



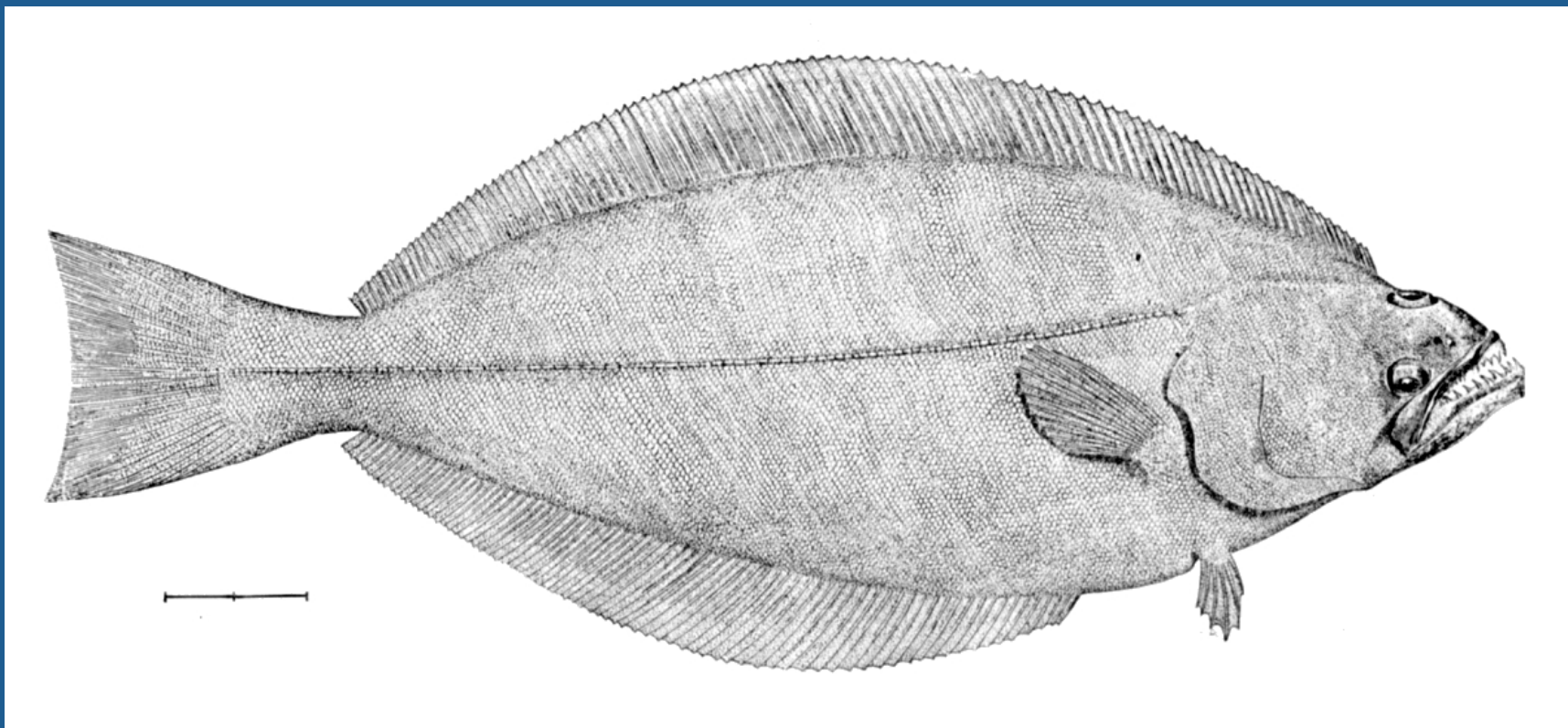
BSAI Greenland turbot and Kamchatka flounder Partial Assessments

