

Pacific Cod In Alaskan Waters

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STOCK DISTRIBUTION

- Widely distributed throughout the northern Pacific ocean, from California to Yellow sea.
- At the center of their range in Alaskan waters.

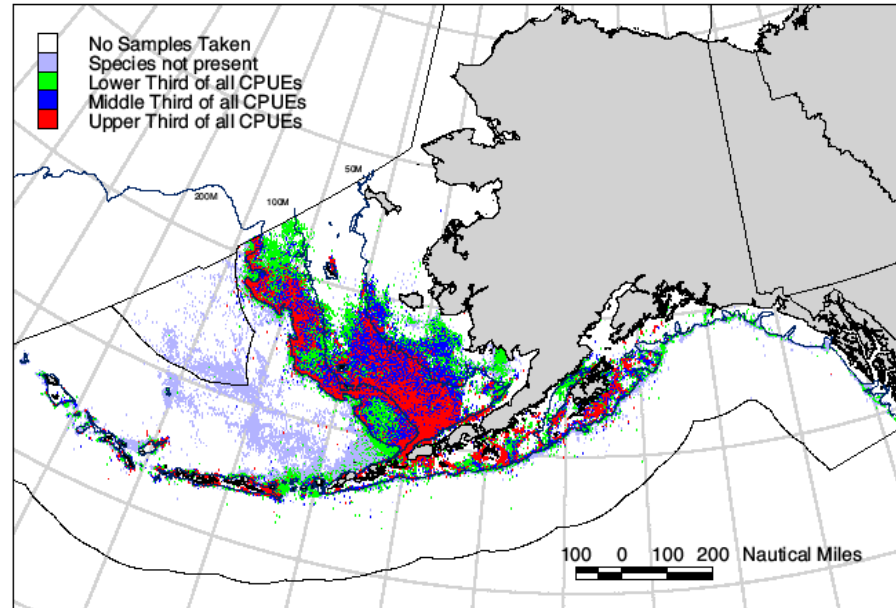


Figure 4. Pacific cod catch per unit effort (CPUE) summary of Alaskan trawl groundfish observer data.

MANAGEMENT

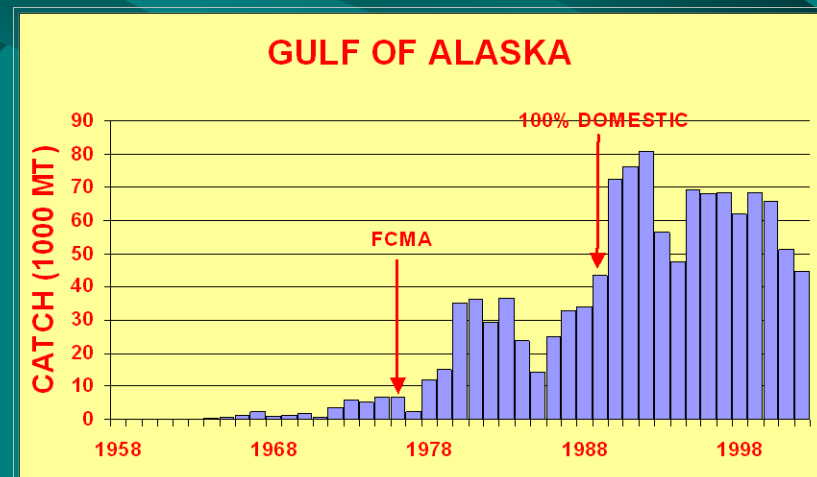
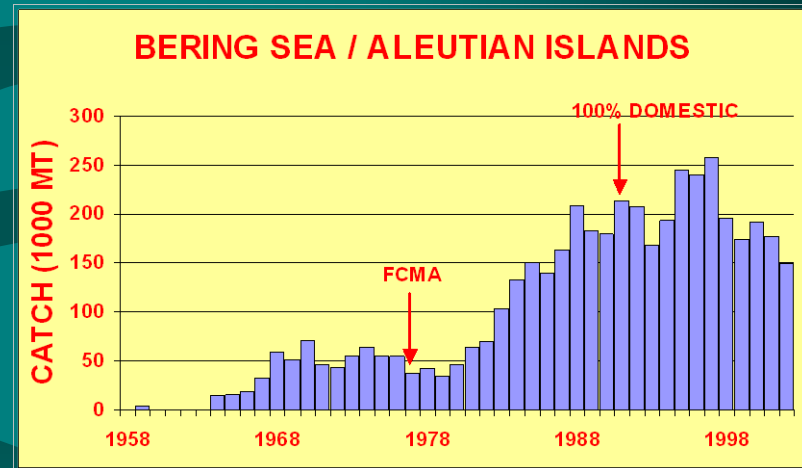
- Regulated by
 - North Pacific Fishery Management Council (NPFMC)
 - One of 8 Federal regional Councils
 - Jurisdiction is EEZ (3-200 miles)
 - Alaska Department of Fish and Game (ADFG)
 - Regulates the state waters fishery
 - 0-3 miles
- Technical and Scientific inputs from NOAA Fisheries and ADFG

