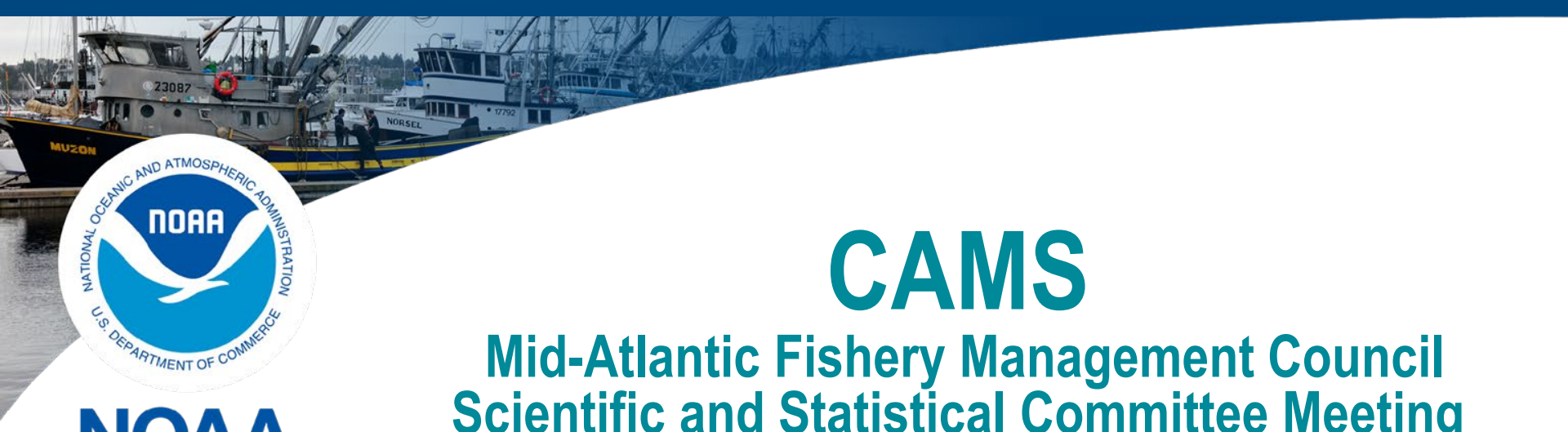


NOAA FISHERIES

CAMS

Mid-Atlantic Fishery Management Council Scientific and Statistical Committee Meeting

May 09, 2023

Greater Atlantic Regional Fisheries Office

Northeast Fisheries Science Center

CAMS Goal

The Catch Accounting and Monitoring System (CAMS) will provide a single comprehensive source for all Northeast US commercial catch (landings and discards) for quota monitoring, stock assessment, protected resources estimation, ecosystem modeling, and other needs of GARFO and NEFSC in a fully documented relational database with appropriate user views and tables.

- Using records from several database collections, consolidate the information at the **trip** (sub_trip) level to either provide data or derived information based on that data
- Where those same databases may or may not have an inherent identifier(s) to link at the trip level
- In a repeatable and reproducible method while running in real time
- Allowing reverse linking to the source data
- That will allow flexibility in meeting future changing policies, database structures, and end user requirements

CAMS structure/approach

- "Single set of books"
- Run in real time (weekly) to meet all current and future needs for commercial fisheries data with automated workflow targeted
- Consistent stocks estimates (were some minor differences at edges)
- Include all sources of removals
- Sub trip based estimates of catch for every federally-managed commercial species
- Apply consistent discard estimation to all fleets
- Support Quota monitoring, Stock assessment, Ecosystem modeling, Protected species assessment, Socio-economic analysis, and many more…
- Using records from several database collections, consolidate the information at the **trip**

