NOAA FISHERIES
Greater Atlantic Regional Office

Differences in Discard and Landing Estimates

An update on coordinated efforts to align methodologies, where possible.

Analysis and Program Support Division

Monitoring and Analysis Section

J. Michael Lanning, Section Chief

An update on coordinated efforts to align methodologies, where possible

Similarities and Differences between Area Allocation (AA) tables and Data Matching Imputation System (DMIS)

A thank you for their analytical work in comparing the AA and DMIS tables:

Susan Wigley (NEFSC) , Brant McAfee (GARFO), Jay Hermsen (GARFO), Dan Linden (GARFO)

And an additional thank you for those attending the meetings

Mike Simpkins (NEFSC) , Michael Ball (NEFSC), Joan Palmer (NEFSC), Kristy Gustafson (NEFSC), Amy Martins (NEFSC), Chris Legault (NEFSC), Chris Tholke (NEFSC)

Presentation's Overarching Theme

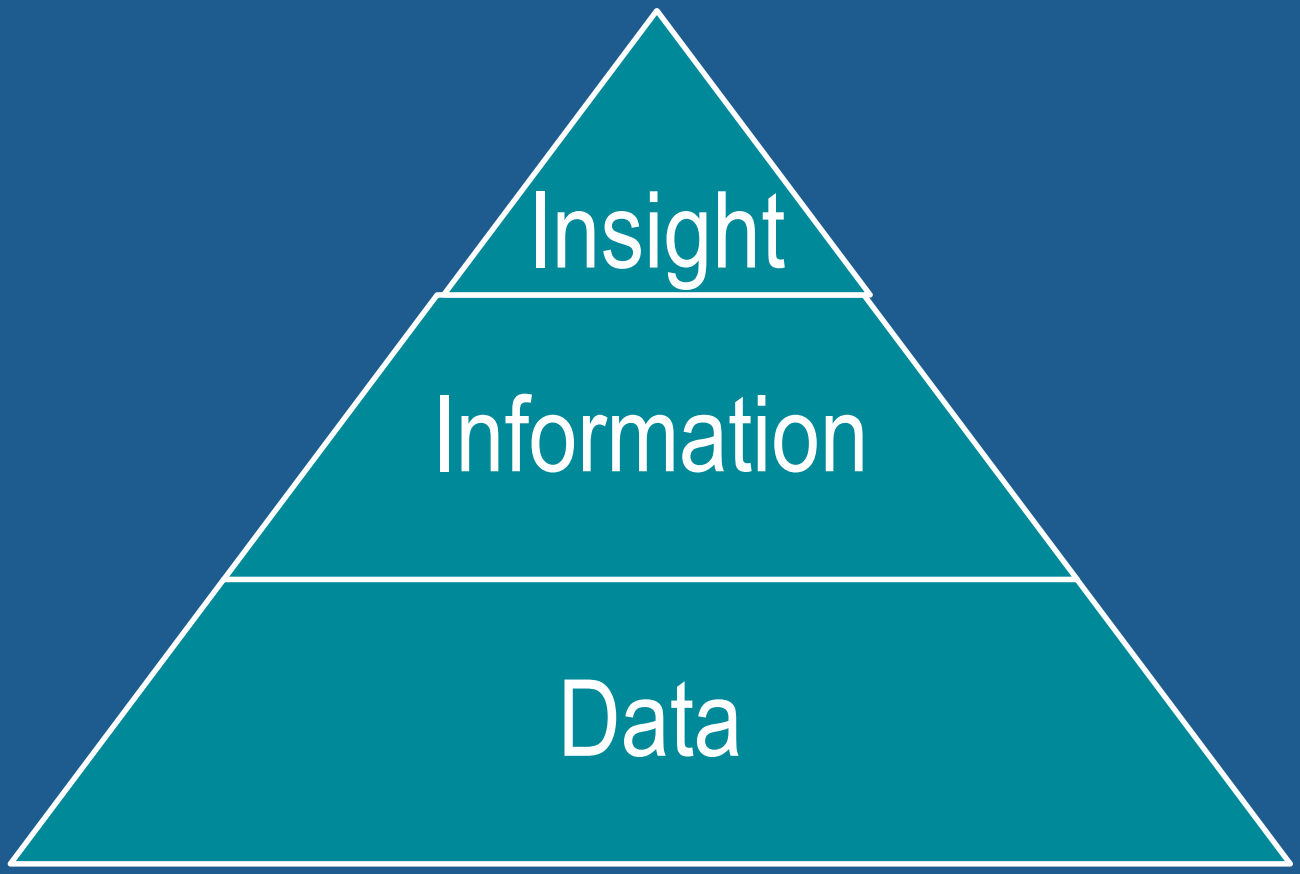
1. Getting beyond why the bycatch estimates are different because they're analyzed for different objectives (true) and use different methodologies (true and for good reasons)

