

MEMORANDUM

TO: Council, SSC and AP Members
FROM: Chris Oliver *DS FOR*
Executive Director
DATE: March 30, 2010
SUBJECT: Amendment 80 Cooperative Report

ESTIMATED TIME
6 HOURS
ALL D-3 ITEMS

ACTION REQUIRED

- (a) Receive Amendment 80 Cooperative Report

BACKGROUND

Implemented in 2008, the Amendment 80 program is a limited access privilege program (LAPP) that allocates a portion of total allowance catches (TACs) for Atka mackerel, Pacific ocean perch, and 3 flatfish species (yellowfin sole, rock sole, and flathead sole), along with an allocation of prohibited species catch (PSC) quota for halibut and crab, in the Bering Sea/Aleutian Islands, to the Amendment 80 sector. One of the requirements when establishing the Amendment 80 program was the submission of an annual year-end cooperative report summarizing their fishing activities from the preceding year to the Council. To this end, attached is the Best Use Cooperative report for the 2009 fishing year as Item D-3(d)(1). Jason Anderson, manager of Best Use Cooperative, will provide a summary report at this meeting.

**Best Use Cooperative
Report to the North
Pacific Fishery
Management Council for
the 2009 Fishery**

March 31, 2010

Introduction

On September 14, 2007, the National Marine Fisheries Service (NMFS) published a final rule implementing Amendment 80 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands management area (BSAI). Amendment 80 provides specific groundfish and prohibited species catch (PSC) allocations to the non-American Fisheries Act (AFA) trawl catcher processor sector and allows the formation of cooperatives. Sector allocations and the formation of cooperatives were intended to assist compliance with the Groundfish Retention Standard (GRS) program.

On January 20, 2008, the Best Use Cooperative (BUC) began fishing allocations under regulations implementing Amendment 80. This report summarizes BUC, its catch for the 2009 fishing year, and the processes implemented to ensure that catch limits are not exceeded.

BUC membership

BUC is comprised of the following seven member companies, and sixteen non-AFA trawl catcher processors.

Company	Vessel	Length Overall
M/V Savage	Seafisher	211
Fishermen's Finest, Inc.	American No. 1	160
	U.S. Intrepid	184
Iquique U.S., L.L.C.	Arica	186
	Cape Horn	158
	Rebecca Irene	140
	Tremont	125
	Unimak	184
Jubilee Fisheries	Vaerdal	124
Ocean Peace	Ocean Peace	220
O'Hara Corporation	Constellation	165
	Defender	124
	Enterprise	124
United States Seafoods, LLC	Seafreeze Alaska	296
	Legacy	132
	Alliance	107

Coop management

BUC activities are governed by a Board of Directors, which is appointed by BUC Members. Additionally, owners, captains, crew, and company personnel participate and provide input to the cooperative management process. The Members executed a

cooperative agreement after extensive discussion and negotiation that outlines harvest strategies, harvest shares, and agreement compliance provisions. The agreement is amended as necessary to improve cooperative management of allocations and PSC, and to comply with regulatory programs.

The BUC Manager is responsible for the day to day management of the cooperative. This includes overseeing and providing communication among the fleet, member companies, and BUC staff, ensuring compliance with the BUC agreement and regulatory programs, tracking the BUC budget, coordinating Board meetings and BUC activities, ensuring harvest shares are distributed in a timely and accurate manner, and managing BUC office and staff. The Manager also completes all cooperative reporting requirements in a timely manner, including applying for annual catch allocations on behalf of BUC. Finally, the Manager coordinates with other staff on research, protected species issues, and community outreach to provide catch and operational transparency.

BUC also employs a full-time Data Manager. The Data Manager is responsible for tracking individual vessel catch and bycatch information relative to allocations, providing regular reports to the coop and individual vessel reports as requested, securely archiving data, identifying and resolving data errors, and working with the Alaska Region and Observer Program offices to ensure timely information streams. The Data Manager also provides Geographic Information System support and analysis as needed.

Finally, BUC members employ Seastate, Inc., which assists as a third party in management activities. Seastate, Inc. is the direct observer data link for many of the processes and activities described in this document, specifically, identifying bycatch issues and tracking historic catch and bycatch trends. Information provided by Seastate, Inc. is essential to the management of BUC allocations.

Harvest strategy

BUC has implemented several protocols and practices to maintain regulatory compliance and ensure allocations are not exceeded. These are described below.

