



# Processing Restrictions for Squids and Sculpins

Initial Review Regulatory Impact Review  
Presented by Steve A. MacLean, NPFMC Staff

# Introduction

- ▶ In 2010 the Council established the Ecosystem Component (EC) category in the BSAI and GOA FMPs
  - ▶ Included prohibited species and forage fish. Grenadier added in 2015 (Amendment 100)
- ▶ Squids were added to the EC category in 2017 (Amendment 117/106)
  - ▶ Limited processing to fish meal only, consistent with other EC species
    - ▶ Council did not intend to limit processing
- ▶ In October 2019 the Council took final action to reclassify sculpins to the EC category in the BSAI and GOA Groundfish FMPs
  - ▶ Action would also limit processing to fish meal only
    - ▶ Council did not intend to limit processing





## Present Action

- ▶ Purpose and Need adopted October 2019
- ▶ Alternative 1: Status Quo - Processing restricted to fishmeal only
- ▶ Alternative 2: Preliminary Preferred Alternative - No restrictions on processing squids and sculpins



# Comparison of Alternatives

**Table 2-3 Summary of Management Measures in Alternatives 1 and 2 (p 17)**

Management Measure	Alt 1- No Action	Alt 2 – No Processing Restrictions
<b>Prohibit Directed Fishing</b>	<b>Yes</b> Prohibit directed fishing in regulations at 679.20(i)	<b>Yes</b> Prohibit directed fishing in regulations at 679.20(i)
<b>Retention and Sale</b>	<b>Yes</b> Retention and sale allowed as <b>fishmeal only</b> , subject to MRA limits.	<b>Yes</b> Retention and sale as <b>any product form allowed</b> , subject to MRA limits.
<b>Annual Harvest Specifications</b>	<b>No</b> - Periodic reports on biomass information from current surveys will be included in the SAFE - Catch does not accrue to optimum yield cap	<b>No</b> - Periodic reports on biomass information from current surveys will be included in the SAFE - Catch does not accrue to optimum yield cap
<b>Incidental Catch Management</b>	<b>Yes</b> MRA = 20% for all basis species	<b>Yes</b> MRA = 20% for all basis species
<b>Recordkeeping and Reporting</b>	<b>Yes</b> Require catch reporting	<b>Yes</b> Require catch reporting



# Meeting requirements for ecosystem component

## National Standard Guidelines guide Councils

- ▶ Analysis for Amendments 117/106 evaluate guidelines for squid
  - ▶ Table 2-2 provides updated summary for squids (p 16)
- ▶ Analysis for Amendments 121/110 evaluate guidelines for sculpins
  - ▶ Table 2-1 provides updated summary for sculpins (p 15)



# Squids (Section 3.1)

- ▶ Important prey of fish, seabirds, marine mammals
- ▶ At least 15 species in BSAI and GOA (Table 3-1)
  - ▶ *Berryteuthis magister* is most abundant
  - ▶ Market squid (*Doryteuthis opalescens*) may be moving to GOA
    - ▶ Active fishery for market squid in California
- ▶ Highly productive, short-lived animals
- ▶ Populations of multiple cohorts spawned throughout the year
  - ▶ Summer-hatched, fall-hatched, winter-hatched
- ▶ Dense schools over continental shelf
  - ▶ May be vertically segregated in the water column