2. How can you ask six researchers the same questions and get six different answers, and how should it be addressed?

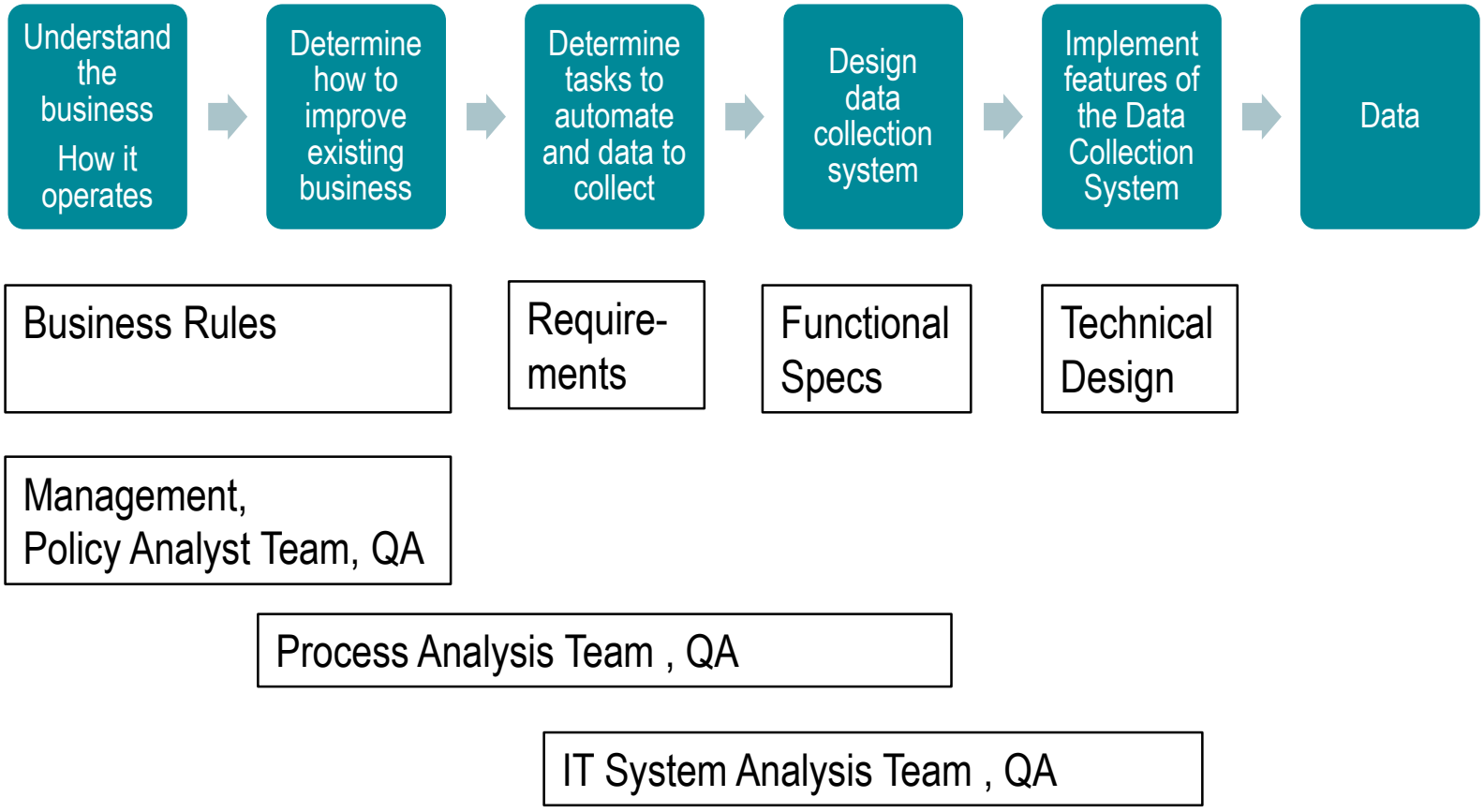
Getting beyond: AA and DMIS

- Why do AA tables and DMIS datasets exist
- AA and DMIS: Similarities and Differences
- Can AA and DMIS be reconciled

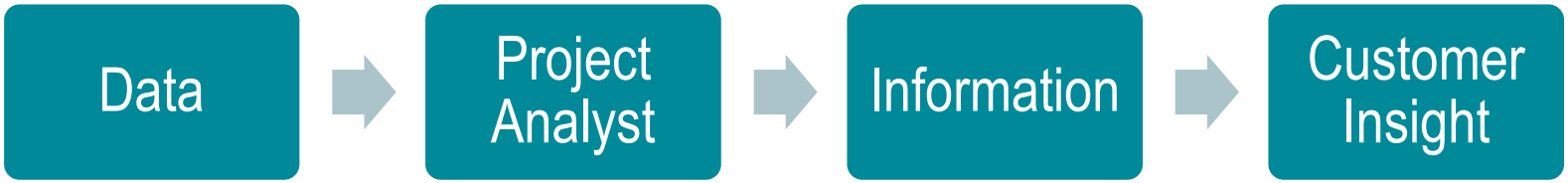
Why does an AA or DMIS exist



Business Process and Roles



Project Analyst Role



- The analyst works with the data to compile information for the customer.
- The quality of that information depends on representativeness data to the question in hand.
- The analyst documents any assumptions (based on the question), scope and limits of interpretation, etc.

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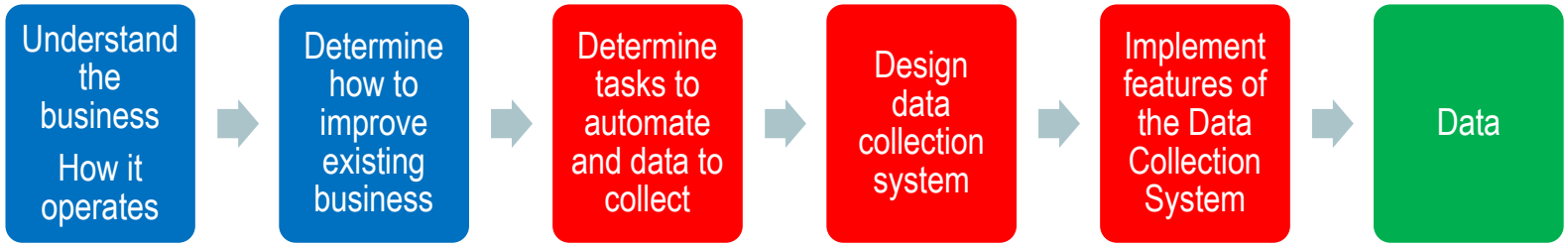
When the above process is working, the analyst sees the following

When, the process is not working well



- Blue doesn't address limitations of Red
  - Time and Cost to make design changes
  - Self Reported Data, Inherent Data Quality
  - Available Information
- Red isn't flexible enough to meet Blue's needs
  - Time and Cost to make design changes
  - Individual data collections miscommunicate
  - Assumes too much or wrong responsibilities

To the analyst (team), it feels more like ……

Ya want me to hard wire a new Reg into this baby and document it? You don't know the final rules? By next week? No Problem

Then in order to meet customer demands

- The analyst (or team) will create a patch data set to fix the data system
- To provide a reasonable working data set for consistent answers based on incomplete, contradictory, missing data.

Problems with having patched system

The patch is often interpretated as the data process

- The patch masks issues associated with the data, but does not correct the issues.
- Two or more replicating processes
- Time, construction, and maintenance
- Confusion of roles
- Territorialism in order to self protect programs
- In the end becomes unwieldy