Subsequent to receiving annual cooperative allocations, BUC and Seastate, Inc. staffs calculate individual vessel harvest shares and PSC limits. For each internal harvest share and PSC allocation, a reserve is established so that both individual vessels and BUC as a whole have a buffer that will be reached prior to the allocation limit. Vessels may not fish into their reserve without Member approval.

The BUC agreement also establishes a mechanism for Members to transfer quota among themselves. These transfers must be approved by the BUC Manager, and may be facilitated by BUC staff.

Catch monitoring

BUC receives data from several different sources. Generally, this includes total catch and species composition information from the North Pacific Groundfish Observer Program, Alaska Fisheries Science Center, total catch and species composition information from the Alaska Region, and production data from the Alaska Region. These data are used by NMFS to debit quota accounts, and determine Groundfish Retention Standard compliance.

The BUC Data Manager receives observer data, which is archived in a database. The database allows the Data Manager to track various Amendment 80 quota accounts, bycatch amounts, catch of other non-Amendment 80 targets, and transfers between Members. The Data Manager uses the database to summarize catch information and distribute regular catch reports to vessels and BUC members. The Data Manager also performs routine data quality checks on observer data, and resolves any discovered errors with individual vessels and NMFS.

NMFS Alaska Region total catch information is provided to BUC staff on a secure website, and upon request by NMFS staff. As noted above, this information constitutes official BUC catch. As a quality control measure, the Data Manager compares these data with the corresponding observer data, and explores and resolves discrepancies.

In addition to receiving regular reports from BUC staff, Seastate, Inc. provides each Member and BUC staff access to a secure website. This webpage provides vessel owners with vessel-level catch information for GOA sideboarded species, Amendment 80 quota species, and other species of interest. Additionally, the Seastate, Inc. website displays information on vessel and cooperative GRS levels.

BUC vessels submit daily production reports through a NMFS software program called Elandings. Because NMFS uses production information to calculate an annual GRS, BUC also collects this information to keep a running tally of vessels' GRS'.

Observer information is transmitted from the vessel, to the Observer Program Offices at the Alaska Fisheries Science Center, then to the Alaska Region offices. Data undergoes initial error checking, and individual observer sample amounts are expanded to total catch amounts. During this process, these data are initially checked for errors.

By the time Alaska Region catch information is available to BUC staff and vessel captains, it is two or three days old. To address this delay, companies have purchased software packages that expand raw observer sample data to total catch amounts, and assigned catch amounts to quota categories. These data expansions are based on the same algorithms that NMFS uses to expand raw observer sampling data. This software allows vessel captains to analyze catch amounts on a real time basis, and make better fishing decisions to maximize harvest amounts while reducing individual vessel overage occurrences. To further check data accuracy, the Data Manager compares expanded data reported by Seastate, Inc. with expanded data produced by the software program.

To help ensure accurate quota accounting and compliance, NMFS requires vessels to implement an extensive monitoring package at their own expense:

- 200 percent observer coverage, nearly all hauls are sampled
- Motion compensated observer scale
- Flow scale for weighing the entire catch
- No mixing hauls
- No fish on the deck outside of the codend
- Only one conveyor line at the point the observer collects a sample
- Each vessel must be certified to maintain one of three bin monitoring options
- Larger observer sampling station
- Vessel Monitoring System

The above list is collectively designed to improve accuracy and reduce bias. High quality catch estimates are important to BUC members and provide increased confidence in NMFS management information, thus facilitating inter-cooperative trades and quota management and oversight.

In addition to these increased monitoring requirements, BUC vessels and companies comply with recordkeeping and reporting regulations. While recordkeeping and reporting requirements are complex and create a significant burden to vessel captains and company representatives, these efforts create an authoritative, timely, and unambiguous record of quota harvested.

The Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis prepared for regulations implementing Amendment 80 indicates that monitoring and catch accounting challenges are greater and more complex than other quota

programs. To address these challenges and ensure quota limits are not exceeded, NMFS has required and BUC vessels have implemented the extensive and expensive monitoring program described above.

GOA sideboard management

Regulations limit Amendment 80 vessels to historic catch levels by establishing sideboard amounts for several species. To help manage GOA sideboard fisheries, BUC established a GOA fishing plan. The 2009 GOA fishing plan described management measures BUC utilized to ensure individual vessels had access to historical GOA catch amounts for certain rockfish fisheries, and halibut PSC.

