EASTERN BERING SEA POLLOCK ASSESSMENT PREVIEW

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Eastern Bering Sea pollock fishery and assessment

**Catch (kt)**

![Graph showing pollock catch from 1992 to 2014](chart.png)
Seasonal and area catch patterns
Bering Sea pollock

[Graph showing seasonal and area catch patterns for Bering Sea pollock from 1992 to 2014, with data points for each year and the legend indicating B season SE, B season NW, and A season.]
Seasonal and area catch patterns
Bering Sea pollock

Graph showing the seasonal and area catch patterns of Bering Sea pollock from 1992 to 2014. The graph indicates the percentage of catch in different areas: B season SE, B season NW, and A season. The data fluctuates over the years, with peaks and troughs visible in each category.
Catch of pollock in non-pollock fisheries

- **Others**
- **Other flatfish**
- **Flathead sole**
- **Rock sole**
- **Yellowfin sole**
- **Pacific cod**

Fishery target:
- Others
- Other flatfish
- Flathead sole
- Rock sole
- Yellowfin sole
- Pacific cod
Catch in numbers—by sex

- Males A season
- Females A season
- Males total
- Females total


Catch (numbers) in Billions
Pollock roe production

Roe per ton of pollock caught
Summer fishing distributions

2011
Pollock catch
1 thou. tons reported
Jun 10 - Jun 10, 2011

2012
Pollock catch
3 thou. tons reported
Jun 10 - Jun 10, 2014

2013
Pollock catch
4 thou. tons reported
Jun 10 - Jun 10, 2013

2014
Pollock catch
1 thou. tons reported
Jun 10 - Jun 10, 2012
Pollock sizes in catch

Shore-based sector by week (2014)
Pollock sizes in catch

Off-shore by week (2014)
Fishery age composition
Bottom-trawl survey
Environmental conditions in Bering Sea
Eastern Bering Sea shelf temperatures

Average temperature (°C)

Year

Courtesy Bob Lauth AFSC
2014 Bottom trawl survey surface temperatures

2014

Bottom temperature (°C)

-1
>-1 - 0
>0 - 1
>1 - 2
>2 - 3
>3 - 4
>4 - 5
>5 - 6
>6

Courtesy Bob Lauth AFSC
Pollock distribution relative to temperature

Average 1982-2013

16 coldest years 16 warmest years

(Kotwicki & Lauth 2013)
Pollock biomass trend

Survey biomass estimate (thousands of t)

Year

2013 pollock survey—4.6 million t
2014 pollock survey—7.4 million t
Bottom trawl survey numbers-at-age
Bottom Trawl Survey Abundance at age... by cohort

Log-scale

age
Biennial mid-water survey
Acoustic survey estimates

Mid-water acoustic survey estimate
Smaller pollock
Pollock > 34cm

2014 Mid-water survey

Courtesy Taina Honkalehto, AFSC
Survey comparisons 2014

Mid-water survey

Bottom survey

Summer EIT survey 2014

Bottom trawl survey 2014
Survey comparisons 2012

Mid-water survey

Bottom survey
E. Bering Sea Mid-water Surveys
Other index data

“Acoustic vessels of opportunity” (AVO)

New data added every other year

Timed with off-year of dedicated pollock survey
Biological considerations

- Growth variability

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Evaluation of changes in growth

Cohort mean anomaly

Anomaly

Survey data
Fishery data
Year-effect

Year-effect mean anomaly

- **Survey**
- **Fishery**

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Summary on growth patterns

- More work needed
- Spatial pattern at young ages may be key
  - Year effects low relative to cohort effects
Weight-at-age update

![Graph showing weight-at-age update with different lines representing 2013 estimated in 2013, 2013 updated in 2014, and 2014 projected.]
Effect of new data
New data in 2014

Fishery 2012

Bottom-trawl survey 2012

AT Survey 2012

Fishery 2013

Bottom-trawl survey 2013

No new data

Bottom-trawl survey 2014

AT Survey 2014

Age
New data in 2014

Fishery 2012
Bottom-trawl survey 2012
AT Survey 2012

Fishery 2013
Bottom-trawl survey 2013

2013 fishery data

Bottom-trawl survey 2014
AT Survey 2014
New data in 2014

Fishery 2012
Bottom-trawl survey 2012
AT Survey 2012

Fishery 2013
Bottom-trawl survey 2013

+ Bottom-trawl data

Bottom-trawl survey 2014
AT Survey 2014

Age
New data in 2014

- Fishery 2012
- Bottom-trawl survey 2012
- AT Survey 2012

- Fishery 2013
- Bottom-trawl survey 2013

- Model 0.3
- All new data

- Bottom-trawl survey 2014
- AT Survey 2014
Fit to fishery

Age composition data

EBS pollock fishery age composition data (2014 Assessment)
Fit to bottom trawl numbers

Bottom Trawl Survey numbers (age 2+)

Predicted
Observed
Improved interpretations of bottom trawl survey data

Stan Kotwicki study

2014 spawning biomass distribution

2015 Female spawning biomass (thousands of t)

Model 1.0  Model 2.0
Impact of bottom trawl survey data

Remove influence of bottom trawl survey

2015 Female spawning biomass (thousands of t)
Retrospective patterns

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SSB retrospective (relative)
2013 model estimates of year class

Numbers at age 1 (millions)

Year class
2014 model estimates of year class

Numbers at age 1 (millions)

Year class

Catch recommendations

• 1.35 million t….
  • **Model** estimate of catch that stabilizes spawning biomass
  • Tier 1 harvest rate quite high
    • Maximum permissible 2015 ABC nearly at 2.9 million t
    • Clearly result in greater future variability
  • Recent 5-years at higher (~1.5 million t 2002-2006) were followed by lowest ABCs (810kt in 2009-2010)
    • Plausibly more related to warmer conditions that led too poor recruitment…but
    • 2012 year-class early indications good
  • Similar to long-term expected yield in Tier 3 (1.39 million t)
Issues

Salmon bycatch

• Sept 2014 petition to call for an emergency closure and cap of 15 thousand Chinook salmon
• Bycatch was lower than that and fishing was 98% complete
• EA/RIR Initial review draft completed
  • To be presented at the December 2014 Council meeting

Medium-term effect of warm conditions
Bogoslof Island

Catch (t)


Catch (t) values:
- 0
- 100,000
- 200,000
- 300,000
- 400,000

Map: Walleye pollock biomass (t) with locations marked in red.
Bogoslof Survey
Age composition
M=0.2
Bogoslof
Survey
Age composition
M estimated