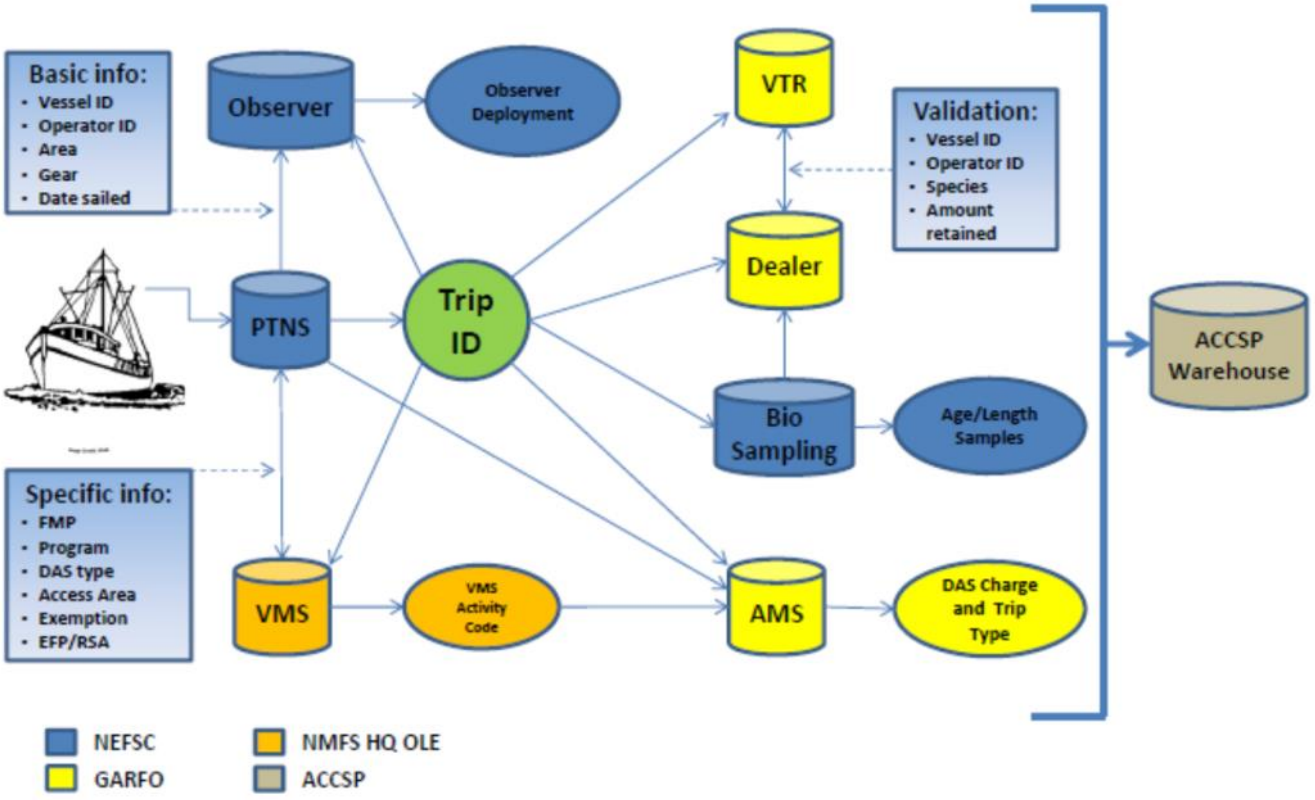
Main Patch: Record Matching

- Since DMIS and AA methodologies are dealer centric in determining total landings, species totals are very close
- Most differences between DMIS and AA are from record matching and orphan record assignment
- This leads to differences in assignment of area and broad stock assignment.
- It also effects any analysis based off of those assignments

Fishery Dependent Data Visioning Project

- Build comprehensive data collection system to support management and stock assessments
- FDDV is a long term solution that will replace/diminish patches
- FDDV will eliminate/reduce need for stock apportionment methods

Fishery Dependent Data Modernization Trip ID Flow



AA and DMIS: Similarities and Differences

AA Description

- AA is a yearly procedure to supplement commercial landing data (1994 onward) with area fished and effort information using Vessel Trip Reports (VTR)

- The goal is to eliminate the need for single species allocation for each analysis conducted and to maintain a consistent, comprehensive commercial landings database from 1963–present containing the information needed to address management questions, conduct stock assessments, and perform ecosystem research

Percent difference [(CFDERS – AA)/ CFDERS * 100] between CFDBS.CFDERSyyyy and CFDBS.CFDETSyyyyAA, by species for 10 selected species, 2011-2016 calendar year.

Species	2011	2012	2013	2014	2015	2016
BUTTERFISH	0.0066	0.0060	0.2685	0.1358	0.0122	0.0363
COD, ATLANTIC	-0.0144	-0.0228	0.0156	0.0233	-0.0114	-0.0020
FLOUNDER, SUMMER (FLUKE)	0.0547	0.1175	0.5703	-0.6219	0.3219	-0.1157
FLOUNDER, WINTER	0.0122	0.1710	0.0104	0.0888	-0.0069	0.0312
FLOUNDER, YELLOWTAIL	0.0047	3.8462	0.0721	0.0534	-0.0205	0.0153
GOOSEFISH	1.2641	0.0346	0.2970	0.2017	0.0139	0.0277
HADDOCK	0.0057	0.4851	-0.0049	-0.0153	-0.0145	-0.0012
MACKEREL, ATLANTIC	-0.4480	0.0002	-5.7078	1.2083	-0.0004	0.3966
SCUP	-0.0639	-0.0118	0.3082	-0.0281	-0.0430	0.0094
SEA BASS, BLACK	0.1349	0.0489	-0.0415	-0.1107	-3.5901	0.0086

Note 5 cells: 2011 monk; 2012 yt; 2013 mack; 2014 mack; 2015 BSB where percent difference is greater than 1%.

DMIS Description

- DMIS is a weekly procedure to supplement commercial landing data (2007 onward) with area fished and effort information using Vessel Trip Reports (VTR) and other needed records such as declarations, catch reports, etc

- The goal is to eliminate the need for single species allocation for each analysis conducted and to maintain a consistent, comprehensive commercial landings database from 2007–present containing the information needed to address management questions, conduct quota monitoring, and perform research

AA Assumptions

- Dealer landings is a census of total landings
- Vessels land only once per day
- Each trip (permit-month- day) in the Dealer data set represents only one trip
- (consolidated trips are special cases and handled according)
- VTR data are representative subset of the Dealer data

DMIS Assumptions

- Dealer landings is a census of total *sold* landings
- All reported data for a permit number are valid for that permit number
- Only one VTR will be reported per trip; multiple day trips are allowed
- Matched VTR to Dealer data are representative subset of missing trip information
- Each orphan (dealer, AMS declaration, VTR) report represents one trip.
- Each permit zero record (permit-month- day) in the Dealer data set represents only one trip

AA matching and area determination

- A dealer trip identifier is assigned to all transactions associated with a trip;
- A dealer trip will be matched to VTR data at one of 4 levels (VTR data have been aggregated into four levels):
  - **Level A 1:1 match**

    matches a VTR trip based upon permit-month-day
  - **Level B 1: vessel match**

    matches a group of VTR trips for same vessel within a month, species group and gear type
  - **Level C 1: fleet match**

    matches a group of VTRs for same fleet within a tonclass, port group, species group and gear type
  - **Level D 1: fleet match**

    matches a group of VTR trips for the general fleet (port group)

AA matching and area determination

- At Level A, the VTR statistical area is used.
  - subtrips may occur at Level A.

- At Levels B, C, and D, statistical area is assigned to a dealer trip on a probabilistic basis by sampling (with replacement) the distribution of unique areas within the stratification cell of a Level.
  - Each dealer trip has been randomly assigned a value between 0 and 1. This value is compared with the cumulative probabilities within the cell to select an area. The cumulative probabilities are based on number of trips and unique areas in the cell.
  - No subtrips at Level B, C, or D.
  - The area probability is used to capture the uncertainty associated with the statistical area landings at Levels B, C and D.

DMIS matching and assignment to VTR area

- DMIS only matches data records at the individual trip level for a given permit number.

- No aggregation of records across trips or VTRs is performed. When available, the reported VTR VTRSERNO is used to match records. When the VTRSERNO is not available, records are matched using a scoring algorithm based on record dates.

- Once matched, the trip level VTR area and effort information is applied to the derived landed values, a function dealer and VTR values. If the VTR information is not available for an individual trip, weighted information by time from previous fully matched trips for the permit is used to estimate the missing information.

DMIS matching and assignment to VTR area

- Assignment to area is by apportioning dealer landings over VTR subtrips based on reported landings.
- Reported VTR area for groundfish trips, calculated area for all others