Meaghan D. Bryan

November 15, 2017

BSAI Greenland turbot

Meaghan D. Bryan and Steve Barbeaux



2016 Harvest Recommendations

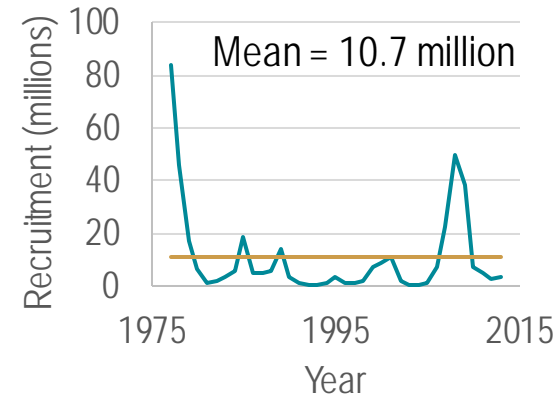
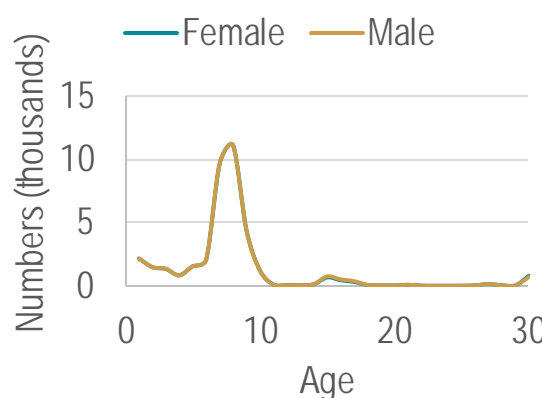
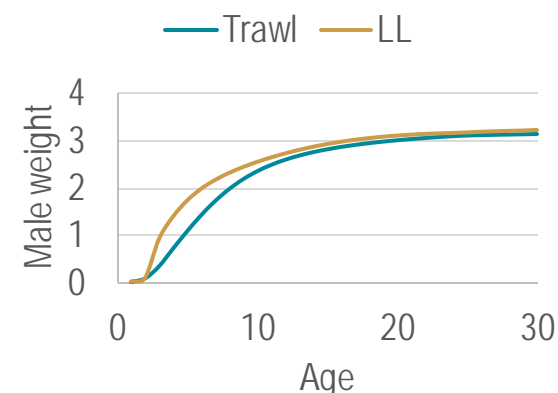
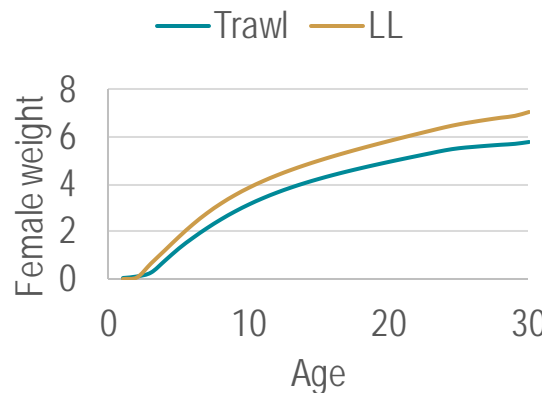
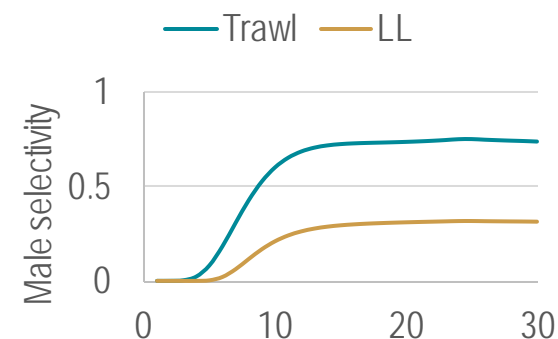
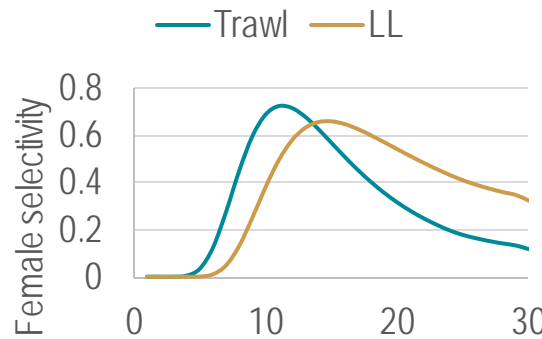
- Author recommended a reduced ABC from max ABC
- Concerns about:
 - Low recruitment
 - Overfished stock status
 - Warm climate scenario projections showed that the stock would be below B35% within 10 years or so and approaching B20% within 20 years
- Plan team decided that the ABC be set at the max ABC
- SSC set the ABC at 6,644 t and the TAC at 4,500 t

Quantity	As estimated or specified last year for:	
	2017	2018
M (natural mortality rate)	0.112	0.112
Tier	3b	3b
Total biomass (age 1+) (t)		
Projected	121,804	122,032
Female spawning biomass (t)		
Projected		
$B_{100\%}$	103,097	103,097
$B_{40\%}$	41,239	41,239
$B_{35\%}$	36,084	36,084
F_{OFL}	0.29	0.29
$\max F_{ABC}$	0.18	0.18
F_{ABC}	0.13	0.12
OFL (t)	11,615	12,831
maxABC (t)	9,825	10,864
ABC (t)	7,000	7,000



Projection inputs

- Natural mortality - 0.112
- Selectivity
 - Female: dome-shaped
 - Male: asymptotic
- Weight at age by fishery
- Age-0 recruits (1977-2013)
- Numbers at age (2016, female and male)

