

# 2017-2018 Harvest Specifications and Management Measures

# Road Map

1. Progress to Date
2. Harvest Specifications Alternatives and Associated Biological Impacts
3. Housekeeping and Informational Matters
4. Results of the Integrated Alternatives
5. Summary of the Economic Analysis
6. Status of the New Management Measures Analysis

# Progress to Date

- ✓ Complete harvest specifications and integrated alternatives analyses were submitted for internal review on schedule
- ✓ Internal review completed, document updated accordingly, ready for April briefing book publication
- ✓ January 1 implementation is within reach

<b>Species</b>	<b>No Action</b>	<b>Alternative 1</b>	<b>Alternative 2</b>
Canary	P* 0.45, ACL = ABC 1,714 mt, 1,588 mt	50% of No Action 857 mt, 763 mt	33% of No Action ACL 566 mt, 504 mt
Darkblotched	Rebuilding Plan 406 mt, 419 mt	P* 0.45, ACL = ABC 641 mt, 653 mt	
Widow	Constant Catch 2,000 mt, 2,000 mt	P* 0.45, ACL = ABC 13,508 mt, 12,655 mt	
Black CA	P* 0.45, ACL = ABC 334 mt, 332 mt	Constant catch, above B40 ten years 319 mt, 319 mt	
CA Scorpionfish	P* 0.45, ACL = ABC 264 mt, 261 mt ACT 111 mt	150 mt constant catch ACT 111 mt	

# Highlighted Harvest Specifications

## Substantive Issues Affecting the Integrated Alternatives Analysis:

- Canary RF ACL alternatives
- Darkblotched RF ACL alternatives
- Widow RF ACL alternatives

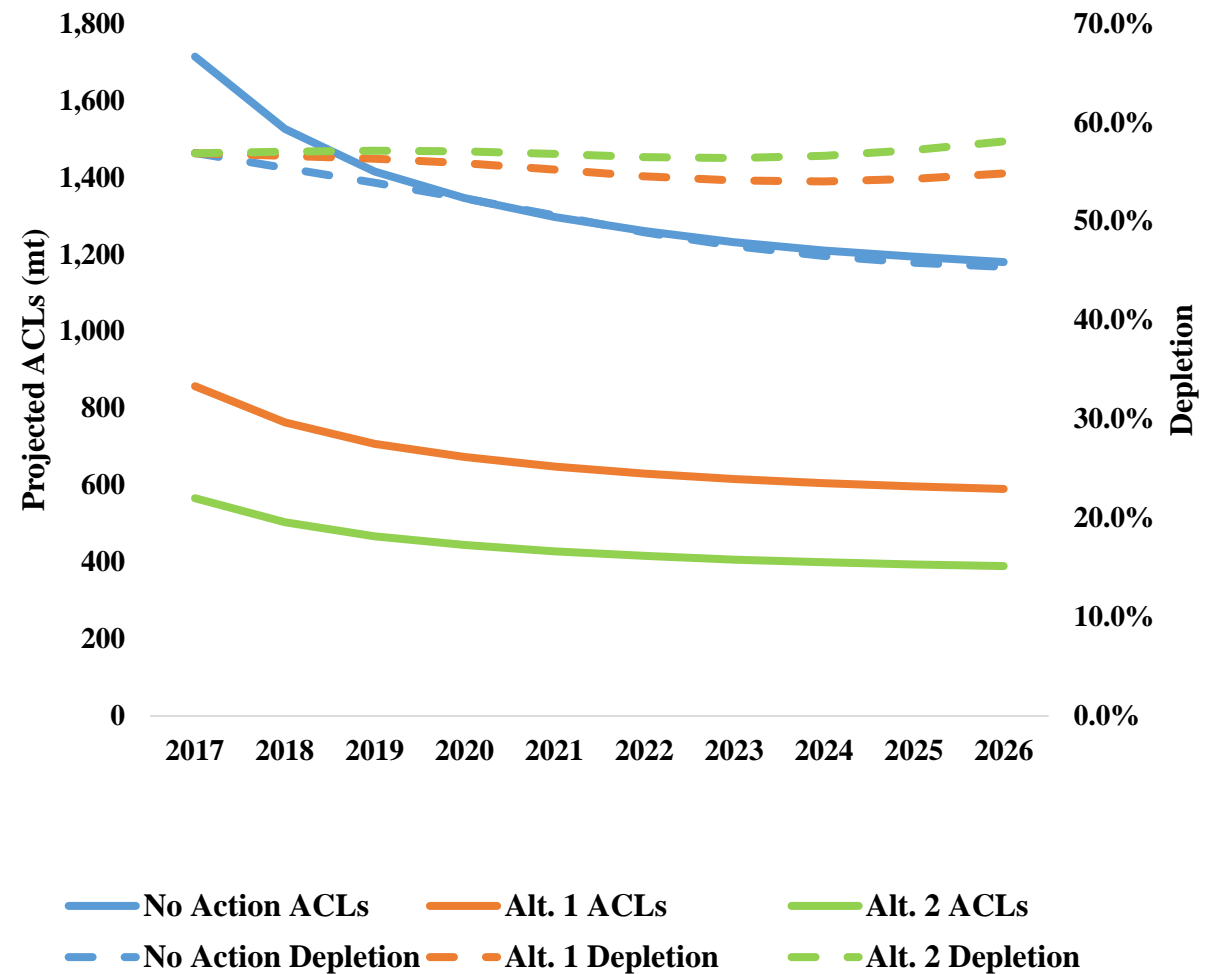
## Informational/Housekeeping Issues:

- CA Black RF alternatives
- Deacon Rockfish
- Sablefish ACLs
- Blackgill RF ACLs

# Canary Rockfish

## Under the Base Case Model (Most Likely)

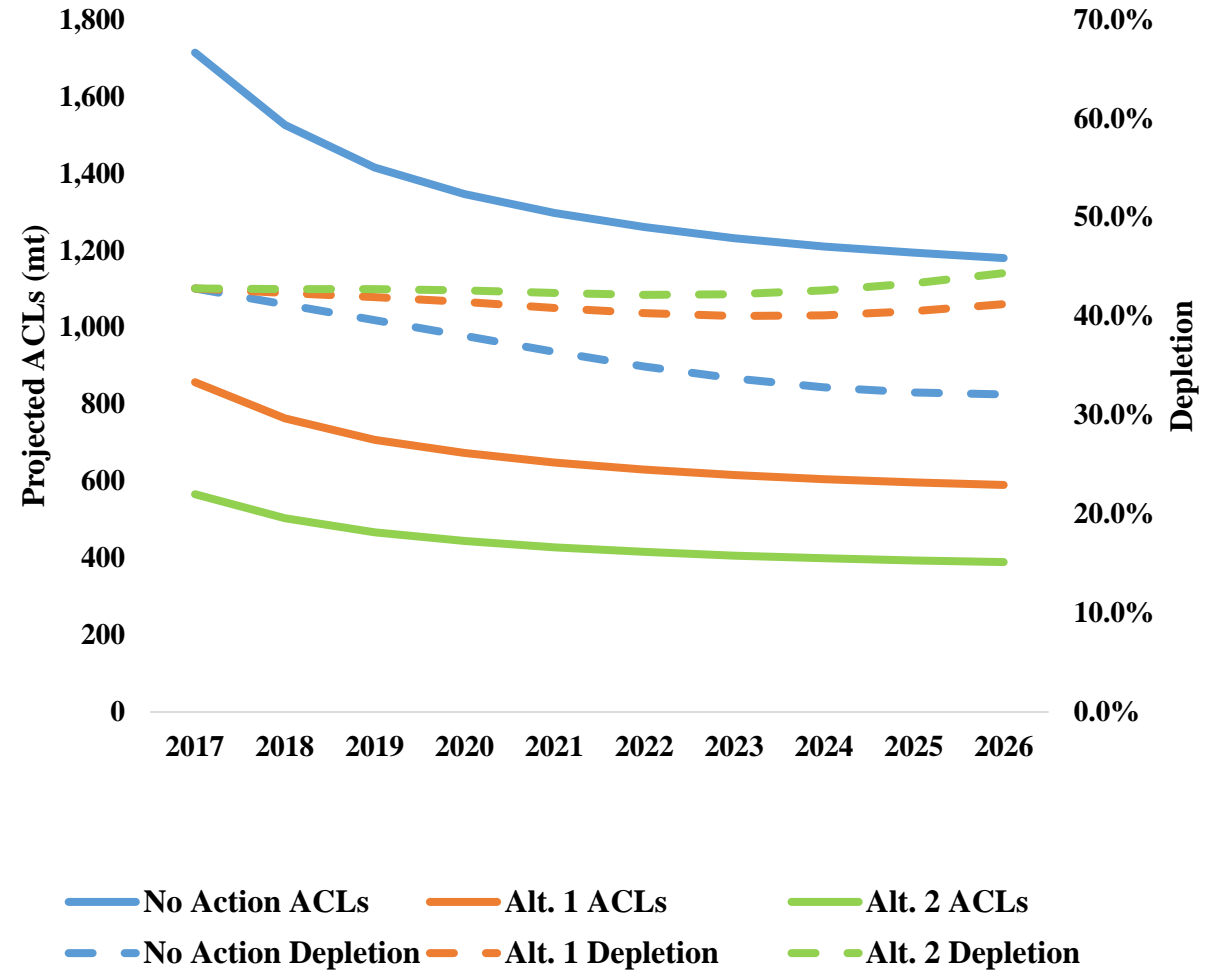
- Canary is rebuilt which means the focus is to achieve OY rather than rationalize every amount of available yield as was the case during rebuilding
- However, there is unestimated assessment uncertainty associated with fixing steepness and natural mortality, as well as a new geospatial trawl survey GLMM index
- Three ACL alts.:
  - No Action: ACL = ABC ( $P^* = 0.45$ );  
2017 ACL = 1,714 mt
  - Alt. 1: ACL = 50% of No Action ACL;  
2017 ACL = 857 mt
  - Alt. 2: ACL = 33% of No Action ACL;  
2017 ACL = 566 mt
- 2026 depletion under the base model varies from 45.4% (No Action) to 58.1% (Alt. 2)
- 10-yr average ACL varies from 1,337 mt (No Action) to 441 mt (Alt. 2)