AA and DMIS Comparison, 10 species, 6 years

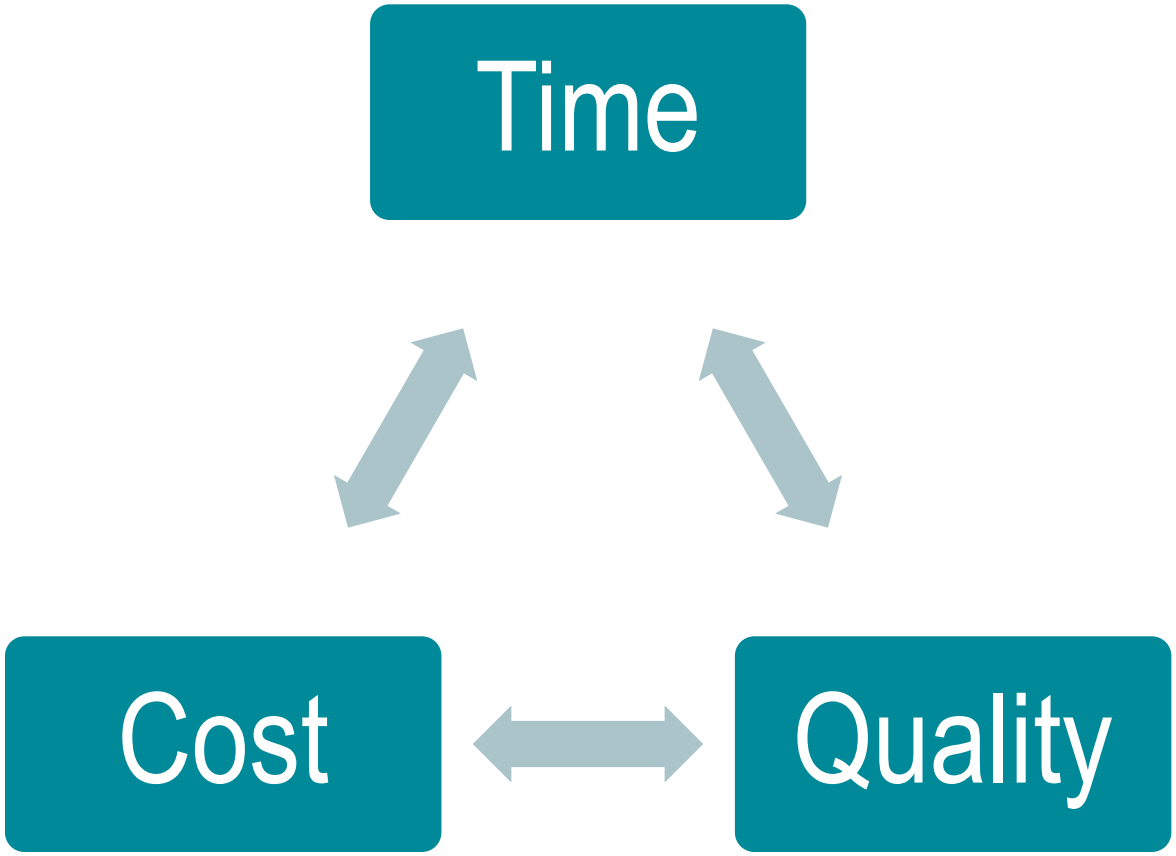
SPECIES_ITIS	COMMON_NAME	SCIENTIFIC_NAME	Stocks
164712	COD,ATLANTIC	GADUS MORHUA	GM, GB
172909	FLOUNDER,YELLOWTAIL	LIMANDA FERRUGINEA	GM, GB, SNE/MA
172905	FLOUNDER,WINTER	PSEUDOPLEURONECTES AMERICANUS	GM, GB, SNE/MA
164744	HADDOCK	MELANOGRAMMUS AEGLEFINUS	GM, GB
164499	GOOSEFISH	LOPHIUS AMERICANUS	Northern, Southern
167687	SEA BASS,BLACK	CENTROPRISTIS STRIATA	UNIT
172567	BUTTERFISH	PEPRILUS TRIACANTHUS	UNIT
169182	SCUP	STENOTOMUS CHRYSOPS	UNIT
172735	FLOUNDER,SUMMER (FLUKE)	PARALICHTHYS DENTATUS	UNIT
172414	MACKEREL,ATLANTIC	SCOMBER SCOMBRUS	UNIT

Can AA and DMIS be reconciled

Short Answer: Not easily or in a timely manner

- To compare and detail differences due to assumptions, matching, any applied rules, AA and DMIS need to be linked at the dealer record level
- AA cannot be deconstructed to link back to an original dealer record.
- All comparison are done at a final build for both AA and DMIS

Short Answer: Not easily or in a timely manner



Same Data Set - Different Answers

How I prefer to handle

1. One way to look at it, it means the answer may not be influenced by any researcher's bias and it does not dictate or micro manage the method
2. Ensure the researcher has a clear understanding of goal with specific questions being asked
3. Find a solution, not an answer. Solutions
   - Supply reasons or explanations or other notes to clarify the work presented.
   - Demonstrate understanding of the methods involved.
   - Communicate what has been done and why
4. Might require the researchers come to a defensible consensus with a healthy debate

Interesting Article: Science isn't broken

Link: https://fivethirtyeight.com/features/science-isnt-broken/#part1

Questions and Comments

Additional Material:
AA and DMIS Comparison Tables

Stock Assessments

US Comm Landings

- Stock-specific landings
- Kall landings for various fleets using gear, mesh

(not using VMS declaration)

Stock Apportionment Method:

- Trip-based Allocation

1:1 matching (p-m-d)

Non-matches (probability-based)

US Comm Discards

- Stock-specific discards
- Various fleets, stratifying using gear, mesh (not using VMS declaration)

Estimation Methods:

- Combined ratio

CY FY, varies by FMP

JAN	JAN
FEB	FEB
MAR	MAR
APR	APR
MAY	MAY
JUN	JUN
JUL	JUL
AUG	AUG
SEP	SEP
OCT	OCT
NOV	NOV
DEC	DEC
JAN	JAN
FEB	FEB
MAR	MAR
APR	APR
MAY	MAY
JUN	JUN
JUL	JUL
AUG	AUG
SEP	SEP
OCT	OCT
NOV	NOV
DEC	DEC
JAN	JAN
FEB	FEB
MAR	MAR
APR	APR

Quota Monitoring

US Comm Landings

- Stock-specific landings
- Kall landings for various fleets using gear, mesh (VMS declaration)

Stock Apportionment Methods:

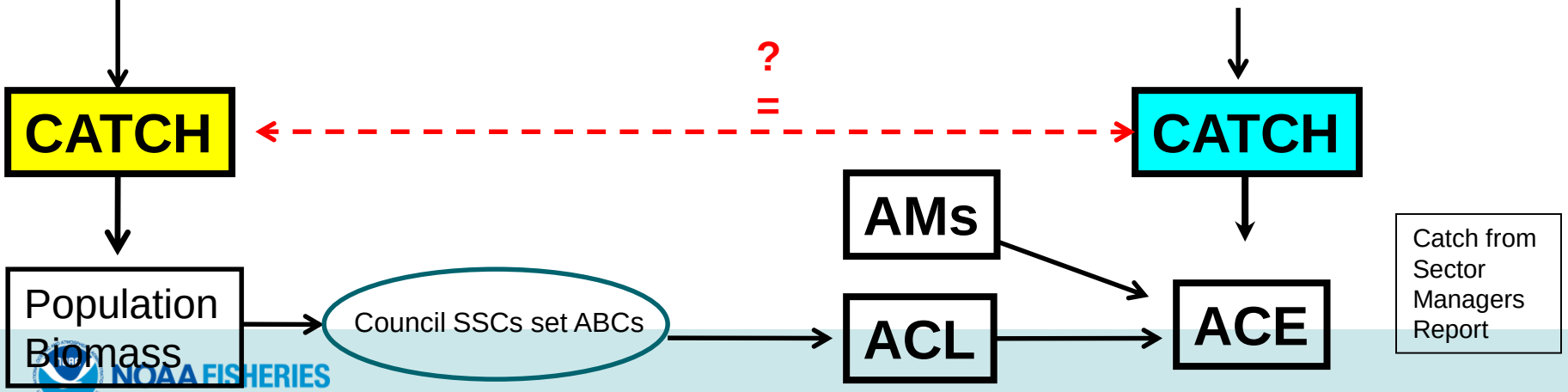
- Trip-based Allocation
  - 1:1 matching (p-v)
  - Non-matches (function-based)
- Data Reconciliation System (DRS)