MANAGEMENT UNITS

- TWO MANAGEMENT UNITS
 - Bering Sea & Aleutian Islands (BSAI)
 - Gulf Of Alaska (GOA)

CATCH HISTORY

- 1958-1976: largely foreign
- 1977: Fishery Conservation and Management Act
- 1977-1990: increasing domestic, with continued foreign and/or joint venture
- 1991- present: exclusively domestic



CATCH MONITORING

- MANDATORY OBSERVER PROGRAM
 - 100% Coverage for vessels >125' LOA
 - 30 % Coverage for vessels > 60' and < 125'
 - No coverage for vessels <60'
- CATCH RECORDING: Blend system
 - Weekly production reports (at-sea processing)
 - State Fish Receiving Tickets (shoreside processing)
 - Observer data

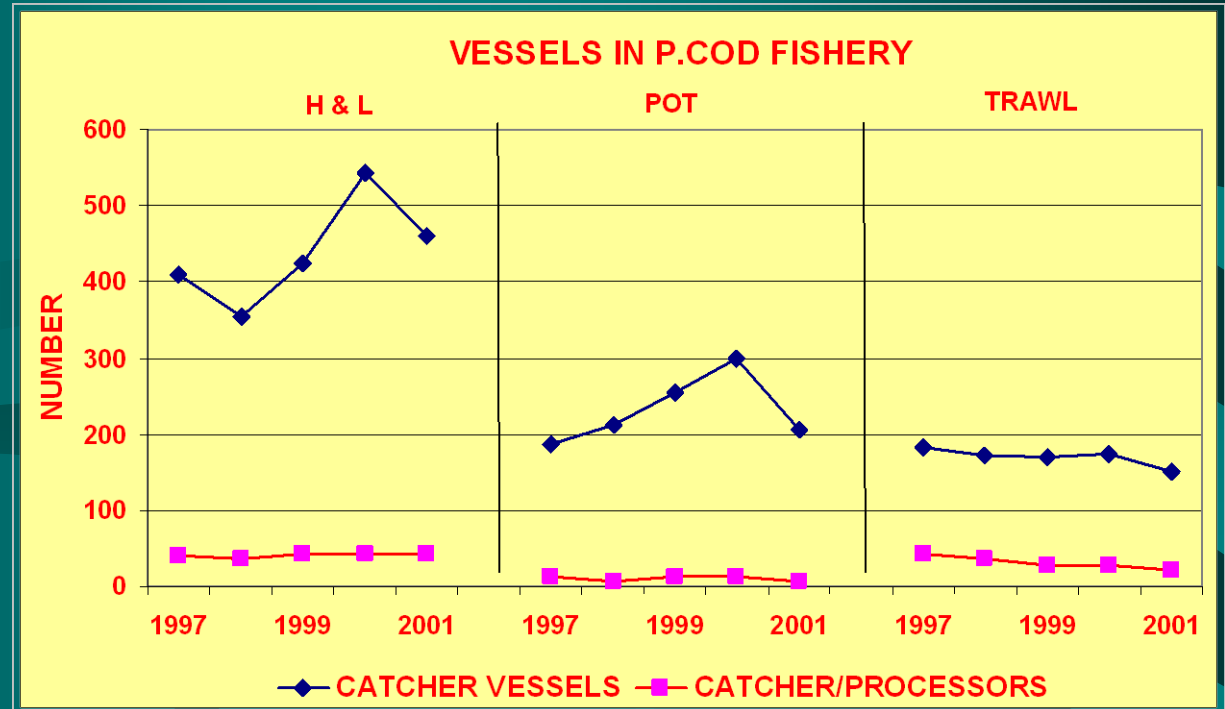
MEAN ANNUAL CATCH

Mean annual catch (mt)