Previous Lessons Learned

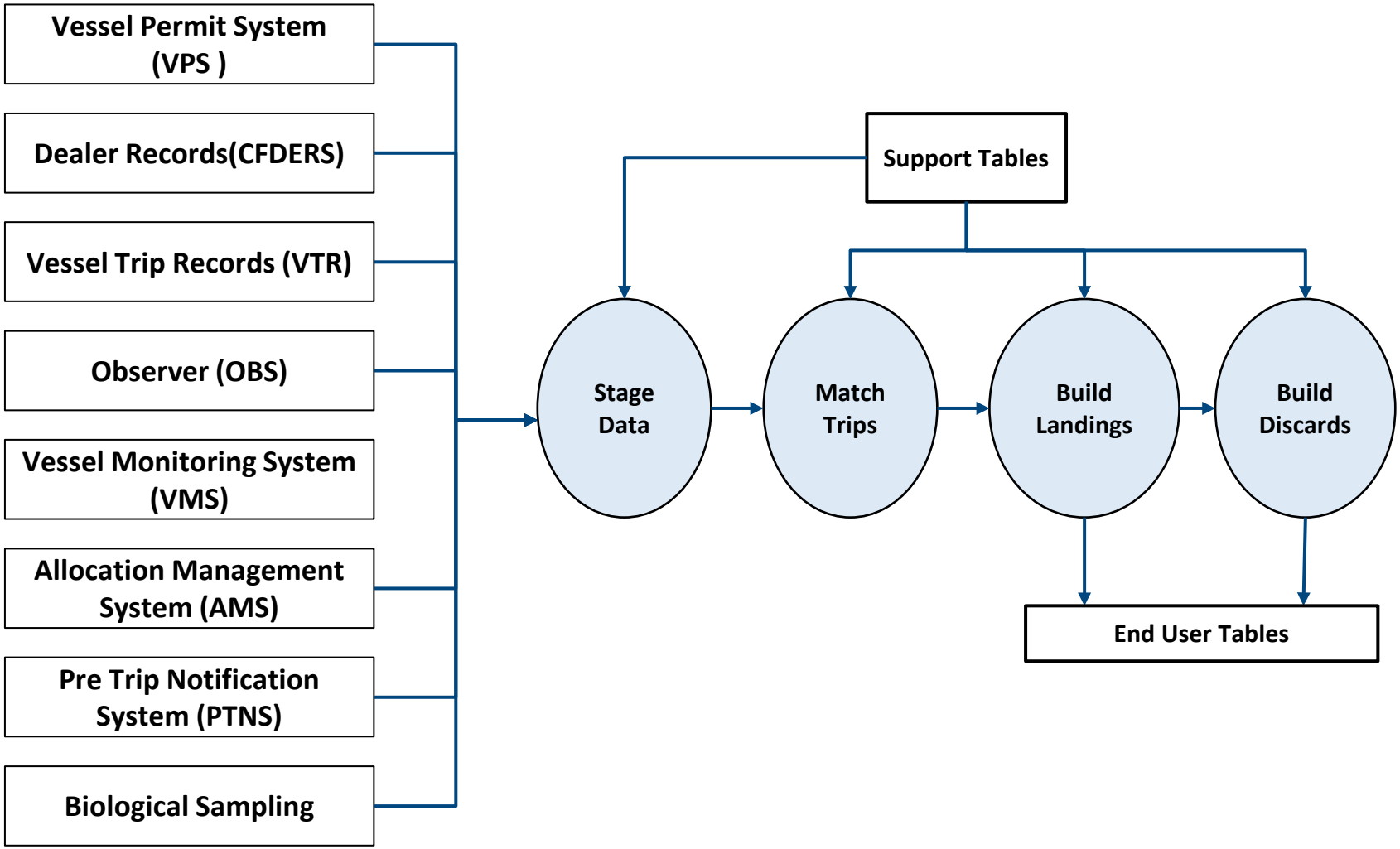
AA = Area Allocation

- Used at NEFSC for stock assessments
- Conducted after all data from calendar year available
- **Based on trip**
- Assumes Dealer landings are a census

DMIS = Data Matching Imputation System

- Used at GARFO for quota monitoring
- Conducted weekly using current data
- **Based on trip**
- Includes all sources of removals
- Landed, home consumption, non-matched trips/species

CAMS Process Overview



CAMS Current Status

- Successful review by the Center for Independent Experts (CIE)
  - Major Milestone Achieved
  - Unparalleled commitment, dedication, and cooperation between GARFO and NEFSC staff
- Focused on CAMS Final Review, Release and Transition
  - Continued CAMS Development & Implementation
  - Transition to CAMS

CIE Review

- Provided CAMS briefings to ACCSP (Jan 9) and Council & Commission Staffs (Jan 11)
  - Provided a high-level overview CAMS and an opportunity for initial questions
  - We provided advanced access to background documents used during the review that were made available to CIE on our CAMS Peer Review website
- CAMS CIE Review (Jan 17-19)
  - The panel was chaired by Cate O'Keefe and included:
  - Edvin Fuglebakk: Institute of Marine Research Norway;
  - Steven Holmes: National Institute of Water and Atmospheric Research Limited; and
  - Geoff Tingley: Gingerfish Ltd

CIE Reports and Findings

- CIE reports:
  - Summary Report
    - Posted on the NOAA Institutional Repository
  - Individual reports from the 3 CIE review panelists
    - Posted on the CIE Repository
- The Panel concluded that the CAMS system can be implemented as the primary, comprehensive source for all US commercial catch in the Greater Atlantic region (landings and discards) for quota monitoring and stock assessment purposes
- The summary report included recommendations that were binned into three categories
  - Immediate: Essential to support operational CAMS; months-1 year
  - Near-term: Likely to improve CAMS in near-term; 1-2 years
  - Long-term: Enhancements as CAMS evolves; 2-5 years

Continued CAMS Development & Implementation

Respond to CIE “immediate” recommendations, including:

- Complete the documentation of the operational version of CAMS
- Implement a Universal Trip Identifier to minimize the need for algorithmic record matching and data imputations and reduce errors and uncertainty
  - This is outside of CAMS.
  - CAMS is ready to use the UTID when it is available.
  - Development of approach nearly complete, implementation challenges remain.
- Need for establishing a CAMS change control board
- Transition planning to ensure users are aware of changes
- Initiate development of user experience testing strategies focused on user needs, expectations, and product satisfaction

Continued CAMS Development & Implementation

- Developing Transition Plan
  - Beginning late May or early June, convene monthly CAMS Transition Meetings with primary points of contact from primary data users to ensure current access to data is available and routine updates on any database issues and transition to CAMS
- Developing CAMS user guide for end users looking to use tables describing the handful of end user tables, what one row represents, and how to join them
  - This would supplement the business rules in the full documentation
- Workshop(s) to train primary users on CAMS
  - Starting with primary points of contact, provide either group or private workshop sessions or one large workshop where we would provide training and could walk around helping people with individual problems that arise
  - Potential expansion of workshops to include broader participation by primary data users
  - We envision providing examples and answering questions about joining tables and where different things they are used to are now located

CAMS Transition

Transition from area allocation tables (AA Tables) and data matching & imputation system (DMIS) to CAMS

- AA Tables - AA Table production stopped in 2019
  - Replicate AA landings tables for 2020 - 2023 (data for calendar years 2020-2023) have been created in CAMS and can be shared
  - Replicate AA landings tables will not be continuing after 2023

- DMIS - will not be continuing after September (target date)
  - DMIS social science branch (SSB) tables for the current year (used for groundfish/sector management) has been updated to the end of March
  - DMIS SSB tables will not continue after groundfish FY22 is finalized (i.e., data reconciliation identified through auditing is complete). Approximately September
  - Equivalent data (in different forms) is all available in a CAMS tables. We plan to help SSB users transition to these CAMS tables via workshops and direct contact as needed

Continued CAMS Development & Implementation

Finalizing discard component of CAMS (just about complete)

- Finalized support tables defining discard stratifications by stock
- Finalized table structures and definitions
- Added full variance estimation at the stock-subtrip level for uncertainty aggregation
- Teams of quota monitoring and stock assessment leads are examining discards for each stock and recommending final settings for CAMS

Landings

- CAMS provides landings outputs much in the same format as the NEFSC area allocation (AA) table structure e.g. CFAGE, CFDETS, CFDETT, and CFLEN.
  - This was the initial step in the CAMS development to ensure that CAMS data could be readily available by Center staff with minimal reprogramming of their code.
  - The long-term solution is to use the CAMS_LANDING table directly, which contains more information and updated data handling approaches. This will require users to change their code, so there will be a transition period when both are available to ensure the new code works as expected.
- Performed an internal review and comparison of legacy AA landings outputs to CAMS, which were found to be accurate and satisfactory for use in stock assessments.
  - Approved by the Assessment Oversight Panel
  - CAMS landings used in 2022 stock assessments, will be used in FY23 quota monitoring
- CAMS landings used to inform the June and September Stock assessments.

Discards

- Three data sources VTRs, observer report, and EM are linked and stratified based on regulation (for quota monitoring) and variables such as gear, mesh size, area definitions and sectors (for groundfish).
  - Species output tables were previously in different formats (DMIS tables at GARFO), which CAMS has standardized for reviewing and analysis efficiency.
  - CAMS use of EM data will be the first system to do so at scale and will broaden the data elements for analysis.
  - Through CAMS and the established connections to source data, end users will be able to analyze length and weight data from vessel reports, observer records, and EM.
- The CAMS team has completed the majority of an internal review of CAMS discard outputs.
  - Compared to stock assessment results that use Standardized Bycatch Reporting Methodology (SBRM) approach
  - CAMS discards may be used in 2023 stock assessments (more likely for fall than spring assessments), will be used in FY23 quota monitoring
  - Remaining effort consists of finalizing the length frequency review.

Immediate Recommendations & Status Updates

- Increase the period of time over which comparative testing with previous systems has been done from just 2019
  - Already being done for discards as part of joint stock assessment and quota monitoring evaluation of stock-specific discard settings in CAMS
  - Partially available for landings (see Dealer-DSM landings comparison in MAPS)
  - Will be part of future management track assessments
  - We ended up creating more years of landings and discards for comparison so 2-3 years have now been compared directly depending on the species
- It is recommended that implementation of CAMS as a single source of fisheries data for stock assessment and quota management for the NEFSC and GARFO is progressed at this time.
  - Stock assessments began using CAMS landings in 2022 assessments
  - Stock assessments in 2023 will begin using CAMS discards
  - Quota monitoring will begin using CAMS in May 2023

Questions?