



**NOAA
FISHERIES**

Northeast
Fisheries
Science
Center

Assessment Capacity, Scheduling, and Other Activities

TOR IV Organization and Priorities

By
Paul Rago
Chief, Population Dynamics Branch
and Colleagues

May 21, 2014



NOAA FISHERIES

*“life does not stand still while
specialists put their minds in order”*

Michael Graham, 1950

Address to United Nations

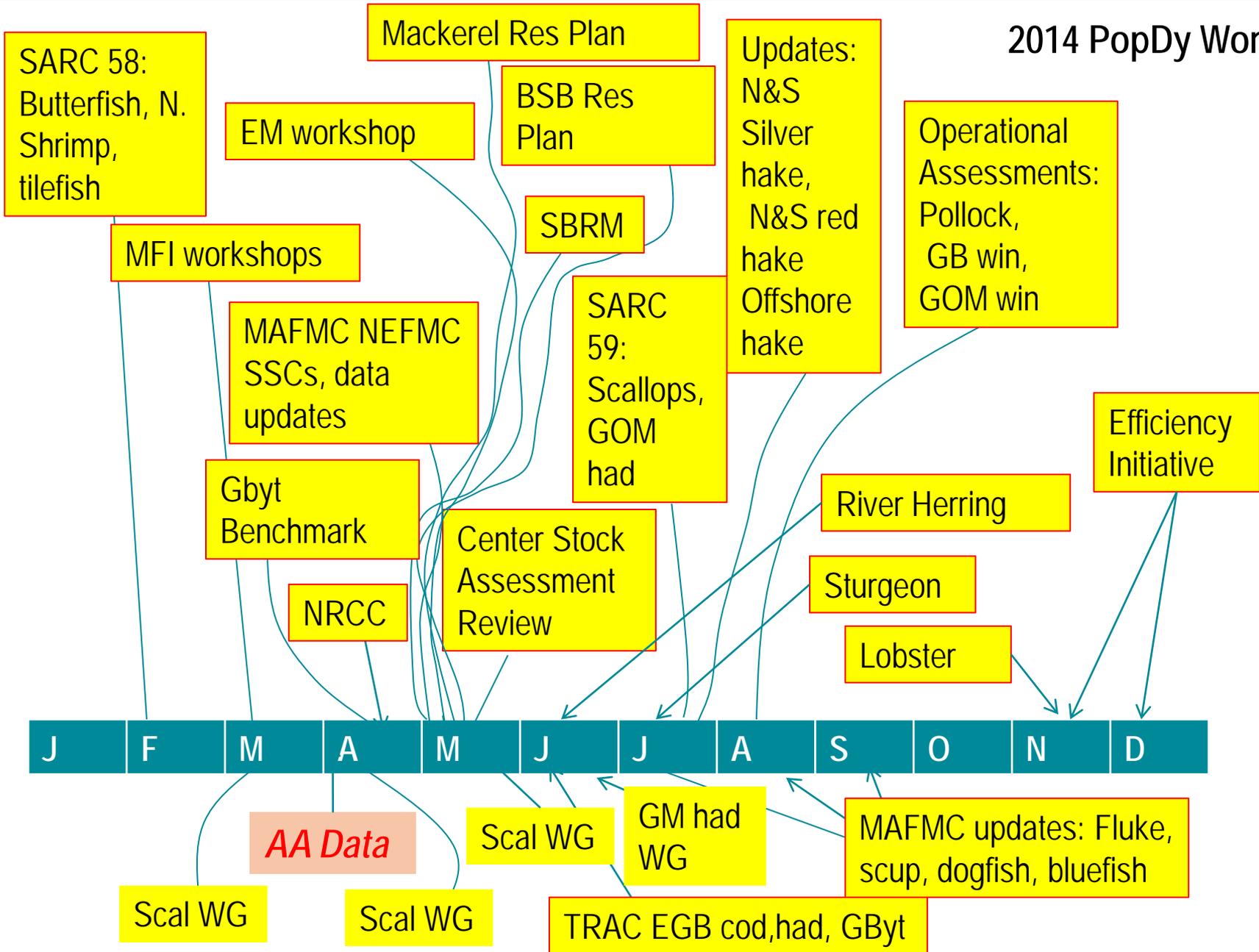


Michael Graham, Britain's chief fishery scientist after WWII

TOR IV Organization and Priorities

Does the Center work effectively internally and in coordination with the NEFMC, MAFMC, ASMFC, and GARFO to accomplish needed assessments according to a set of priorities?

2014 PopDy Workplan



Lagos 2011, Nigerian Power Line WSJ 4-24-2014

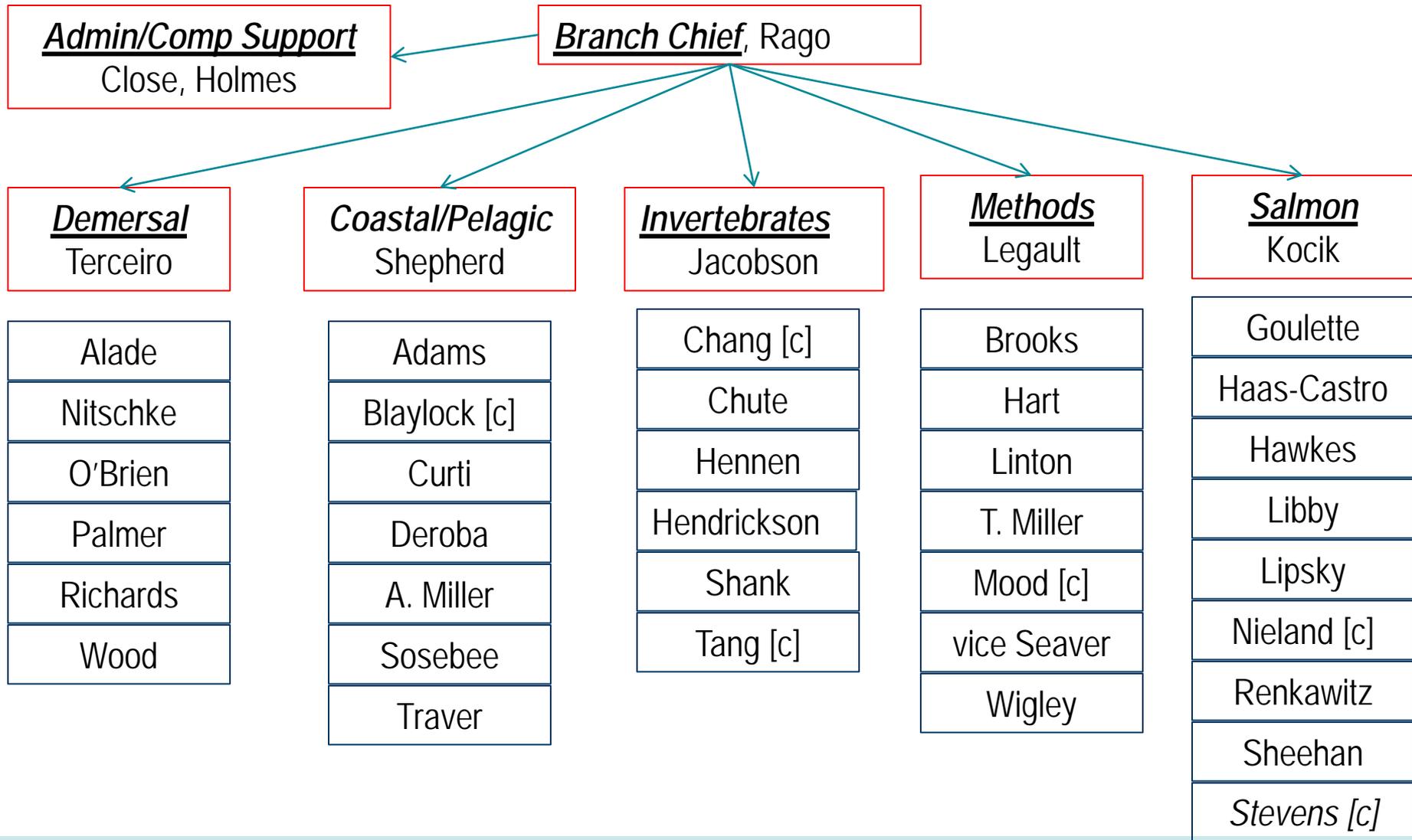
Complicated, dangerous and futile—a patchwork of neglected infrastructure