Period	GOA	BSAI
1958-1976	3,000	44,000
1977-1990	29,000	111,000
1990-2002	64,000	199,000

VESSELS

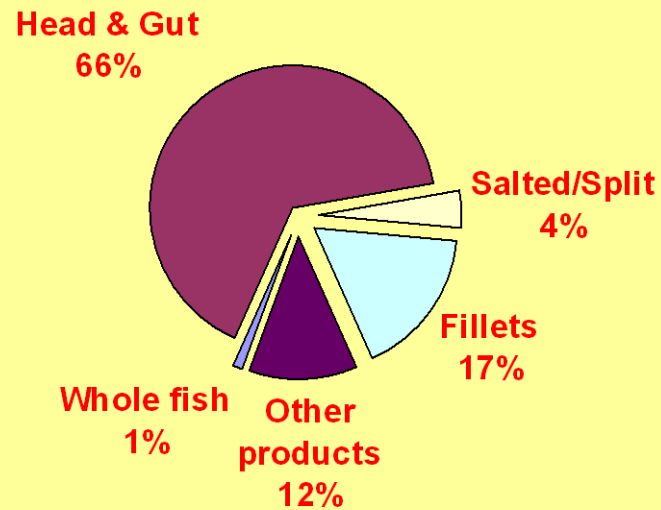
- In 2001, 64% of all vessels participated in target P.cod fishery
 - 86% of the trawl fleet
 - 99% of the pot fleet
 - 52% of the hook and line fleet



VALUE

- Gross value was ~\$240 million in 2001
- Most (66%) sold as “head & gut” product form
- Fillets account for 17% of sales

DISTRIBUTION OF VALUE BY PRODUCT FORM



REFERENCE POINTS

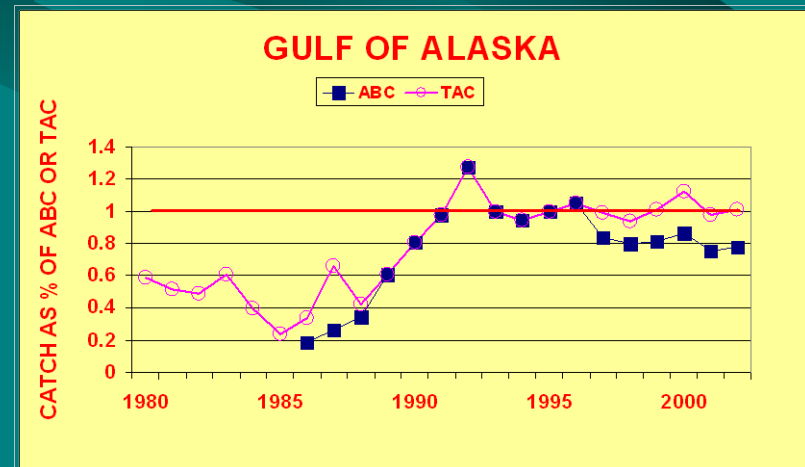
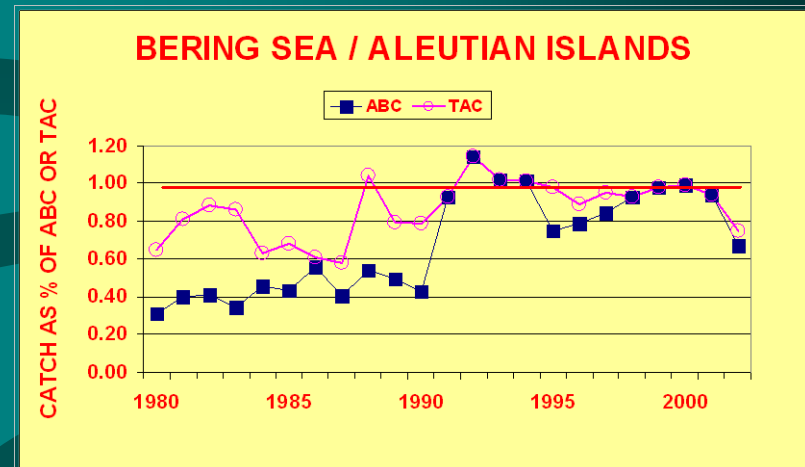
- Stock biomass is estimated from surveys and size-based demographic models
- Three categories of catch allowance
 - OFL: Overfishing Level
 - ABC: Acceptable Biological Catch
 - TAC: Total Allowable Catch
- $TAC < ABC < OFL$
- OY (Optimal Yield) is an additional constraint