Rockfish Pilot Program management

In 2009, several BUC vessels participated in the Rockfish Pilot Program Limited Access fishery. BUC staff communicated with NMFS to provide daily catch information in order to establish appropriate closure dates for Amendment 80 rockfish sideboards and the Rockfish Pilot Program catcher processor sideboards.

2009 BUC Catch

The following tables provide BUC catch. All data is rounded to the nearest whole number for reading simplicity. *BUC catch during the 2009 fishing year fell within allocation levels, and no overages occurred.* It's important to understand that fishing behavior and catch amounts under any given year of cooperative operations may not reflect those of other years. Several examples are provided below.

BUC vessels are concerned that individual vessel Pacific cod apportionments could severely constrain their ability to harvest other groundfish species at the end of a fishing year. Therefore, many vessels tend to conserve Pacific cod early in the year, and many have chosen to limit or eliminate Pacific cod directed fishing altogether.

As in 2008, ice conditions during the 2009 fishing year reduced large scale directed flathead sole fishing opportunities on traditional fishing grounds and during typical time frames. Additionally, halibut were generally found deeper than normal, and flathead sole were associated with higher halibut bycatch rates. To reduce overall halibut catch, BUC vessels chose to fish for shallower species which contained lower halibut bycatch rates. In years with lower halibut bycatch rates, vessels may choose to increase flathead sole effort.

BUC initially apportions its annual NMFS-issued allocation to individual companies or vessels. Subsequently, BUC companies are able to engage in transfers with other BUC

companies or vessels to maximize harvesting efficiencies. Because allocations are managed under hard caps, some portion of each of BUC's allocations will be left unharvested to serve as a buffer prior to reaching allocation amounts. Total 2009 transfer amounts are shown in the tables below. These amounts include transfers between individual companies, and individual vessels within a company.

Bering Sea and Aleutian Islands BUC Allocated Quota and Catch Amounts

Species	BUC A80 Allocation (mt)	BUC Catch (mt)	Total Transfer Amounts (mt)
Flathead	43,351	12,031	0
Cod (Total)	*20,654	19,637	3,648
Rock Sole	56,811	33,668	203
Yellowfin Sole	*93,987	69,563	2,804
POP 541	1,543	1,510	64
POP 542	1,604	1,566	72
POP 543	2,676	2,645	34
Mackerel 541	10,512	10,318	2,444
Mackerel 542	11,047	10,412	682
Mackerel 543	5,797	5,414	120

Notes: BUC received a yellowfin sole reallocation of 6,000 mt on October 2 and a Pacific cod rollover of 3,000 mt on September 16. Allocation amounts marked with an asterisk "*" include those amounts. Total Transfer Amounts include transfers between companies, as well as transfers between vessels within the same company.

Bering Sea and Aleutian Islands BUC PSC Limits and Catch Amounts

Species	BUC A80 Allocation	BUC Catch	Total Transfer Amounts
Halibut Mortality (mt)	1,793	1,497	54
King Crab Z1 (#)	73,351	50,406	2,017
Bairdi Z1 (#)	321,922	131,712	1,988
Bairdi Z2 (#)	548,443	135,331	0
COBLZ Opilio (#)	1,544,825	315,582	0

Halibut mortality is reported as metric tons and crab mortality in numbers.

Bering Sea and Aleutian Islands Salmon Catch Amounts

Species	BUC Catch (#s)
Chinook	508
Non-Chinook	1,128

Groundfish Retention Standard

In addition to beginning Amendment 80 operations, Amendment 79 required BUC to meet (GRS) requirements beginning in 2008. The GRS and Amendment 80 require the cooperative to annually retain a percentage of groundfish relative to their overall Bering Sea and Aleutian Islands catch. The GRS is applicable to BUC in aggregate, and is phased in over a four year period according to the following table:

Groundfish Retention Standard	
GRS Schedule	Annual GRS
2008	65%
2009	75%
2010	80%
2011 and each year thereafter	85%

The GRS calculation is based on the proportion of groundfish retained. The GRS calculation numerator is the amount of groundfish retained over the course of a fishing year. Product recovery rates (PRR) published in regulation (Table 3 to 50 CFR 679) are applied to the weight of each species by product type. This amount is known as the round weight equivalent (RWE). Retained product weight is self reported by each vessel through a software program called Elandings.