# Canary Rockfish

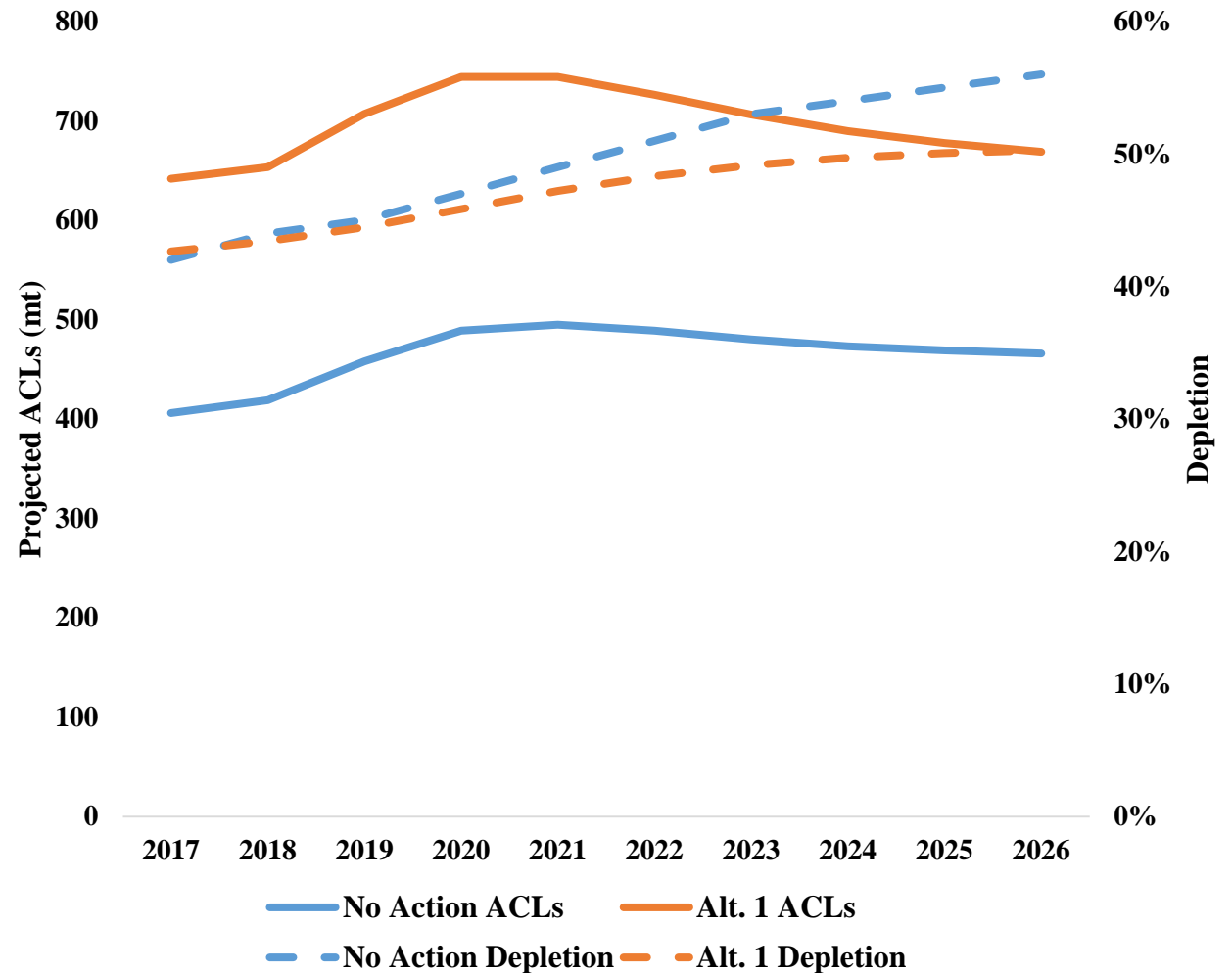
## Under the Low State of Nature Model (Less Likely)

- Projections under the low state of nature were analyzed to address concerns with assessment uncertainty
- While less likely than the base case model in the 2015 assessment, the low state of nature model projects depletion under a lower value of steepness ( $h=0.6$ )
- 2026 depletion under the low state of nature model varies from 32.1% (No Action) to 44.3% (Alt. 2)



# Darkblotched Rockfish

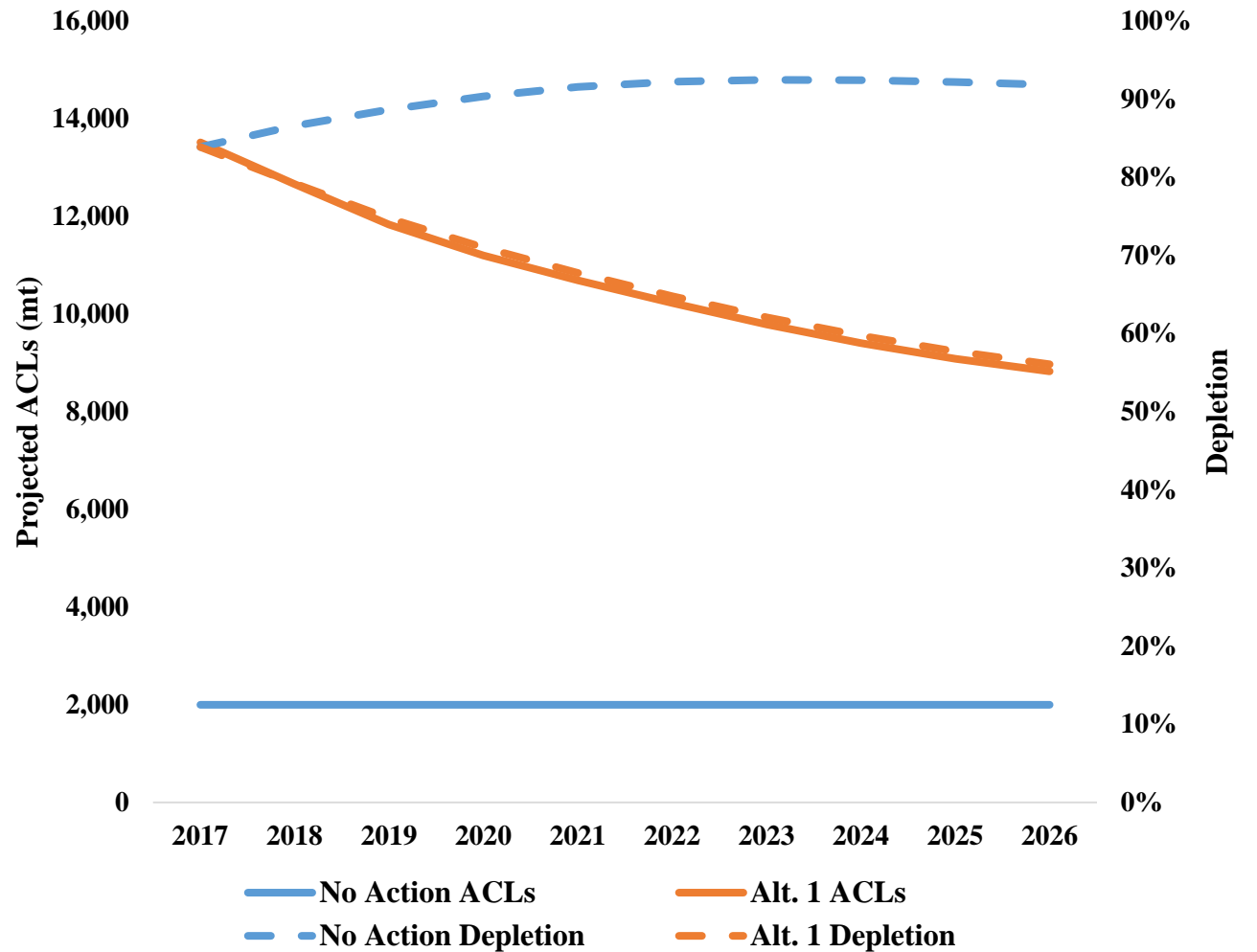
- Two ACL alts.:
  - No Action: ACL based on SPR = 64.9%; 2017 ACL = 406 mt
  - Alt. 1: ACL = ABC ( $P^* = 0.45$ ); 2017 ACL = 642 mt
- Both alternatives with equal rebuilding probabilities since stock is projected to be rebuilt this year
- 10-yr average ACL varies from 464 mt (No Action) to 696 mt (Alt. 1)
- 2026 depletion varies from 56% (No Action) to 50% (Alt. 1)