HARVEST RATES

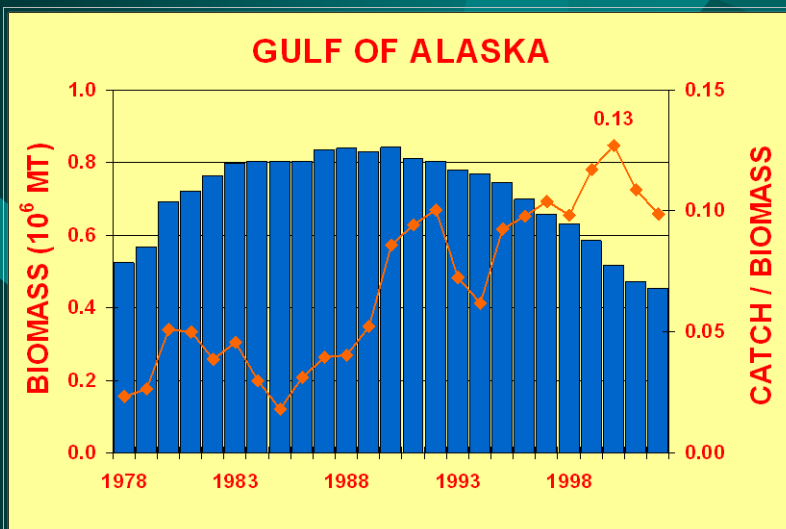
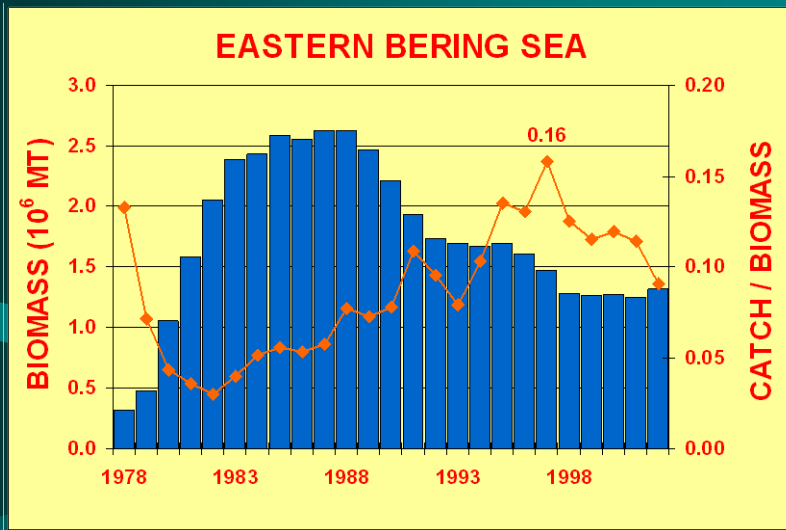
- Tiered, information dependent, system used to assign appropriate harvest rates
- Pacific cod are tier 3b
 - Reliable estimate of Biomass (B), target biomass ($B_{40\%}$), and target fishing mortality rates ($F_{40\%}$ and $F_{35\%}$)
 - Estimated current biomass is less than the target biomass ($B < B_{40\%}$)

FISHERY PERFORMANCE

- BSAI: 1980-2002
 - Catch>TAC four times (maximum 114%)
 - Catch>ABC three times (maximum 114%)
- GOA: 1980-2002
 - Catch>TAC five times (maximum 127%)
 - Catch>ABC three times (maximum 127%)