The denominator of the GRS calculation is the total groundfish harvest by an Amendment 80 vessel over the course of a fishing year. Because vessels also catch non-groundfish species, NMFS and fishing companies must rely on observers to collect sub-samples from each haul. The proportion of groundfish in a sample is expanded to the total haul weight, as measured by a motion compensated flow scale, to estimate the total amount of groundfish in each haul.

The cumulative BUC GRS is calculated as the sum of all participating vessels' retained catch divided by the sum of all participating vessels' groundfish catch. *For 2009, BUC achieved a GRS of 81 percent, and NMFS Catch Accounting System data¹ indicates that BUC retained 90.2 percent of its groundfish catch. BUC has complied with 2009 GRS retention requirements.*

¹ The EA/RIR/FRFA prepared for Amendment 79 used Catch Accounting System data to measure historic retention rates.

Findings and Future Issues

The following section highlights regulatory programs that concern BUC members, market impacts due to global economic situations and environmental conditions, and incremental PSC reductions. These sections are titled:

- GRS Issues
- Market Effects
- PSC Reductions
- GOA Specific Issues

GRS Issues

Fishing under Amendment 79 began January 20, 2008. Vessel companies have typically tracked their product by species, and compared product weights with observed catch weights. Early in 2008, anecdotal information from fishing companies indicated that RWE amounts were sometimes less than observed catch amounts for those same species. Theoretically, these amounts should be equal. Furthermore, GRS calculated retention estimates are lower than expected, and this creates concerns for a number of BUC vessels in anticipation of increasing retention standards.

Under the GRS program, some BUC vessels have been required to retain smaller, damaged, diseased, and less valuable groundfish species to remain compliant with implementing regulations. Therefore, BUC is keenly interested in ensuring that retention estimated by the GRS equation is accurate, and incremental retention increases required under the program are commensurate with the program recommended by the Council. Bias in this process could force the retention of more low-valued product to meet the GRS than would otherwise be needed to meet GRS requirements.

To address these concerns and better understand the issues described above, BUC asked Karl Haflinger at Seastate, Inc. to assist. The following summarizes information and analysis provided by Seastate, Inc.:

Amendment 79 requires that the Amendment 80 sector meet a retention standard that increases from 65% in 2008 to 85% in 2011. The analysis that supported this Council action examined the changes in retention percentages by looking at historical data. Included in the analysis were profiles of retention percentages for various fleets and estimates of extra product and raw weights of fish that would have to be retained by fleets if required to

meet various retention standards. Throughout the analysis, the computations of historical retention percentages and increased retention tonnages were made using “blend” and/or catch accounting system (CAS) data. Total catch and retained catch were derived from these data sources, both of which use a mixture of production and observer data as the basis for calculations. Thus, retention percentage based on the blend (from here on “blend” refers to either the older blend formula or the post-2003 CAS estimate) would be determined as:

$$Rb = \frac{\text{Retained catch (blend)}}{\text{Total catch (blend)}}$$

where (*blend*) indicates a data source that is comprised of a mix of observer and production data. The Council ultimately chose to define a groundfish retention standard expressed as the ratio of the round weight equivalent of retained product to total catch, or:

$$GRS = \frac{\text{Retained catch (production RWE)}}{\text{Total catch (blend)}}$$

Throughout the Amendment 79 analysis, there exists an implied assumption that the retention percentage calculated by the new GRS method would be the same as the retention percentage calculated by Rb. However, this assumption was not examined in the analysis and no production round-weight equivalents were presented that would allow a reader to compute the GRS standard that was adopted. Data presented below indicate that the GRS formula returns a significantly lower number than the Rb retention percentage calculation used throughout the analysis. The effect of this difference is to require much greater retention of catch by the Amendment 80 fleet, perhaps to a level that is not possible to achieve, even with no discards.

The Amendment 80 sector had, preparatory to coop formation, requested blend, CAS, and WPR information from NMFS. An analysis of those historic data shows a marked contrast to results and conclusions on the effects of the various Amendment 79 alternatives presented in the analysis. In the first year of operation under Amendment 79, vessel operators were able to increase both Rb and GRS dramatically. The GRS is consistently less than Rb, and BUC vessels were still only able to achieve 77% under the GRS calculation. Using the Amendment 79 analysis methodology (ie. with

Rb as a proxy for GRS), Rb increases from 77% to 91% between 2007 and 2008. However, the fleet's apparent retention is still only 77% because it's now measured by GRS rather than Rb.

