Survey Planning and Vessel Operations

Office of Science & Technology

Stock Assessment Science Program Review

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NOAA FISHERIES

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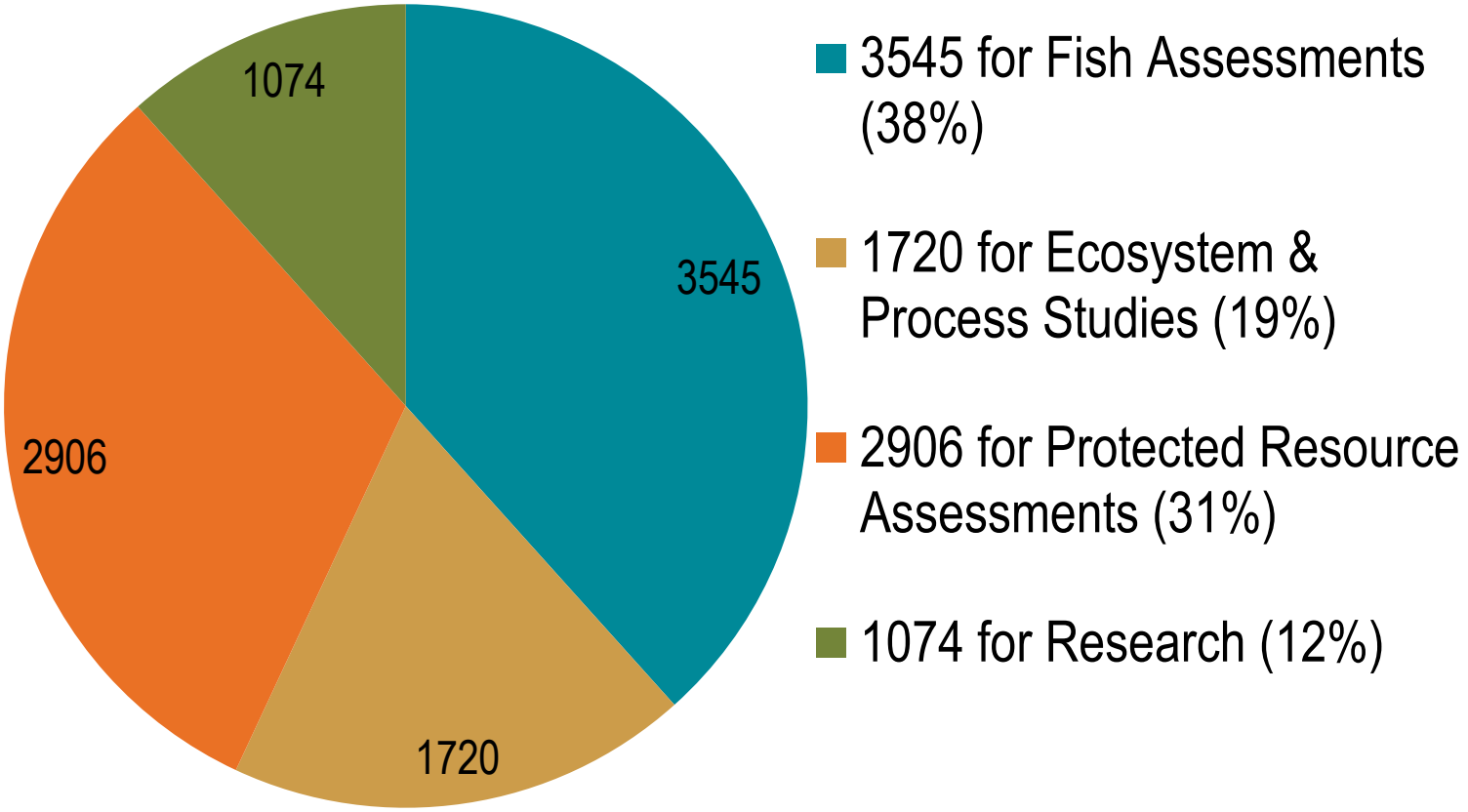
Outline

- NMFS at-sea Observing Requirements
- Platforms for at-sea Observing Requirements
- Overview of NOAA Ship Allocation Process
- Data Management Activities
- The Future NOAA Fleet
- Unmanned Systems