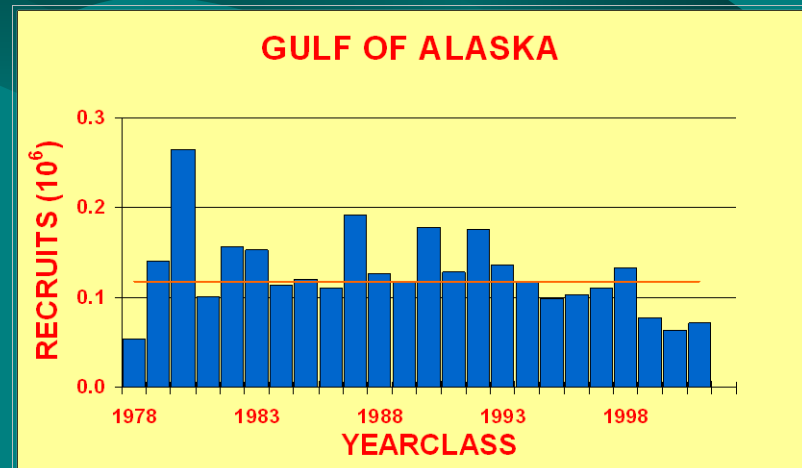
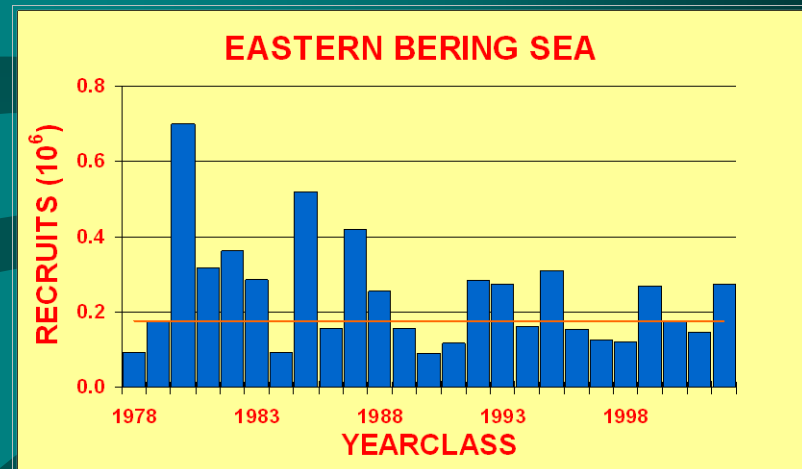
ABUNDANCE TRENDS



- EBS: Age 3+ Biomass declining
 - Mean since 1978: 1.7 million mt
 - Mean in last 5 years: 1.3 million mt
 - Peak utilization rate: 16%
- GOA: Age 3+ Biomass declining
 - Mean since 1978: 0.7 million mt
 - Mean in last 5 years: 0.5 million mt
 - Peak utilization rate: 13%

RECRUITMENT TRENDS

- EBS: Age 3 Recruits
 - Mean since 1978: 241 million mt
 - Mean in last 5 years: 197 million mt
 - Declining incidence of large year-classes
- GOA: Age 3 Recruits
 - Mean since 1978: 127 million mt
 - Mean in last 5 years: 87 million mt
 - Below median 7 of the last 8 years