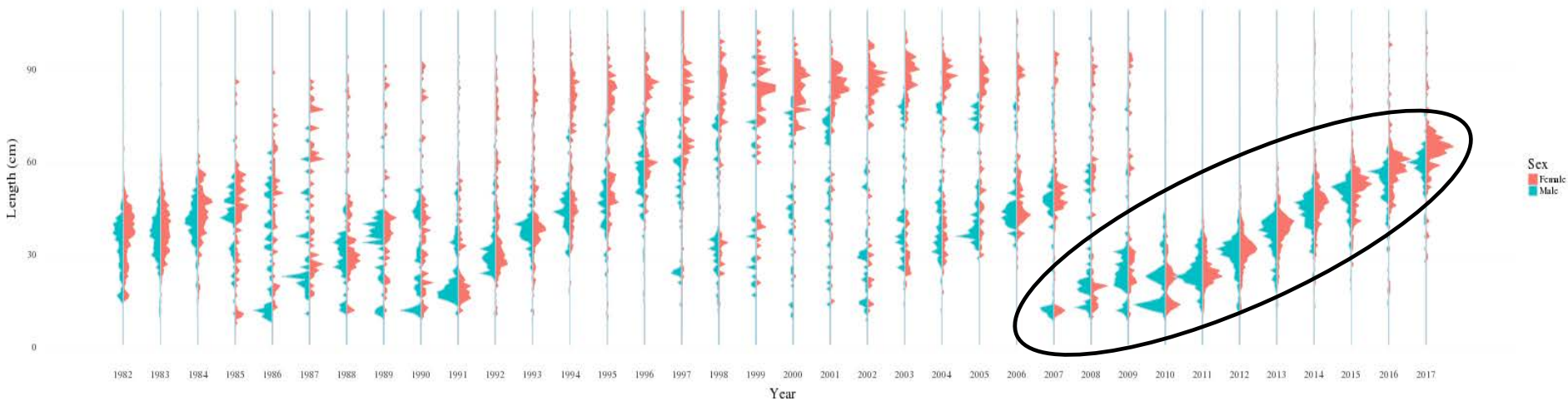


Projection inputs

- Catch
 - 2016 updated from 2,186 t to 2,238 t
 - 2017 updated from 7,000 t to 3,649 t
 - Expected catch by the end of the year
 - $TAC \times 2\text{-year average fraction of TAC}$
 - $TAC = 4,500 \text{ t}$
 - $2\text{-year average fraction of TAC} = 81.1\%$
 - 2018 set to 7,000 t (proposed ABC)

BSAI shelf survey length composition

Length frequency distribution

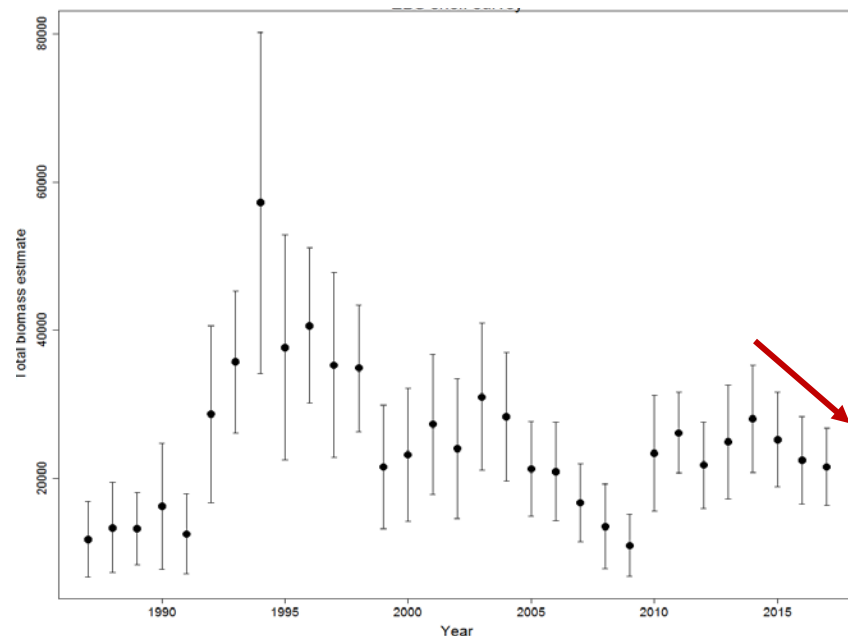


- Most recent strong year class from 2007/2008 is moving through the population
- There are still concerns about continued low recruitment

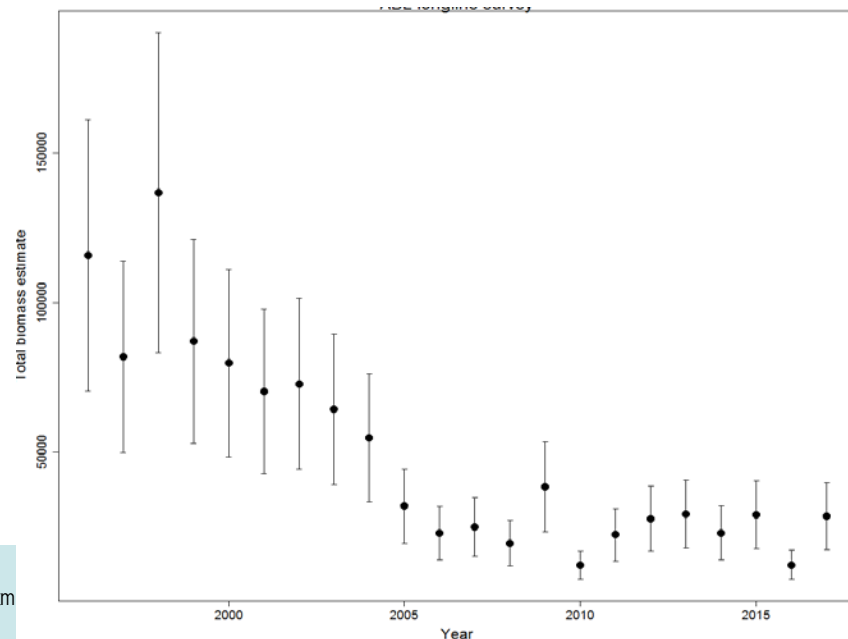
Survey trends

- EBS shelf and ABL longline surveys were updated in 2017
- EBS shelf survey
 - 23% decline since 2015
 - 4% decline in 2017
- ABL longline survey
 - 132% increase in 2017

