4%	0.4%	0.8%	0.0%	0.2%	0.0%	8.3%	0.0%	2.0%	0.0%	0.0%	6.6%	0.4%	0.4%	0.6%	0.1%	21.8%	0.2%	0.4%	0.4%	0.2%	8.8%	0.1%	0.1%	0.9%	1.2%	39.9%	7.3%	
3B	693	6	3	0	1	0	2	0	0	0	18	0	5	0	0	10	1	0	0	0	13	0	0	0	0	3	0	0	0	0	52	20	135
		4.5%	2.2%	0.0%	0.7%	0.0%	1.8%	0.0%	0.0%	0.0%	13.3%	0.0%	3.5%	0.0%	0.0%	7.1%	0.8%	0.0%	0.0%	0.0%	9.6%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	38.7%	30.6%	
4A	239	6	0	1	0	0	0	0	0	0	10	0	0	0	0	6	0	0	0	0	3	0	0	0	0	1	0	0	1	3	28	6	65
		9.9%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.8%	0.0%	0.0%	0.0%	0.0%	8.7%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	2.1%	4.1%	42.4%	13.5%	
4B	38	2	0	0	0	4	0	0	0	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	15
		13.0%	0.0%	0.0%	0.0%	25.1%	0.0%	0.0%	0.0%	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	20.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.1%	26.5%	
4C	286	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	17	1	21
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	83.9%	2.6%	
4D	50	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	7	0	0	0	0	12	0	24
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.9%	0.0%	0.0%	0.0%	0.0%	31.0%	0.0%	0.0%	0.0%	0.0%	51.2%	0.0%	
4E	1,191	2	0	2	0	0	0	0	0	0	6	0	1	0	0	2	0	0	0	0	8	0	0	0	0	2	0	0	1	0	41	37	101
		1.6%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	0.0%	1.2%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	8.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	1.0%	0.0%	40.3%	46.1%	
Alaska	15,047	40	36	23	13	41	31	0	8	3	340	3	75	1	1	344	18	11	25	7	861	5	9	9	20	355	8	16	53	49	1,803	198	4,405
		0.9%	0.8%	0.5%	0.3%	0.9%	0.7%	0.0%	0.2%	0.1%	7.7%	0.1%	1.7%	0.0%	0.0%	7.8%	0.4%	0.3%	0.6%	0.2%	19.6%	0.1%	0.2%	0.2%	0.5%	8.1%	0.2%	0.4%	1.2%	1.1%	40.9%	4.5%	

Source: Alaska Department of Fish and Game, Division of Subsistence, SHARC Survey, 2008.

[1] Number of fishers using setline (fixed) gear. Based on location of tribe or rural community of SHARC holder.

[2] The column for 30 hooks includes those fishers who reported using more than 30. There is no 30-hook limit in Areas 4C, 4D, or 4E.

Table 9.–Average net weight of subsistence and sport harvested halibut, 2007, by regulatory area fished.

	Subsistence Methods			Sport Harvest[1]			Total Halibut		
Area[2]	Number	Pounds, Net Weight	Average per fish	Number	Pounds, Net Weight	Average per fish	Number	Pounds, Net Weight	Average per fish
2C	25,743	524,897	20.4	5,452	91,953	16.9	31,194	616,850	19.8
3A	18,965	372,289	19.6	5,094	96,327	18.9	24,059	468,616	19.5
3B	2,469	47,748	19.3	222	4,313	19.4	2,692	52,061	19.3
4A	974	14,946	15.3	151	3,208	21.3	1,125	18,154	16.1
4B	102	1,997	19.5	15	338	21.9	118	2,335	19.8
4C	1,162	15,077	13.0	0			1,162	15,077	13.0
4D	116	3,204	27.7	0			116	3,204	27.7
4E	4,165	52,135	12.5	24	60	2.5	4,189	52,195	12.5
Alaska	53,697	1,032,293	19.2	10,959	196,198	17.9	64,655	1,228,491	19.0

Source: Alaska Department of Fish and Game, Division of Subsistence, SHARC Survey, 2008.