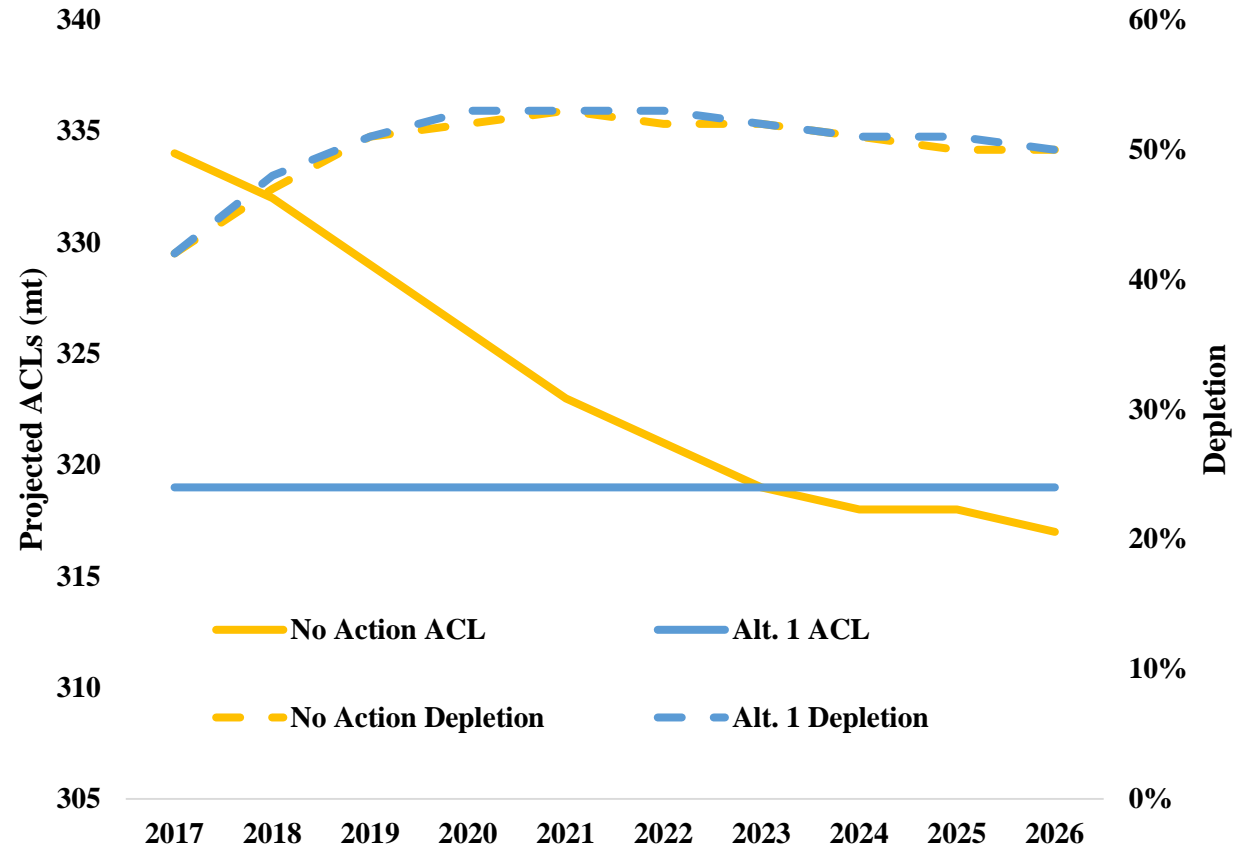
# Widow Rockfish

- Two ACL alts.:
  - No Action: ACL = 2,000 mt;  
2017 ACL = 2,000 mt
  - Alt. 1: ACL = ABC ( $P^* = 0.45$ );  
2017 ACL = 13,508 mt
- 10-yr average ACL varies from 2,000 mt (No Action) to 10,720 mt (Alt. 1)
- 2026 depletion varies from 92% (No Action) to 56% (Alt. 1)



# Black Rockfish off California

- 2 ACL alts:
  - No Action: ACL = ABC ( $P^* = 0.45$ ); 2017 ACL = 334 mt
  - Alt. 1: Constant 10-yr ACL = 319 mt
- Both alts. have same starting and ending depletions (42% in 2017 and 50% in 2026)
- No Action ACLs higher until 2023; Alt. 1 ACLs higher thereafter
- 10-yr average ACLs:
  - No Action: 324 mt
  - Alt. 1: 319 mt



# Deacon Rockfish

- FMP provision: “The category “rockfish” includes all genera and species of the family *Scorpaenidae*, even if not listed, that occur in the Washington, Oregon, and California area. The *Scorpaenidae* genera are *Sebastes*, *Scorpaena*, *Sebastolobus*, and *Scorpaenodes*.”
- Deacon rockfish (*Sebastes diaconus*) recently described and adopted as a new *Sebastes* species by AFS
- Frable et al. (2015) describe how catch histories of deacon and blue rockfish are conflated
- Deacon rockfish have always been managed in the Nearshore Rockfish complexes with a harvest contribution blended with that of blue rockfish
- Recommend regulations be updated to include deacon rockfish with blue rockfish when specifying harvest specifications and management measures (i.e., housekeeping only – no new species or management measures needed)

# Sablefish ACLs

- ACLs provided in November did not have the 40-10 adjustment
- 2017 and 2018 ACLs are:
  - N of 36°: 6,041 mt and 6,299 mt, respectively
  - S of 36°: 1,075 mt and 1,120 mt, respectively
- Correct ACLs used in the integrated alternatives analysis

# Blackgill Rockfish ACLs

- The 2017 OFL/ABC/ACL for blackgill rockfish south of 40°10' N latitude contribute to the southern Slope Rockfish complex specifications
- Blackgill will be managed with stock-specific harvest specifications beginning in 2018
- Consistent with the action taken by the Council in November

# Integrated Alternatives

- Combine the harvest specifications alternatives with routine adjustments to management measures to keep catch within the ACLs
- Routine measures are those previously analyzed and available in regulation. For example RCA adjustments, bag limits, trip limits, size limits, etc.
- Additional impact analysis was completed for some routine management measures that haven't been recently implemented. E.g., canary rockfish fixed gear trip limits and recreational bag limits

# Trawl Overview - Results

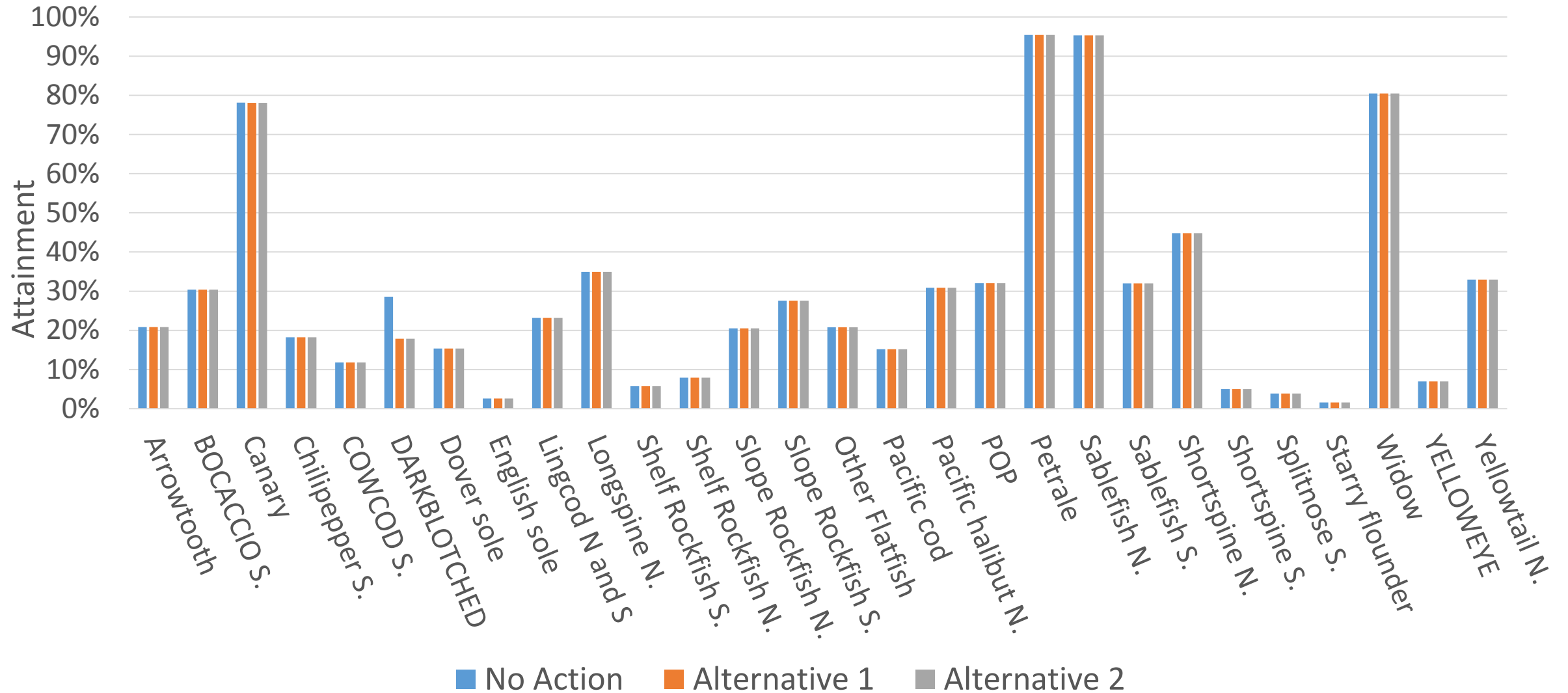
- Model projections, supplemental analyses, and qualitative information are needed to inform final action on the canary, darkblotched, and widow ACLs
- Shorebased IFQ
  - Projected attainment is similar to 2011-2015
  - Higher landings of canary and widow rockfish are expected, given the higher ACLs
  - Higher canary and widow rockfish ACLs are expected to provide greater access to shelf species, like yellowtail rockfish, Dover sole, and other flatfish
  - Flexibility in areas fished
- At-sea Sectors
  - Low probability of exceeding the canary, darkblotched, POP, and widow allocations
  - Cost of avoidance is high
  - If an allocation is exceeded, the fishery would be closed
  - Increased allocations would provide greater flexibility in the areas fished