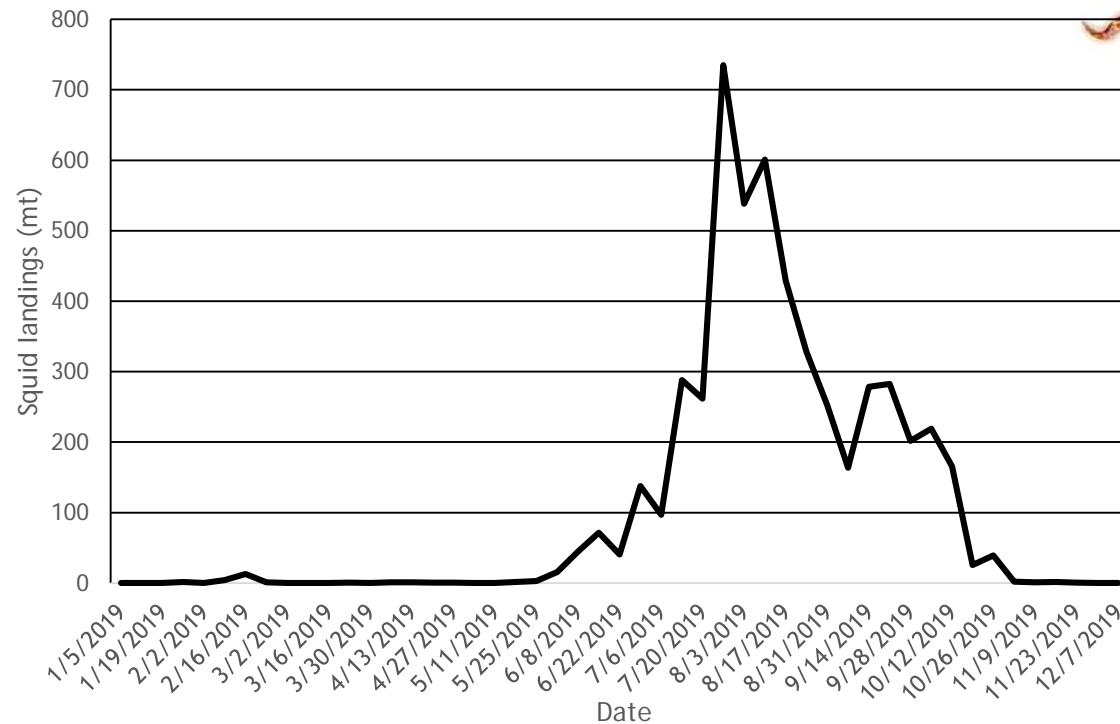
## Squids trawl survey biomass estimates (Section 3.1.3)

- ▶ Squids are not well sampled in the AFSC bottom-trawl surveys
- ▶ Catches are highly variable
- ▶ *B. magister* and *Gonatopsis borealis* are most abundant (Table 3-2)
- ▶ Biomass estimates fluctuate greatly (Table 3-3)
- ▶ Establishing harvest specifications problematic because reliable biomass estimates do not exist
  - ▶ Managed as Tier 6 complex before EC



## Squids catch and retention (Section 3.1.5)

- ▶ Vast majority of squids caught incidentally in pollock trawl fisheries (Table 3-4 & 3-5)



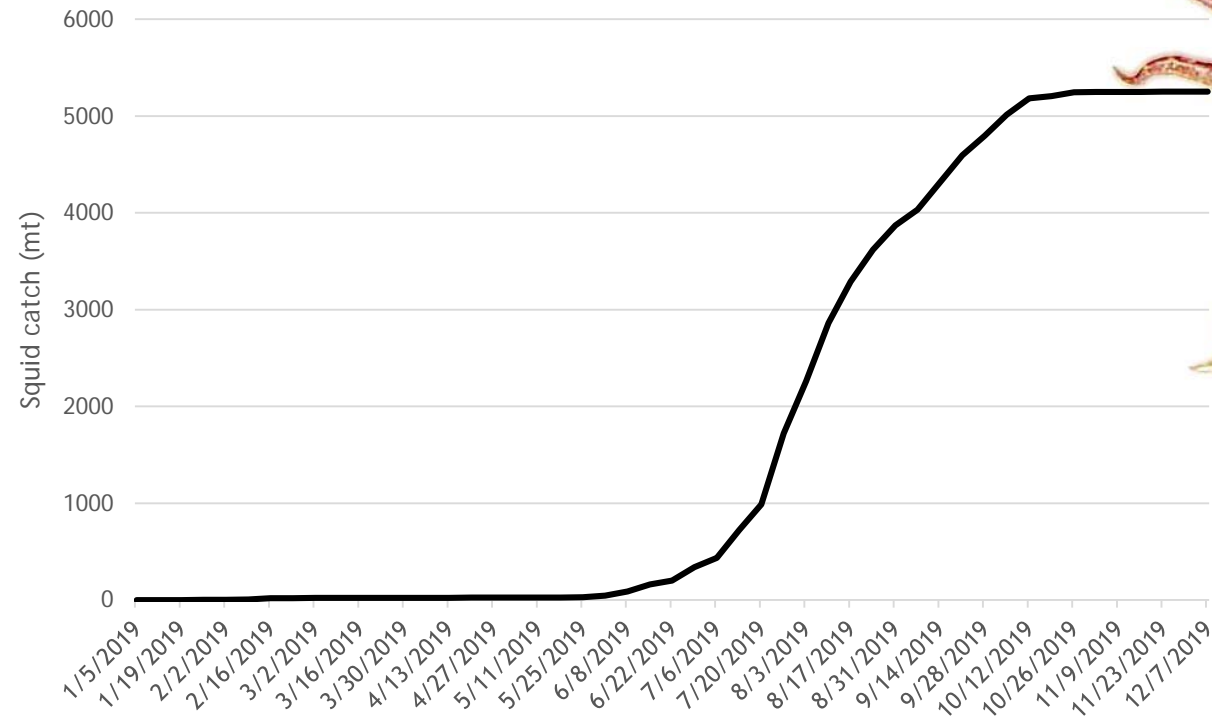
**Figure 4-1. Squid landings (mt) by date in the BSAI and GOA in 2019.  
AKFIN accessed December 23, 2019**