NMFS at-sea Observing Requirements

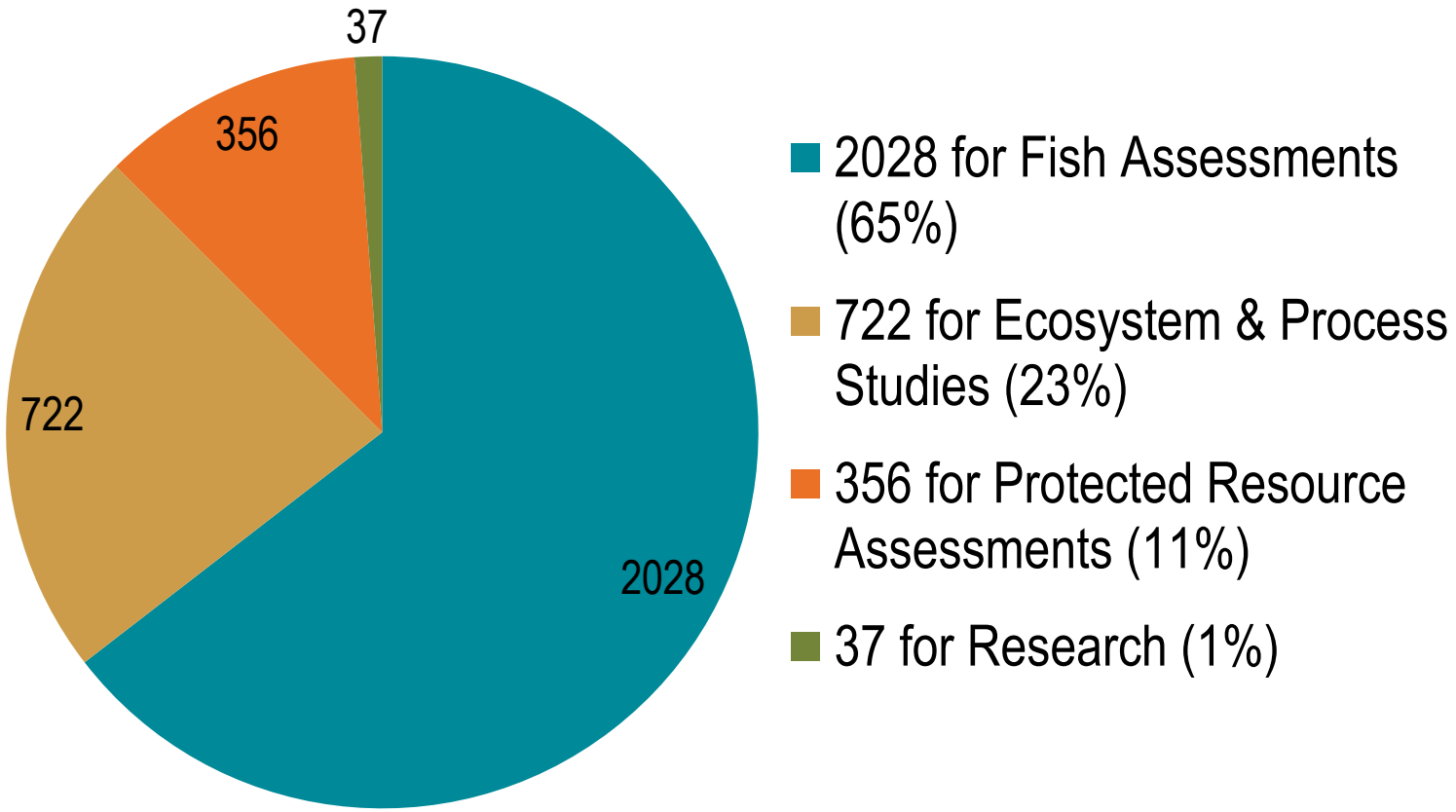
- 9245 Days at Sea (DAS) Validated by ST Staff