# Shorebased IFQ and At-Sea Analysis

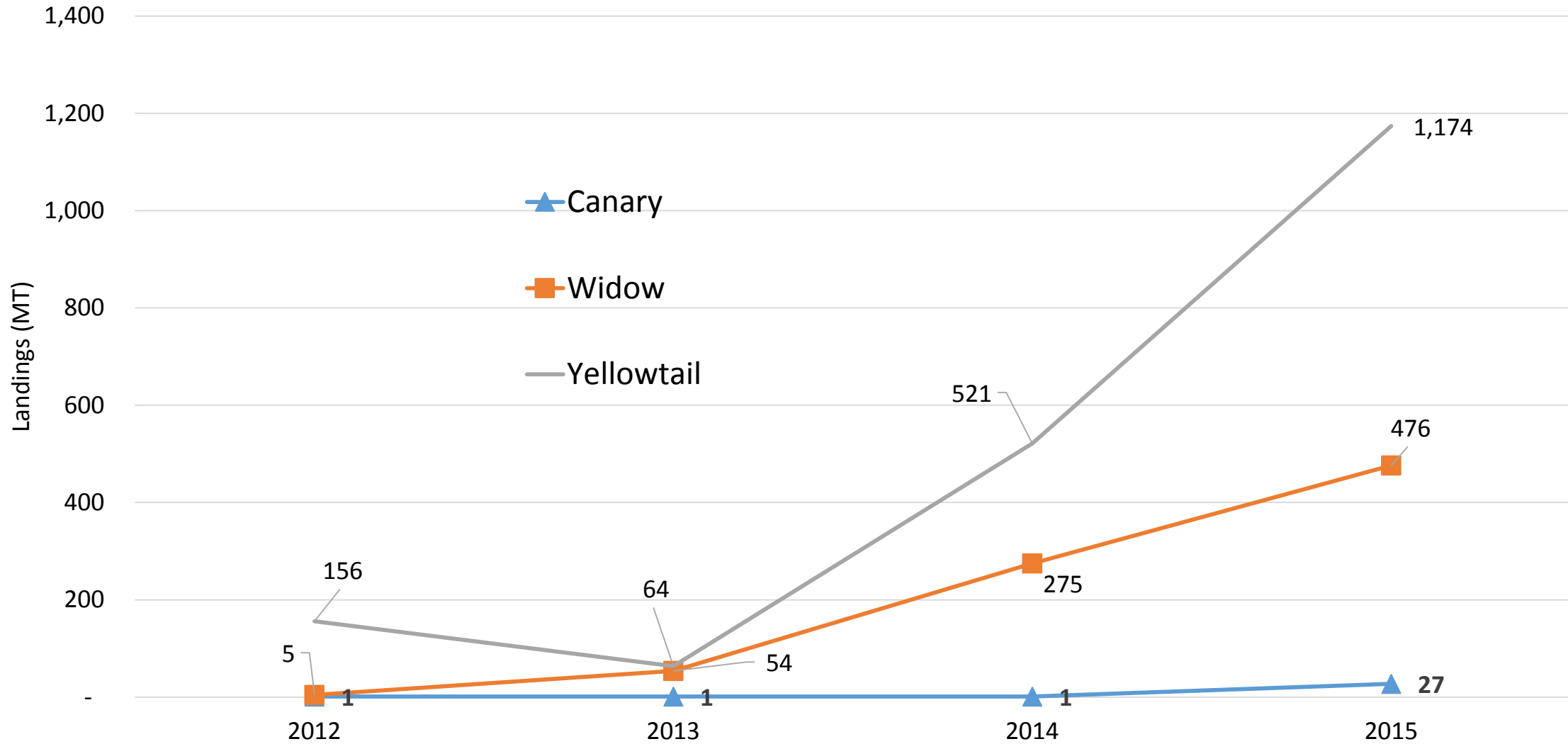
- Allocations calculated using the proposed ACLs, which vary by alternative only for canary, darkblotched, and widow
- 2015 Pacific whiting TAC and allocations used as a proxy
- Amendment 21 allocations for darkblotched, POP, and widow
- Two-year allocation for canary
  - Based on the September 2015 scorecard, per Council guidance in November
  - Allocation percentage or absolute value can be modified in April
- 2016 Trawl RCA structure would apply under all alternatives for the shorebased IFQ program



# Shorebased IFQ Results - Attainment



# Shorebased IFQ Landings from Midwater Rockfish Trawls

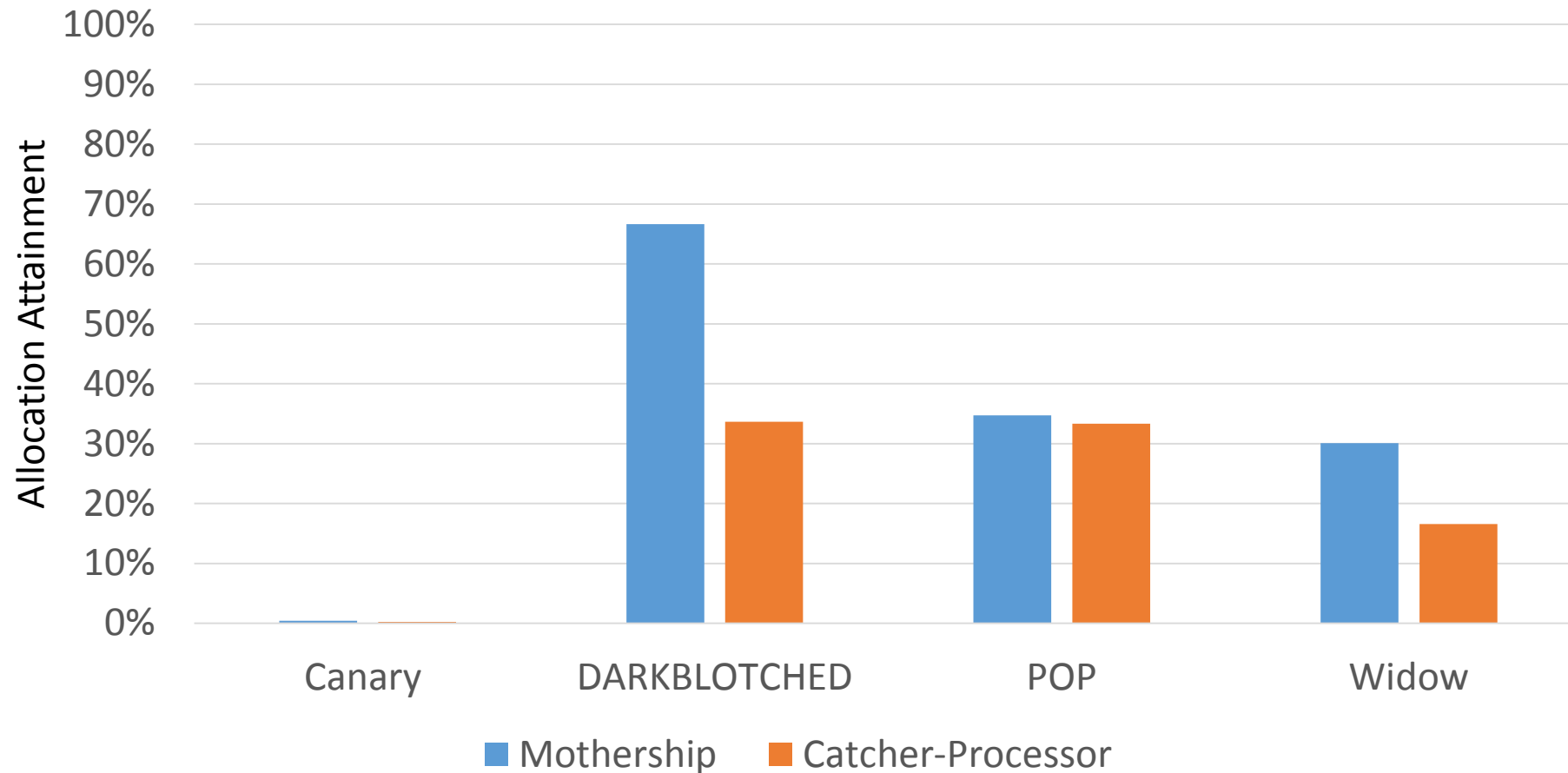


Data retrieved from PacFIN March 2016, Dahl Sector 4 filtered on midwater gear

BFMG March 2016

# At-Sea Sectors – Projected bycatch

1. Bycatch rate approach: Average historical bycatch rate from 2011-2014, positively weighted for more recent years



# At-Sea Results (cont.)- Bootstrap Approach

- Simulated seasons for the at-sea fleet based on historical individual haul data from 2000-2015
- Intended to provide an assessment of risk to the Council on whether the allocation alternatives will ensure that the fleets can prosecute all of their whiting
- A season was considered “closed” once the whiting TAC was achieved or the other species allocations were attained or exceeded.