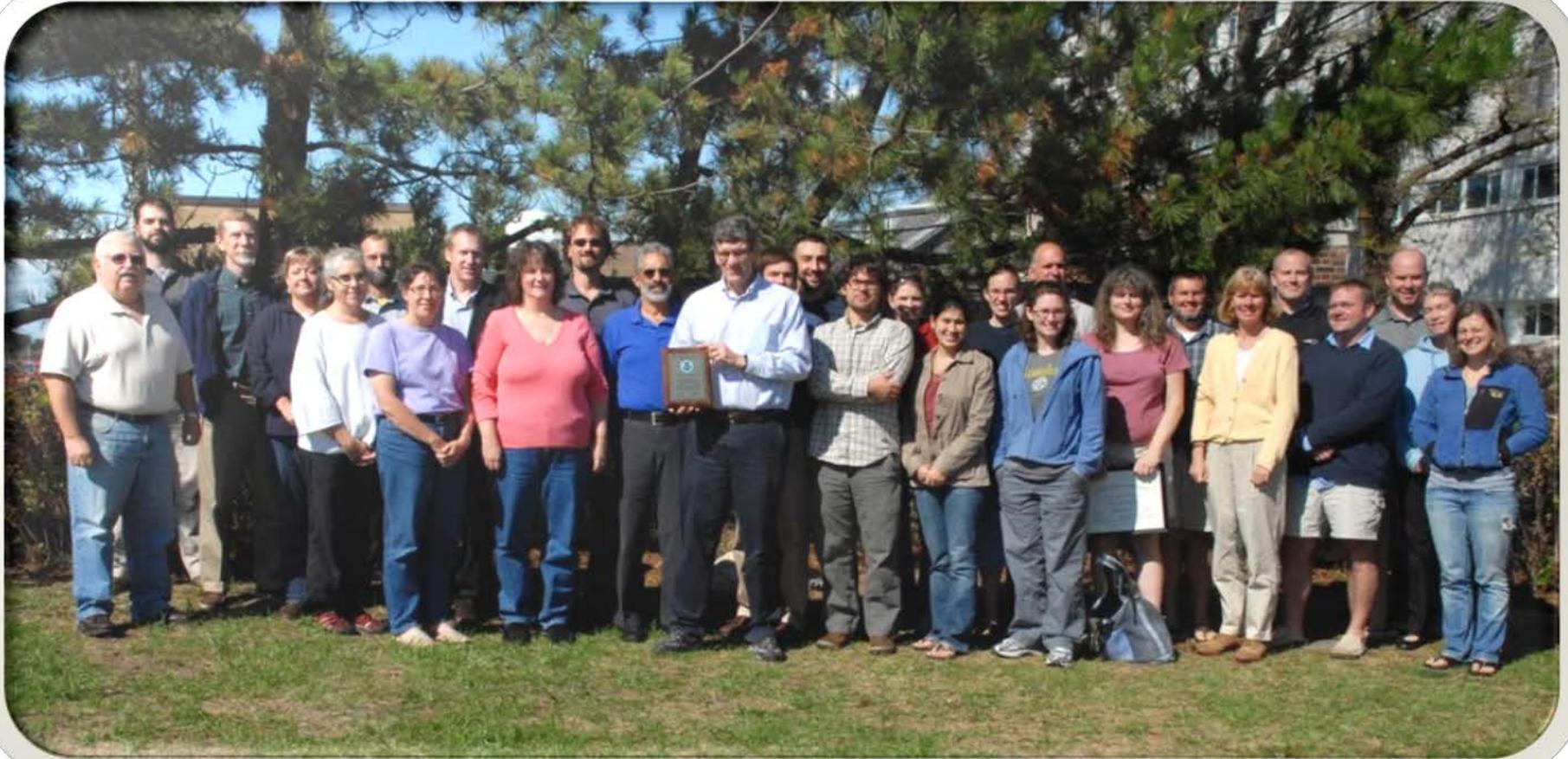
Overview

- A description of my colleagues
- Species Prospectus
- Timing of assessments and the Council processes
- Staffing requirements
- Efficiency Initiative
- Assessment Bucks -- Free Market allocation

