



NOAA
FISHERIES

NOAA's Cost of Fish Stock Assessments

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Outline



- **Background**



- **Cost Considerations**



- **Stock Assessment Enterprise Budget**



- **Number of Assessments Completed**



- **Average Cost of Assessments**



- **Summary**

Summary



• NOAA's stock assessment activities are an end-to-end enterprise, with scientific data collected by way of many multi-species data collection programs in support of near 130 assessments annually



• Stock assessment programs provide many benefits beyond the ability to conduct assessments (e.g., fishery monitoring, protected species, EBFM, research, etc.)



• The greatest costs of NOAA's stock assessment enterprise are catch monitoring, then surveys, and then analysis/assessment.

Summary



• Funding is greatest in the Southeast, similar in Northeast, Alaska and West Coast, and lowest in Pacific Islands.



• Structural factors drive assessment production differences across regions.



• NOAA's average assessment costs are lowest in Alaska, then Northeast, then Southeast and West Coast, then highest in the Pacific Islands.

Stock Assessments are the Backbone of Sustainable Fisheries Management

Stock assessments provide a technical basis to fishery management that supports:

- Setting annual catch limits (ACLs)
- Achieving optimum yield while avoiding overfishing and ecosystem harm

Assessments use **Abundance, Biology and Catch** data to:

- Track & forecast impacts of fishing on fish stocks
- While accounting for ecosystem and environmental factors

NMFS Operates a Complex/Interrelated Stock Assessment Enterprise

NMFS assessment activities

- Constitute an enterprise dominated by ongoing multispecies data collection programs
- Culminate in prioritized assessments of component species

Funding for NMFS assessment & monitoring portfolio

- Near **\$215 million** in total
- **<4%** of commercial fishery ex-vessel value
(smaller fraction if recreational value is included)

NMFS Stock Assessment Enterprise Optimized at Regional Level

There is no average stock assessment

- The scientific needs and costs of operations vary greatly by region.
- Funds produce regional monitoring/assessment capabilities across many stocks

Greatest investments: catch monitoring and fishery-independent surveys

- These multi-species programs provide data for many stocks at the same time

Fisheries Data Collection Complexity

- Higher diversity of fishery sectors in a region complicates the assembly of comprehensive assessment input data

NMFS Stock Assessment Enterprise Optimized at Regional Level

Survey Coverage and Efficiency

- The assessment process is more efficient when a single type of fishery-independent survey can provide good coverage for a large number of stocks

Assessment Process Complexity

- Where assessment factors are most favorable, a streamlined and relatively standardized “update” assessment process is often used
- Where factors are unfavorable, more extensive investigations with multi-step public review processes have been used to increase trust in quality assurance (this requires more time and resources)

NMFS Stock Assessment Enterprise Optimized at Regional Level

Most Streamlined - Alaska

- Observer program provides unified source of catch and biological information

Most Diverse - Southeast

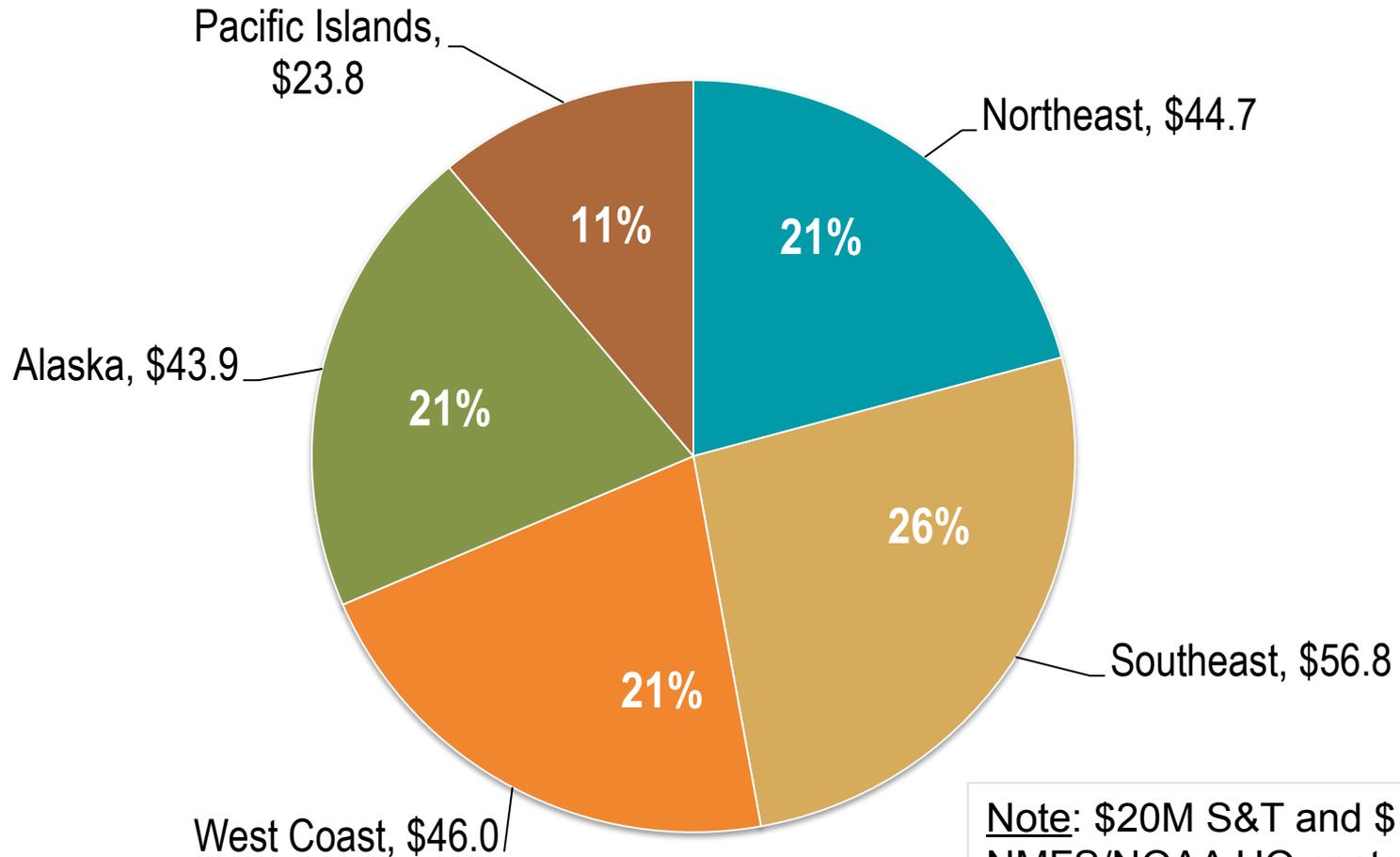
- Many commercial and recreational fishery sectors divided among state reporting programs