# Bootstrap Results Overview and Interpretation

- These simulation results are based on the assumption that fleets will behave similarly as they have in the last 15 years; however, this has been at the expense of the fleets having to consistently move areas in order to avoid all of the constraining species (and salmon)
- Many factors to consider with future of fishery: salmon consultation, changes to RCAs, movement of whiting, rebuilding species

# At-Sea Allocations Under ACL Alternatives

Species	No Action		Alt 1		Alt 2	
	MS	CP	MS	CP	MS	CP
Darkblotched	7.8	11	12.6	17.8	12.6	17.8
POP	7.2	10.2	7.2	10.2	7.2	10.2
Widow	120	170	290.5	411.5	290.5	411.5
Canary	90.8	127.4	44.2	62	28.4	39.8

# Example: Catcher-Processors – No Action

Stock	CP All. (mt)	Percentage of Simulated Seasons									
		1%	5%	10%	25%	50%	75%	90%	95%	99%	99.99%
Whiting	90,673	20,699	35,393	53,388	89,201	90,673	90,673	90,673	90,673	90,673	90,673
DARKBLOTCHED	11	0.3	1.2	1.7	2.6	4.8	7.1	9.4	11	<b>12.1</b>	<b>13.6</b>
POP	10.2	0.1	0.2	0.3	1	4.6	8.1	<b>10.3</b>	<b>10.8</b>	<b>12.4</b>	<b>14.4</b>
Widow rockfish	170	3.5	5.7	8.4	14.1	30.5	67	97.2	119	<b>195.3</b>	<b>248.4</b>
Canary rockfish	127.4	0	0.1	0.1	0.2	0.4	0.6	1.1	2.1	3.8	7.3

# Bootstrap Results Overview and Interpretation

## Catcher Processor

Stock	No Action		Alt 1/Alt 2	
	Allocation	Risk of Exceeding	Allocation	Risk of Exceeding
Darkblotched	11	5%	17.8	<.1%
Widow	170	1-5%	411.5	<1%

## Mothership

Species	No Action		Alt 1/Alt 2	
	Allocation	Risk of Exceeding	Allocation	Risk of Exceeding
Darkblotched	7.8	10%	12.6	<1%
Widow	120	5%	290.5	--



# Bootstrap Results Overview and Interpretation

Sector	No Action	Alternative 1	Alternative 2
Catcher Processor	127.4	62	39.8
Mothership	90.8	44.2	28.4

- Canary allocations under all alternatives provide buffers for both fleets
- However, there may be shifts in fishing behavior as canary wouldn't be as constraining as it's been in previous years with very low allocations.
- Council may look at allocating to at-sea sectors an amount less than under the alternatives, but enough to cover high catch events multiple times

# Non-Trawl Results - Overview

- Higher canary ACLs under all three alternatives provide some increased opportunities, however the low yelloweye rockfish ACLs and associated allocations continue to limit opportunities
- Routine adjustments to management measures are the same under all alternatives
- Lower trip limits and bag limits, depending on the recreational season option, are proposed as a result of the lower black rockfish ACLs in California, compared to 2016
- Several trip limit increases are proposed

# Non-Trawl - Commercial

- 2016 non-trawl RCA structure is proposed under all alternatives
  - Non-Nearshore is projected to exceed their yelloweye share by 0.1 mt; however the non-trawl allocation is not projected to be attained
- Non-Nearshore would have the same trip limits for LE and OA as in 2016 under all three alternatives, except
  - Sablefish South of 36° N. lat. LE: Same limits or lower
  - Increases for
    - Canary rockfish
    - Sablefish North of 36° N. lat.
    - Yellowtail rockfish north of 40°10' N. lat.
    - Shelf rockfish from 40°10' N. lat. to 34°27' N. lat.
    - Blackgill rockfish south of 40°10' N. lat. in 2018
- Nearshore would have the same trip limits for LE and OA as in 2016 under all three alternatives, except
  - Higher California scorpionfish limits
  - Higher canary retention
  - Lower black rockfish limits from 42° N. lat. to 40°10'

# Non-Trawl - Washington Recreational

Same season structure as 2016, except

- Season Length Options
  - Year-round
  - Option 1: Prohibit bottom fishing from October 16 to March 14
- Sub-Bag Limit Options
  - 2016 Limits: 10 rockfish sub-bag limit, no canary
  - Option 1: 8 rockfish sub-bag limit, no canary
  - Option 2: 7 rockfish sub-bag limit, 1 of which can be canary
- Option to reduce the size of the lingcod closed area by modifying the southern boundary

# Non-Trawl - Oregon Recreational

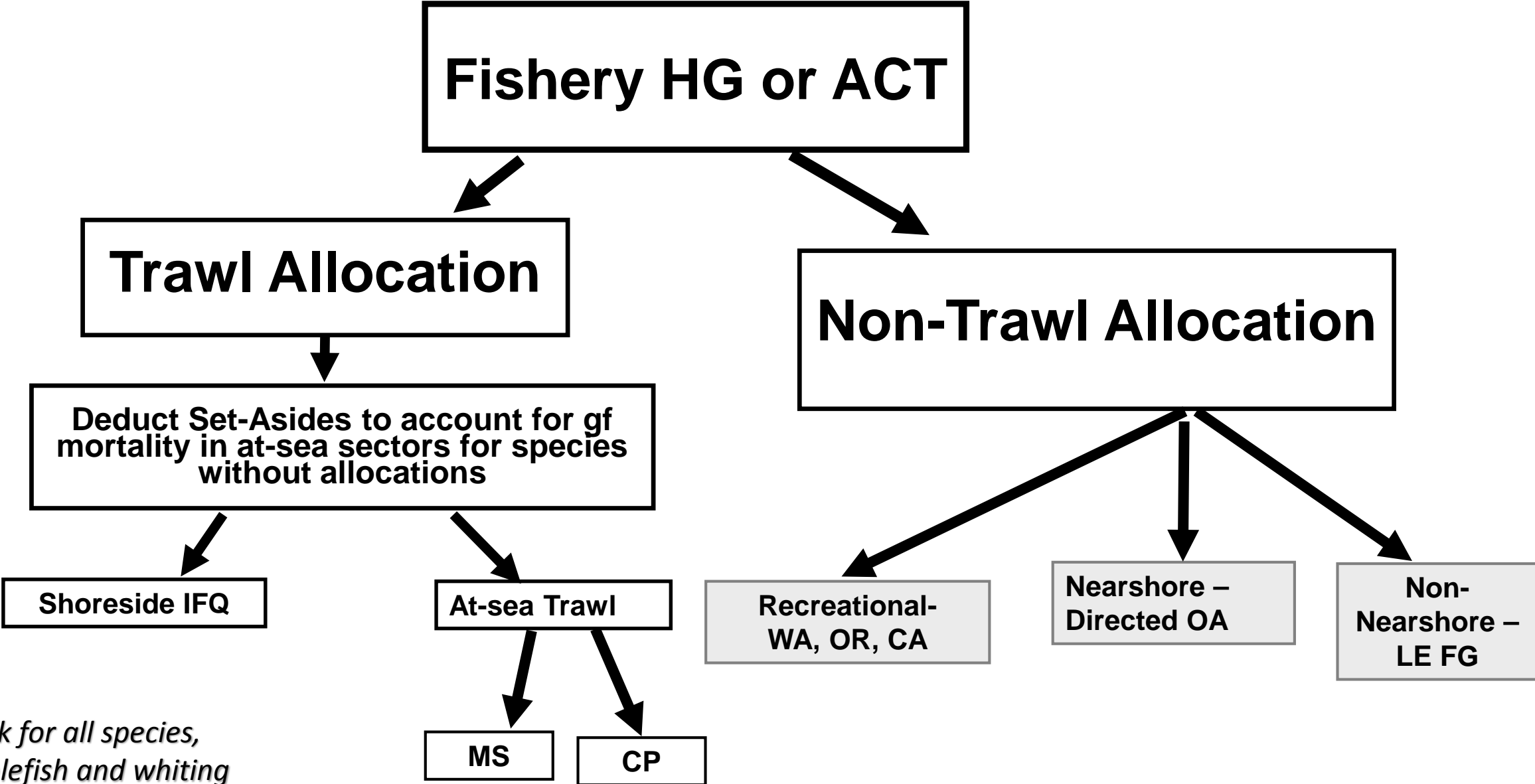
Same season structure as 2016, except

- Bag Limits Options
  - 2016 Limits: 10 marine fish bag limit, one of which can be canary
  - Option 1: 10 marine fish bag limit, no restrictions on canary
- The 10 inch kelp greenling length limit may be removed
- Stonewall Bank closure could be expanded, based on projected yelloweye mortality