NMFS at-sea 2012 Observing Accomplishments

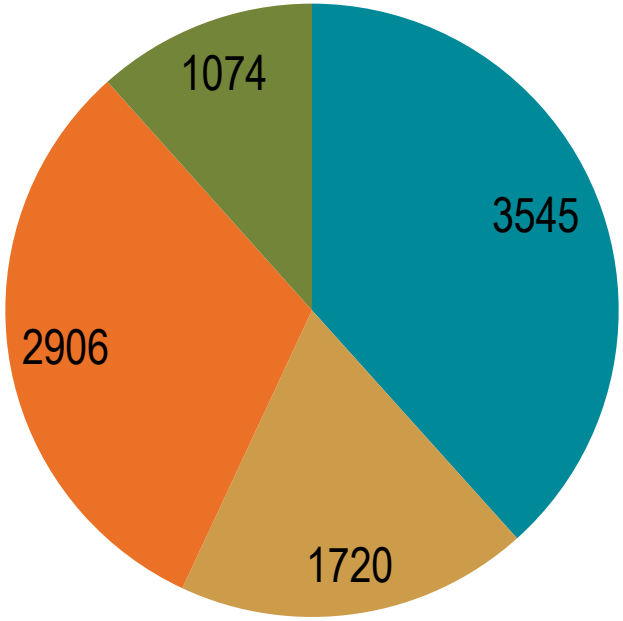
- 34% of Validated Requirement

3143 Total DAS; 1352 NOAA Fleet, 1791 Charter



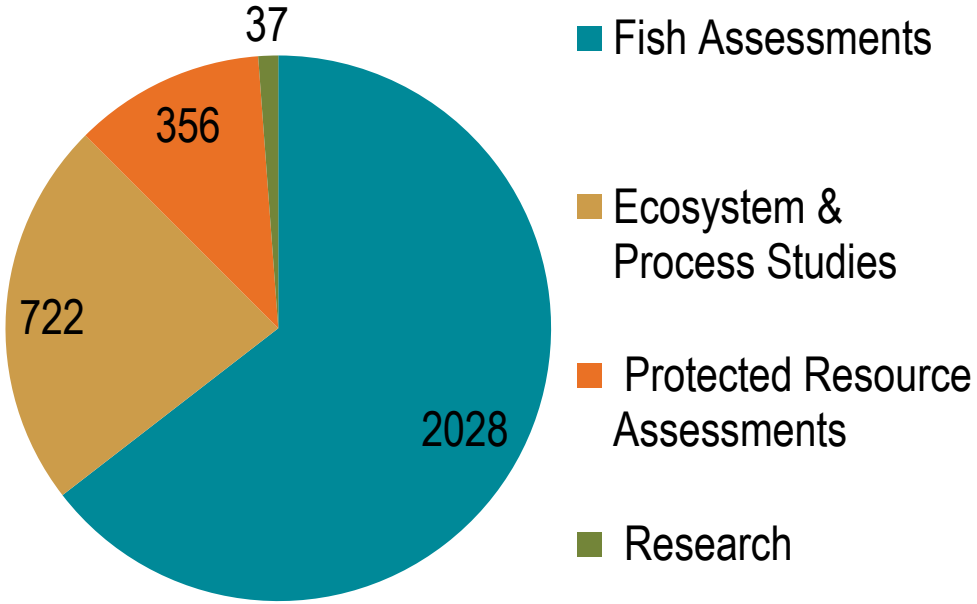
NMFS at-sea Observing

Requirement



9245 Validated DAS

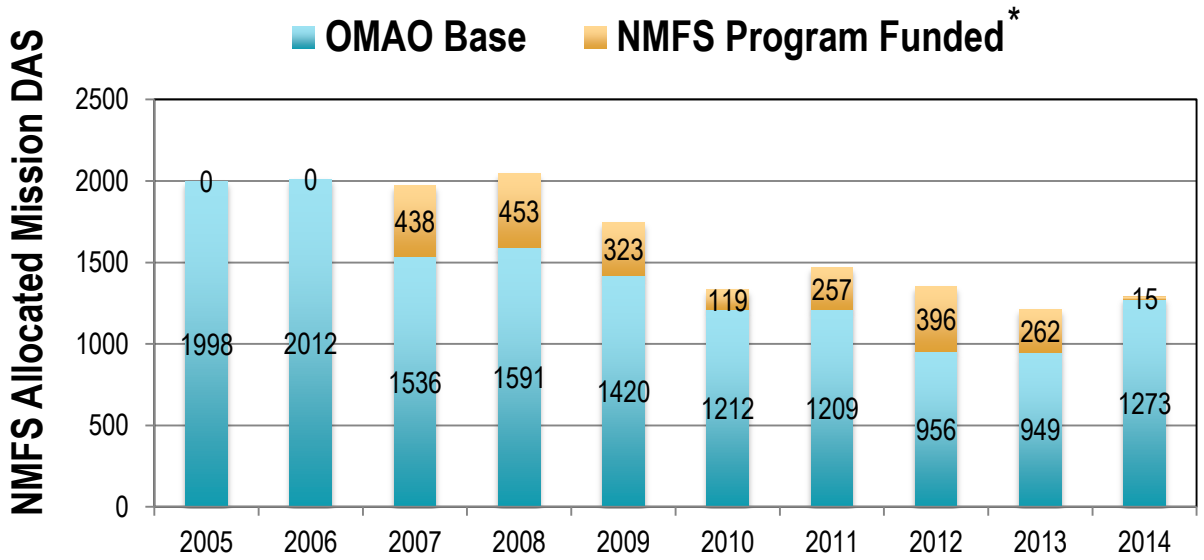
Accomplished in 2012



3143 DAS

NOAA FSV Days-At-Sea

- FY15 Pres. Budget FAP has 1568 NMFS DAS



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
NMFS $M's	0	0	$4.8	$5.4	$1.5	$1.6	$3.1*	$3.7	$2.9	$0.2
MF/DSJ Backfill	0	0	0	0	0	$1.8	$1.8	$2.1	$1.9	$3.3

* FY11 NMFS DAS/$ Bill cancelled due to NOAA Budget Supplemental to OMAO.

Platforms for At-Sea Observations

- FY12 - 1352 DAS on NOAA Ships
- 1791 DAS on chartered ships cost $16.8M

NOAA Fleet

- Larger vessels (more berths)
- Specialized instrumentation
- ICES quieting
- Consistency in vessel / sensors
- Less skilled at fishing