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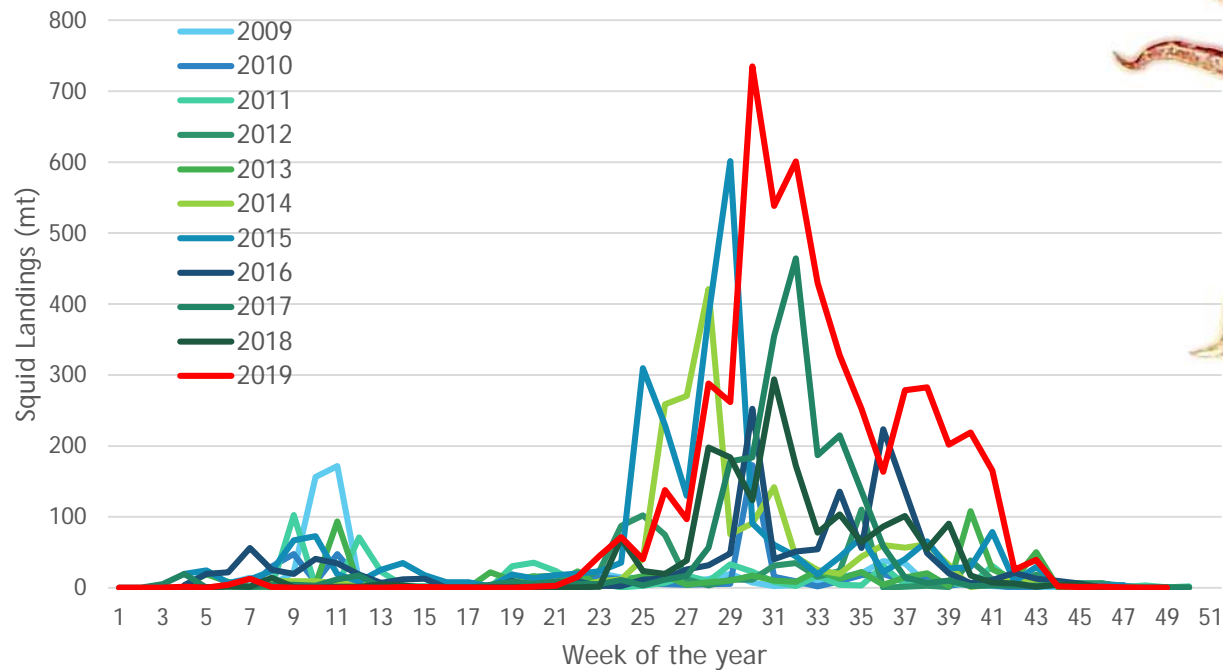