Harvest and retention by Blend/CAS and produce RWE for BUC vessels. Tremont (<125') excluded 2005-2007 because of incomplete data. Seastate data received from NMFS.

Year	Blend / CAS total catch	Blend / CAS retained catch	Production report retained catch	Blend / CAS retention (Rb) %	Groundfish retention standard retention (GRS) %	Difference: CAS-GRS
1999	155,667	101,856	88,633	65%	57%	8%
2000	178,563	120,474	98,705	67%	55%	12%
2001	158,781	116,455	102,434	73%	65%	9%
2002	190,247	132,061	116,800	69%	61%	8%
2003	188,257	129,620	114,116	69%	61%	8%
2004	217,658	145,767	130,801	67%	60%	7%
2005	201,586	153,673	136,311	76%	68%	9%
2006	196,360	151,422	133,929	77%	68%	9%
2007	211,325	163,437	147,119	77%	70%	8%
2008	260,296	235,580	200,161	91%	77%	14%
2009	251,602	226,886	203,673	90%	81%	9%

To meet the 85% GRS standard, an additional 10,189 mt would need to be retained beyond what was retained in 2009. The following shows estimates of catch and discard based on observer data. To increase retention by another 10,189 mt, coop vessels would need to keep all discarded Amendment 80 species, all other flatfish complexes, all squid, and a portion of species subject to MRA regulations. Since product RWEs are apparently less than the raw weights for many species, these would have to be retained as whole fish to have any hope of meeting the 85% standard. Such retention levels are far beyond those outlined for the Council by the Amendment 79 analysis.

2009 Observer based estimate of total catch, production-based estimates of retained catch, and retention percentages according to GRS methodology

Group Description	Obs Total Catch	Obs est retained catch	Obs est discarded catch	Retained RWE	CAS-base retention %	GRS standard
Pcod BSAI	21,668	21,453	215	21,700	99.0%	100.1%
POP 541	1,933	1,816	117	1,883	94.0%	97.4%
POP 542	2,378	2,273	105	2,259	95.6%	95.0%
POP 543	3,402	3,256	146	3,231	95.7%	95.0%
Mackerel BS/541	14,069	13,813	256	13,602	98.2%	96.7%
Mackerel 542	15,006	14,320	687	12,752	95.4%	85.0%
Mackerel 543	7,190	6,974	216	6,017	97.0%	83.7%
Flathead BSAI	12,078	11,727	351	10,656	97.1%	88.2%
Yellowfin BSAI	71,939	68,396	3,543	62,148	95.1%	86.4%
Rocksole BSAI	34,471	32,245	2,227	26,235	93.5%	76.1%
Total	184,134	176,273	7,861	160,483	95.7%	97.2%
Of flats BSAI	1,856	1,141	715	888	61.5%	47.8%
Squid	135	0	135	0	0.1%	0.0%
Total	1,991	1,141	850	888	57.31%	44.60%
Rougheye BSAI*	72	59	13	68	81.5%	94.4%
Turbot BS*	612	584	28	558	95.4%	91.2%
Sablefish AI*	73	70	2	63	96.8%	86.2%
Turbot AI*	2,139	1,837	302	1,816	85.9%	84.9%
Sablefish BS*	77	75	3	65	96.4%	84.3%
Pollock BS*	17,732	15,522	2,211	13,790	87.5%	77.8%
Arrowtooth BSAI*	23,591	20,254	3,336	17,310	85.9%	73.4%
ORockfish BS*	96	89	7	65	92.4%	67.6%
ORockfish AI*	94	75	19	63	79.6%	66.9%
POP BS*	506	363	143	307	71.8%	60.6%
AKPlaice BSAI*	11,155	7,745	3,411	6,389	69.4%	57.3%
Pollock AI*	959	734	225	548	76.6%	57.2%
Northern BSAI*	1,676	1,129	547	777	67.4%	46.3%
Shortraker BSAI*	84	67	18	32	79.2%	37.9%
Other species BSAI*	6,610	869	5,740	452	13.2%	6.8%
Total	65,476	49,472	16,005	42,303	75.6%	64.6%
Totals	251,602	226,886	24,716	203,673	90.2%	81.0%

Species and complexes with an asterisk "*" indicates species that are placed on bycatch status by NMFS, and thus are subject to MRA regulations during part or all of the fishing year. "Of flats" includes all flatfish except halibut, flathead sole, Greenland turbot, rock sole, yellowfin sole, arrowtooth flounder, and Alaska plaice. "Other species" includes sculpins, sharks, skates, and octopus.