# Non-Trawl - California Recreational

- Season Structure Options
  - Option 1: 2016 structure
  - Option 2: Longer seasons and fewer depth restrictions in the winter north of Point Arena
  - Option 3: Increases depth of fishing by 10 fm north of Point Conception
  - Option 4: Allows all depth, but only for 3 months
- Sub-bag Limits
  - Black rockfish: Option 4 maintains the 2016 limit of 5, all other options require reductions that range from 2-4
  - Lingcod: Reduction from 3 to 2
  - Bocaccio: Ranges from 3-10
  - Canary: Ranges from 1-5

# Canary Rockfish – Two-Year Allocations



*Framework for all species, except sablefish and whiting*

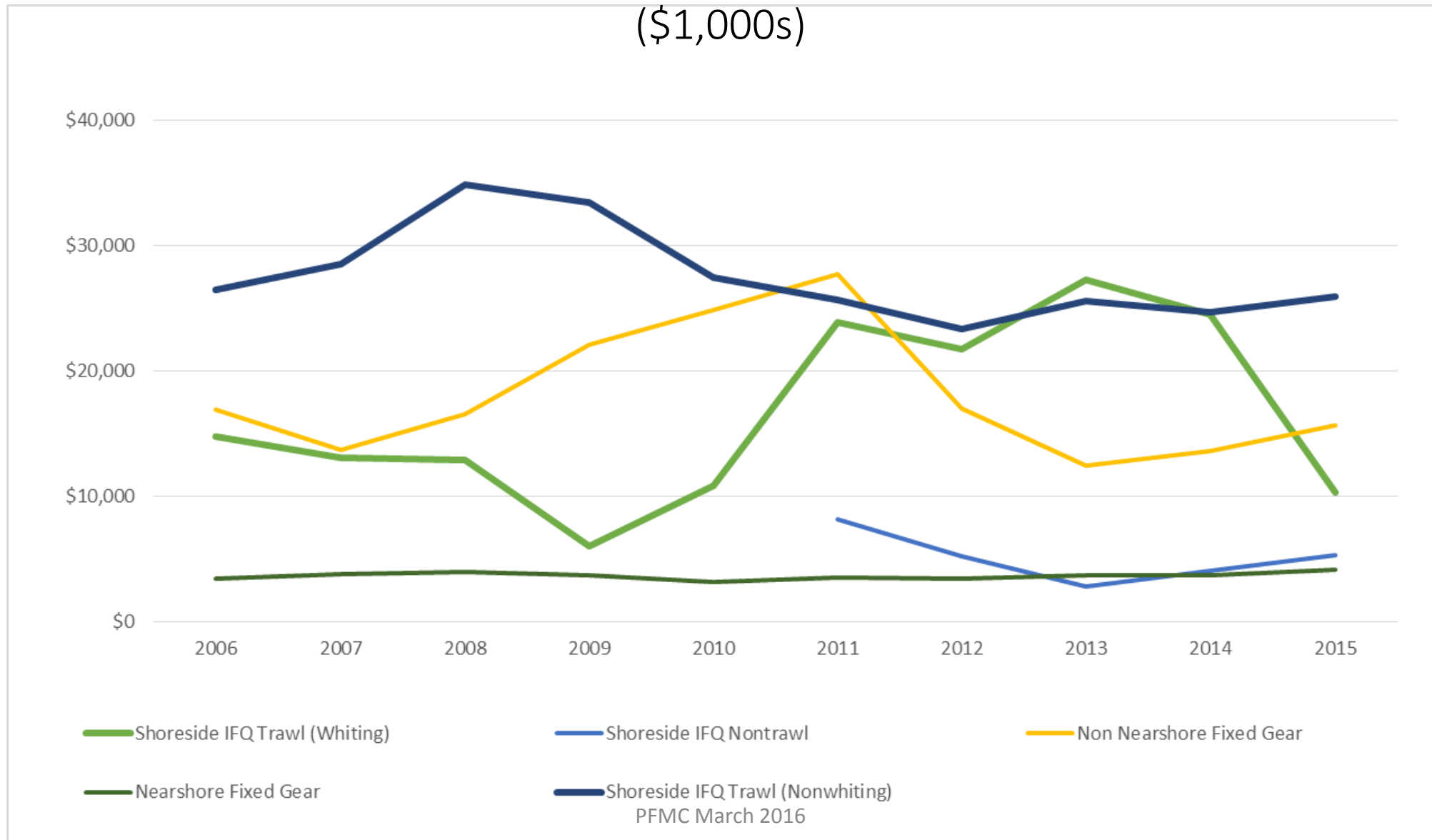
# Two-Year Canary Allocation

- Preliminary analyses use the September 2015 scorecard allocations
  - No sector is projected to attain their canary allocation, projected attainment ranges from 37 to 47% of the fishery HG
  - Model estimates are highly uncertain given that retention has been prohibited for nearly two decades
  - Shorebased IFQ sector is the only sector that reports varying harvest under the alternatives, all other sectors are the same as No Action
  - It is generally believed that the shorebased IFQ sector, given individual accountability, will have the greatest opportunity to increase access to shelf species
  - Opportunities in the non-trawl sectors continue to be limited by low yelloweye rockfish ACLs
  - One approach would be to buffer the projected at-sea and non-trawl sector impacts and allocate the remainder to the shorebased IFQ sector



# Economic Analysis

# Trends in Fishery Ex-vessel Revenue



# Average Annual Ex-vessel Revenue Pre- and Post-Trawl Rationalization

	Shoreside IFQ Trawl (Nonwhiting)	Shoreside IFQ Nontrawl	Non Nearshore Fixed Gear	Nearshore Fixed Gear
Annual Average Revenue 2006-2010	\$30,180	-	\$18,852	\$3,630
Annual Average Revenue 2011-2015	\$25,086 + \$5,106 = \$30,192		\$17,311	\$3,710

Inflation-adjusted (2015) ex-vessel revenue, \$1,000s

# Groundfish Ex-vessel Revenues Under the Baseline and Alternatives (\$millions)

	<i>Baseline</i>	No Action	Alternative 1	Alternative 2
Non-whiting Trawl+Non-trawl IFQ	30.0	39.2	42.7	42.6
Nearshore Fixed Gear	3.6	4.6	4.6	4.6
Non-nearshore Fixed Gear	17.1	20.8	20.8	20.8
<b>Total (incl. whiting)</b>	<b>72.3</b>	<b>78.7</b>	<b>85.3</b>	<b>85.2</b>