**Figure 4-2. Cumulative squid landings (mt) by date in the BSAI and GOA in 2019. AKFIN accessed December 23, 2019**



# Squids catch and retention (Section 3.1.5)

- ▶ Catch in 2019 much higher than in recent years

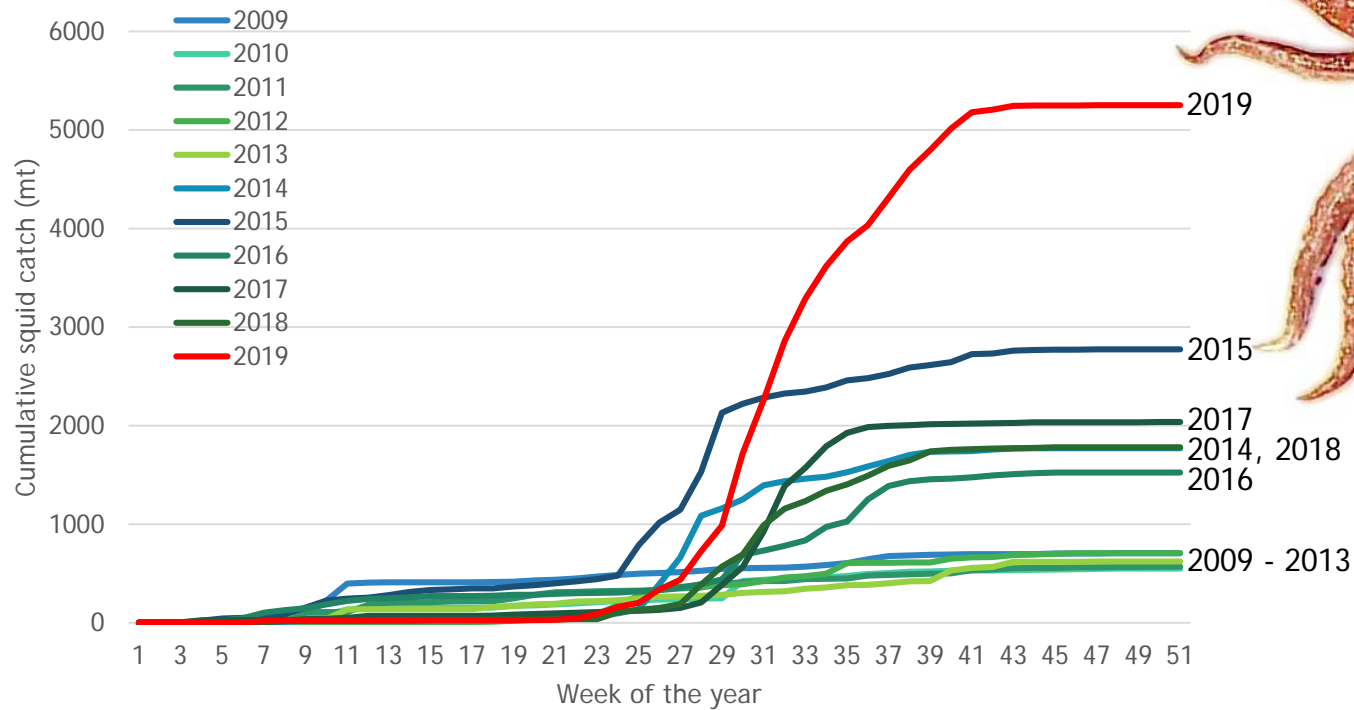


**Figure 4-3. Squid landings (mt) by week in the BSAI and GOA 2009 - 2019. AKFIN 12.23.2019.**



# Squids catch and retention (Section 3.1.5)

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**Figure 4-4. Cumulative squid landings (mt) by week in the BSAI and GOA 2009 - 2019. AKFIN 12.23.2019.**



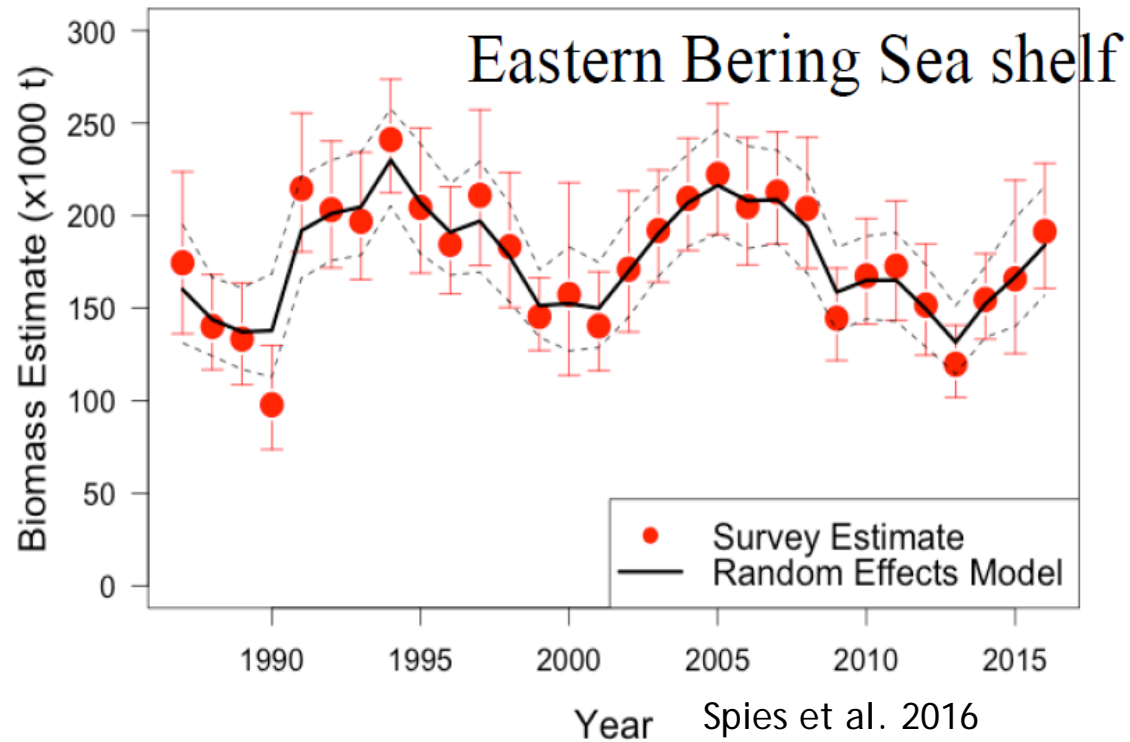
# Sculpins (Section 3.2)