Population Dynamics Branch

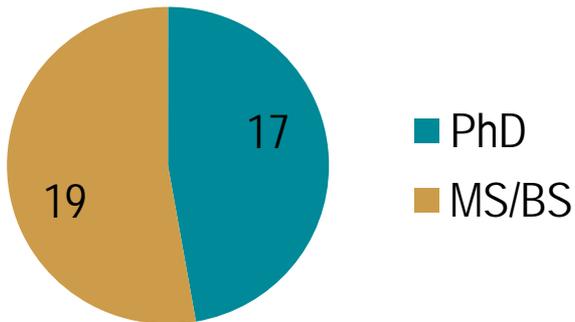


Population Dynamics Branch 2011

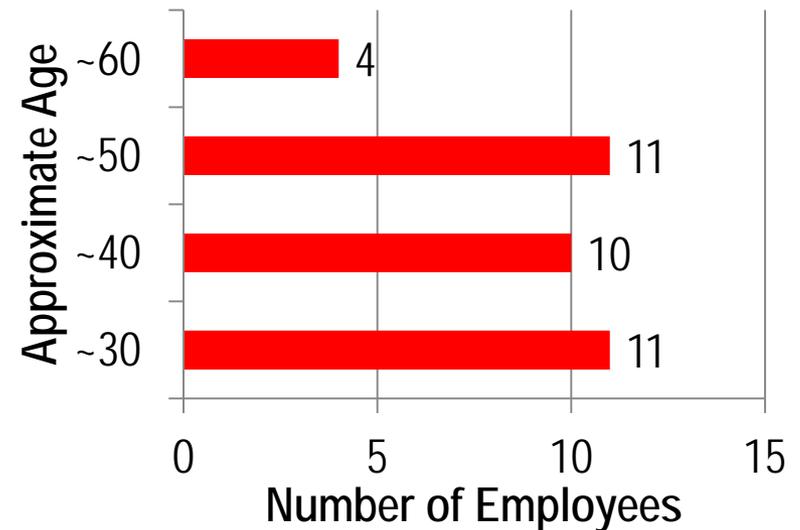
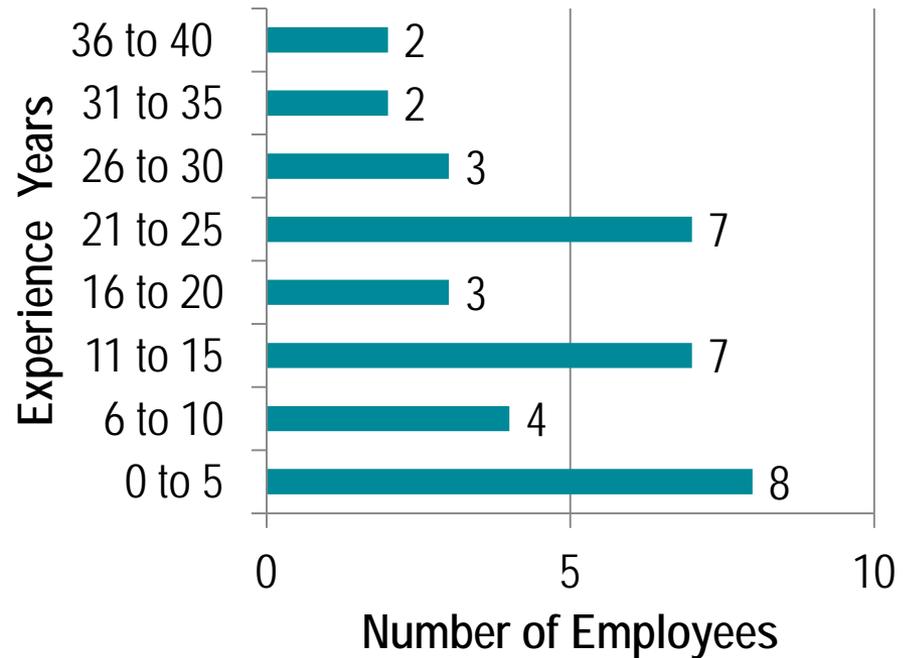
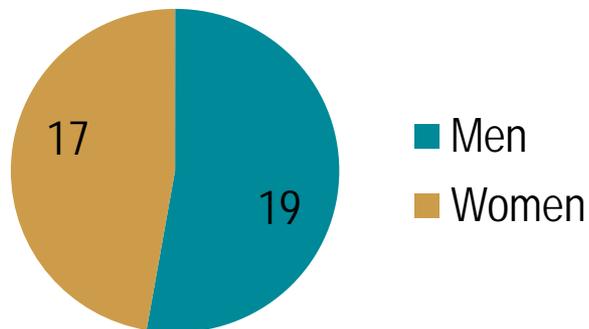


Life History Attributes

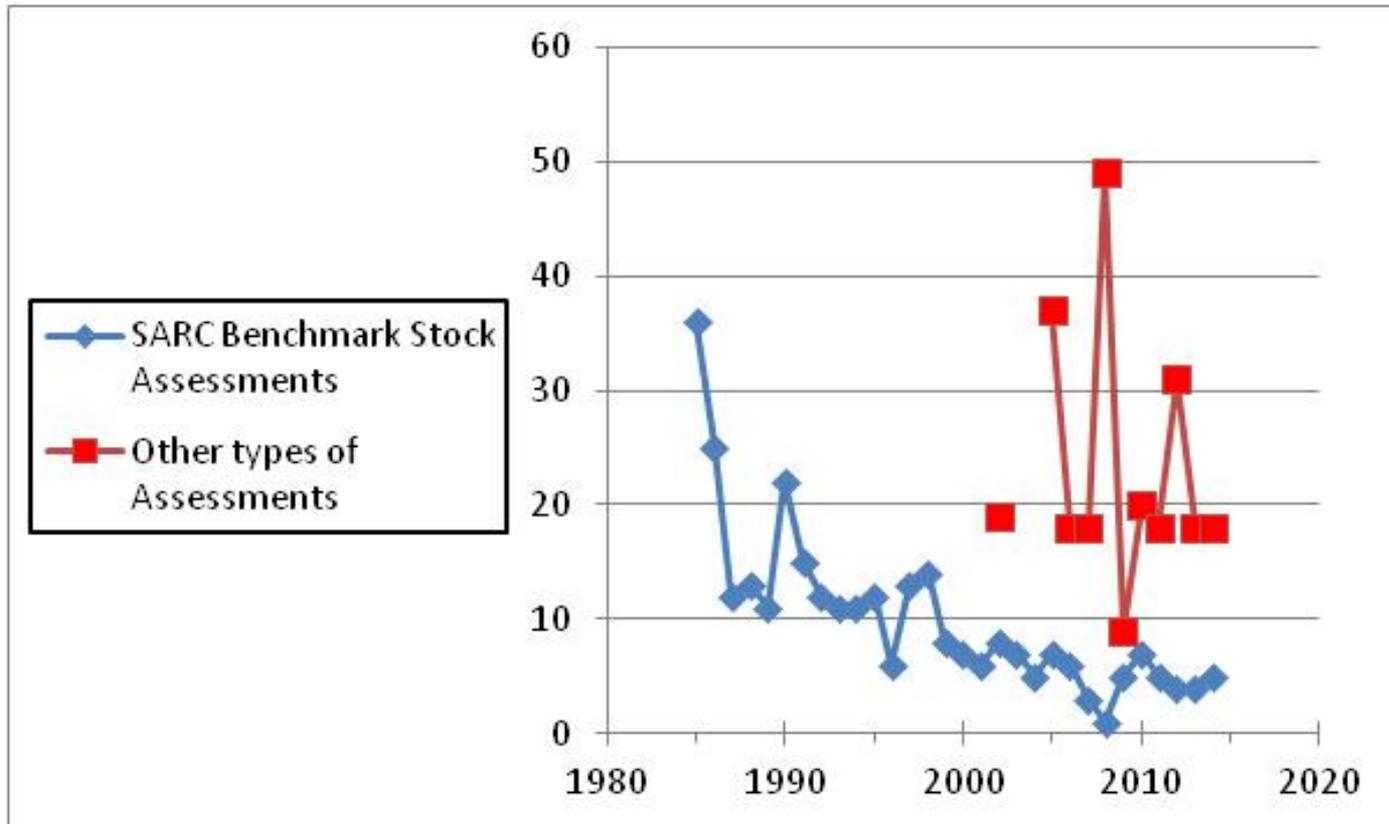
Education



Sex



Assessment Tally (#) over time



“Other types” include:

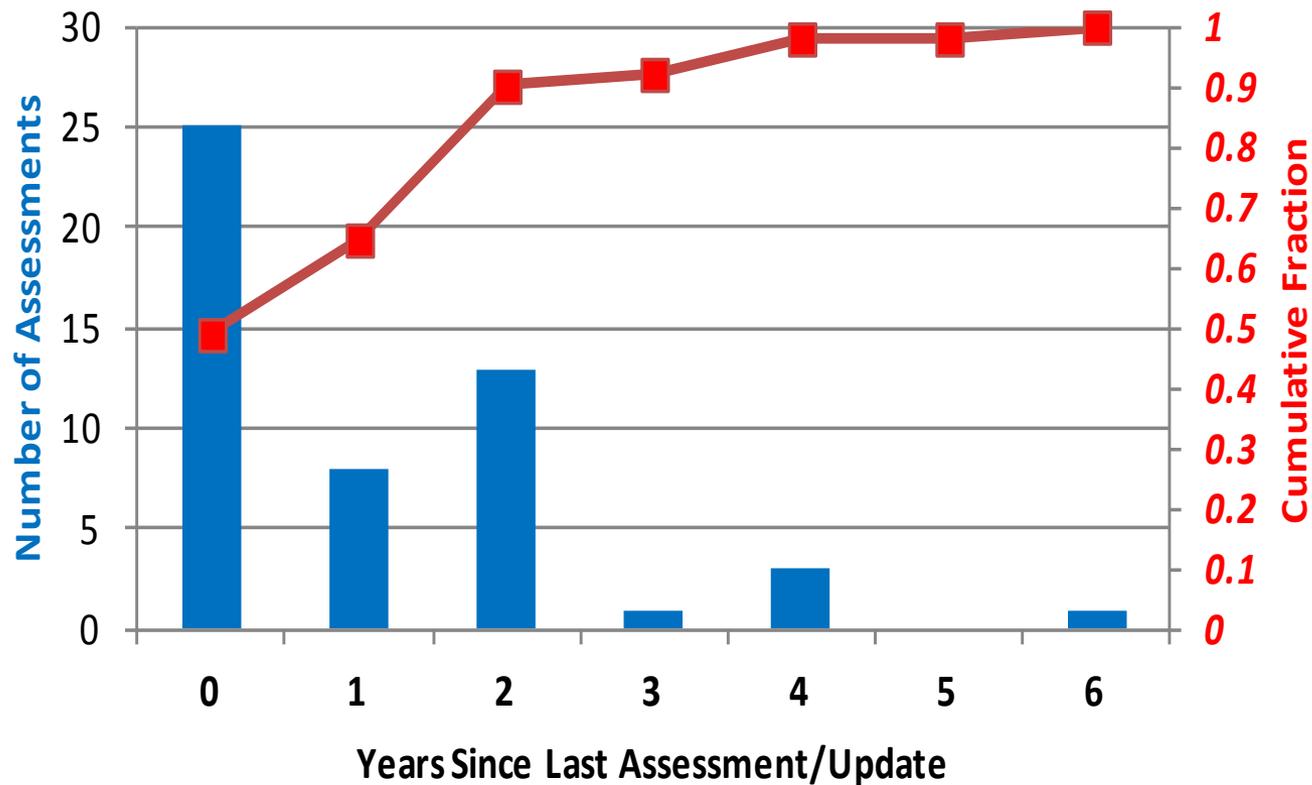
- GARM (Groundfish Assessment)
- Annual Assessment Updates
- Operational Assessments
- Data Poor Stock WG



Years Since Last Assessment/Update By the end of 2014...

FMP	Species	Stock
	Cod	GB
	Cod	GOM
	Haddock	GB
	Haddock	GOM
	Yellowtail Flounder	GB
	Yellowtail Flounder	SNE/MA
	Yellowtail Flounder	CC/GOM
	American Plaice	GB/GOM
	Witch Flounder	
Northeast Multispecies	Winter Flounder	GB
	Winter Flounder	GOM
	Winter Flounder	SNE/MA
	Redfish	
	White Hake	GB/GOM
	Pollock	GB/GOM
	Windowpane Flounder	GB/GOM
	Windowpane Flounder	SNE/MA
	Ocean Pout	
	Atlantic Halibut	
	Atlantic Wolffish	
Northeast Multispecies (small mesh)	Silver Hake	North
	Silver Hake	South
	Red Hake	North
	Red Hake	South
	Offshore Hake	
NEFMC (potential)	Cusk	
	Little Skate	
	Winter Skate	
Northeast Skate Complex	Bamdoor Skate	
	Thorny Skate	
	Cleamose Skate	
	Rosette Skate	
	Smooth Skate	
Atlantic Herring	Atlantic Herring	
Deep-Sea Red Crab	Deep-Sea Red Crab	
Atlantic Sea Scallop	Atlantic Sea Scallop	
Monkfish	Monkfish	North
	Monkfish	South
Spiny Dogfish	Spiny Dogfish	
Summer flounder, scup and black sea bass	Summer Flounder	
	Scup	
	Black Sea Bass	
Squid, Mackerel, Butterfish	Atlantic Mackerel	
	Loligo Squid	
	Illex Squid	
	Atlantic Butterfish	
Atlantic surfclam and ocean quahog	Atlantic Surfclam	
	Ocean Quahog	
Bluefish	Bluefish	
Tilefish	Golden Tilefish	
American Lobster	American Lobster	GB
	American Lobster	GOM
	American Lobster	SNE
Northern Shrimp	Northern Shrimp	
Striped Bass	Striped Bass	
NEFMC (potential)	Atlantic Hagfish	
Atlantic Salmon	Atlantic Salmon	
American Eel	American Eel	
Atlantic Sturgeon	Atlantic Sturgeon	
Shad and River Herring	River Herring	
	American Shad	