US Comm Discards

- Stock-specific discards
- GF fleets stratifying using mri (sector), gear, mesh (fleets identified via VMS declaration)

Estimation Methods:

- Cumulative ratio



Stock Assessments

US Comm Landings

Stock Apportionment Method (AA procedure):

Multi-tier Trip-based Allocation

- 4 levels (A, B, C, and D)
  - A 1:1 matching (trip; p-m-d)
  - B vessel-month level
  - C fleet level
  - D port level
- Area is probability-based at B, C, D

Quota Monitoring

US Comm Landings

Stock Apportionment Methods:

- Apportionment over VTR effort
- Missing Area/Gear information based on permit history

Stock Assessments

Key Elements:

- 1994 - present
- Total commercial landings are assumed known; area and effort determined.
- Mandatory and non-mandatory data (mandatory data should have VTR)
- Split trips (change in area, gear, mesh) occur only at Level A (1:1 match)
- AA tables contain all commercial landings reported by dealers (including State landings but State data are not apportioned b/c no corresponding VTR)
- Biological samples (Lengths and Ages) need to link to individual trips to obtain area for the sample
- Random component of allocation does not contribute to wide spread in stock landings.
- Center Ref Document 08-18
- Discards estimated via separate procedure
- Only selected fleets that can be estimated over 30+ yr stock assessment time series;
- Stocks may use 1 or more regions within stock area

For multi-stock species, Kall may be underestimated because area = '000' will be excluded.

- Majority of Area = '000' is associated with State data (non-mandatory data) and varies by gear type (OT and GN have relatively small % of area = '000').

Quota Monitoring

Key Elements:

- 2007 – present / Records matched to 2004
- Total commercial landings are assumed known; area and effort determined.
- DMIS tables contain all commercial landings reported by dealers (not including State landings since State data are not apportioned b/c no corresponding VTR)
- GF discards included in DMIS. Other Discards estimated via separate procedure
- All trip information can be linked back to origin data records, derived data is flagged

AA and DMIS Comparison, 10 species, 6 years

SPECIES_ITIS	COMMON_NAME	SCIENTIFIC_NAME	Stocks
164712	COD,ATLANTIC	GADUS MORHUA	GM, GB
172909	FLOUNDER,YELLOWTAIL	LIMANDA FERRUGINEA	GM, GB, SNE/MA
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167687	SEA BASS,BLACK	CENTROPRISTIS STRIATA	UNIT
172567	BUTTERFISH	PEPRILUS TRIACANTHUS	UNIT
169182	SCUP	STENOTOMUS CHRYSOPS	UNIT
172735	FLOUNDER,SUMMER (FLUKE)	PARALICHTHYS DENTATUS	UNIT
172414	MACKEREL,ATLANTIC	SCOMBER SCOMBRUS	UNIT

US commercial landings (live, mt) from CFDBS.CFDERSyyyy (DERS) and CFDBDS.CFDETSyyyyAA (AA) for 10 selected species, 2011-2016 calendar year.

	2011		2012		2013		2014		2015		2016	
Species	DERS	AA	DERS	AA	DERS	AA	DERS	AA	DERS	AA	DERS	AA
BUTTERFISH	663.61	663.57	639.61	639.57	1,094.06	1,091.12	3,139.28	3,135.02	2,103.83	2,103.58	1,194.10	1,193.67
COD, ATLANTIC	7,984.21	7,985.36	4,765.30	4,766.39	2,262.76	2,262.41	2,348.37	2,347.82	1,529.02	1,529.20	1,461.34	1,461.37
FLOUNDER, SUMMER (FLUKE)	7,517.12	7,513.01	5,918.31	5,911.36	5,695.89	5,663.40	4,988.83	5,019.85	4,857.79	4,842.15	3,537.39	3,541.48
FLOUNDER, WINTER	2,124.43	2,124.17	2,395.26	2,391.16	2,750.77	2,750.49	1,987.31	1,985.55	1,706.16	1,706.28	1,162.73	1,162.37
FLOUNDER, YELLOWTAIL	1,831.11	1,831.03	2,377.96	2,286.50	2,079.95	2,078.45	1,777.43	1,776.48	1,195.51	1,195.75	1,351.55	1,351.34
GOOSEFISH	8,708.93	8,598.83	9,760.69	9,757.32	8,611.23	8,585.65	8,553.83	8,536.57	8,638.14	8,636.94	9,056.90	9,054.39
HADDOCK	5,709.05	5,708.72	1,976.15	1,966.56	1,870.46	1,870.55	4,553.28	4,553.98	5,411.89	5,412.68	5,023.51	5,023.57
MACKEREL, ATLANTIC	530.68	533.06	5,332.63	5,332.62	4,136.35	4,372.45	5,977.37	5,905.14	5,616.41	5,616.43	5,710.08	5,687.43
SCUP	6,814.07	6,818.42	6,750.53	6,751.33	8,132.60	8,107.53	7,239.20	7,241.23	7,721.34	7,724.66	7,147.36	7,146.69
SEA BASS, BLACK	767.06	766.02	782.44	782.06	1,026.54	1,026.97	1,087.85	1,089.05	1,078.98	1,117.72	1,174.35	1,174.25

Percent difference [(CFDERS – AA)/ CFDERS * 100] between CFDBS.CFDERSyyyy and CFDBS.CFDETSyyyyAA, by species for 10 selected species, 2011-2016 calendar year.

Species	2011	2012	2013	2014	2015	2016
BUTTERFISH	0.0066	0.0060	0.2685	0.1358	0.0122	0.0363
COD, ATLANTIC	-0.0144	-0.0228	0.0156	0.0233	-0.0114	-0.0020
FLOUNDER, SUMMER (FLUKE)	0.0547	0.1175	0.5703	-0.6219	0.3219	-0.1157
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SEA BASS, BLACK	0.1349	0.0489	-0.0415	-0.1107	-3.5901	0.0086

Note 5 cells: 2011 monk; 2012 yt; 2013 mack; 2014 mack; 2015 BSB where percent difference is greater than 1%.

AA Tables vs. Dealer DMIS[1] Species Level Landing Differences (mt), 2011-2016

Species	2011	2012	2013	2014	2015	2016
BUTTERFISH	0	0	-3	-4	0	0
COD,ATLANTIC	0	1	0	-1	0	0
FLOUNDER,SUMMER (FLUKE)	-145	-47	-40	-17	-69	-103
FLOUNDER,WINTER	0	-4	0	-2	0	0
FLOUNDER,YELLOWTAIL	0	-91	-1	-1	0	0
GOOSEFISH	-113	-3	-28	-16	3	-8
HADDOCK	0	-10	0	1	1	3
MACKEREL,ATLANTIC	6	0	236	-72	0	-23
SCUP	-18	0	-24	-8	2	-5
SEA BASS,BLACK	-8	0	0	-4	34	-11

[1]Dealer DMIS: Only includes dealer reported live pounds; Dealer date of purchase determines year;
Omits Party/Charter and Carrier trips; Adds dealer landings from permits not in DMIS ("000000") to total DMIS landings

AA Tables vs. Dealer DMIS[1] Species Level Percent Differences [(AA - Calibrated DMIS)/AA * 100], 2011-2016