[1] Sport harvest of halibut by SHARC holders.

[2] Area totals are based on the location of the harvest (see also Table 6 and Table 7).

Table 10.–Estimated harvests of lingcod and rockfish by SHARC holders while subsistence fishing for halibut, by regulatory area and geographic subarea fished, 2006.

Subarea	Regulatory Area	Number of SHARCs Fished	Estimated Harvest			
			Lingcod		Rockfish	
			Estimated Number Fished	Estimated Number Harvested	Estimated Number Fished	Estimated Number Harvested
Southern Southeast Alaska	2C	1,772	287	824	585	5,108
Sitka LAMP Area	2C	913	358	1,163	449	3,964
Northern Southeast Alaska	2C	807	89	254	181	1,259
Area 2C Subtotal	2C	3,349	677	2,241	1,141	10,331
Yakutat Area	3A	84	30	154	19	164
Prince William Sound	3A	401	50	114	96	640
Cook Inlet	3A	296	23	91	50	720
Kodiak Island Road System	3A	762	87	228	147	1,089
Kodiak Island Other	3A	627	71	222	122	1,093
Area 3A Subtotal	3A	1,917	232	810	375	3,706
Chignik Area	3B	80	13	19	24	328
Lower Alaska Peninsula	3B	190	10	48	20	338
Area 3B Subtotal	3B	266	23	67	43	666
Eastern Aleutians - East	4A	87	6	25	7	89
Eastern Aleutians - West	4A	13	0	0	6	11
Area 4A Subtotal	4A	99	6	25	13	100
Western Aleutians - East	4B	22	2	15	1	5
Area 4B Subtotal	4B	22	2	15	1	5
St. George Island	4C	14	1	7	1	27
St. Paul Island	4C	17	0	0	0	0
Area 4C Subtotal	4C	31	1	7	1	27
St. Lawrence Island	4D	10	1	29	3	170
Area 4D Subtotal	4D	10	1	29	3	170
Bristol Bay	4E	30	0	0	1	24
Yukon/Kuskokwim Delta	4E	362	50	208	36	237
Norton Sound	4E	1	0	0	0	0
Area 4E Subtotal	4E	393	50	208	38	261
Alaska Grand Total[1]	Alaska	5,933	959	3,402	1,568	15,266

Source: Alaska Department of Fish and Game, Division of Subsistence, SHARC Survey, 2007.

[1] Because fishers might fish in more than one area, subtotals for regulatory areas and the state total might exceed the sum of the subarea values.

Table 11.–Estimated harvests of halibut by gear type and participation subsistence and sport fisheries, selected Alaska communities, 2003-2007.