- ▶ At least 48 species in BSAI and GOA
- ▶ Occupy all benthic habitats along shelf and slope
- ▶ Depths from 20 m - 1,000 m
- ▶ Range from less than 10 cm to 80 cm
- ▶ Predators consuming a wide variety of benthic prey



# Sculpin trawl survey biomass estimates (Section 3.2.2)

- ▶ Sculpins are sampled annually in the shelf and slope surveys
- ▶ Low CV suggests that surveys adequately estimate biomass



# Sculpin Fishery Catch (Section 3.2.2.2)

▶ Taken only as bycatch in BSAI (Table 3-6)

Year	BSAI					
	Biomass (mt)	OFL (mt)	ABC (mt)	TAC (mt)	Catch (mt)	Catch/Biomass
2011	199,348	58,300	43,700	5,200	5,377	0.03
2012	183,942	58,300	43,700	5,200	5,798	0.03
2013	171,523	56,400	42,300	5,600	5,864	0.03
2014	189,359	56,400	42,300	5,600	4,902	0.03
2015	186,386	52,365	39,725	4,700	5,003	0.03
2016	199,937	52,365	39,725	4,500	4,911	0.02
2017	188,656	56,582	42,387	4,500	5,338	0.03
2018	188,656	53,201	39,995	5,000	5,105	0.03
2019	188,656	53,201	39,995	5,000	5,420	0.03

▶ and GOA (Table 3-6)

Year	GOA					
	Biomass (mt)	OFL(mt)	ABC(mt)	TAC (mt)	Catch (mt)	Catch/Biomass
2011	33,729	7,328	5,496	5,496	774	0.02
2012	34,112	7,641	5,731	5,731	794	0.02
2013	34,500	7,641	5,731	5,731	1,964	0.06
2014	35,155	7,448	5,569	5,569	1,182	0.03
2015	35,823	7,448	5,569	5,569	1,018	0.03
2016	34,340	7,338	5,591	5,591	1,330	0.04
2017	32,918	7,338	5,591	5,591	1,316	0.04
2018	34,943	6,958	5,301	5,301	610	0.02
2019	33,124	6,958	5,301	5,301	603	0.02



# Regulatory Impact Review – Section 4

## Description of Fisheries Squid – Section 4.5.1

- ▶ No directed fishery for squids
- ▶ Catch and retention are variable in the BSAI and GOA (Table 4-1)

**Table 4-1. Catch (mt) and retention (mt) of squid by all groundfish fisheries by FMP area 2009-2019**

Year	BSAI			GOA		
	Catch	Retained	% Retained	Catch	Retained	% Retained
2009	360	181	50.4	337	293	86.7
2010	410	270	65.8	131	120	91.6
2011	336	149	44.2	233	188	80.9
2012	688	471	68.5	18	3	13.7
2013	299	112	37.4	322	304	94.6
2014	1,678	993	59.2	94	63	66.6
2015	2,364	1,951	82.6	411	329	80.1
2016	1,286	526	40.9	240	139	57.8
2017	1,996	1,019	51.0	39	12	30.1
2018	1,736	1,299	74.8	43	9	20.3
2019 <sup>1</sup>	5,931	2,742	46.2	63	48	76.1



## Squid harvesting vessels (Section 4.5.3.1)

- ▶ Both catcher-processors and catcher vessels catch squid in the BSAI (Table 4-2)