Year	2011	2012	2013	2014	2015	2016
BUTTERFISH	0.0000	0.0000	-0.2750	-0.1306	-0.0095	-0.0335
COD,ATLANTIC	0.0025	0.0231	-0.0177	-0.0255	0.0131	0.0068
FLOUNDER,SUMMER (FLUKE)	-1.9353	-0.7951	-0.6992	-0.3316	-1.4271	-2.8999
FLOUNDER,WINTER	-0.0141	-0.1673	-0.0109	-0.0906	0.0059	-0.0258
FLOUNDER,YELLOWTAIL	-0.0109	-4.0017	-0.0674	-0.0506	0.0251	-0.0222
GOOSEFISH	-1.3118	-0.0359	-0.3250	-0.1824	0.0301	-0.0861
HADDOCK	-0.0070	-0.4831	0.0000	0.0154	0.0148	0.0557
MACKEREL,ATLANTIC	1.0880	0.0000	5.3975	-1.2096	0.0000	-0.3974
SCUP	-0.2640	-0.0015	-0.2985	-0.1159	0.0285	-0.0644
SEA BASS,BLACK	-1.0705	0.0000	0.0195	-0.3295	3.0509	-0.9538

AA Tables vs. Dealer DMIS[1] Stock Level Landing Differences (mt), 2011-2016

Species	Stock	2011	2012	2013	2014	2015	2016
BUTTERFISH	UNIT	0.0	0.0	-2.9	-4.1	-0.2	-0.4
COD,ATLANTIC	GB	-209.6	-62.4	-29.3	-46.9	-51.6	-131.4
	GOM	139.6	35.3	16.4	25.8	24.6	63.1
	NK	70.1	28.3	12.5	20.6	27.0	68.3
FLOUNDER,SUMMER (FLUKE)	UNIT	-145.4	-47.0	-39.6	-16.6	-69.2	-102.6
FLOUNDER,WINTER	GB	-74.0	-88.0	-101.5	-43.5	3.4	12.0
	GOM	26.3	33.1	47.1	15.5	46.4	20.2
	NK	-24.7	40.7	12.3	49.6	26.3	67.1
	SNE	72.1	10.0	41.9	-23.3	-75.8	-99.7
FLOUNDER,YELLOWTAIL	CC	31.0	26.3	31.1	1.6	11.3	13.5
	GB	-12.6	6.0	0.6	11.7	1.3	2.8
	NK	10.8	-77.9	12.5	26.1	29.4	30.0
	SNE	-29.4	-46.0	-45.7	-40.5	-41.8	-46.5
GOOSEFISH	NK	69.9	60.4	72.9	34.1	91.0	162.1
	NOR	-23.1	1.0	11.0	-17.6	40.3	-26.1
	SOU	-159.6	-65.0	-111.9	-32.2	-128.6	-143.7
HADDOCK	GB	-94.2	-34.0	-21.8	-105.3	-103.4	-138.5
	GOM	73.5	29.5	21.9	104.4	98.6	135.2
	NK	20.3	-5.2	0.1	1.5	5.6	6.0
MACKEREL,ATLANTIC	UNIT	5.8	0.0	236.1	-72.3	0.0	-22.7
SCUP	UNIT	-18.0	-0.1	-24.2	-8.4	2.1	-4.6
SEA BASS,BLACK	UNIT	-8.2	-0.1	0.1	-3.6	34.1	-11.3

AA Tables vs. DMIS Species Stock Level Percent Differences [(AA - Dealer DMIS)/AA*100], 2011-2016

Species	Stock	2011	2012	2013	2014	2015	2016
BUTTERFISH	UNIT	0.0	0.0	-0.3	-0.1	0.0	0.0
COD,ATLANTIC	GB	-6.3	-3.1	-2.2	-3.1	-4.1	-12.7
	GOM	3.1	1.3	1.8	3.2	11.9	22.2
	NK	33.4	42.6	40.7	56.6	52.2	47.8
FLOUNDER,SUMMER (FLUKE)	UNIT	-1.9	-0.8	-0.7	-0.3	-1.4	-2.9
FLOUNDER,WINTER	GB	-4.1	-4.6	-6.1	-3.9	0.4	2.6
	GOM	16.4	10.8	21.7	9.4	30.0	17.1
	NK	-78.4	51.3	28.9	59.4	51.3	69.9
	SNE	53.6	10.3	5.1	-3.7	-11.9	-20.5
FLOUNDER,YELLOWTAIL	CC	4.6	2.8	5.4	0.4	4.2	5.1
	GB	-1.4	1.3	0.5	16.8	2.2	11.2
	NK	45.0	-13.1	1.4	3.2	5.1	3.2
	SNE	-12.1	-14.3	-10.0	-7.9	-14.7	-37.1
GOOSEFISH	NK	44.1	31.2	40.3	36.7	67.3	74.7
	NOR	-0.7	0.0	0.3	-0.5	1.0	-0.6
	SOU	-3.1	-1.2	-2.2	-0.6	-2.9	-3.4
HADDOCK	GB	-1.8	-2.2	-1.3	-2.5	-2.2	-3.8
	GOM	14.9	7.1	10.3	33.5	15.2	10.1
	NK	85.7	-96.3	14.3	48.4	56.6	87.0
MACKEREL,ATLANTIC	UNIT	1.1	0.0	5.4	-1.2	0.0	-0.4
SCUP	UNIT	-0.3	0.0	-0.3	-0.1	0.0	-0.1
SEA BASS,BLACK	UNIT	-1.1	0.0	0.0	-0.3	3.1	-1.0

AA Tables vs. Total DMIS[1] Species Level Landing Differences (mt), 2011-2016

Species	2011	2012	2013	2014	2015	2016
BUTTERFISH	50	58	49	33	47	61
COD,ATLANTIC	56	22	-1	11	18	37
FLOUNDER,SUMMER (FLUKE)	198	406	367	279	251	171
FLOUNDER,WINTER	46	28	20	25	19	24
FLOUNDER,YELLOWTAIL	-17	-92	-4	6	8	9
GOOSEFISH	-182	47	-7	-17	-18	-14
HADDOCK	-81	-76	-22	-10	-23	-32
MACKEREL,ATLANTIC	-84	-233	263	-33	-51	-221
SCUP	990	1286	1149	1042	1094	817
SEA BASS,BLACK	122	147	168	193	274	211

[1]Total DMIS: *Includes dealer, VTR, and bait/home consumption from VTR; VTR date land determines year; Omits Party/Charter and Carrier trips; Omits dealer landings from permits not in DMIS ("000000") to total DMIS estimate*

AA Tables vs. Total DMIS Species Level Percent Differences [(AA - Total DMIS)/AA * 100], 2011-2016

Year	2011	2012	2013	2014	2015	2016
BUTTERFISH	7.56	9.05	4.45	1.05	2.24	5.07
COD,ATLANTIC	0.71	0.47	-0.03	0.45	1.20	2.50
FLOUNDER,SUMMER (FLUKE)	2.63	6.87	6.47	5.56	5.18	4.84
FLOUNDER,WINTER	2.17	1.18	0.74	1.27	1.13	2.03
FLOUNDER,YELLOWTAIL	-0.93	-4.01	-0.20	0.33	0.66	0.63
GOOSEFISH	-2.11	0.48	-0.08	-0.19	-0.21	-0.15
HADDOCK	-1.41	-3.87	-1.15	-0.21	-0.42	-0.63
MACKEREL,ATLANTIC	-15.72	-4.36	6.02	-0.57	-0.92	-3.89
SCUP	14.52	19.04	14.17	14.39	14.16	11.43
SEA BASS,BLACK	15.86	18.81	16.36	17.69	24.52	17.98

Note: differences greater than 3% are highlighted.