Community[1]	Year	Number of SHARC Holders[2]	Subsistence Harvests						Sport Harvest[4]		All Harvests	
			Setline (fixed) Gear		Hand-Operated Gear		Total Subsistence Harvest					
			Estimated Number Fished	Estimated Pounds Harvested	Estimated Number Fished	Estimated Pounds Harvested	Estimated Number Fished	Estimated Pounds Harvested	Estimated Number Fished	Estimated Pounds Harvested	Estimated Number Fished	Estimated Pounds Harvested
Cordova	2003	358	68	7,613	40	7,885	102	15,498	144	11,534	194	27,032
	2004	526	174	29,693	97	10,946	262	40,640	174	12,149	325	52,789
	2005	602	238	34,907	104	12,234	281	47,141	179	10,519	358	57,660
	2006	607	202	21,059	125	7,968	248	29,027	152	7,020	301	36,047
	2007	615	233	21,683	128	7,033	282	28,716	123	4,203	315	32,919
Kodiak	2003	1,320	438	101,575	278	51,678	646	153,254	498	68,170	858	221,424
	2004	1,561	554	131,719	335	55,605	802	187,214	581	73,181	971	260,395
	2005	1,741	650	146,781	398	64,047	871	210,828	669	82,455	1,116	293,283
	2006	1,716	684	142,326	497	63,496	961	205,822	562	64,320	1,092	270,142
	2007	1,880	707	135,351	486	58,282	945	193,633	648	68,556	1,157	262,189
Petersburg	2003	1,047	330	41,704	138	14,013	415	55,718	268	19,611	523	75,329
	2004	1,187	322	53,885	206	17,900	482	71,784	351	26,408	617	98,192
	2005	1,197	338	44,050	175	17,321	436	61,372	312	23,289	569	84,661
	2006	1,082	300	35,608	222	18,075	426	53,682	246	17,351	529	71,033
	2007	1,123	274	32,026	191	15,491	386	47,517	264	15,177	516	62,694
Port Graham	2003	52	10	4,398	28	7,056	35	11,454	3	156	36	11,610
	2004	57	15	4,425	31	4,755	42	9,181	11	850	42	10,031
	2005	52	8	7,938	18	3,190	18	11,127	9	488	18	11,615
	2006	50	9	2,397	24	3,797	30	6,194	2	0	30	6,194
	2007	59	22	5,347	28	3,146	36	8,493	4	233	36	8,726
Sand Point	2003	73	15	3,409	11	1,410	21	4,819	11	410	21	5,229
	2004	351	25	4,360	74	6,996	109	11,355	50	1,384	121	12,739
	2005	321	35	12,201	77	9,700	100	21,901	23	1,281	105	23,182
	2006	365	59	7,406	87	12,809	133	20,214	29	6,300	140	26,514
	2007	364	49	13,278	113	11,337	138	24,615	16	3,034	138	27,649
Sitka	2003	1,639	760	155,276	160	19,604	821	174,880	401	32,408	956	207,288
	2004	1,871	714	151,660	147	14,739	904	166,474	412	25,829	1,026	192,303
	2005	1,974	738	126,426	172	19,893	814	146,319	417	55,913	987	202,232

	2006	1,895	809	145,542	297	17,830	915	163,372	395	23,032	1,036	186,404
	2007	1,954	839	115,162	270	26,886	921	142,049	315	16,200	1,010	158,249
Toksook Bay	2003	532	8	3,790	47	20,709	54	24,500	0	0	54	24,500
	2004	529	7	859	44	5,737	56	6,596	0	0	56	6,596
	2005	522	5	602	60	14,269	61	14,870	2	98	62	14,968
	2006	533	6	2,333	112	34,149	113	36,481	0	0	113	36,481
	2007	533	17	1,451	100	6,469	112	7,921	0	0	112	7,921
Tununak	2003	0										
	2004	70	16	878	23	1,076	31	1,954	0	0	31	1,954
	2005	70	3	332	18	2,329	20	2,661	0	0	20	2,661
	2006	70	7	224	33	3,808	33	4,032	0	0	33	4,032
	2007	69	14	1,536	38	5,479	38	7,015	0	0	38	7,015
Unalaska[3]	2003	92	39	6,713	31	4,146	50	10,860	33	5,519	70	16,379
	2004	131	43	9,557	39	5,973	81	15,530	34	2,165	93	17,695
	2005	150	60	9,573	57	8,535	88	18,108	28	2,439	97	20,547
	2006	171	53	7,526	47	8,805	81	16,331	50	3,768	101	20,100
	2007	176	67	9,012	38	4,238	83	13,250	33	2,287	92	15,537

Source: Alaska Department of Fish and Game, Division of Subsistence SHARC Survey, 2004, 2005, 2006, 2007, and 2008.

[1] For data on all communities for 2005, see Appendix Tables A-4, A-5, and A-6.

[2] SHARC = Subsistence halibut registration certificate; includes all SHARC holders living in the community.

[3] Includes Dutch Harbor.

[4] Sport harvests by SHARC holders only.

Table 12.–Estimated harvests of halibut for home use, Sitka.