Sector	Year	Catch	Retained	Vessels
CP	2009	213	57	10
	2010	156	22	15
	2011	216	29	18
	2012	209	16	14
	2013	208	22	14
	2014	750	75	10
	2015	380	102	17
	2016	824	227	15
	2017	1,127	395	14
	2018	532	250	12
CV <sup>1</sup>	2009	147	124	36
	2010	255	248	49
	2011	120	119	64
	2012	479	452	77
	2013	91	90	69
	2014	928	914	75
	2015	1,983	1,849	82
	2016	462	297	74
	2017	869	585	68
	2018	1,204	1,041	66

**Table 4-2. Total catch (mt) and retained catch (mt) and the number of vessels retaining squid in the BSAI by sector from 2009 - 2018.**





## Squid harvesting vessels (Section 4.5.3.1)

- ▶ Catcher vessels catch and retain more squid than the C-P sector in the GOA (Table 4-3)

Sector	Year	Catch	Retained	Vessels
CP	2009	*	*	*
	2010	8	0	6
	2011	12	0	8
	2012	15	0	4
	2013	8	0	4
	2014	*	*	*
	2015	42	0	7
	2016	11	0	6
	2017	22	0	5
	2018	28	0	5
CV <sup>1</sup>	2009	321	291	38
	2010	123	120	44
	2011	220	188	57
	2012	4	2	70
	2013	313	304	72
	2014	66	62	82
	2015	369	329	84
	2016	228	138	68
	2017	18	12	68
	2018	15	9	57

**Table 4-3. Total catch (mt) and retained catch (mt) and the number of vessels retaining squid in the GOA by sector from 2009 - 2018.**



## Squid processing (Section 5.4.1.4)

- ▶ Whole bait is the primary product for the BSAI and GOA combined (Table 4-4)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fish Meal								*	*	*
Whole Bait	86,743	389,226	262,897	299,184	277,434	798,976	856,860	*	*	832,476
Whole Fish	313,711	*	*	2,690	24,740	*	*	*	*	*
Processors	7	6	8	10	10	4	4	5	3	7

- ▶ Whole bait is the most valuable product for the BSAI and GOA combined (Table 4-5)

Product Type	Total Production weight (pounds)	Gross first wholesale value (\$)
Fish Meal	9,209	7,115
Whole Bait	3,804,682	2,347,114
Whole Fish	836,147	374,835

- ▶ But the value for fish meal reported is believed to be an error in COAR data



## Squid processing (Section 5.4.1.4)

- ▶ Squid are processed in a few communities (Table 4-6)

**Table 4-6. Total squid production (mt) by community in the BSAI and GOA, 2009 – 2018.**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Dutch/Unalaska	*	71	42	73	8	592	655	82	320	662
Kodiak	296	125	184	2	276	60	318	127	6	4
Other	126	179	80	379	108	324	1,202	226	270	383



## Sculpin harvest (Section 4.5.2)

- ▶ Sculpin caught only incidentally in the BSAI and GOA
- ▶ Catch is low (Table 4-7)

YEAR	Catcher Vessels delivering to Shoreside Processing Plants or Stationary Floating Processors		Catcher/Processors and Motherships		TOTAL		
	Trawl	Nontrawl	Trawl	Nontrawl	Trawl	Nontrawl	Total
2011	144	4	241	0	384	4	388
2012	164	11	211	2	375	13	388
2013	60	5	126	0	187	5	192
2014	57	16	97	0	154	16	170
2015	41	4	64	0	105	4	109
2016	52	11	68	0	120	11	131
2017	23	8	44	0	67	8	75
2018	32	8	67	0	100	8	107

- ▶ Value is low (Table 4-8)