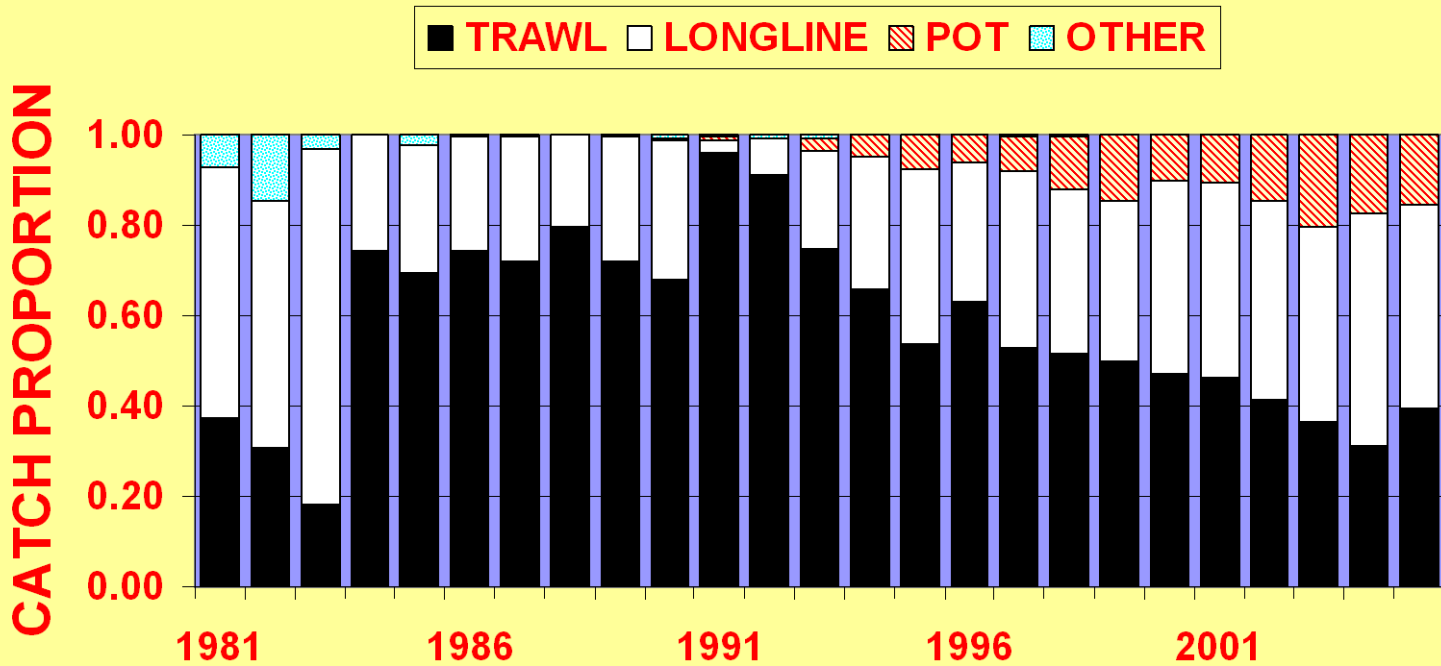


GEAR SPLITS

- 1978-1990 predominately a trawl fishery (66%)
- 1990-2000 more equitable distribution between longline and trawl with a low but increasing allocation to pot gear
- By 2001 predominately Longline (52%)

GEAR SPLITS

BSAI/GOA COMBINED



FISHERY MANAGEMENT

- QUOTA BASED MANAGEMENT
 - OY: maximum combined catch for all species in the management unit
 - OFL: catch level that maintains the individual stock at the Minimum Stock Size Threshold
 - ABC: maximum catch level that provides for a long-term sustainable fishery
 - TAC: annual target level for species specific fishery removals

2003 BSAI ABC

2003 BSAI	Age 3+	Spawning Biomass		
		B_{OFL}	B_{40}	B_{ABC}
Biomass (1000 mt)	1,680	377	431	427
Fishing Mortality		F_{OFL}	F_{40}	adj. F_{ABC}
Instantaneous F		0.42	0.35	0.30
Allowable catch @ F (1000 mt)		324	278	245

2003 GOA TAC

2003 GOA	Age 3+	Spawning Biomass		
		B_{OFL}	B_{40}	B_{ABC}
Biomass (1000 mt)	452	79	90	89
Fishing Mortality		F_{OFL}	F_{40}	adj.F_{ABC}
Instantaneous F		0.42	0.35	0.30
Allowable catch @ F (1000 mt)		80	74	53

TAC CONSTRAINTS

- Less than OY
- Less than ABC
- Distributions
 - Jurisdiction
 - Sector
 - Region
 - Season

JURISDICTION

- **FEDERAL FISHERIES**
 - Federally licensed under Limited Entry Program (LLP)
 - Fish exclusively in federal waters
 - Federal TAC discounted for expected removals in state waters
- **STATE WATER FISHERIES**
 - Parallel Fishery: jointly licensed for federal and state waters
 - State Only: exclusively licensed for state waters only

SECTOR SPLITS

- BSAI: Explicit allocation
 - Trawl
 - AFA Qualified Vessels
 - Non-AFA Qualified
 - Fix Gear other than Jig
 - Jig

BSAI SECTOR SPLITS

Gear sector	Percent	
	Sector	Within Sector
Trawl	47.0%	
CV 1/		50.0%
CP 2/		50.0%
Fixed Gear (non-jig)	51.0%	
Hook and Line CP		80.0%
Hook and Line CV		0.3%
Pot		18.3%
CV < 60' LOA		1.4%
Jig	2.0%	

GOA SECTOR SPLIT

- 90:10 Inshore/Offshore
 - No explicit allocation among gears
 - Inshore must be landed by qualified inshore sector fishers (includes CPs < 125' LOA)
 - Offshore caught by at-sea catcher/processor