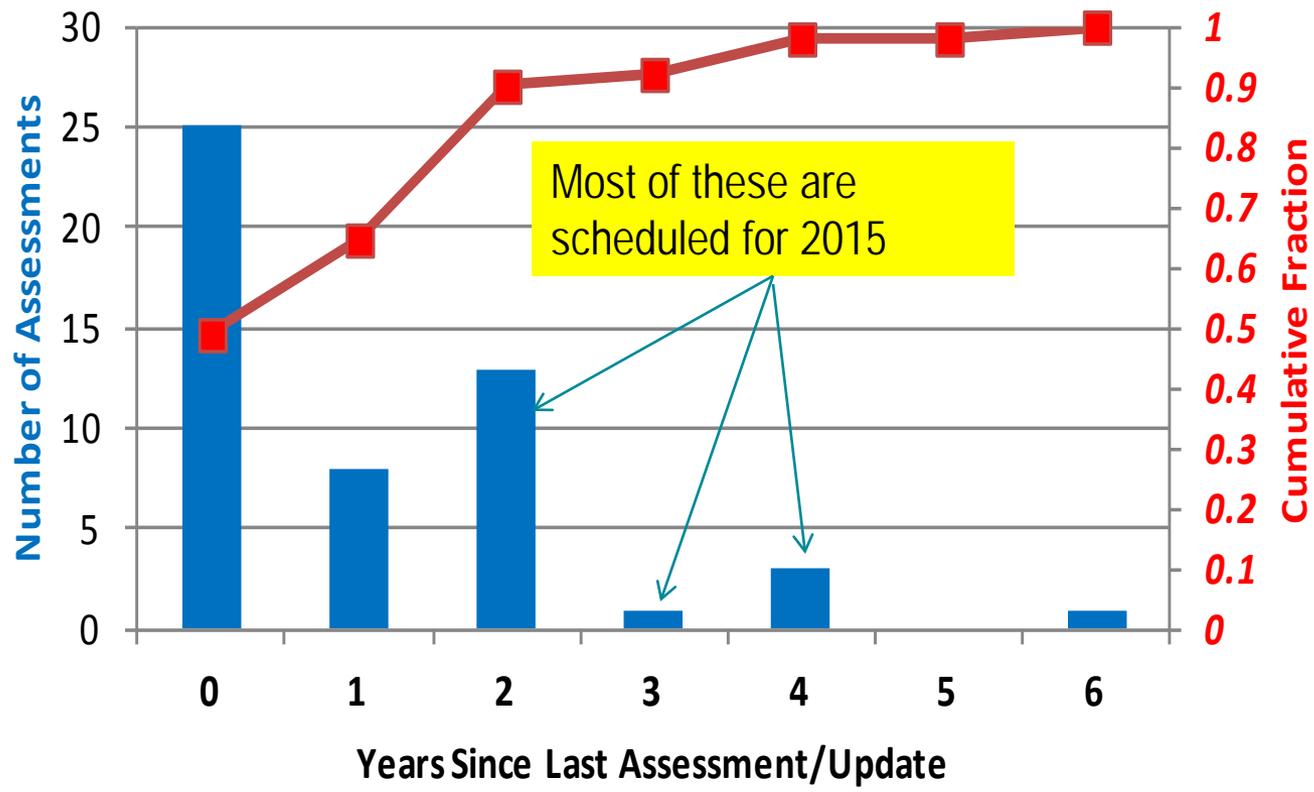
Frequency of Assessments at NEFSC



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American Eel	American Eel	
Atlantic Sturgeon	Atlantic Sturgeon	
Shad and River Herring	River Herring	
	American Shad	

Frequency of Assessments at NEFSC



Species Prospectus Format

- Stock
- Lead Scientist (transition lead)
- Fishery Management Plan
- Last Assessment and Type
- Model Type
- Key Issues related to efficacy of assessments
 - Sources of uncertainty {retrospective pattern, calibration, catchability and scale, domes, aging, M, changing environment, stock structure, reference points}
 - Key research needs {e.g., tagging, age validation, M change}
 - Prospects for next benchmark {e.g., monkfish, black sea bass, mackerel}

Other Assessment Related Work

- Council committees
- Special projects
 - SBRM
 - PTNS
 - Discard Estimation
 - Sector development
- Special Projects internal
 - Efficiency Initiative
 - Pop Dy Resource Guide

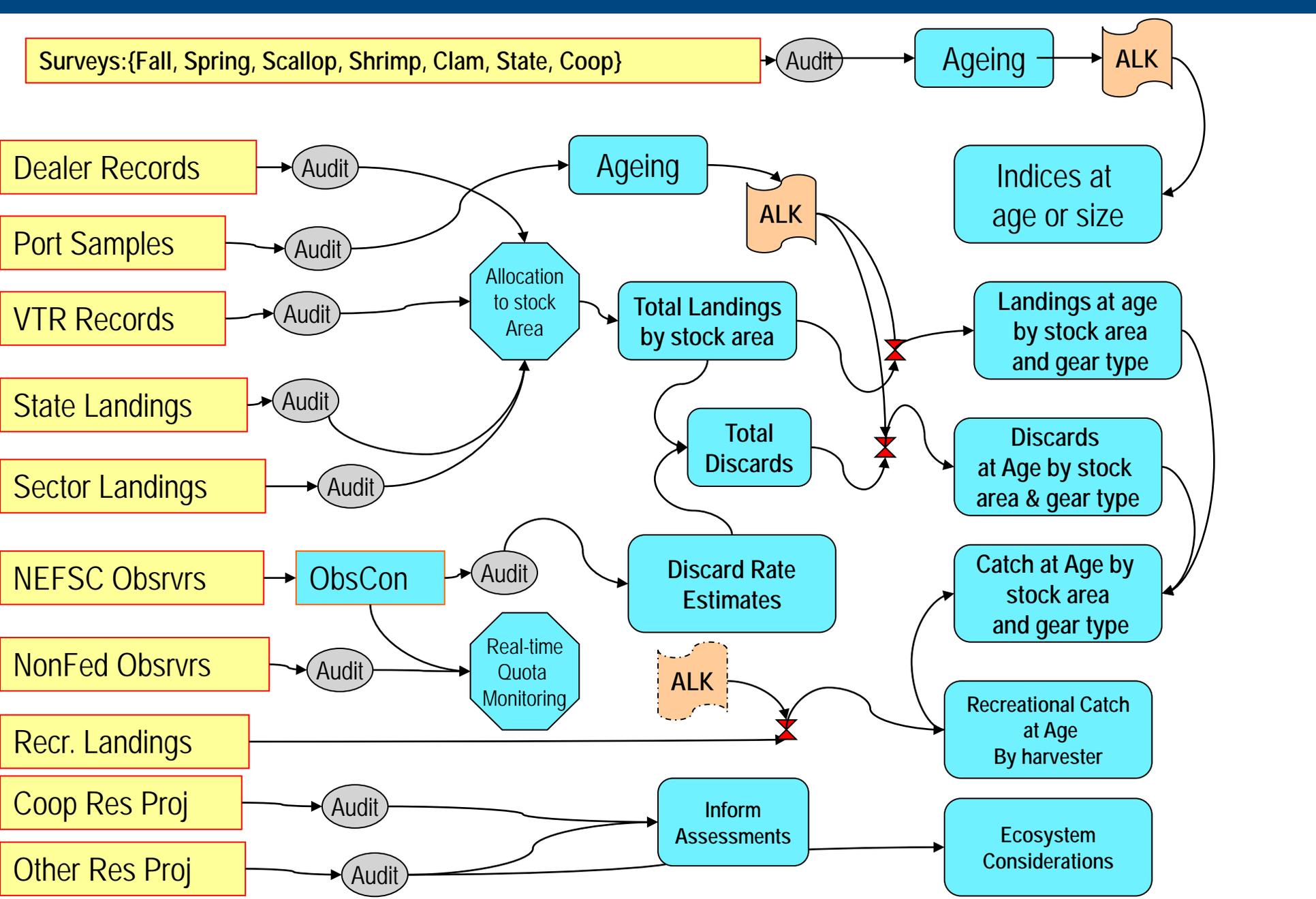
Population Dynamics Branch Service to NEFSC