Causes for differences between historic retention estimated in the Amendment 79 analysis and what the GRS enforcement standard would have indicated are unknown. However, each component of the GRS equation is measured with some error. For example, scale weight is measured on a flow scale calibrated to ± 3 percent accuracy for a known weight, and for each reading of scale weight there is an opportunity for the reader to misread or misrecord the weight. PSC and non-groundfish catch weights are a function of observer estimates of species composition for each haul and are subject to varying degrees of precision dependent in part on the volume of the PSC and non-groundfish catch and the observer sample size. Product weight is typically estimated from an average case weight from all cases of that product type. Both the case count and the mean case weight are subject to measurement error. Finally, PRR, although currently treated as fixed without error, can vary from vessel to vessel, processing line to processing line, by season, by area, and by the same product for different species.

To explore the magnitude and direction of each of these potential error sources would be time consuming and expensive. However, BUC has begun conducting some pilot work to explore PRRs in the 2009 rock sole, Pacific cod, yellowfin sole, Atka mackerel, and POP fisheries to better understand the discrepancies reported. Results from this project indicate that NMFS published PRRs may be underestimating retained catch amounts, making it more difficult to achieve GRS levels.

As retention requirements are increased through 2011, BUC is concerned that current GRS percentages may become economically impractical, and unattainable.

Market Effects

PSC was not generally limiting to BUC vessels in 2009, and additional flatfish entered the market relative to pre-Amendment 80 fishing. This is particularly true for yellowfin sole, as many vessels chose to focus on this species due to higher halibut bycatch rates in the flathead sole fishery. Global economic problems have resulted in decreased available credit and cash, therefore decreasing selling opportunities for BUC members. Pacific cod prices have been reduced by almost half from what they were prior to these economic problems. Decreased demand and increased supply has resulted in lowered flatfish prices. Additionally, increasing GRS retention requirements are anticipated to impact market supply, demand, and price.

PSC reductions

In 2008 and 2009, BUC was not constrained by any of its PSC limit allocations and harvested 70.40 and 83.47 percent of its halibut allocation respectively. However, as previously noted, fishing behavior, halibut distribution, and harvest under the first years of cooperative operations may not reflect those of subsequent years. Additionally, note that Table 35 to 50 CFR 679 shown below requires annual PSC reductions through 2012 as part of Amendment 80. Additionally, prior to Amendment 80 BUC members had access to total trawl PSC amounts that

exceeded Amendment 80 allocations. For example, the 2007 BSAI trawl halibut PSC limit was 3,400 mt.

Fishery	Year	Halibut PSC limit in the BSAI	Zone 1 Red king crab PSC limit	C. opilio crab PSC limit (COBLZ)	Zone 1 C. bairdi crab PSC limit	Zone 2 C. bairdi crab PSC limit
			As a percentage of the total BSAI trawl PSC limit after allocation as PSQ			
Amendment 80 sector	2008	2,525 mt	62.48	61.44	52.64	29.59
	2009	2,475 mt	59.36	58.37	50.01	28.11
	2010	2,425 mt	56.23	55.3	47.38	26.63
	2011	2,375 mt	53.11	52.22	44.74	25.15
	2012 and all future years	2,325 mt	49.98	49.15	42.11	23.67
BSAI trawl limited access	All years	875 mt	30.58	32.14	46.99	46.81

Under Amendment 80, vessel captains are able to slow fishing operations, and move from areas with higher PSC rates. The consensus from BUC vessel is that lower than normal halibut biomass has been seen in typical head and gut fishing areas. Therefore, BUC is cautiously optimistic about this first two years of cooperative operations. Higher PSC abundance on flatfish fishing grounds coupled with Amendment 80 halibut and crab PSC annual reductions, and changes to fishing patterns due to water temperatures, ice conditions, and/or climate change could result in future PSC constraints.

The following table summarizes current and historical PSC usage through March 2 of each Amendment 80 fishing year, and shows annual variation among allocated PSC categories for the first months of operations.