REGIONAL DISTRIBUTION

- BSAI: None
- GOA: Three areas with distribution based on summer bottom trawl survey biomass (average over last 3 surveys)
 - Western 38%
 - Central 56%
 - Eastern 6%

BSAI SEASONAL DISTRIBUTIONS

Gear sector	Seasons		
Trawl	Jan 20-Apr 1	Apr 1- Jun 10	Jun 10-Nov 1
CV 1/	0.70	0.10	0.20
CP 2/	0.50	0.30	0.20
Fixed Gear (non-jig)	Jan 1-Jun 10	Jun 10-Dec 31	Sep 1-Dec 31
Hook and Line CV	0.60	0.40	
Pot	0.60		0.40
CV < 60' LOA	n/a	n/a	n/a
Jig	Jan 1-Jun 10	Jun 10-Dec 31	
All vessels	0.60	0.40	

GOA SEASONAL DISTRIBUTIONS

Gear	Season		
	A		B
Fixed	Jan 1-June 10	Jun 11-Aug 31	Sep 1-Dec 31
HL	0.60	Closed ^{1/}	0.40
Pot	0.60	Closed ^{1/}	0.40
Jig	0.60	Closed ^{1/}	0.40
Trawl	Jan 20-June 10	Closed ^{1/}	Sep 1-Nov 1
CV/CP	0.60	Closed ^{1/}	0.40

1/ Target fishery closed, incidental catch limited to MRB

OTHER CONSTRAINTS

- PROHIBITED SPECIES (PSC)
- BYCATCH (Incidental Catch)
- ENDANGERED SPECIES (ESA)
 - Steller Sea Lions
 - Short tailed Albatross
- ESSENTIAL FISH HABITAT (EFH)

PROHIBITED SPECIES

- BSAI PSC Caps

- Halibut 1,434 mt (trawl); 775 mt (non-trawl)
- Herring 20 mt
- Red King Crab 13,000 crab
- C. opilio 125,000 crab
- C. bairdi 510,000 crab (2 zones 60:40)

- GOA

- Halibut 2000 mt (trawl) 300 mt (non-trawl)
 - Pot, Jig, HL sablefish exempt from PSC limit (Legal sized Halibut must be retained in sablefish fishery)

- PSC seasonally apportioned, usually constraining

BYCATCH

- Maximum Retainable Bycatch Allowances
 - Limits the proportion of retained catch as ratio of total catch
 - Applies to non-target fisheries
- Full retention standard for target fisheries

ENDANGERED SPECIES

- STELLER SEA LIONS (SSL)
 - Extensive array of open and closed areas to protect SSL foraging
 - Seasonal apportionments to limit local depletion of the prey base
- Short tailed Albatross
 - Maximum allowable take (6 birds in 2 years)
 - Sea bird avoidance measures

ESSENTIAL FISH HABITAT

- Recent Initiative, rule making in development
 - Potential for specific closed areas
 - More impacts to spatial and seasonal catch apportionment
 - Possible bycatch limitations for some invertebrates

RATIONALIZATION

- Rationalization: addresses fleet capacity
 - Increasing allocation tensions among and within industry sectors
 - Fishing cooperatives gaining acceptance
 - Exist for AFA vessels
 - Needed for the non-AFA fleet in both the fixed gear and mobile gear sectors
 - NPFMC is working on GOA rationalization program
 - Drafted a crab fishery rationalization program that will have impacts on the P.Cod pot fishery

OTHER ISSUES

- Rollovers: (small boat/big boat dispute)
 - Under utilized fixed gear TAC currently rolls to long line CPs in final quarter of calendar year
 - Under utilized trawl and jig TAC goes to long line CPs and pot fishery
 - Proposal to allocate unused jig TAC to hook and line and pot vessels < 60'
- AFA vessels encroaching on non-AFA vessels
- Adjustment in MBR rates to promote fuller utilization (balance of targeted vs incidental catch)

SUMMARY

- Independently managed State and Federal fisheries
- Stock condition healthy but declining
- Quota based catch allowance, with conservatively set harvest rates
- Effective catch monitoring with at-sea observers
- Bycatch and ESA constraints limiting
- Multiple allocation issues among competing fishing sectors
- Increasing call for “rationalization” of fisheries