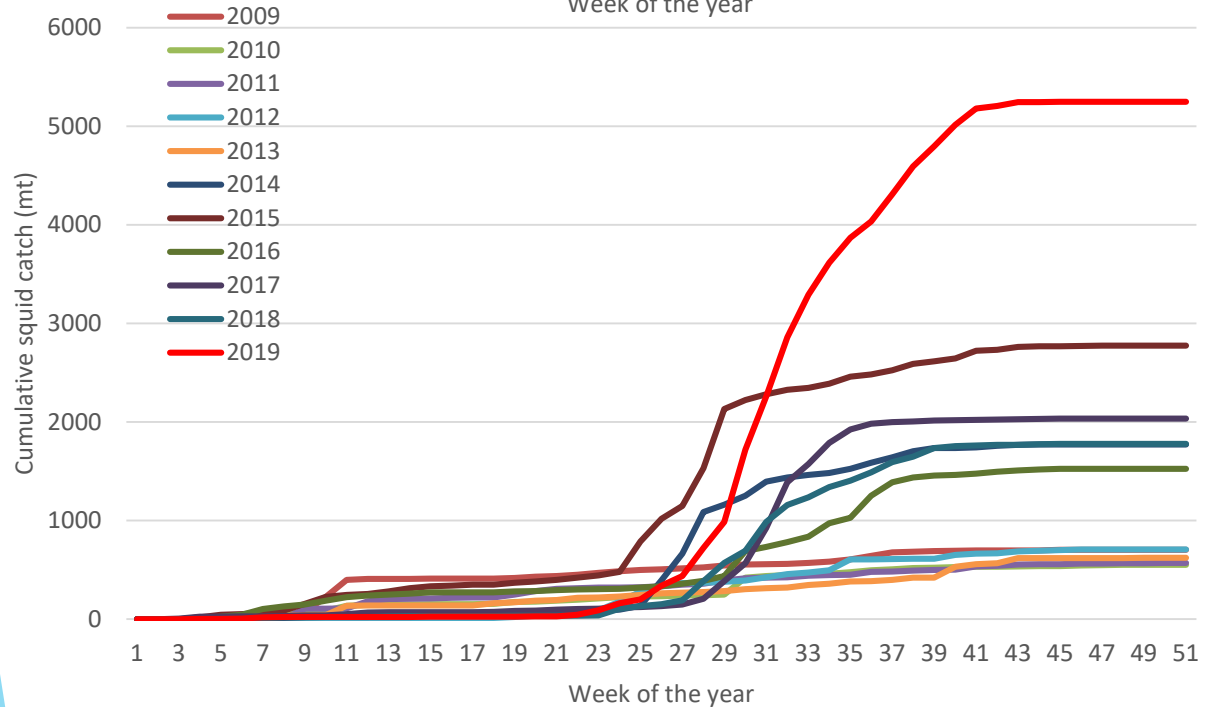
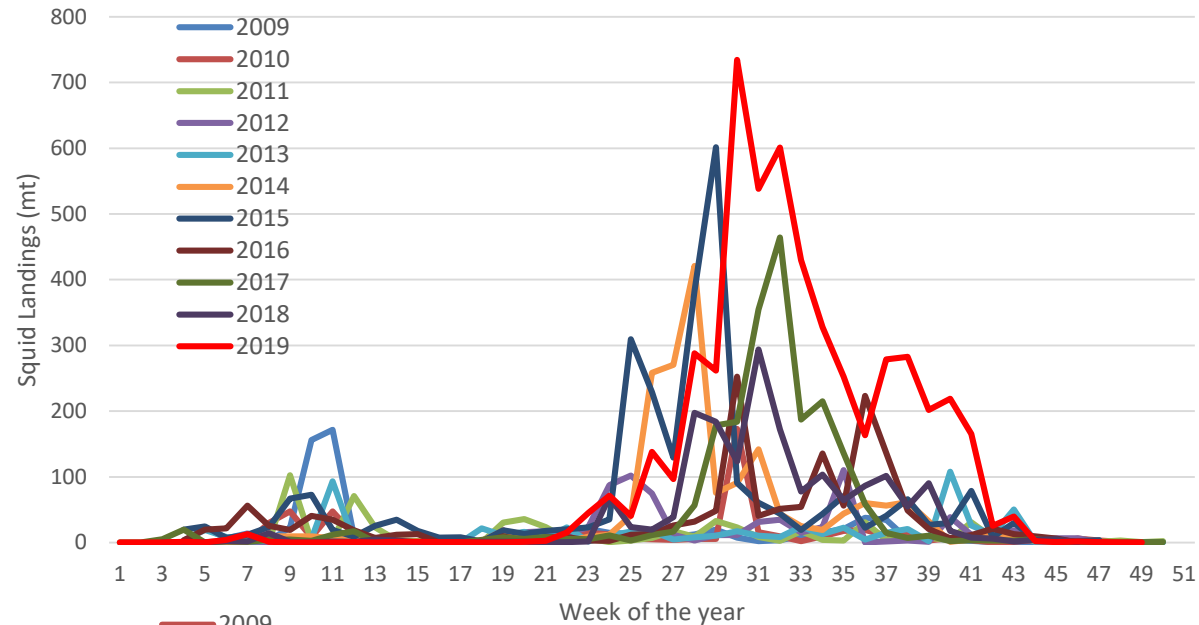
Year	Ex-vessel price per pound of CV sculpins that was processed into fish meal (\$)	
	BSAI	GOA
2011	0.02	0.02
2012	0.02	0.02
2013	0.02	0.02
2014	0.02	0.00
2015	0.02	0.02
2016	0.02	0.00
2017	0.02	0.00