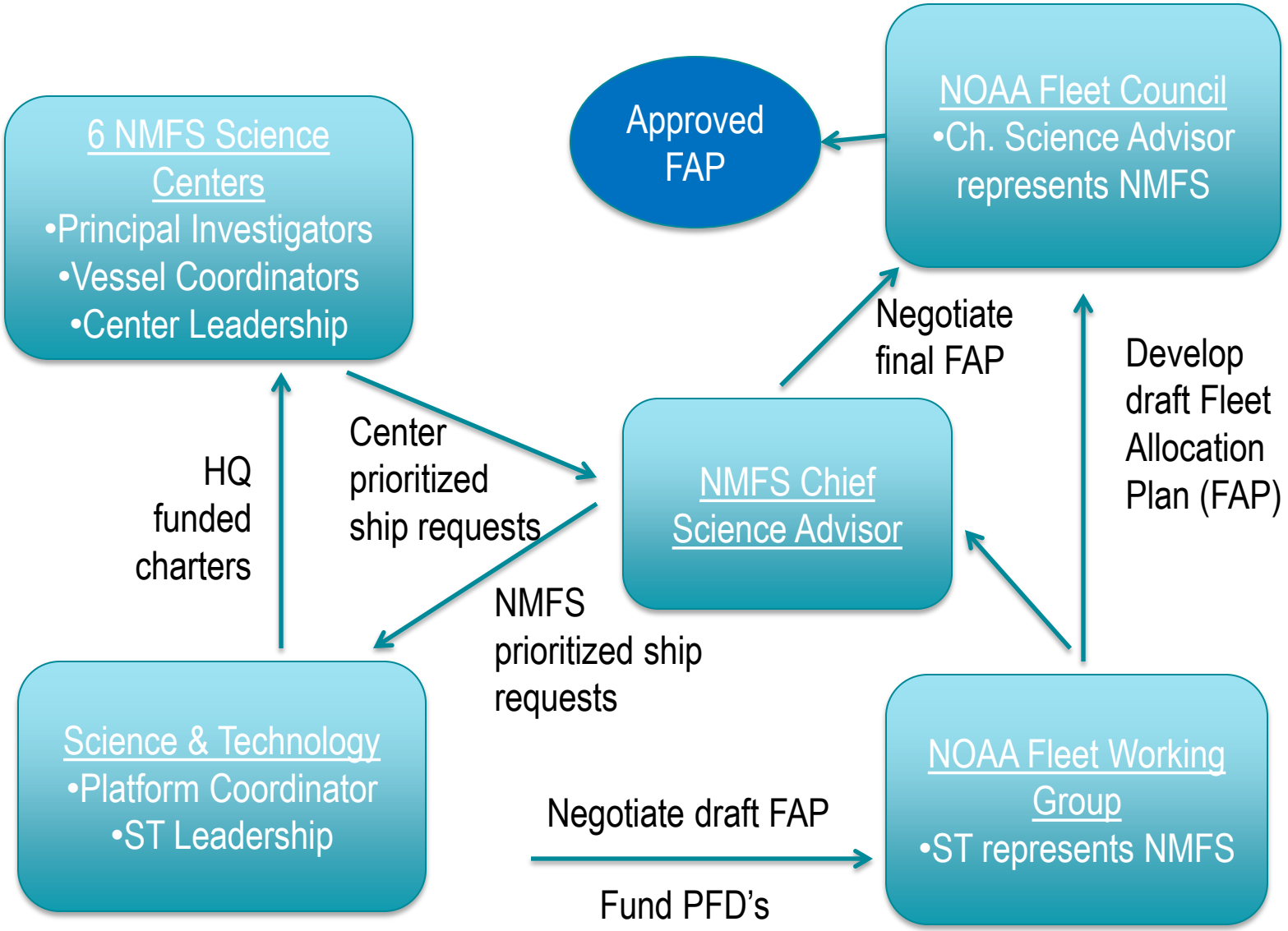
Charter Vessels

- Generally smaller (fewer berths)
- Limited instrumentation
- Very skilled at fishing
- Cumbersome contracting process

Overview: NOAA Ship Allocation Process

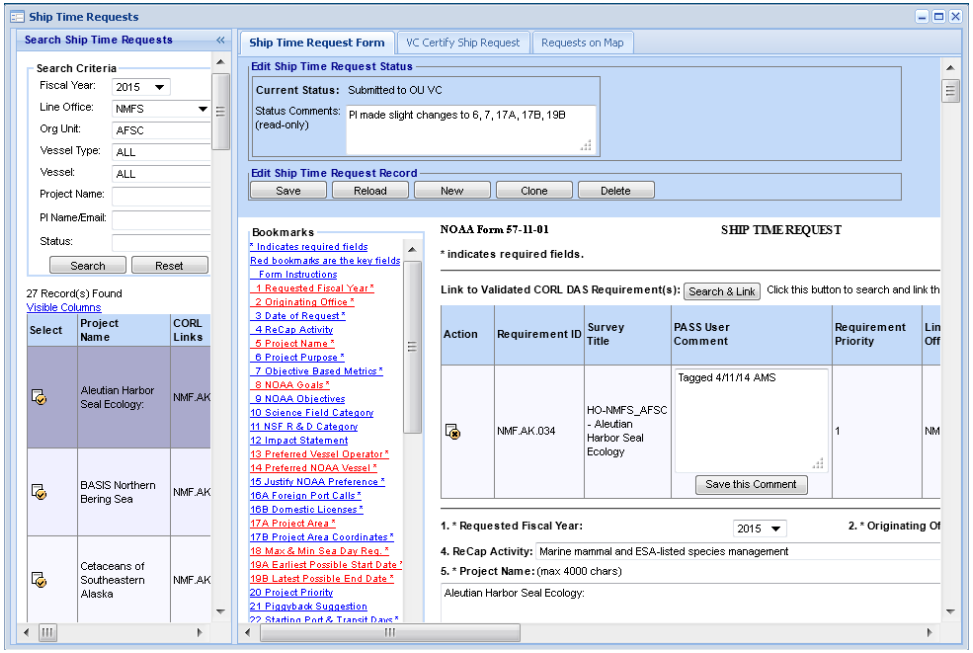
- Developing Line Office Ship Time Requests (STR's)
- Prioritizing STR's
- Allocating OMAO's Variable Operating Costs
- Developing a Fleet Allocation Plan (FAP)
- Executing the FAP; adjusting for real world events