Stock Assessment Funding Pulled from Many Budget Lines

- Looking at entire stock assessment portfolio, the following budget lines contribute significantly to fish stock assessments:
 - Data collection, data processing & management, and research and modeling budget lines
 - Budget lines that support capacity building and collaborative programs with States and Industry
 - OMAO budget lines that support our primary surveys on NOAA ships

Stock Assessment Enterprise Budget

FY 2015 Obligations (\$ in millions)



Note: \$20M S&T and \$18.3M NMFS/NOAA HQ costs spread across regions

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All Stock Assessments are not Equal

Category	Description
First-time	Also considered a benchmark
Benchmark / Research	Major re-do; external reviewers; sets stage for future updates
Operational / Update (Full)	Add recent data (same types as previous); minimal model modifications; streamlined review
Update (Partial / Catch-Only)	Repeat previous assessment, updating recent annual catch data
Indicator Report / Analysis	Presentation of assessment data trends (not analyzed in a model)

Stock Assessment Production By Region

Num. Completed Assessments	NE	SE	West Coast (NW+SW)	AK	PI	Totals
FY2011	23	19	17	60	3	122
FY2012	31	20	7 ^b	69	6	133
FY2013	18	23	20	67	1	129
FY2014	28	21	10	67	5	131
FY2015	29	11	13	62	6 ^c	121
Average FY11-FY15	25.8	18.8	13.4	65	4.2	127.2

^a Exercise excludes Pacific Salmon and Pacific Halibut (PIHC) stocks. In the West Coast region, an additional 65 salmon assessments were completed in FY15, and an additional 5 salmon assessments in the Alaska region. These are led primarily by states and tribes, and supported principally by funding from external sources, therefore not included for this exercise.

^b High/low pattern due to synchrony with biannual groundfish management cycle

^c This includes two stocks that are jointly assessed by the Southwest and Pacific Islands Fisheries Science Centers (assessments support the U.S. West Coast Fisheries for Highly Migratory Species and Pacific Pelagic Fisheries of the Western Pacific Region Ecosystem.)

Assessment Data Complexity: AK vs. SE

Alaska: Bering Sea yellowfin sole

Fishery Data (Catch, Discards, Biology)

- 1 fishery to monitor
(bottom trawl)
- Data provided by 1 source
(N. Pacific Observer Program)

Abundance Data

- 1 fishery-independent abundance survey
(Bering Sea bottom trawl)

Southeast: Gulf of Mexico red snapper

Fishery Data (Catch, Discards, Biology)

- ~8 fisheries monitored
(Commercial Handline & Longline; Recr. Private Boat & Charter Boat, Recr. Headboat; Comm. & Recr. Closed Seasons - Discard only; Shrimp Bycatch - Discards only)
- Data separated by 2 regions
(east/west Gulf)
- Data provided by 4 separate sources
(States, TIP, MRIP, Observers)
- Linking logbook, catch, and biological data is complex but necessary for assessments

Abundance Data

- 6 fishery-independent abundance surveys
(SEAMAP Video, Plankton, Summer Trawl, Fall Trawl; NFMS bottom longline; Artificial Reef ROV)
- 3 fishery-dependent abundance surveys
(Headboat index, MRIP index, Handline index)

Average Cost of Fish Stock Assessments

AVERAGE COST OF ASSESSMENTS	REGIONAL					NATIONAL
	NE	SE	West Coast	AK	PI	
	\$1,732,565	\$3,021,567	\$3,432,553	\$675,025	\$5,656,992	\$1,691,335