## Analysis of Impacts (Section 4.6)

- ▶ Qualitative analysis of impacts involves speculation about actions of individual participants
  - ▶ Confounded by incomplete information about
    - ▶ Biological information about squids and sculpins
    - ▶ Fishery actions
    - ▶ Economic information
  - ▶ Has never been significant market for sculpin products
- ▶ Two considerations for analysis
  - ▶ Can we explain the anomalous 2019 squid catch
  - ▶ Can we anticipate impacts of processing restrictions on squids and sculpins





## Recent Squid Catch 2009 - 2019

- Before 2019, squids could be processed and sold
  - Despite regs, some squid were sold in 2019
- In 2019 more squid caught after July than in earlier years
- Moving squids to EC removed need for vessels to avoid squid
- Pollock vessels avoiding Chinook salmon and sablefish
- Without estimate of squid abundance it is difficult to assess causes
- Lack of data also makes it difficult to predict squid catch



## Analysis of Impacts (Section 4.6)

### ▶ Alternative 1 Status Quo - Squid

- ▶ If anomalously high squid catch seen in 2019 occurred in the future:
  - ▶ Processors could experience higher costs associated with discarding squid or converting fish meal plants to efficiently process squid
  - ▶ Costs depend on individual processors' decisions to discard or process
  - ▶ Overall costs not significant in comparison to overall value of BSAI and GOA groundfish fisheries
- ▶ Not likely any significant impacts of Alternative 1 on squid

### ▶ Alternative 1 Status Quo - Sculpins

- ▶ Has never been a significant market for sculpin products
  - ▶ Caught and retained at low levels, low value for products
- ▶ Not likely any significant impacts of Alternative 1 on sculpins



## Analysis of Impacts (Section 4.6)

- ▶ **Alternative 2 Removing processing restrictions - Squid**
  - ▶ If anomalously high squid catch seen in 2019 occurred in the future:
    - ▶ Processors may generate additional revenue from sale of squids as whole bait
    - ▶ Total additional revenue would depend on individual processors' decisions to process squid or discard
    - ▶ Total potential economic impacts are not significant in comparison to overall value of BSAI and GOA groundfish fisheries
  - ▶ Not likely any significant impacts of Alternative 2 on squid
- ▶ **Alternative 1 Status Quo - Sculpins**
  - ▶ Has never been a significant market for sculpin products
    - ▶ Caught and retained at low levels, low value for products
  - ▶ Not likely any significant impacts of Alternative 2 on sculpins





## Effects on fishing communities (Section 4.6.3)

Analysts did not identify any impacts that would create adverse economic impacts on any fishing community or cause other adverse social impacts

## Affected small entities (Section 4.6.4)

Both alternatives would directly regulate processors receiving squids or sculpins in BSAI and GOA

Possible that one or more processors could be small entities if the company and its affiliates worldwide employ fewer than 750 people

Total employment numbers of companies and their affiliates are not available to make that determination



## Management and Enforcement Concerns (Section 4.7)

- ▶ Alternative 1 Status Quo
  - ▶ Monitoring catch at trip level to ensure MRA is not exceeded
  - ▶ Monitoring processing products to ensure squids and sculpins are not processed into product other than fish meal
  - ▶ Determining appropriate penalty for MRA overages
- ▶ Alternative 2 Removing processing restrictions
  - ▶ Monitoring catch at trip level to ensure MRA is not exceeded
  - ▶ Determining appropriate penalty for MRA overages



## Implications for State fisheries (Section 4.7.3)

- ▶ No implications for State fishery management
  - ▶ FMPs do not preclude development of directed fisheries in State waters
  - ▶ Fishery for market squid could be developed as the State of Alaska Board of Fisheries determine it to be appropriate



## Net Benefit to the Nation (Section 4.8)

- ▶ May increase marginally under Alternative 2 relative to Alternative 1 by allowing processing and sale of squids and sculpins and by preventing waste of incidental catch

## MSA National Standards (Section 5)

- ▶ Both alternatives are consistent with National Standards

## Council Ecosystem Vision Statement (Section 5.3)

- ▶ Both alternatives are consistent with the Council's Ecosystem Vision Statement
  - ▶ Alternative 2 may allow for marginally greater economic benefits by allowing processing and sale of squid and sculpins



Thanks to:  
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Molly Watson

Questions?



# Sea surface and bottom temperatures of EBS shelf

Siddon and Zador 2019 Ecosystem Status Report 2019 Eastern Bering Sea