Overview: NOAA Ship Allocation Process



Developing Ship Time Requests

- PASS web based application for Fleet Allocation and Planning
- PASS developed in ST, adopted by the Fleet Council
- In future, track execution & aircraft
- 45 data fields
- Linked to validated observing requirements
- Database



Prioritizing Ship Time Requests

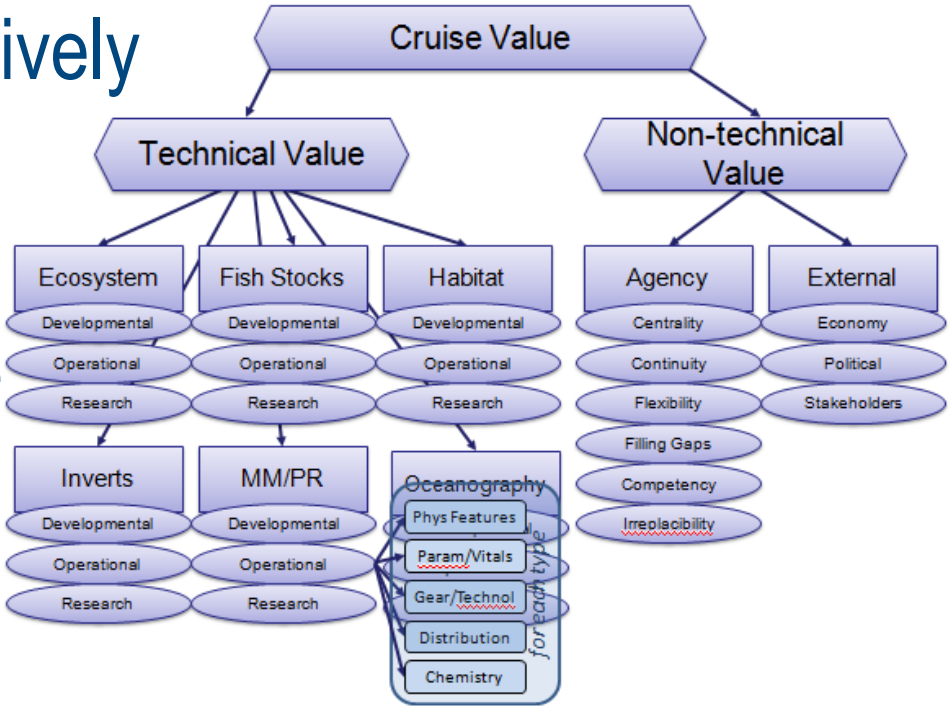
- Using PASS, Ship Time Requests (STR's) are generated by PI's
  - NOAA Fleet and Charter with estimated cost
- Science Centers prioritize their own STR's
  - Budget estimates inform how far down list funding will go
- NMFS Chief Science Advisor & Science Board develop NMFS wide prioritization
  - Somewhat subjective, time consuming, deliberative process

NMFS HQ Priority	Center Priority	Center	FY15 Ship Request	Preferred Platform (in parens if other)	min DAS	max DAS	Project type (Fish, PR, Eco)	NMFS Cumulative MIN DAS
1	1	AFSC	Walleye Pollock GoA Summer Survey	DY	60	65	f	60
2	1	NEFSC	NEFSC Bottom Trawl Survey Autumn - October/November (FY15)	HB	36	36	f	96
3	1	NWFSC	2015 HAKE Survey	SHIMADA	80	80	f	176
4	1	PIFSC	Bottomfish Fishery Independent Sampling Methods Comparison - Spring	SE	15	15	f	191
5	1	SEFSC	SEAMAP Summer Shrimp/Bottomfish Survey	R2	38	41	f	229
6	1	SWFSC	Spring CPS1	SHIMADA	30	30	f	259
7	2	AFSC	Walleye Pollock Shumagin/Sanak (GOA) Pre-spawning Survey	DY	18	20	f	277
8	2	NEFSC	NEFSC Bottom Trawl Survey Spring 2015	HB	60	60	f	337
9	2	PIFSC	Bottomfish Fishery Independent Sampling Methods Comparison - Fall	SE	15	15	f	352
10	2	SEFSC	SEAMAP Fall Shrimp/Bottomfish Survey	R2	41	44	f	393
11	2	SWFSC	West Coast Marine Mammal Survey (Part 1)	Lasker	60	75	p	453
12	3	AFSC	Walleye Pollock Shelikof/Chirikof Shelf-break (GOA) Pre-spawning survey	DY	26	28	f	479