“Action Items” are correspondence sent to Center Directorate by Headquarters, the Regional Office, Councils, Commission or External Partners. Some are simple; others are complex, such as review of management specifications, environmental impact statements, or briefing documentation for senior managers or Congress. Most of the Action Items assigned to Population Dynamics Branch are complex. Average time spent on each Action Item is about 20 hours.

Fiscal Year	Total Action Items	Number by PopDy	% by PopDy
2012	332	97	29%
2013	251	82	33%
2014 (to date)	87	26	30%
Total	670	205	31%

The Life Cycle Costs of An Assessment

- Assessment
 - Lead Scientist {Data Preparation, Model, Report, Presentation, Revisions, ...}
 - Working Group Chair
 - Colleagues participating in review meetings
 - Colleagues reviewing work progress
 - Age and Growth
 - Other Participating Center Staff
- Reviews
 - SARC/TRAC/Operational/Updates
 - SSC
 - Externals
- Council/Commission support for implementation via PDT, FMAT or other committees
- Review of amendments, frameworks or other management measures for Council and GARFO
- For some stocks, the post assessment costs exceed the assessment cost



Surveys: {Fall, Spring, Scallop, Shrimp, Clam, State, Coop}

Audit

Ageing

ALK

Dealer Records

Audit

Ageing

ALK

Indices at age or size

Port Samples

Audit

Allocation to stock Area

Total Landings by stock area

Landings at age by stock area and gear type

VTR Records

Audit

Total Discards

Discards at Age by stock area & gear type

State Landings

Audit

Discard Rate Estimates

Catch at Age by stock area and gear type

Sector Landings

Audit

ALK

Recreational Catch at Age By harvester

NEFSC Obsrvrs

ObsCon

Real-time Quota Monitoring

Inform Assessments

Ecosystem Considerations

NonFed Obsrvrs

Audit

Recr. Landings

Coop Res Proj

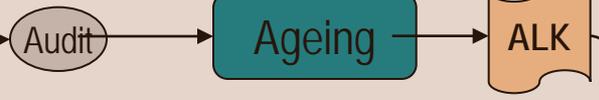
Audit

Other Res Proj

Audit

+2 to 3 Months

Surveys: {Fall, Spring, Scallop, Shrimp, Clam, State, Coop}



Dealer Records



Indices at age or size

Port Samples



VTR Records



State Landings



Sector Landings



NEFSC Obsrvrs



NonFed Obsrvrs



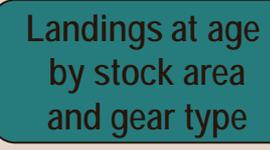
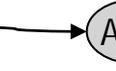
Recr. Landings



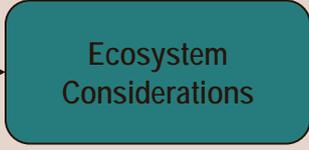
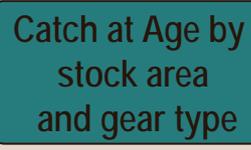
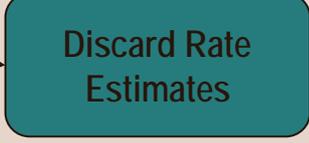
Coop Res Proj