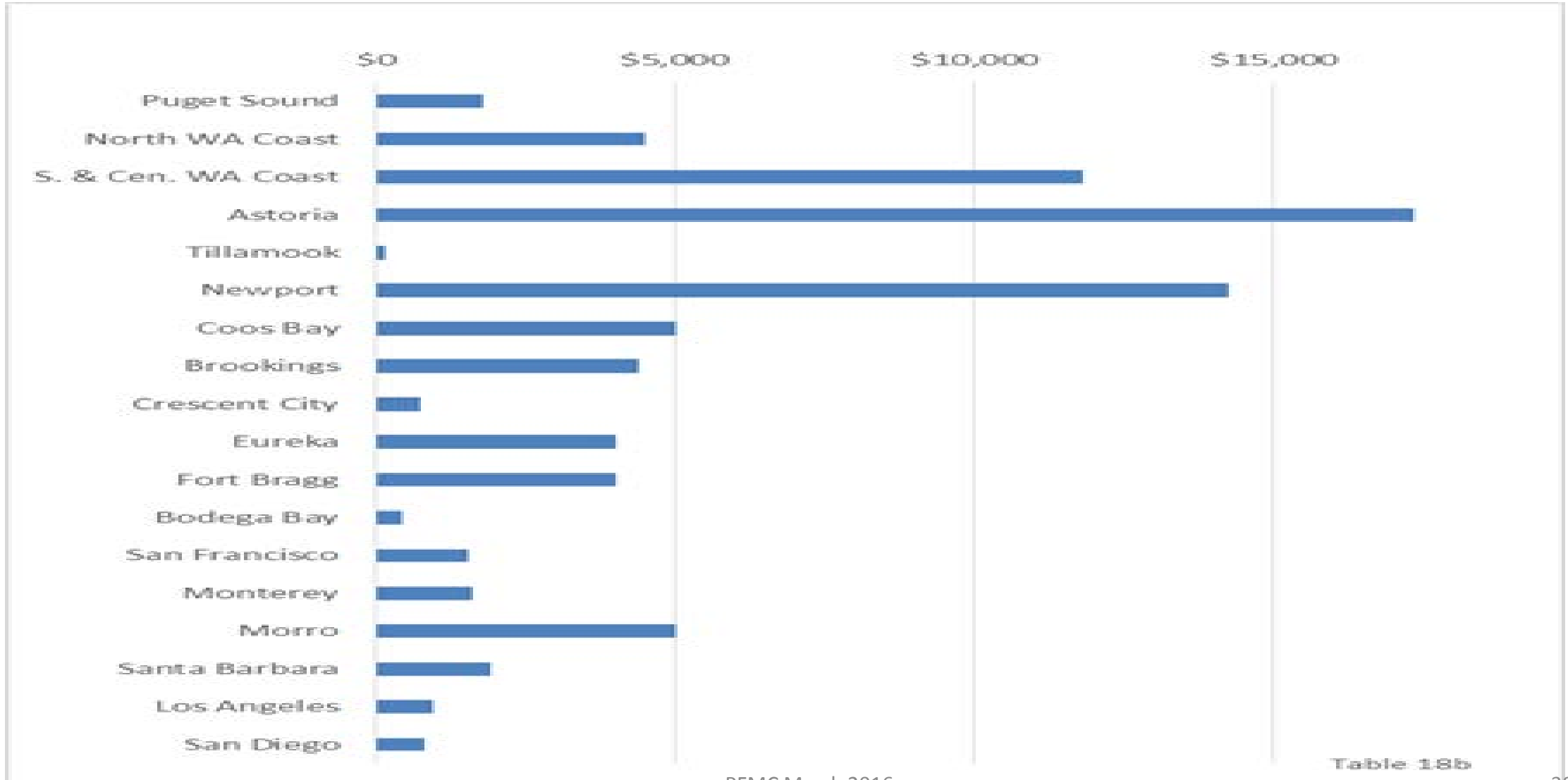
# Total Cost Net Revenue

(ex-vessel revenue net of variable costs and fixed costs) (\$ millions)

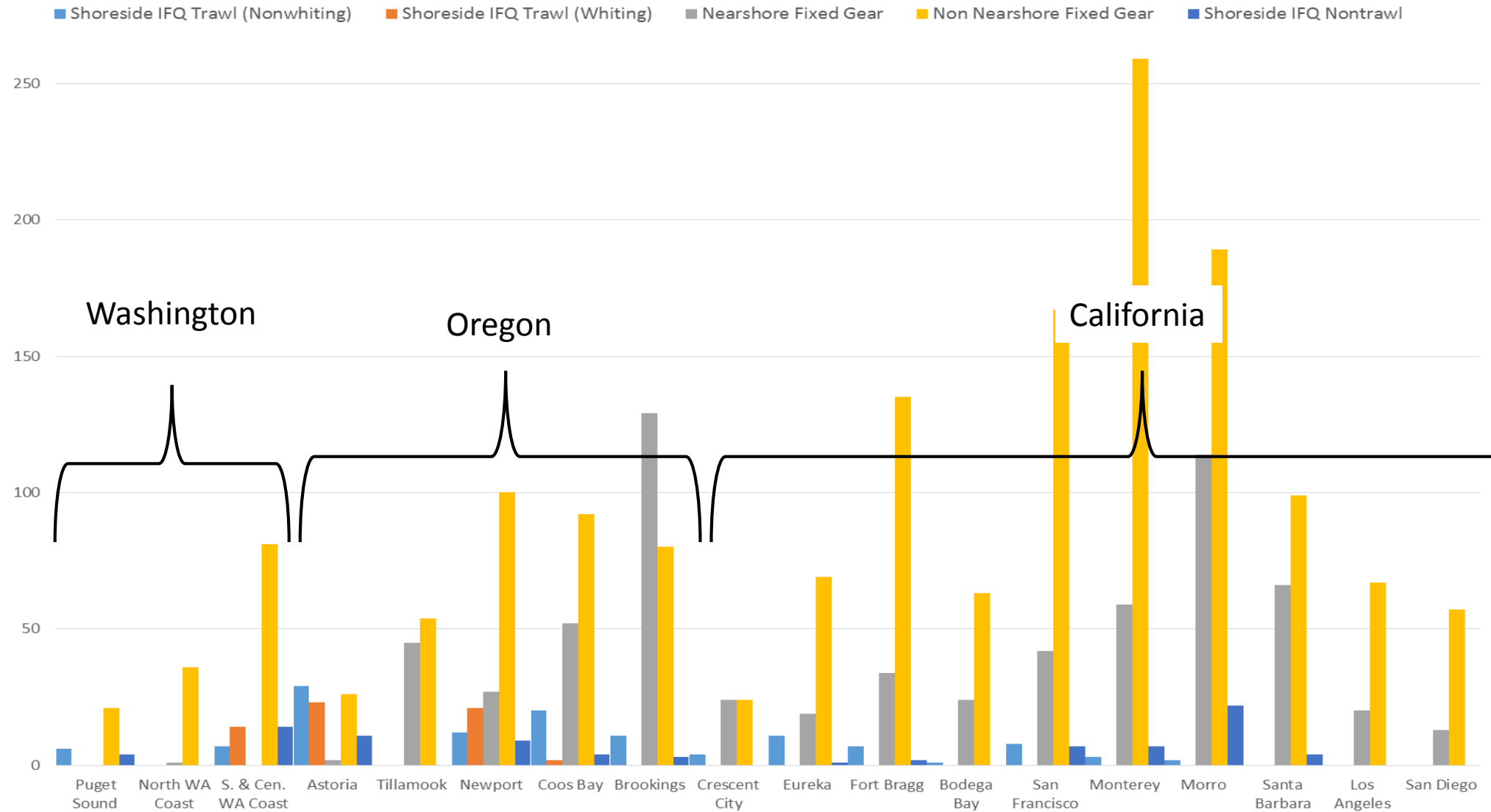
<b>Fishery</b>	<b>No Action</b>	<b>Alternative 1</b>	<b>Alternative 2</b>
IFQ Non-whiting Trawl	10.4	11.3	11.3
IFQ Non-whiting Fixed Gear	1.1	1.0	1.0
LE Fixed Gear	3.0	3.0	3.0
Open Access Nearshore	0.4	0.4	0.4
Open Access Nearshore	0.4	0.4	0.4

# Groundfish Revenue by Port Group

Groundfish ex-vessel revenue in current dollars (inflation adjusted), \$1,000s, by "IOPAC port groups", annual average 2010-2014



# Participation by Fishery Sector and Port



**Engagement** (groundfish ex-vessel revenue in a port as a percent of coastwide groundfish ex-vessel revenue), and

**Dependence** (groundfish ex-vessel revenue in a port as percent of total ex-vessel revenue in the port).

(2012-2014 inflation-adjusted averages)

	Engagement	Dependence
Puget Sound	2%	21%
North Wa Coast	5%	35%
South And Central Wa Coast	14%	11%
<b>Washington</b>	<b>21%</b>	<b>14%</b>
Astoria	24%	41%
Tillamook	0%	5%
Newport	20%	31%
Coos Bay	5%	11%
Brookings	5%	22%
<b>Oregon</b>	<b>54%</b>	<b>27%</b>
Crescent City	1%	2%
Eureka	5%	14%
Fort Bragg	5%	23%
Bodega Bay	1%	4%
San Francisco	2%	3%
Monterey	2%	6%
Morro	6%	46%
Santa Barbara	3%	4%
Los Angeles	1%	2%
San Diego	1%	9%
<b>California</b>	<b>25%</b>	<b>8%</b>
<b>Coastwide</b>		<b>15%</b>



# Commercial Fishery Income Impacts

(\$millions)

<b>Community Groups</b>	<b>No Action</b>	<b>Alternative 1</b>	<b>Alternative 2</b>
Puget Sound	4.4	4.4	4.4
Washington Coast	13.4	14.4	14.4
Astoria-Tillamook	44.0	52.8	52.6
Newport	15.8	18.1	18.0
Coos Bay-Brookings	15.8	15.7	15.6
Crescent City-Eureka	9.3	9.3	9.2
Fort Bragg – Bodega Bay	8.8	8.8	8.7
San Francisco Area	2.3	2.3	2.3
SC – Mo – MB	6.3	6.3	6.1
SB – LA – SD	4.0	4.0	3.4
<b>Coastwide Total</b>	<b>124.0</b>	<b>136.0</b>	<b>134.7</b>