EBS Shelf Survey Biomass

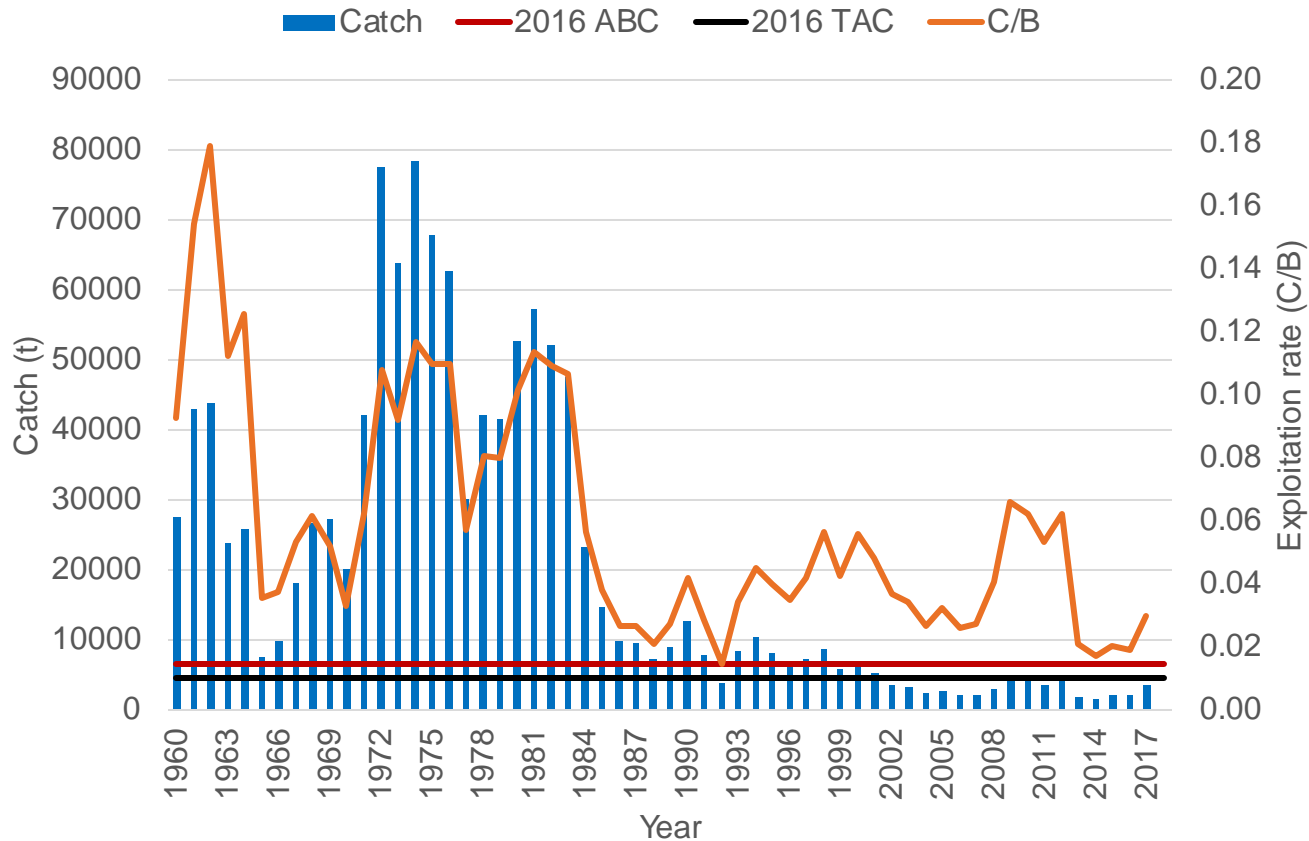


ABL longline Biomass



	As estimated or specified last year for:		As estimated or recommended this year* for	
Quantity	2017	2018	2018	2019
M (natural mortality rate)	0.112	0.112	0.112	0.112
Tier	3b	3b	3b	3b
Projected total (age 1+) biomass (t)	121,804	122,032	126,417	127,021
Female spawning biomass (t)	50,461	55,347	58,035	61,878
Projected				
B _{100%}	103,097	103,097	103,097	103,097
B _{40%}	41,239	41,239	41,239	41,239
B _{35%}	36,084	36,084	36,084	36,084
F _{OFL}	0.29 ⁺	0.29 ⁺	0.22	0.22
maxF _{ABC}	0.18	0.18	0.18	0.18
F _{ABC}	0.13	0.12	0.11	0.11
OFL (t)	11,615	12,831	13,148	13,540
maxABC (t)	9,825	10,864	11,132	11,473
ABC (t)	7,000	7,000	7,000	7,000
EBS	6,111	6,111	6,111	6,111
Aleutian Islands	889	889	889	889
	As determined <i>last</i> year for:		As determined <i>this</i> year for:	
Status	2015	2016	2016	2017
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No