AA Tables vs. Total DMIS Stock Level Landing Differences (mt), 2011-2016

Species	Stock	2011	2012	2013	2014	2015	2016
BUTTERFISH	UNIT	50	58	49	33	47	61
COD,ATLANTIC	GB	-247	-76	-37	-50	-55	-138
	GOM	93	32	6	27	24	62
	OTH	210	67	31	34	49	112
FLOUNDER,SUMMER (FLUKE)	UNIT	198	406	367	279	251	171
FLOUNDER,WINTER	GB	-76	-89	-103	-44	3	11
	GOM	23	31	45	15	46	20
	OTH	32	79	43	84	51	96
	SNE	68	7	36	-30	-81	-104
FLOUNDER,YELLOWTAIL	CC	14	20	27	1	11	13
	GB	-17	2	-1	12	1	3
	OTH	24	-66	28	37	39	39
	SNE	-38	-49	-58	-44	-44	-46
GOOSEFISH	NOR	-53	-18	0	-21	16	-40
	OTH	156	194	181	92	135	217
	SOU	-285	-128	-188	-88	-169	-191
HADDOCK	GB	-165	-97	-39	-114	-127	-166
	GOM	61	16	16	102	95	127
	OTH	24	5	1	3	10	7
MACKEREL,ATLANTIC	UNIT	-84	-233	263	-33	-51	-221
SCUP	UNIT	990	1,286	1,149	1,042	1,094	817
SEA BASS,BLACK	UNIT	122	147	168	193	274	211

AA Tables vs. Total DMIS Stock Level Percent Differences [(AA - Total DMIS)/AA*100], 2011-2016

Species	Stock	2011	2012	2013	2014	2015	2016
BUTTERFISH	UNIT	8	9	4	1	2	5
COD,ATLANTIC	GB	-7	-4	-3	-3	-4	-13
	GOM	2	1	1	3	12	22
	OTH	100	100	100	93	95	79
FLOUNDER,SUMMER (FLUKE)	UNIT	3	7	6	6	5	5
FLOUNDER,WINTER	GB	-4	-5	-6	-4	0	2
	GOM	15	10	21	9	30	17
	OTH	100	100	100	100	100	100
	SNE	50	8	4	-5	-13	-21
FLOUNDER,YELLOWTAIL	CC	2	2	5	0	4	5
	GB	-2	1	-1	17	2	11
	OTH	100	-11	3	5	7	4
	SNE	-16	-15	-13	-8	-15	-37
GOOSEFISH	NOR	-2	0	0	-1	0	-1
	OTH	98	100	100	99	99	100
	SOU	-5	-2	-4	-2	-4	-5
HADDOCK	GB	-3	-6	-2	-3	-3	-5
	GOM	12	4	8	33	15	10
	OTH	100	100	100	81	96	99
MACKEREL,ATLANTIC	UNIT	-16	-4	6	-1	-1	-4
SCUP	UNIT	15	19	14	14	14	11
SEA BASS,BLACK	UNIT	16	19	16	18	25	18

Additional Material: FDDV

FDDV Data Process Planning

- Transitioning from visioning and planning phase to development phase.
- This phase of the project will be an ongoing coordinated endeavor with incremental improvements that span several years until the final FDDV vision is fully realized.
    - It will include an overhaul of our existing fisheries dependent data collection programs and development of new:
        - infrastructure;
        - architecture;
        - databases;
        - technology;
        - regulations;
        - applications; and
        - change in reporting requirements.

FDDV Data Process Planning

- Forming Project Teams
  - Technical Project Team – led by NEFSC staff with significant participation from technical staff from GARFO and ACCSP
    - Development of unique trip identifiers and integration of a trip management system (TMS)
    - Collect requirements needed to modify existing architecture (SAFIS and other available applications such as PTNS2)
    - Develop next-generation eVTR system
  - Policy Project team – led by GARFO staff with potential participation from Council and ASMFC staff
    - Identify and develop requirement documents assist system developers
    - Collaborations with Councils and ASMFC to identify regulatory requirements to support FDDV programming
    - Develop outreach and communication plans in collaboration with Councils and ASMFC

FDDV Data Process Planning

- Significant collaboration with ACCSP on the technical programming component and with the Councils and ASMFC for the policy/management component

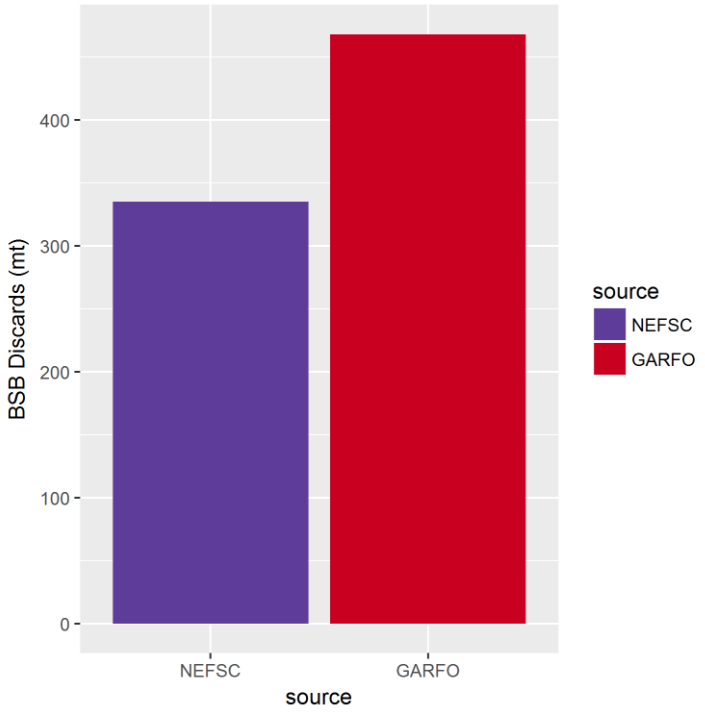
FDDV Data Process Planning

- Significant collaboration with ACCSP on the technical programming component and with the Councils and ASMFC for the policy/management component.
- FDDV Updates / Presentations
  - New England Fishery Management Council – September 2018
  - Mid-Atlantic Fishery Management Council – October 2018
  - Atlantic States Marine Fisheries Commission – October 2018

Additional Material: Revisiting Black Sea Bass (2015)

- Estimates of total discards (D) are dictated by:
    1) Data sources
    2) Rate calculation procedures
- Differences in 1 and/or 2 = differences in D