Year	Number of Fishing Households	Pounds Usable (Net) Weight					95% confidence range (+/- %)[2]
		Removed from Commercial Harvests	Rod and Reel	Other Methods[1]	Total	Total w/o Commercial Removal	
1987	1,252	12,353	180,982		193,335	180,982	22
1996	943	16,528	135,048	14,196	165,772	149,244	28
Annual average	1,098	14,441	158,015	14,196	179,554	165,113	

Source: Scott et al. 2001.

[1] Harvest data not collected for "other methods" in 1987.

[2] Pertains to estimate of total harvests.

Table 13.–Estimated harvests of halibut for home use, Petersburg.

Year	Number of Fishing Households	Pounds Usable (Net) Weight					95% confidence range (+/- %)[2]
		Removed from Commercial Harvests	Rod and Reel	Other Methods[1]	Total	Total w/o Commercial Removal	
1987	604	11,728	107,448		119,176	107,448	51
2000	468	6,951	49,023	0	55,974	49,023	39
Annual average	536	9,339	78,236	0	87,575	78,236	

Source: Scott et al. 2001; Division of Subsistence, ADF&G, Household Survey, 2001.

[1] Harvest data not collected for "other methods" in 1987.

[2] Pertains to estimate of total harvests.

Table 14.–Estimated harvests of halibut for home use, Cordova.

Year	Number of Fishing Households	Pounds Usable (Net) Weight					95% confidence range (+/- %)[1]
		Removed from Commercial Harvests	Rod and Reel	Other Methods	Total	Total w/o Commercial Removal	
1985	228	3,776	31,002	1,752	36,530	32,754	29
1988	343	18,701	119,873	348	138,922	120,221	62
1991	272	25,107	25,493	116	50,716	25,609	33
1992	401	11,383	60,612	0	71,995	60,612	48
1993	382	3,762	39,556	2,056	45,374	41,612	32
1997	321	3,551	58,647	4,252	66,450	62,899	41
Annual average	325	11,047	55,864	1,421	68,331	57,285	

Source: Scott et al. 2001.

[1] Pertains to estimate of total harvests.

Table 15.–Estimated harvests of halibut for home use, Port Graham.

Year	Number of Fishing Households	Pounds Usable (Net) Weight					95% confidence range (+/- %)[2]
		Removed from Commercial Harvests	Rod and Reel	Other Methods	Total	Total w/o Commercial Removal	
1987	42	1,237	3,809	3,389	8,435	7,198	14
1989	29	3,217	1,482	1,222	5,921	2,704	47
1990	32	3,003	4,106	3,171	10,280	7,277	22
1991	35	1,663	2,332	4,846	8,841	7,178	17
1992	42	24	7,867	3,365	11,256	11,232	14
1993	42	86	3,105	1,346	4,537	4,451	14
1997	36	79	2,881	5,326	8,286	8,207	28
Annual average[1]	38	1,015	4,017	3,574	8,606	7,591	

Source: Scott et al. 2001.

[1] Excludes 1989, the year of the *Exxon Valdez* Oil Spill.

[2] Pertains to estimate of total harvests.

Table 16.–Estimated harvests of halibut for home use, Kodiak road system.

Year [1]	Number of Fishing Households	Pounds Usable (Net) Weight					95% confidence range (+/- %)[2]
		Removed from Commercial Harvests	Rod and Reel	Other Methods	Total	Total w/o Commercial Removal	
1982	1,404	NA	NA	NA	451,223	360,113	45
1991	1,178	48,245	206,692	40,591	295,528	247,283	30
1992	1,178	89,625	329,345	18,732	437,702	348,077	33
1993	1,336	142,108	479,391	31,863	653,362	511,254	33
Annual average	1,306	93,326	338,476	30,395	462,197	366,682	

Source: Scott et al. 2001.

[1] Harvest data are available based on random samples drawn from the entire road system population for 1982 and 1991. Just Kodiak City was sampled in 1992 and 1993. Estimates for the entire road system population were developed for this table based on the known portion of the total road system harvest harvested by city residents in 1982 and 1991.

[2] Pertains to estimate of total harvests.