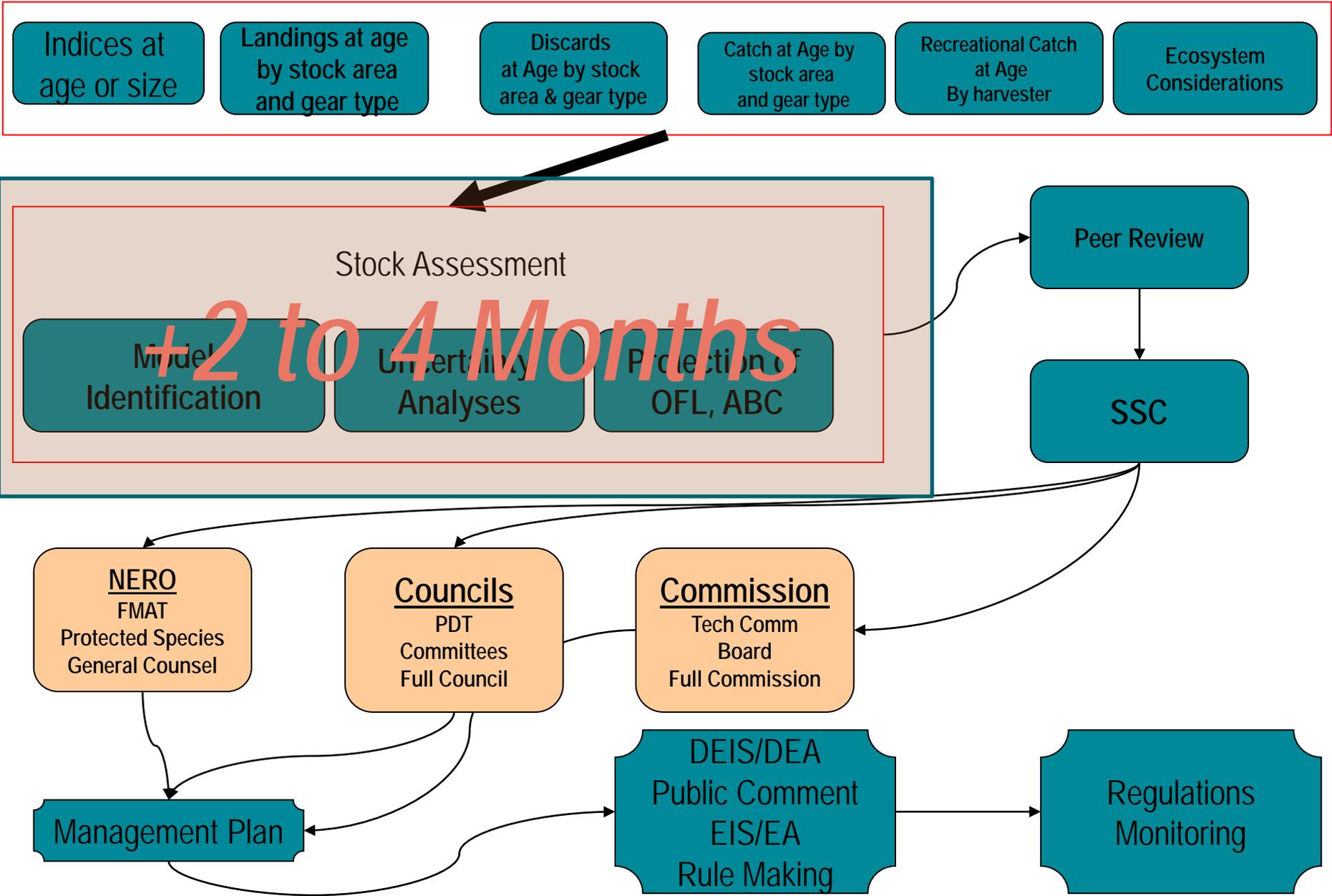


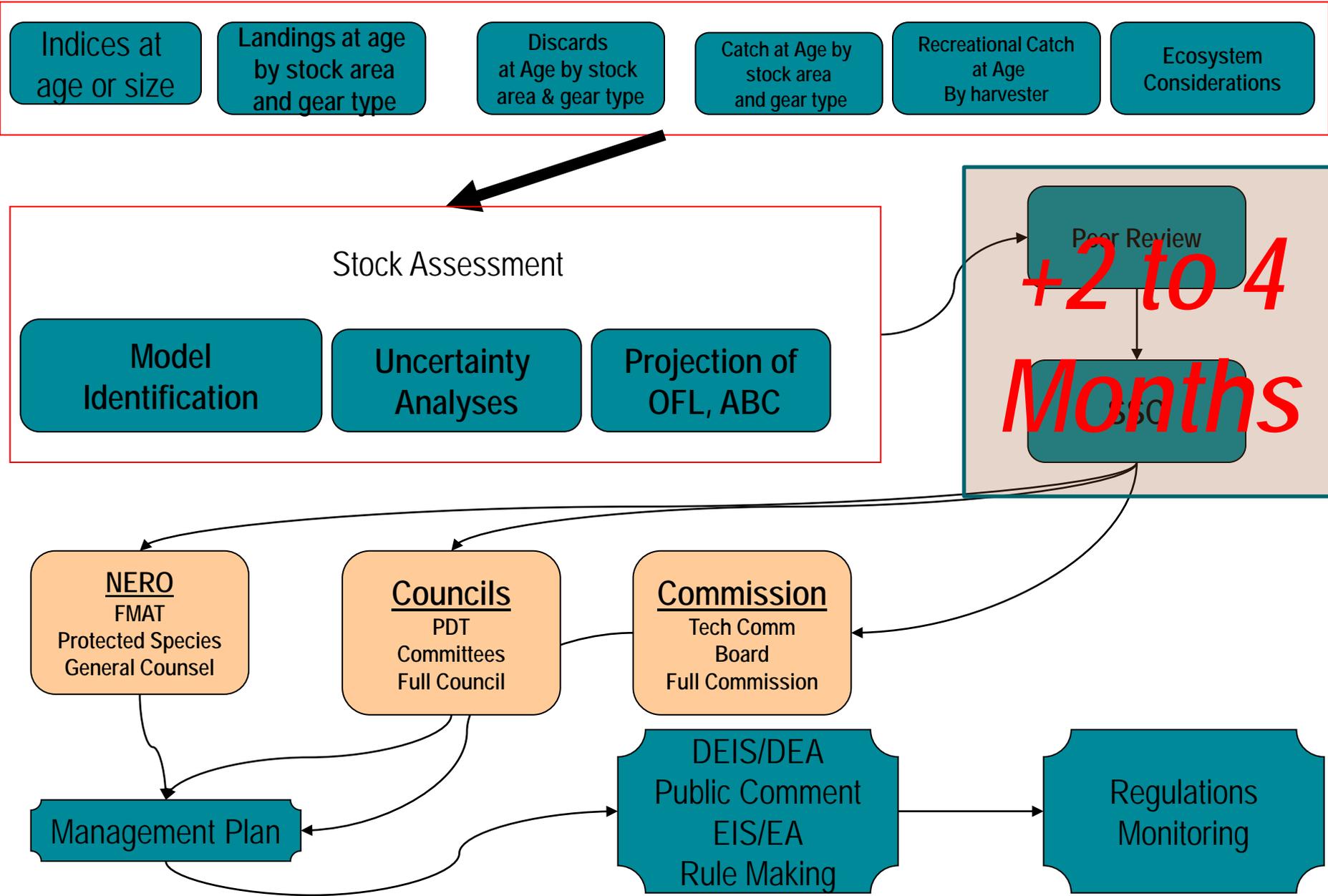
Other Res Proj

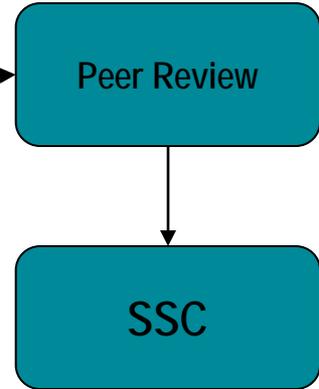
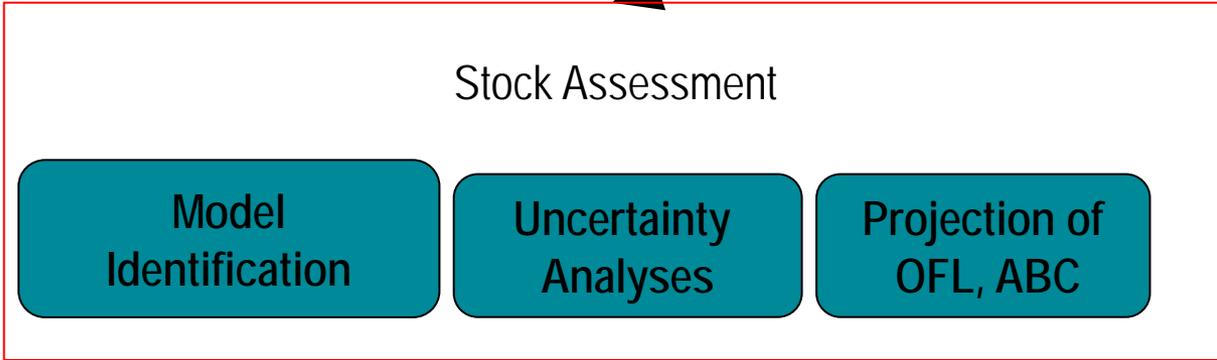
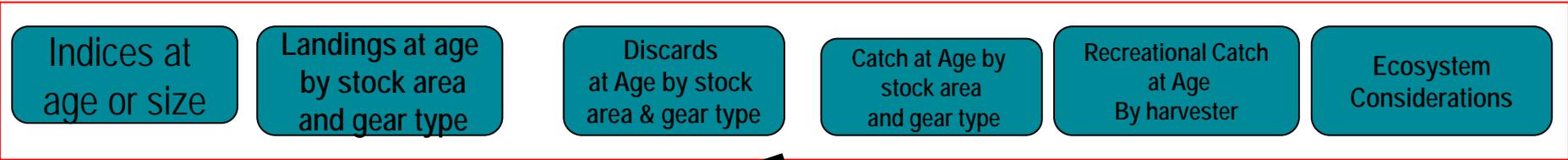