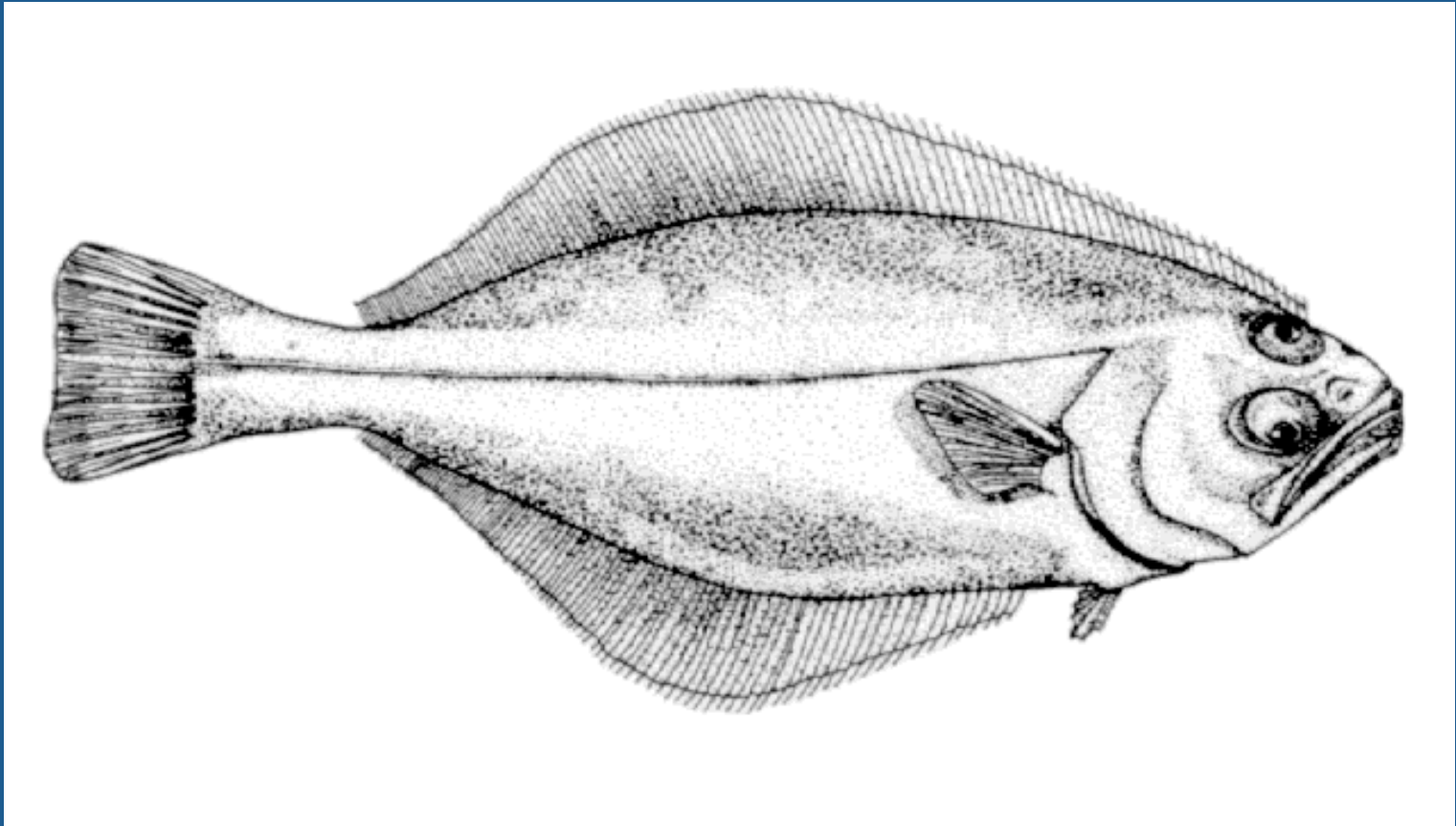
Catch-biomass ratios



- Average exploitation between 1984 and 2017: 0.04

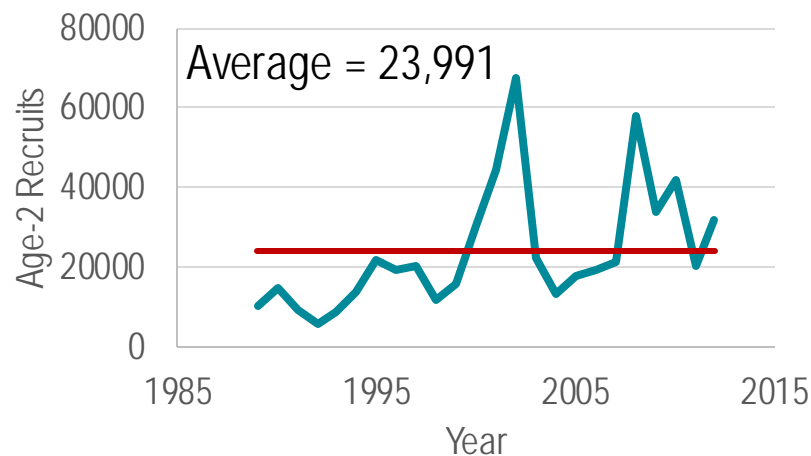
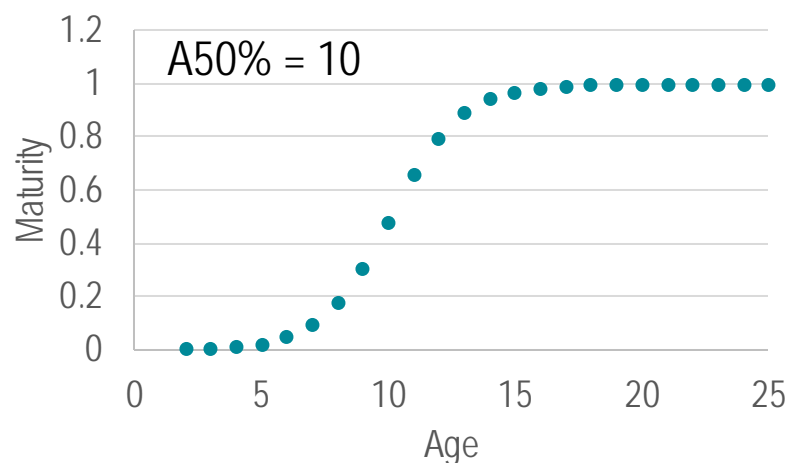
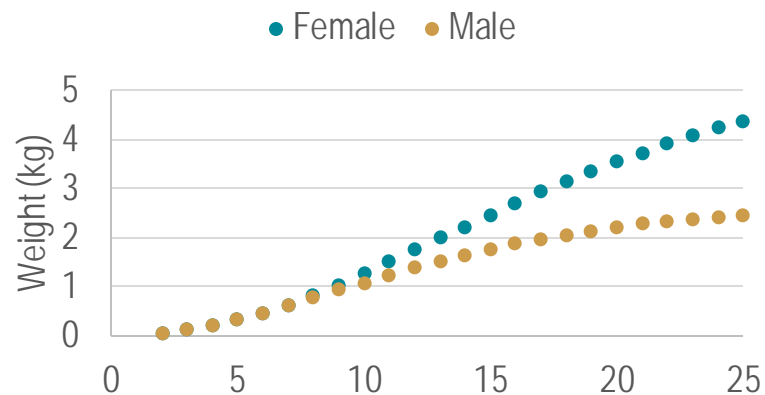
Kamchatka flounder