- Lowest avg. in AK – favorable alignment of factors; highly efficient assessment updating process
- Highest avg. in PI – newest assessment program, large stock complexes (i.e. many stocks covered in small number of assessments); several international stocks (time-intensive and protracted due to international processes)

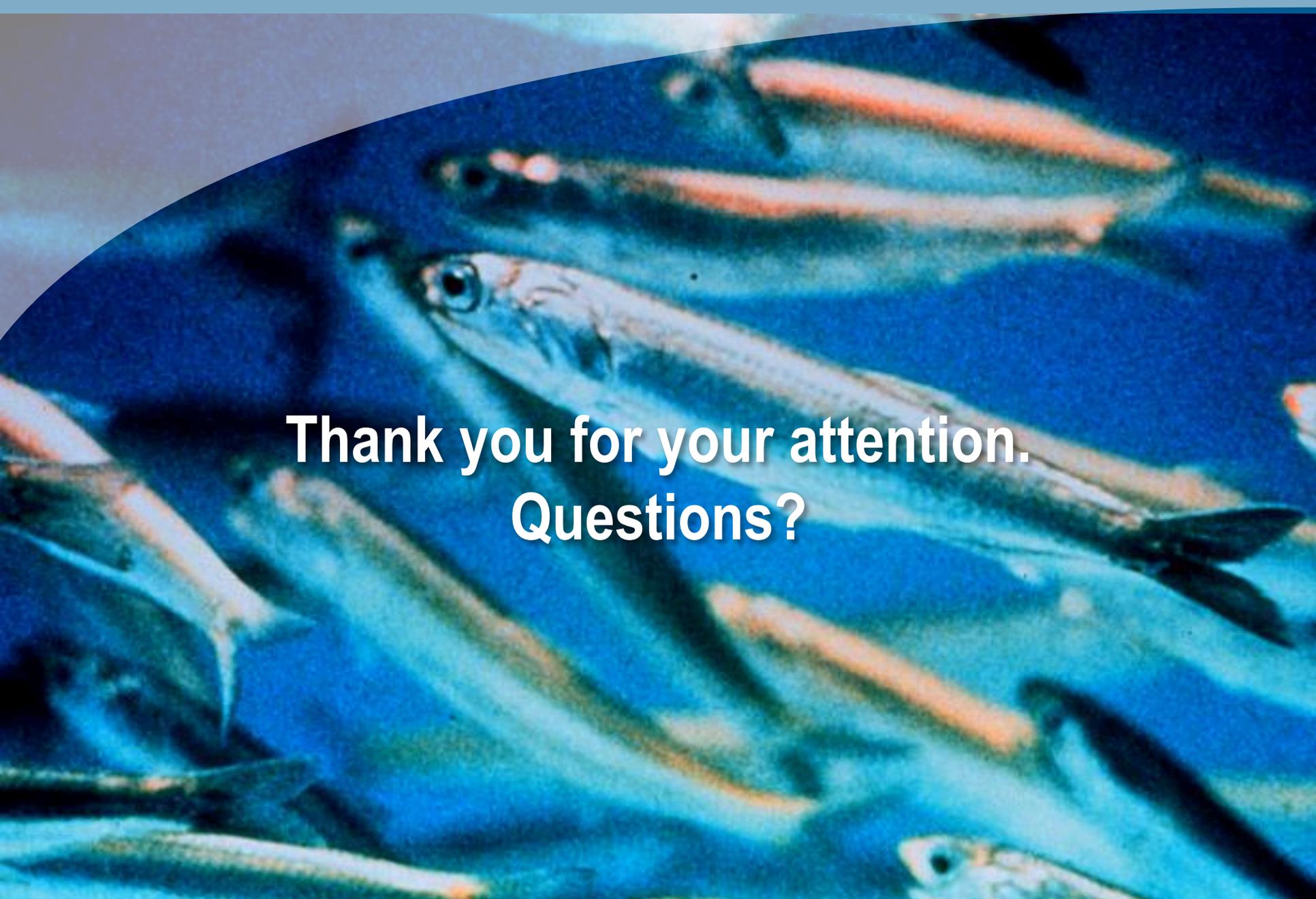
Regional Scale Management Results in Multiple Benefits

1. Catch monitoring is needed for accountability, but all costs are associated here with assessments.
2. Observers funded for fish stock assessment and monitoring purposes benefit protected species monitoring.
3. Fishery-independent assessment surveys provide substantial information for ecosystem monitoring and Ecosystem Based Fishery Management (EBFM).
4. Stock assessment data collection supports a wide range of research conducted by NOAA, academia, other agencies, etc.

Conclusion

- Constantly Evolving Scientific Enterprise:
 - Surveys/data collection
 - Regional prioritization
 - Decision processes (SEDAR)



A large school of salmon swimming in clear blue water. The fish are silvery with distinct orange and white stripes along their sides. They are moving in a coordinated pattern, filling most of the frame.

**Thank you for your attention.
Questions?**