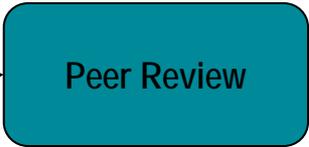
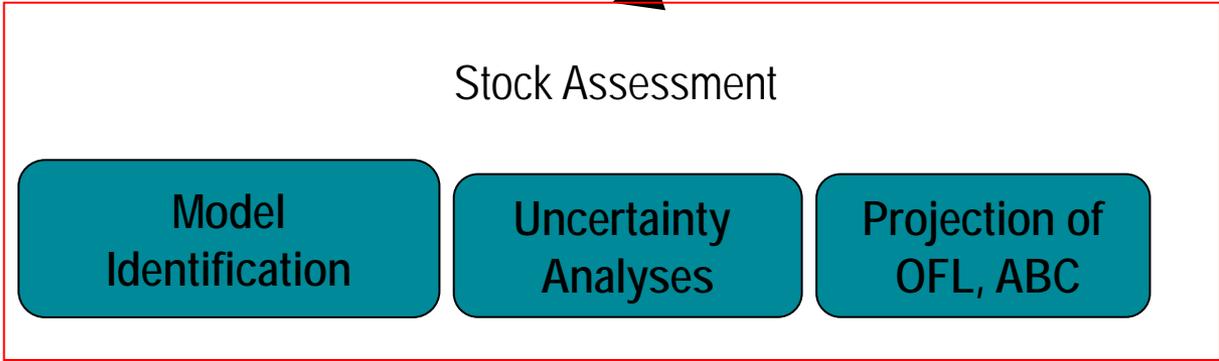
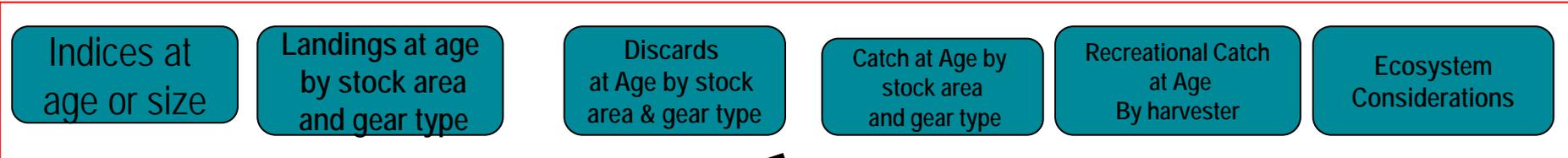
+ 1 to 2 Months











A Readable, Condensed Timeline for Data Availability

Commercial Landings and Discards

- Vessel Trip Report landings data completed by end of March
- Discard Data by end of March
- Aging data by April
- State landings by April
- Area Allocation (data cleaning/reconciliation) Landings Data by May
- Discard estimation by May
- Stock assessment data meeting in May
- Stock assessment model meeting in late May, early June
- Stock assessment peer review in June/July

Surveys

- NEFSC spring by June 1

Example: 2013—Summer flounder benchmark: data mtg June 3-7, model mtg June 17-20

- No one was happy

Consider Gulf of Maine Cod

- GARM 2008, VPA
 - Stock rebuilding with estimates of strong year classes
 - Not overfished (58% of Bmsy) but overfishing occurring
 - Successful fishing in limited area
- SARC 53, 2011, ASAP
 - Rigorous review of data, improved model
 - Overfished (19% of Bmsy) and overfishing occurring
 - Stock declining rapidly, high F and need to cut landings sharply
- Meetings with Headquarters, Councils, Industry, Sci. & Stat. Comm., etc.
- Special topic meetings
 - Stock structure
 - Discard mortality
 - Recreational catch
 - Commercial LPUE
- ABC set at 6,700 mt vs 2,000 recommendation
- **SARC 55, 2012 Confirmatory Re-do**
 - Four working group meetings
 - SARC
 - Two models proposed (Constant M, Ramp M)
 - Overfished and Overfishing occurring

2011-2012 Staff Time

6 Person Years

42 Dog Years

There must be an easier way

Efficiency Initiative within Pop Dy Branch

Objectives

- Streamline the production of assessments (data, models, reports)
- Improve reproducibility and transferability of assessments
- Increase time available for Research

Efficiency Initiative Essential Elements

In collaboration with Partners, develop standard

- Data structures for use in assessments
- Information content in assessment documents
- “Woods Hole” tables and figures
- TORs for benchmarks and updates

Advocate for judicious use of benchmark assessments dependent on availability of new data, new models, or major research breakthroughs

Can we untangle the web?



- Price is an efficient means of allocating scarce resources
- Unowned resources are overexploited (Hardin 1968)
- Top-down planning has utility but generally does not allow for the inevitable interventions.
- Let the buyer (Councils, Commission) choose assessments subject to a budget for staff time?

Assessment Bucks Concept

- Assign personnel costs to assessments by species and type
- Partition scientist time into Assessment and support (X%) and Research (100-X%)
- Total person years = # Staff= N
 - Allocate person year budgets to each council and commission
 - Eg. NEFMC (n1), MAFMC (n2), ASMFC (n3)
 - Total time for assessments =n1+n2+n3
 - Total time for research =N-n1-n2-n3 = N*(100-X)%
- Need to consider staff time for popular species (e.g., required every year; prices could increase)
- Staff could barter time

What are you, nuts?

Strengths

- High level of assessment production
- Realistic appraisal of key assessment strengths and weaknesses
- Resiliency and ability to meet every challenge
- Mobilization of resources for common good
 - Efficiency Initiative
 - Georges Bank Yellowtail Flounder
 - GARM 3
 - Special SARCS
 - Special Projects (Sector, SBRM, Real-time discard estimation)

Challenges

- Need for research time—resiliency and responsiveness come at the cost of research and improvements of assessments
- Care and feeding of more complex models will increase

Solutions

- Recognize limits to capacity (Assessment Bucks?)
- Improve efficiency of assessment production
- Increase timeliness of fishery dependent data
- Reserve Benchmarks to capitalize on
 - Major research breakthroughs
 - New model paradigms
 - Core research questions, e.g., retrospective patterns, change in M.
- Synchronize data production, assessments, and management needs.

Questions?

Other opinions?