Table 17.–Halibut removals in Alaska by regulatory area, 2007.

	Pounds Net Weight					
Area	Commercial[1]	Sport[2]	Subsistence[3]	Wastage	Bycatch	Total
2C	8,473,000	2,545,000	524,897	292,000	340,000	12,174,897
3A	26,493,000	5,045,000	372,289	971,000	2,770,000	35,651,289
3B	9,249,000	10,000	47,748	441,000	1,240,000	10,987,748
4	8,094,000	46,000	107,069	248,000	7,080,000	15,575,069
Alaska	52,309,000	7,646,000	1,052,003	1,952,000	11,430,000	74,389,003

Sources: Williams 2008; Division of Subsistence, ADF&G, SHARC Survey, 2008.

[1] Commercial catch includes IPHC research catch and in Area 2C, the Metlakatla fishery catch.

[2] Projected harvests.

[3] Includes 19,049 pounds of sublegal halibut legally retained by CDQ organizations in areas 4D and 4E for personal use. The subsistence harvest by SHARC holders was 1,032,293 pounds, including 87,349 pounds in Area 4.

Table 18.–Comparison of selected SHARC survey results, 2003-2007 study years.

	Study Years					% Change						
	2003	2004	2005	2006	2007	2004 Compared to 2003	2005 Compared to 2004	2005 Compared to 2003	2006 Compared to 2005	2006 Compared to 2003	2007 Compared to 2006	2007 Compared to 2003
Response to Survey												
Number of SHARCs Issued	11,635	13,813	14,306	14,206	15,047	18.7%	3.6%	23.0%	-0.7%	22.1%	5.9%	29.3%
Number of Surveys Returned	7,593	8,524	8,565	8,426	8,682	12.3%	0.5%	12.8%	-1.6%	11.0%	3.0%	14.3%
Response Rate	65.3%	61.7%	59.9%	59.3%	57.7%	-5.4%	-3.0%	-8.3%	-0.9%	-9.1%	-2.7%	-11.6%
Subsistence Halibut Fishing												
Estimated Number of Subsistence Halibut Fishers	4,942	5,984	5,621	5,909	5,933	21.1%	-6.1%	13.7%	5.1%	19.6%	0.4%	20.1%
Percent of All SHARC Holders Subsistence Fishing	42.5%	43.3%	39.3%	41.6%	39.4%	2.0%	-9.3%	-7.5%	5.9%	-2.1%	-5.2%	-7.2%
Estimated Number of Subsistence Halibut	43,926	52,412	55,875	54,089	53,697	19.3%	6.6%	27.2%	-3.2%	23.1%	-0.7%	22.2%
Estimated Net Pounds of Subsistence Halibut	1,041,330	1,193,162	1,178,222	1,125,312	1,032,293	14.6%	-1.3%	13.1%	-4.5%	8.1%	-8.3%	-0.9%
Average Weight of Subsistence-Harvested Halibut	23.7	22.8	21.1	20.8	19.2	-4.0%	-7.3%	-11.0%	-1.4%	-12.2%	-7.6%	-18.9%
Average Harvest per Fisher, Fish	8.9	8.8	9.9	9.2	9.1	-1.5%	13.5%	11.8%	-7.9%	3.0%	-1.1%	1.8%
Average Harvest per Fisher, Net Pounds	210.7	199.4	209.6	190.4	174.0	-5.4%	5.1%	-0.5%	-9.2%	-9.6%	-8.6%	-17.4%
Sport Halibut Fishing by SHARC Holders												
Estimated Number of Sport Halibut Fishers	2,580	3,107	3,147	2,894	2,566	20.4%	1.3%	22.0%	-8.0%	12.2%	-11.3%	-0.5%
Percent of All SHARC Holders Sport Fishing	22.2%	22.5%	22.0%	20.4%	17.1%	1.4%	-2.2%	-0.8%	-7.4%	-8.1%	-16.3%	-23.1%
Estimated Number of Sport Halibut	10,784	12,530	14,096	11,219	10,959	16.2%	12.5%	30.7%	-20.4%	4.0%	-2.3%	1.6%
Estimated Net Pounds of Sport Halibut	245,947	251,092	293,415	223,639	196,198	2.1%	16.9%	19.3%	-23.8%	-9.1%	-12.3%	-20.2%
Average Weight of Sport-Harvested Halibut	22.8	20.0	20.8	19.9	17.9	-12.1%	3.8%	-8.8%	-4.2%	-12.6%	-10.2%	-21.5%
Average Harvest per Fisher, Fish	4.2	4.0	4.5	3.9	4.3	-3.5%	11.1%	7.2%	-13.5%	-7.3%	10.2%	2.2%
Average Harvest per Fisher, Net Pounds	95.3	80.8	93.2	77.3	76.5	-15.2%	15.4%	-2.2%	-17.1%	-18.9%	-1.0%	-19.8%