Prioritizing Ship Time Requests

Multi-criteria Decision Analysis Tool

- Work with U.S. Army Corps partners to develop objective decision support tool
- Tool being run retrospectively on fy13 PASS STR's to fine tune
- Output will be repeatable
- Support, not make prioritization decisions



Allocating OMAO's Variable Operating Costs*

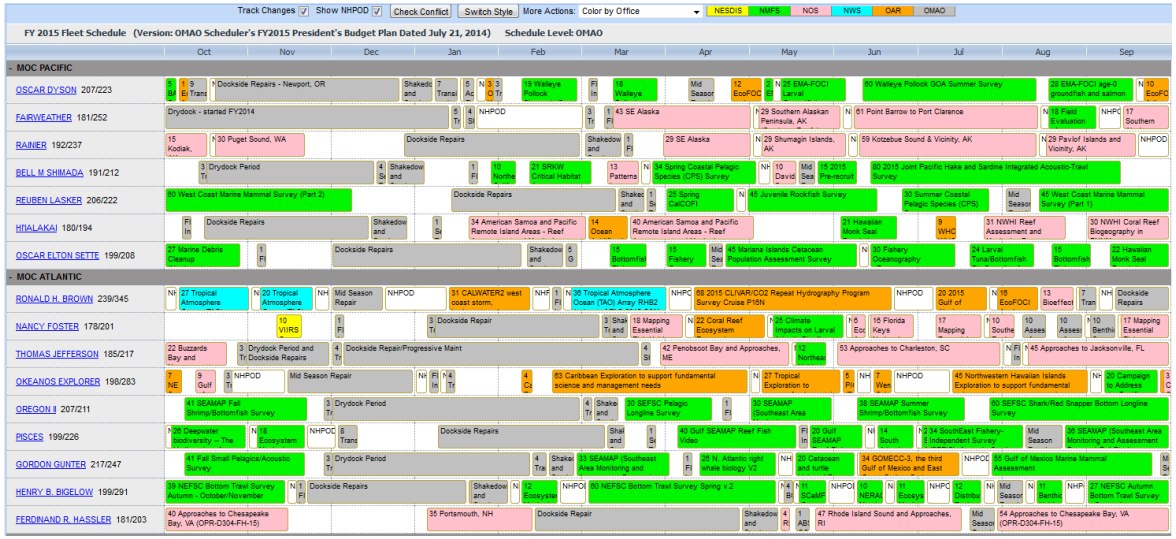
DAA's meet to allocate variable operating costs among the Line Offices

- Facilitated by the Deputy, PPI
- DAA's considered line office priorities and allocated 95% according to historic percentages
- Impacts of projects below 95% funding level used to allocate 5% pool
- PASS develops cost of each STR, allowing line offices to use their allocation to fund projects on their priority list
- Line offices have option of adding their own funds to "buy" program funded days at sea

*Variable Operating Costs; funding OMAO has to operate the Fleet, after the cost of owning the Fleet.

Developing a Fleet Allocation Plan (FAP)

- ST staff in Fleet Working Group draft FAP using PASS
  - Work to minimize conflicts & transits, maximize efficiency, collaboration and piggy-backs
- Fleet Council approves FAP if OMAO concludes it is executable



Executing the FAP

Adjusting for real world events

- ST staff and Center Vessel Coordinators constantly communicate with ship commands, marine centers, field party chiefs and HQ staff
- Inform HQ NOAA of status of ships and charter vessels through the NMFS Executive Officer
- Adjust sailing schedules & charter contracts as necessary to adapt to contingencies

Data Management Activities

Fishery Independent Survey System (FINSS)

- Catalogs metadata from NMFS at-sea observations . Provides up-to-date information to public through on-line portal.

Protected Species Incidental Take (PSIT)

- Database providing real-time tracking of takes of protected species in the course of NMFS fisheries research surveys.