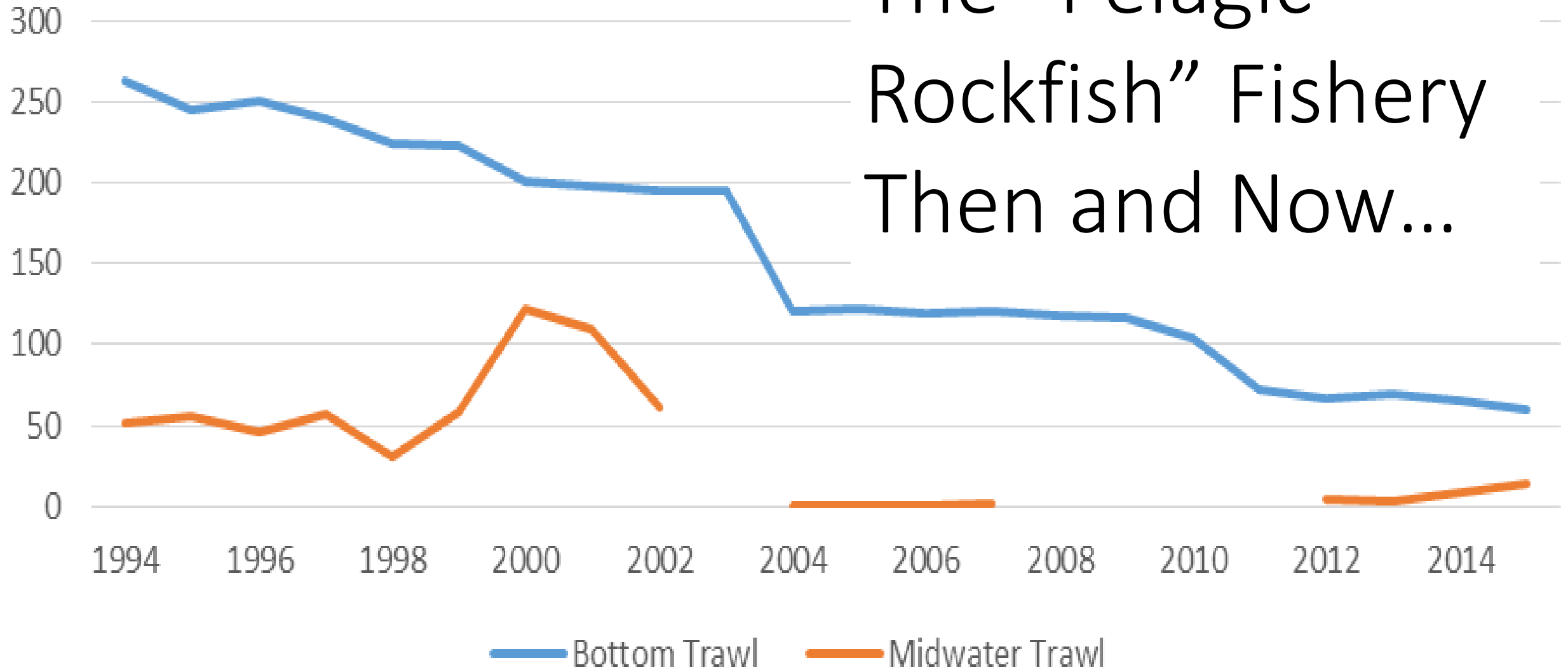
# Recreational Fishery Income Impacts

(\$millions)

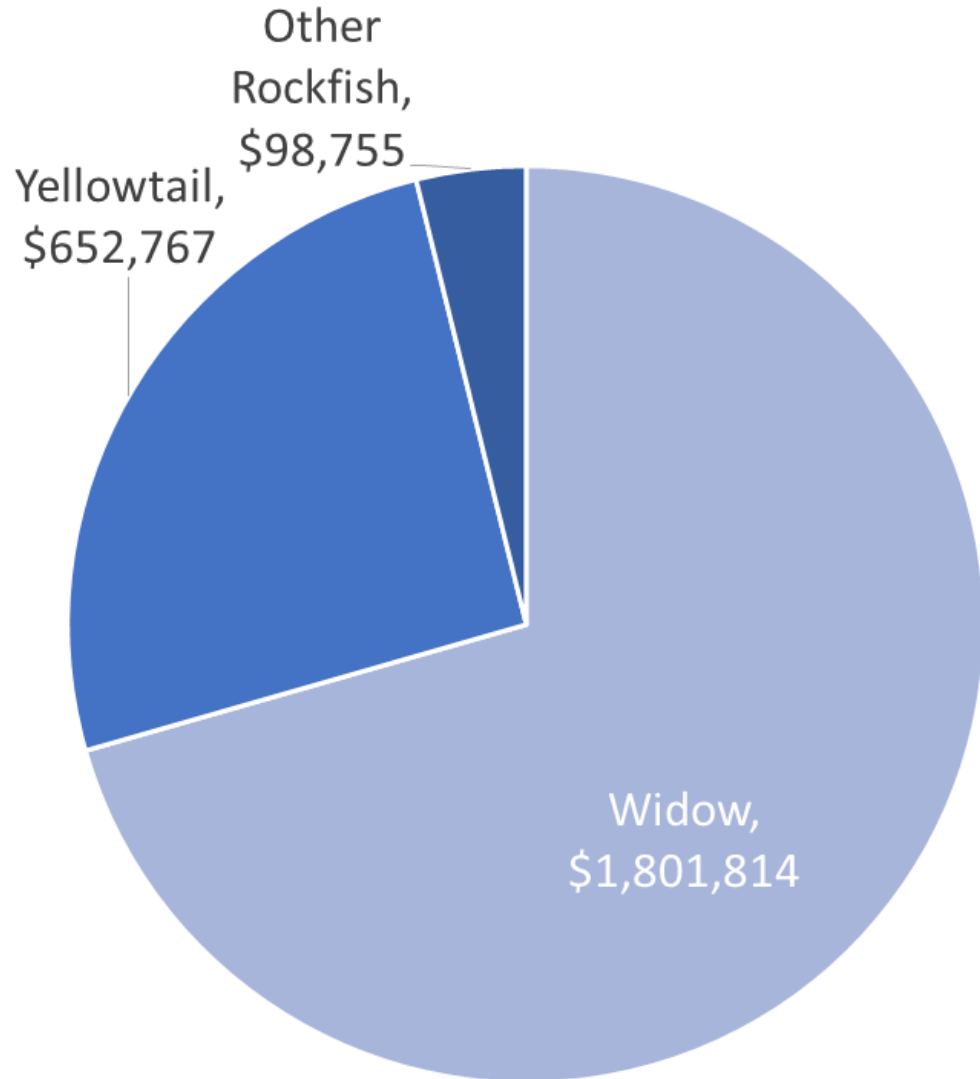
Community Groups	No Action	Alternative 1 (CA Ops 1 and 3)	Alternative 2 (CA Ops 1 and 3)	Alternatives 1 and 2 (CA Op 2)	Alternatives 1 and 2 (CA Op 4)	Alternative 1 (CA Ops 1 and 3) + WA Groundfish Season Alt
Puget Sound	-	-	-	-	-	-
Washington Coast	5.8	5.8	5.8	5.8	5.8	5.8
Astoria-Tillamook	1.5	1.5	1.5	1.5	1.5	1.5
Newport	6.8	6.8	6.8	6.8	6.8	6.8
Coos Bay-Brookings	2.8	2.8	2.8	2.8	2.8	2.8
Crescent City-Eureka	3.5	3.5	3.5	4.4	2.6	3.5
Fort Bragg - Bodega Bay	2.9	2.9	2.9	3.0	2.4	2.9
San Francisco Area	20.9	20.9	20.9	20.9	10.7	20.9
SC – Mo – MB*	20.0	20.0	20.0	20.0	10.8	20.0
SB – LA – SD*	171.6	171.6	171.6	171.6	75.8	171.6
<b>Coastwide Total</b>	<b>235.9</b>	<b>235.9</b>	<b>235.9</b>	<b>236.8</b>	<b>119.3</b>	<b>235.8</b>

Nonwhiting trawl participation by gear type

# The “Pelagic Rockfish” Fishery Then and Now...



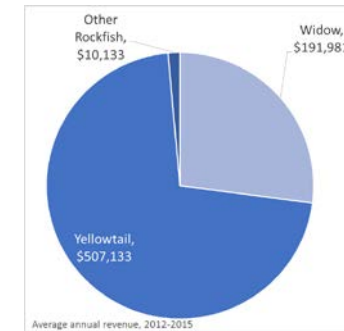
# Then...



Average annual revenue, 1994-2002

# ...and Now

Average annual revenue, 2011-2015



Widow: \$191,981  
Yellowtail: \$507,133  
Other Rockfish: \$10,133

# ...And Projected (Average 2017-2018)

- No Action: \$1.8 million
- Alternative 1: \$6.9 million
- Alternative 2: \$6.9 million

# Progress to Date – New Management Measures

- Council guidance in November was that new management measure analyses were a secondary priority, to be completed after the harvest specifications and integrated alternatives
- Draft of new management measures submitted on time and currently under review
  - Lower priority resulted in the review occurring later than in past cycles
  - In April, we will report on the work necessary to refine the analysis, results of the NEPA scoping, and any schedule implications

# New Management Measures

- Big skate FMP classification from ecosystem component to “in the fishery”
- Manage starry flounder in the Other Flatfish complex –
  - Amendment 21 trawl/non-trawl allocations: Starry flounder 50/50; Other Flatfish 90/10
- Trawl Sector
  - Allow transfer of shorebased QP for canary, darkblotched, POP, and widow to the MS sector
- California Commercial and Recreational
  - New inseason process outside a Council meeting
- California Rec:
  - Allow petrale sole to be retained, along with species in the Other Flatfish complex, at any depth during the seasonal depth closures
  - Nine new overfished species hotspot closures
- Oregon Rec: Allow flatfish retention at any depth during the seasonal depth closure

# Questions?