Meaghan D. Bryan and Tom Wilderbeur



Projection inputs

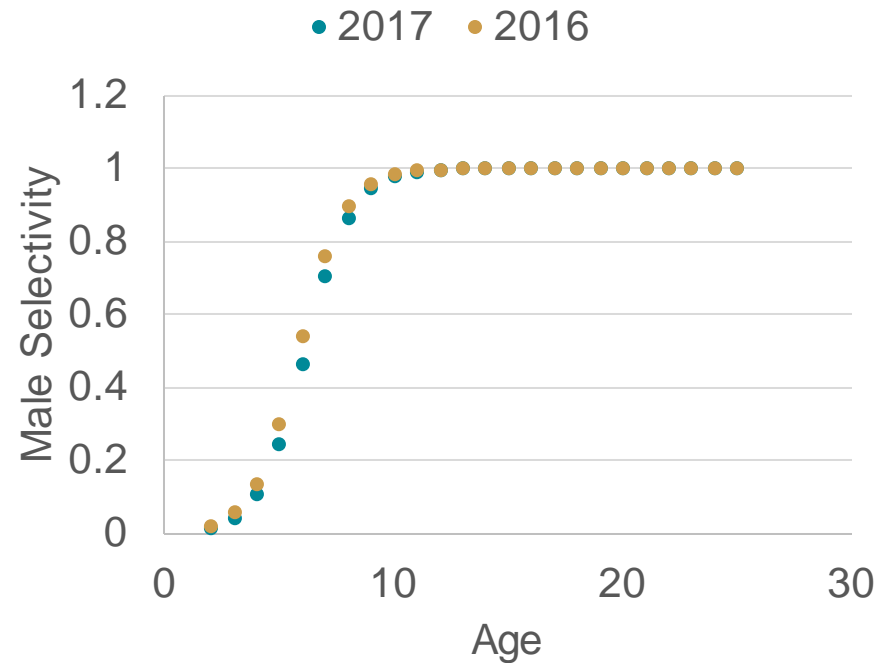
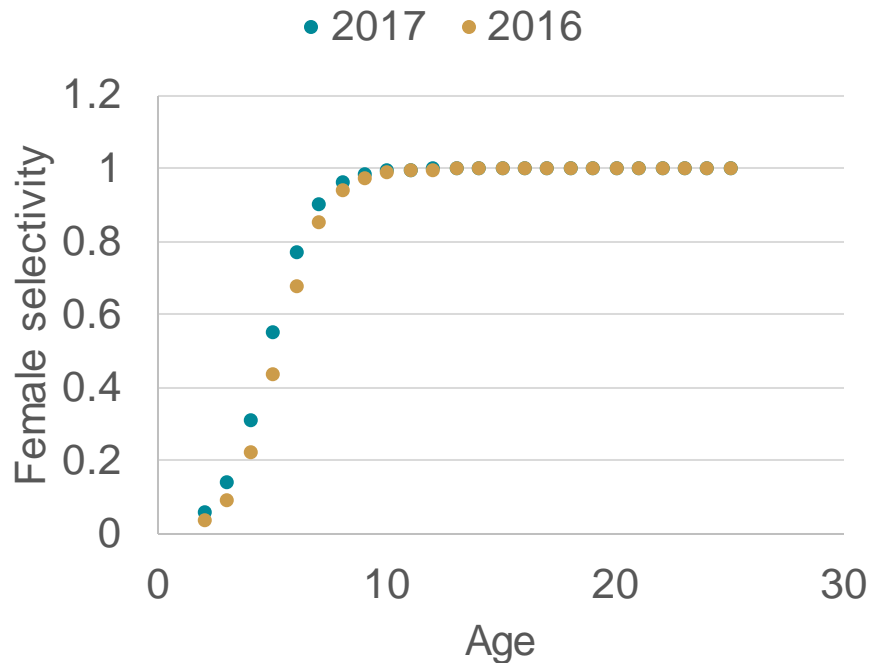
- Inputs from 2016 assessment were used
- Unchanged inputs
 - Natural mortality – 0.11 (female and male)
 - Weight and maturity at age
 - Recruitment (1989 – 2012): Age 2