Species	2008			2009			2010		
	Usage Amount (mt)	Annual Allocation (mt)	% Usage	Usage Amount (mt)	Annual Allocation (mt)	% Usage	Usage Amount (mt)	Annual Allocation (mt)	% Usage
Halibut	187	1,837	10.19%	305	1,793	17.03%	308	1,754	17.57%
King Crab Z1	10,622	78,631	13.51%	28,667	74,351	38.56%	16,600	70,237	23.63%
Bairdi Z1	30,283	340,520	8.89%	37,733	321,922	11.72%	37,400	257,715	14.51%
Bairdi Z2	389	580,311	0.07%	430	548,443	0.08%	4,085	440,277	0.93%
Opilio (COBLZ)	931	1,632,432	0.06%	295	1,544,825	0.02%	28,625	1,461,309	1.96%

GOA Specific Issues

As described above, BUC works closely with NMFS to manage GOA sideboard fisheries. However, during the first couple years of coop operations, BUC discovered several constructs within the inseason management and catch accounting systems which affects BUC vessels’

quarterly catch accounting. We would like to continue working to resolve the following inseason management ambiguities:

- The assignment of halibut to deep and shallow water complexes when a quarter ends in the middle of a week results in catch from the 1st allocation period accruing towards the 2nd allocation period. The effect of this is compounded by the fact that halibut does not roll from quarter to quarter as it does in open access.
- The methodology for assigning halibut to deep and shallow water complexes based on the observer's visual estimate of species retention rather than actual product complicates at-sea management.
- The "B" season directed cod fishery is managed according to an open access model that is no longer appropriate to the Amendment 80 fleet which is sideboarded on cod and halibut, is required to report production and discards daily, measures catch on flow scales, and has 100 percent observer coverage.

Research and Outreach

In addition to harvesting and processing activities, BUC is actively engaged in several projects to improve the natural and human environment affected by fishing operations. These are briefly described below.

Trawl sweep modification

John Gauvin works for BUC on environmental and scientific issues that affect BUC fisheries. Since 2006, John and BUC fishermen have been collaborating with Dr Craig Rose and other scientists from the Alaska Fisheries Science Center (AFSC) to modify groundfish trawls to reduce their effects on the benthic habitat. During testing in 2006 and 2007, elevating devices were added to trawl sweeps to raise the sweeps off the bottom, and reduce effects on sessile seafloor animals and unconsolidated substrates. For most Bering Sea flatfish trawls, trawl sweeps are long (up to 1500 ft), and sweep 90 percent of the area between the trawl doors. Proposed modifications would attach 10 inch bobbins, or disks, every 90 feet to the trawl sweeps, raising the trawl sweep above the substrate allowing animals to pass underneath.

In field testing, these modifications resulted in a 90 percent decrease in the area contacted by trawl gear, and have reduced effects on sea whips and crabs while not substantially reducing flatfish catch. One of the findings from the research is that roughly ninety percent of seawhips that are in the pathway of the modified sweeps are still upright and undamaged. Likewise, *C. opilio* and *C. bairdi* mortality from the modified sweeps was reduced to zero.

At its October 2009 meeting, the Council took final action to implement Amendment 94 to the BSAI Groundfish FMP. Under this amendment, any vessel targeting flatfish with non-pelagic

trawl gear in the Bering Sea would be required to use these modified trawl sweeps. If approved, these requirements are expected to be in place for the 2011 fishing year.

Reducing halibut mortality

BUC believes operating as cooperative increases incentives for individual bycatch accountability and optimal use of halibut bycatch mortality limits. BUC vessels now have a direct relationship between how they utilize their halibut bycatch mortality allowances and how much of their allocated and non-allocated target species are harvested. Therefore, BUC companies are continuing to improve their utilization of halibut excluders and how they avoid bycatch hotspots through data sharing. Potential reductions in halibut mortality rates through improved halibut handling procedures is another important part of the BUC's overall set of steps to make best use of its halibut bycatch allowances. Work in this area is of critical importance to the development of an adequate set of tools to accommodate the 50 MT per year reduction in the halibut bycatch mortality cap as part of Amendment 80. The following summarizes BUC's recent EFP research to explore improved halibut handling procedures:

- Halibut bycatch mortality rates in flatfish and cod fisheries currently range from 70-80 percent, and are expected to increase under slower Amendment 80 fishing conditions.
- The largest obstacle to reducing halibut mortality rates is the Amendment 80 catch monitoring requirements. To allow for accurate estimations of catch, including halibut bycatch, sorting and removal of PSC prior to observer sampling is currently prohibited.
- Most observers collect samples in a vessel's factory as catch moves from holding tanks to processing areas. Halibut near the back of the tank may not be discarded for up to two hours, and this time will increase under Amendment 80.
- To explore whether halibut accounting could occur on deck where halibut could be discarded in better condition, BUC was issued an experimental fishing permit (EFP). Phase I of the EFP was conducted from May 27 – June 27, 2009 on three BUC vessels. These vessels fished under the EFP but used their own Amendment 80 allocations of halibut PSC and groundfish.
- The average mortality rate for halibut sorted on deck was 45 percent. This was a reduction of almost 50% relative to the current average mortality rate assigned to the EFP target fisheries (75 percent is the average mortality rate applied to the BSAI flatfish fisheries currently).
- Average sorting time on deck for the EFP overall was approximately 27 minutes from the time the net was brought aboard to time the last halibut was returned to the water or deck sorting was completed, whichever was longer. In practice, this included the time it took

the crew to sort out the halibut (as little as 10 minutes on some tows) and the time it took the sea sampler on duty to measure and assess viability for each halibut.

- Most of the modified halibut handling procedures used for the EFP appeared to be feasible for the EFP vessels in the arrowtooth, flathead sole, rex sole and Pacific cod fisheries.
- The spring yellowfin sole fishery may not be a feasible candidate for alternative handling procedures due to greater catch amounts and very low halibut bycatch rates. Fall yellowfin sole fishing, however, is generally more like the cod and flathead sole fishing done in the EFP in terms of catch amounts per tow and the size and number of halibut in each tow, and might be a good candidate for reductions in halibut mortality rates with deck sorting.
- A subsequent Phase II to this EFP is being planned. This EFP could address many of the operational issues needed to implement modified halibut handling processes in a real world setting. These could include: utilizing technology to monitor crew sorting halibut on deck rather than employing additional sea samplers to complete this work, evaluating automated methods to rapidly weigh or measure halibut and addressing methodologies for halibut viability sub-sampling within current observer sampling constraints.

Community outreach

BUC representatives have traveled to western Alaska communities to engage with community leaders. During several trips to Nome, Bethel, Dillingham, and Anchorage, BUC met with representatives from Kawerak, the Association of Village Council Presidents, the Bristol Bay Economic Development Corporation, the Bristol Bay Native Association, the Qayassic Walrus Commission, and the United States Fish and Wildlife Commission. We discussed BUC operations under Amendment 80, provided catch information, and discussed research to reduce trawl effects to the benthic habitat. Additionally, we negotiated a regulatory closure to protect western Alaska subsistence resources in the Etolin Strait/Nunivak Island area, while still maintaining access to important flatfish fishing grounds.

Because careful halibut bycatch management is so important to BUC's ability to harvest its target species allocations, BUC captains avoid areas with high halibut rates as much as possible. As high concentrations of yellowfin sole migrate across the Bering Sea shelf, BUC vessels follow these schools as they typically represent high catch per unit effort (CPUE) and low halibut bycatch. As the ice clears, large spawning schools of yellowfin sole congregate in very shallow water. At certain times of the year, these may be the only low bycatch areas. Displacement to other areas would result in higher CPUE, longer bottom times, increased costs, and additional habitat effects.

These shallow yellowfin spawning areas are sometimes adjacent to western Alaska communities. Community members have expressed concern to BUC and the Council about all vessel activities, and their affects on local commercial and subsistence harvests. Additionally, there have been gear conflicts in the area between large and small scale fishing operations, and claims of illegal fishing. Because there are several different sectors that operate in these areas, and because BUC believes there have been misconceptions about BUC catch, operations, and trawl gear effects, BUC has proactively engaged in a community outreach and education program.

Summary

The Council has designed, and NMFS has implemented, a well-designed program that provides BUC with the necessary tools to effectively manage Amendment 80 fisheries, reduce bycatch, and increase retention. BUC and its member companies are working hard to maximize the goals of Amendment 79 and 80 by implementing internal data management and quality control measures that enable companies and vessel captains to maximize allocations. Amendment 80 is arguably one of the most successful, highly regulated rationalization programs to date. For 2009, BUC catch amounts for this complex multi-species fishery were well below regulatory limits, and the GRS exceeded minimum requirements. While BUC companies are pleased with these successes, they have identified Amendment 79 and 80 program elements that could be improved, and look forward to addressing these with the Council and NMFS.