Water Column Sonar Data Archive

- Partnership with National Geophysical Data Center for collection, archival, and dissemination of fisheries active sonar data. Achieves data stewardship and discovery policies. Data agreements with 4 of the Science Centers with plans to rapidly expand to all of NMFS active sonar data holdings.

- **Presently, FINSS and PSIT data are collected via manual data calls and submissions from the Science Centers**
- **Future PASS will include module capturing data on execution of NMFS at-sea observations, feeding automated input to FINSS, PSIT and other applications requiring such metadata.**

Future NOAA Fleet

6 of present 16 ship fleet will be retired by 2024

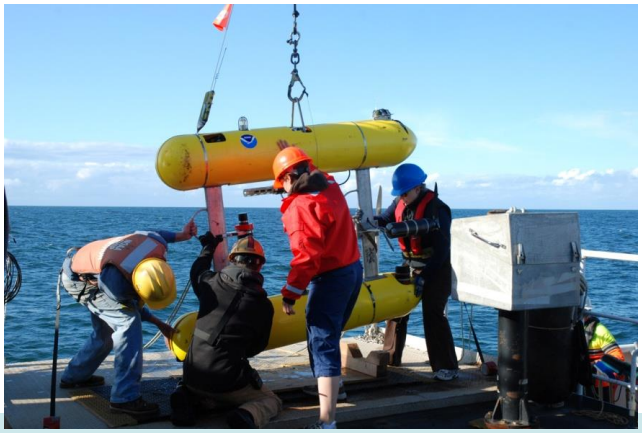
- NOAA Report calls for building 10 ships
  - Two Ocean Class Vessels (not trawl capable)
  - One, high endurance, trawl capable Arctic Vessel
  - Seven trawl capable Regional Class Vessels
- NOAA signed Interagency Agreement With Navy
- ST staff engaged on the OMAO Integrated Product Team

Artists rendering of NSF Regional Class Research Vessel

Unmanned Systems (UxS)

NOAA UxS Working Group established

- Develop way forward for integration as standard survey tools
- ST Deputy has major leadership role in working group
- ST staff and Center scientists have significant supporting roles
- Present focus on developing management framework, funding strategies and concept of operations methodology
- ST staff engaged in supporting UxS projects funded by the Advanced Sampling Technology Working Group, the Unmanned Aircraft Systems Program Office and others



Strengths

- NMFS & OMAO have a very strong, committed relationship
- Fleet allocation process has evolved significantly since 2011. More transparency and consistency than ever.
- ST and Science Centers adhere to consistent and uniform vessel planning and allocation activities across the agency
- ST has experienced, knowledgeable survey support staff, excellent working relationships with Centers, with NMFS Leadership and with OMAO
- ST divisions have technology and programming expertise to develop and implement effective solutions to information management and process challenges (e.g.; PASS, FINSS)
- ST has solid record of providing resources to respond to changing vessel contingencies

Challenges

- Significant decline in annual days at sea provided by OMAO
- Costs for vessel operations are highly variable (fuel, unscheduled maintenance) and not correlated with increased appropriations
- Delayed annual appropriations limit execution
- OMAO has its challenges with staffing and maintaining complex vessels
- Procurement regulations require significant advance planning and dogged perseverance to successfully establish charter contracts
- Increasing requirements and capabilities for data management related to vessel activities

Solutions

- Long term charter contracts attract vendors willing to modify vessels and offer maximum flexibility and stable costs over the life of charter
- Attention paid to the constraints and needs of vessel providers contributes to availability and capability of their services
- Implementation of advanced sampling technologies and UxS allow more survey data collection per day at sea
- ST has resources to respond to vessel contingencies
- ST working with OMAO to develop a Regional Class Vessel of adequate but not extravagant capability
- Automated data sharing and cross verification capabilities being incorporated in data management solutions
- Implementing objective prioritization of survey activities

Thank You!

Background Slide
Allocating OMAO's Variable Operating Costs

FY 15 Marine Service Allocation

LO	FY15 $ (M)	FY15 %
NOS	11.76	27.097%
OAR	9.74	22.442%
NWS	3.35	7.719%
NESDIS	0.15	0.346%
NMFS	18.40	42.396%
LO total	43.4	100%
OMAO	1.50	n/a
Total	44.90	100%