Data updates

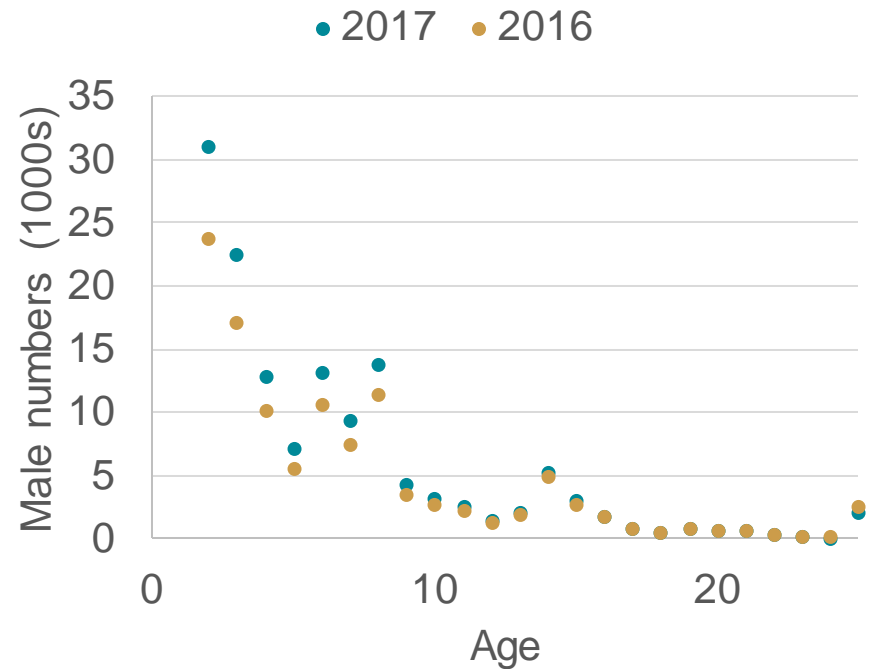
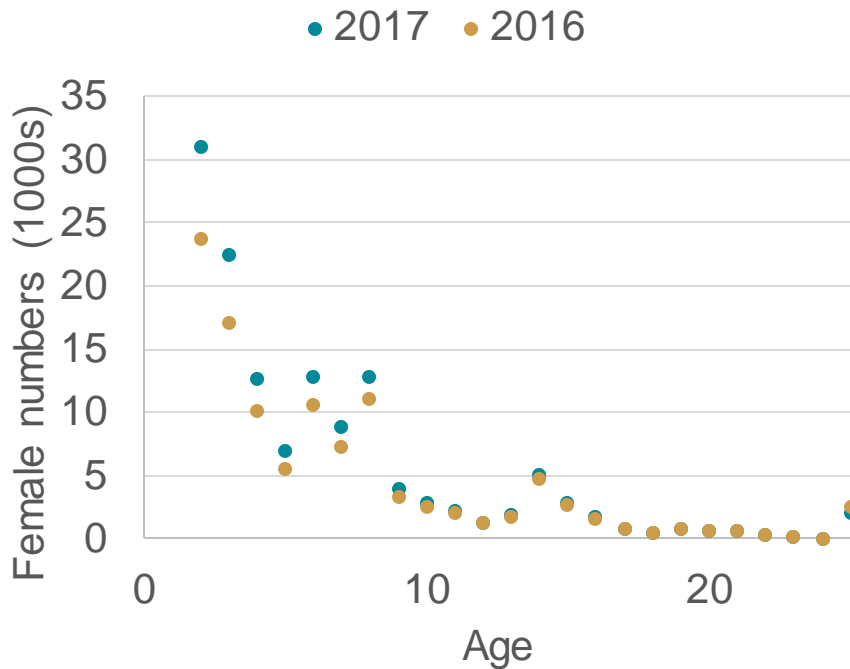
- Catch
 - 2016: Updated from 4,533 t to 4,851 t
 - 2017 and 2018: 4,347 t
 - 2-year average fraction of TAC (~86.9% of 5000 t)
 - Lower than 2016 input – 4,533 t
- Fishery selectivity
- 2016 numbers-at-age

Fishery selectivity



- 2016 projections: fishery selectivity was from a model run where female and male natural mortality was assumed to be 0.09

Numbers at age (2016)