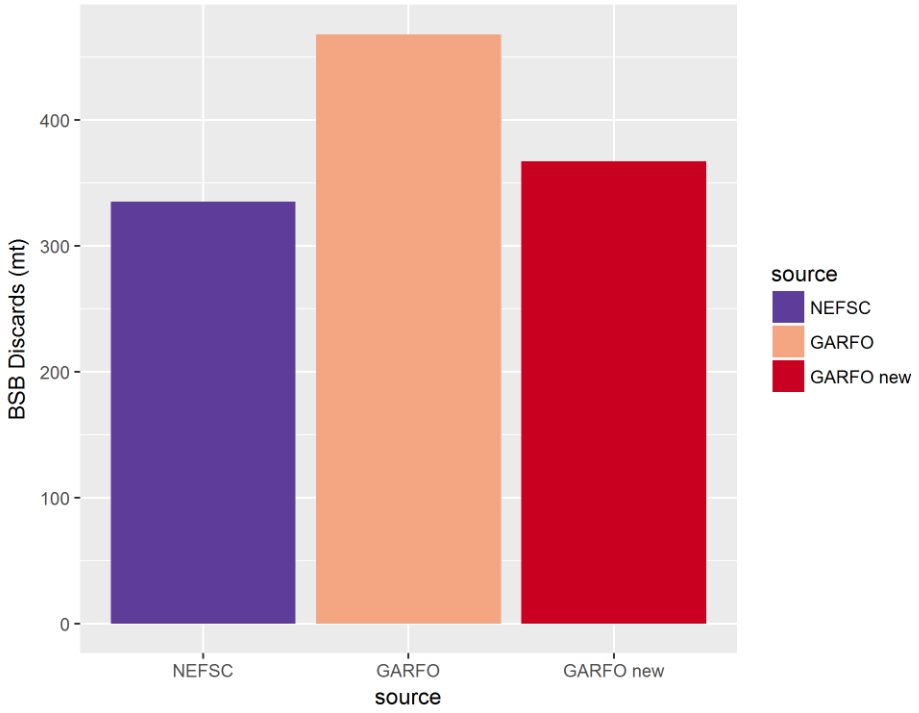
- Black sea bass (BSB) in 2015



NEFSC = **335** mt

GARFO = **468** mt

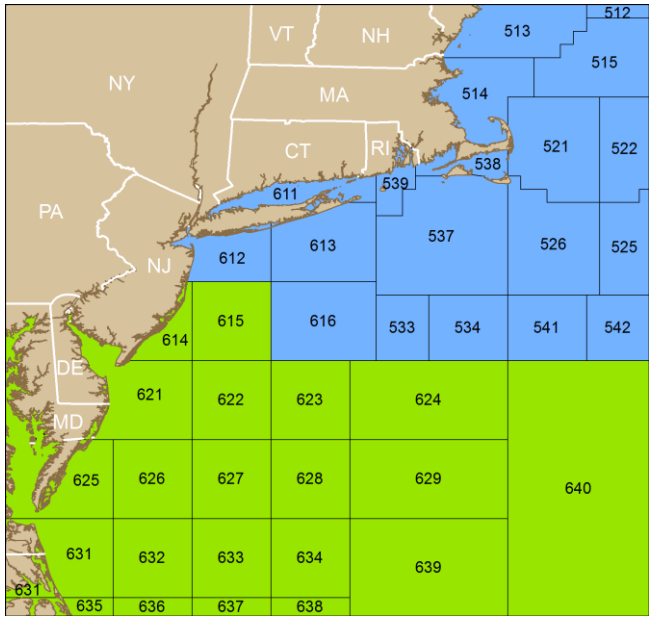
- Black sea bass (BSB) in 2015



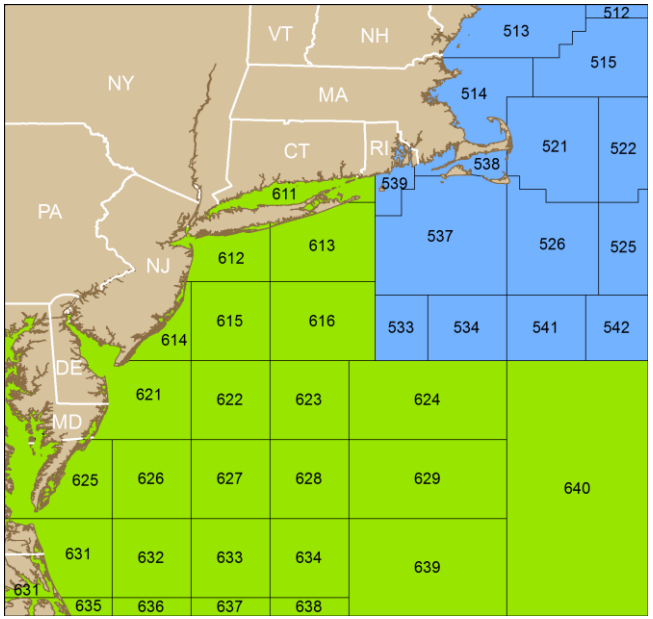
Changes:

- lobster pot stratum
- N/S region split
- **367** mt

- Black sea bass (BSB) in 2015

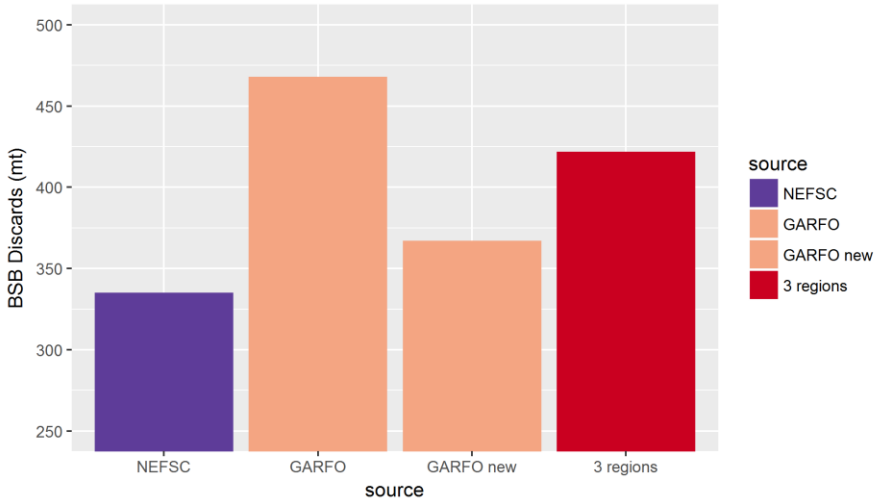


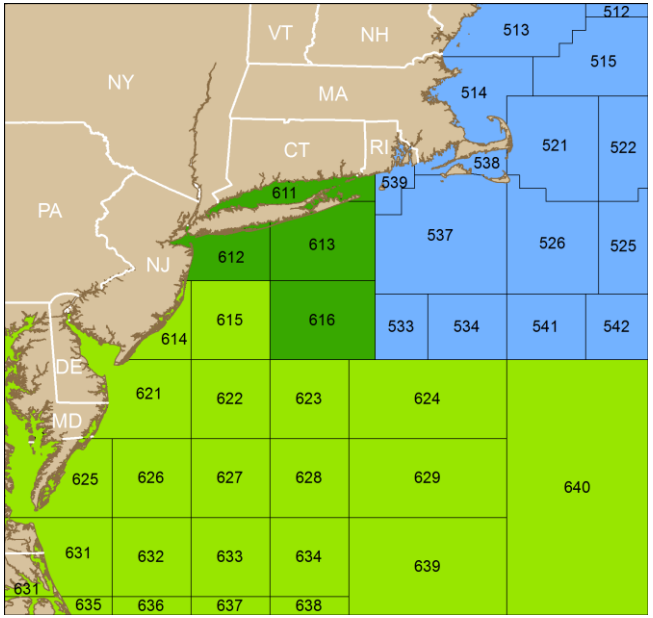
NEFSC



GARFO

- Black sea bass (BSB) in 2015
- Including 3rd region
  - More variance explained (regression)
  - Higher total discard estimate: **422** mt





End Material