Total Number of Halibut Fishers												
Estimated Number of Fishers, Subsistence or Sport	5,941	6,980	6,876	6,899	6,787	17.5%	-1.5%	15.7%	0.3%	16.1%	-1.6%	14.2%
Percent of Total SHARC Holders who Fished	51.1%	50.5%	48.1%	48.6%	45.1%	-1.0%	-4.9%	-5.9%	1.0%	-4.9%	-7.1%	-11.7%
Incidental Rockfish Harvests												
Number of Rockfish Harvesters	1,239	1,616	1,544	1,529	1,568	30.4%	-4.5%	24.6%	-1.0%	23.4%	2.6%	26.6%
Percent of all SHARC Holders	10.6%	11.7%	10.8%	10.8%	10.4%	9.9%	-7.7%	1.4%	-0.3%	1.1%	-3.2%	-2.1%
Percent of all Subsistence Halibut Fishers	25.1%	27.0%	27.5%	25.9%	26.4%	7.7%	1.7%	9.6%	-5.8%	3.2%	2.2%	5.4%
Number of Rockfish Harvested	14,870	19,001	12,395	16,945	15,266	27.8%	-34.8%	-16.6%	36.7%	14.0%	-9.9%	2.7%
Average Number of Rockfish Harvested, All Subsistence Halibut Fishers	3.0	3.2	2.2	2.9	2.6	5.5%	-30.6%	-26.7%	30.0%	-4.7%	-10.3%	-14.5%
Average Number of Rockfish Harvested, Subsistence Halibut Fishers who Harvested Rockfish	12.0	11.8	8.0	11.1	9.7	-2.0%	-31.7%	-33.1%	38.1%	-7.6%	-12.2%	-18.9%
Incidental Lingcod Harvests												
Number of Lingcod Harvesters	699	953	862	927	959	36.3%	-9.5%	23.3%	7.6%	32.7%	3.4%	37.2%
Percent of all SHARC Holders	6.0%	6.9%	6.0%	6.5%	6.4%	14.8%	-12.7%	0.3%	8.4%	8.7%	-2.4%	6.1%
Percent of all Subsistence Halibut Fishers	14.1%	15.9%	15.3%	15.7%	16.2%	12.6%	-3.7%	8.4%	2.3%	11.0%	3.0%	14.3%
Number of Lingcod Harvested	3,298	4,407	2,355	3,486	3,392	33.6%	-46.6%	-28.6%	48.0%	5.7%	-2.7%	2.9%
Average Number of Lingcod Harvested, All Subsistence Halibut Fishers	0.7	0.7	0.4	0.6	0.6	10.4%	-43.1%	-37.2%	40.8%	-11.6%	-3.1%	-14.3%
Average Number of Lingcod Harvested, Subsistence Halibut Fishers who Harvested Lingcod	4.7	4.6	2.7	3.8	3.5	-2.0%	-40.9%	-42.1%	37.6%	-20.3%	-5.9%	-25.0%

Sources: Fall et al. 2004, 2005, 2006, 2007; Alaska Department of Fish and Game, Division of Subsistence, SHARC Survey, 2008.