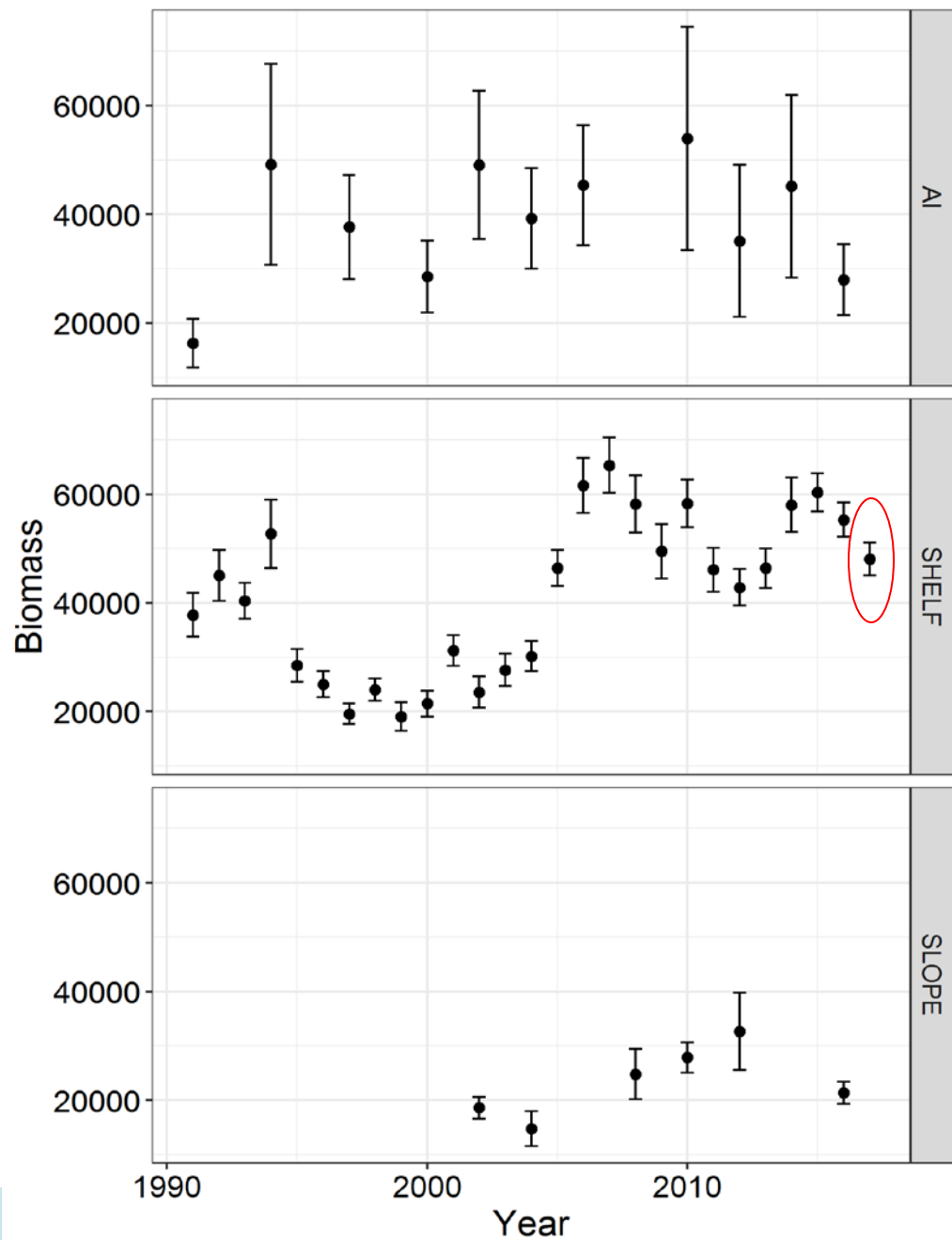


- 2016 numbers at age were from a model run where female and male natural mortality was assumed to be 0.09

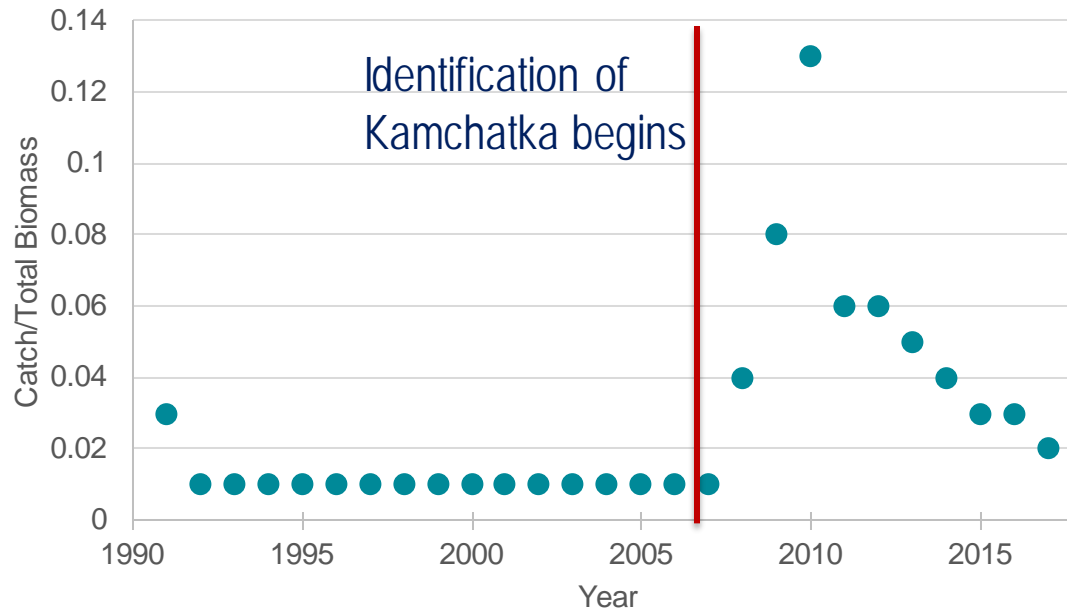
Quantity	As estimated or specified last year for:		As estimated or recommended this year* for	
	2017	2018	2018	2019
M (natural mortality rate)	0.11	0.11	0.11	0.11
Tier	3	3	3	3
Projected total (age 2+) biomass (t)	170,300	181,000	189,868	199,223
Female spawning biomass (t)	60,300	62,200	63,718	67,390
Projected				
B _{100%}	127,000*	127,000*	126,954	126,954
B _{40%}	50,800*	50,800*	50,782	50,782
B _{35%}	44,400*	44,400*	44,434	44,434
F _{OFL}	0.078	0.078	0.075	0.075
maxF _{ABC}	0.066	0.066	0.064	0.064
F _{ABC}	0.066	0.066	0.064	0.064
OFL (t)	10,360	10,700	11,347	12,022
maxABC (t)	8,800	9,200	9,737	10,317
ABC (t)	8,800	9,200	9,737	10,317
	As determined last year for:		As determined this year for:	
Status	2015	2016	2016	2017
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No

Survey trends

- Shelf survey updated
 - 13% decline in 2017



Catch-biomass ratios



- 2007 – Kamchatka specifically identified in catch
- Prior to 2007 – Kamchatka assumed to be 10% of combined arrowtooth and Kamchatka catch