CAMS discaRd Update

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[1] APSD

Discard Rate Current Method Summary (J. Michael Lanning summary)

1. Rates determine by observer reported values (gear, area, etc)
2. Incomplete observed trips have missing 'hauls' prorated by observed information from that trip
3. Trips with observer get reported/calculated observed discards of that specific trip
4. Unobserved trips get discards from the rate calculated from 1)
5. QM is only interested in the summary total of discards for each trip, not subtrips. Often the interested number is a summary of trips, ie. the herring total of bycatch for an area/season or a sector's season's total of GB Cod.
6. Other others are driven by regs. Here I would place transition rates and EM methods.

discaRd Base and Support tables

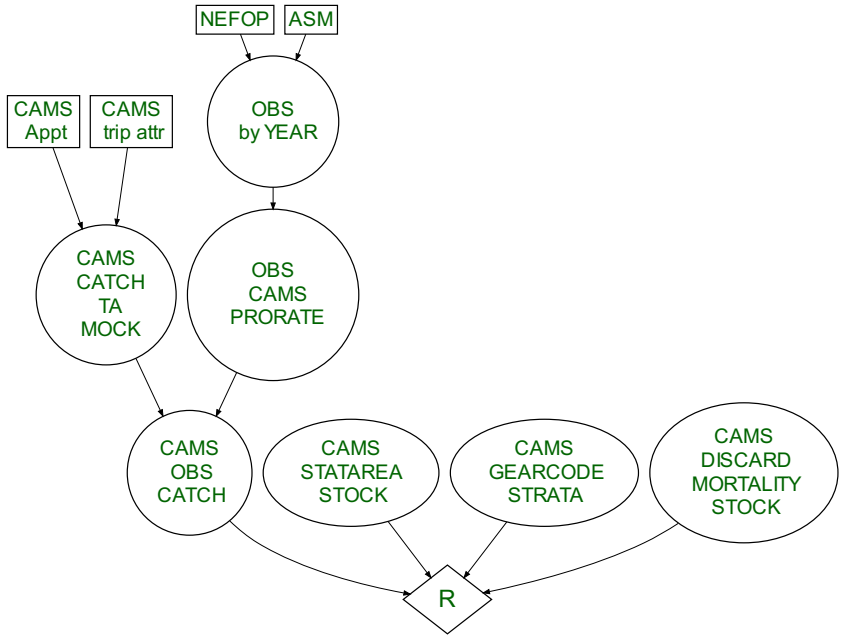


Figure 1: Base tables (rectangle), Intermediary (circle), and Support tables (Oval)

Prorated discards

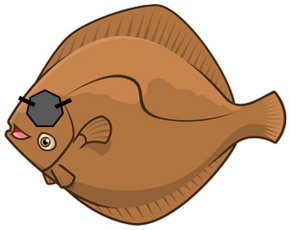
Incomplete observed trips have missing 'hauls' prorated by observed information from that trip

Prorate observed discards on unobserved hauls within a subtrip. This is done by applying a ratio of kept all on the entire trip to kept all on the unobserved hauls only

$$d_{total} = d_{observedhauls} * (1 + KALL_{unobservedhauls}/KALL_{subtrip})$$

R Process

`discaRd` R package built for 2016 Discard Estimation Peer Review



discaRd

New functions for CAMS:

- `make_assumed_rate` Calculates 'fallback rate' using a subset of `STRATA` variables
- `make_bdat_focal` Constructs data frame of observed trip data for species of interest
- `run_discard` Runs these functions in conjucntion with `discaRd`

Running it

- refresh Oracle tables?
- define species and stock (if applicable)
  - generates SQL
- import to R
  - apply CAMS_GEAR_GROUP according to SPECIES
  - apply STOCK STAT AREA according to SPECIES and stock (if needed)
  - join discard mortality by species/stock/CAMS_GEAR_GROUP
- `run_discard`
  - STRATA is assigned dynamically by using elements of the imported data
  - If using `transition rates`, two time periods are defined
  - Assumed (fallback rates) are defined as a subset of STRATA
- Apply Discard Mortality

TO DO

- utilize support tables
  - `CAMS_GEAR_GROUP` **DONE**
  - `STAT_AREAS` **DONE**
  - `CAMS_DISCARD_MORTALITY_STOCK` **in process**
- add `SECTOR` for multispecies (see above) **DONE**
- Time periods **Determined by STOCK/SPECIES**
  - Species with the same time period, e.g. Calendar year, can be imported at once.
- Assumed (fallback) rate criteria: how simplified must this be?
- implement transitions (if using fixed time period) **DONE**
- Deal with Exemptions
- Incorporate stratification for EM trips
- refine exact operational process*

***Will likely be based on modules that run common sets of species (e.g. common `CAMS_GEAR_GROUP` and stock definition)**

Modules

- Quota Monitoring
  - Squid/Mackerel/Butterfish (Calendar year) ++ This may encompass any UNIT stock with calendar year
  - Groundfish (May year)
  - Monkfish (May year)
  - Yellowtail/Windowpane in scallop fishery (April year)
  - Skates (?)
  - Small mesh species (hakes)
  - Dogfish (May year)
  - ??
- SBRM
  - 300 species on SBRM year (Calendar?) -Stock Assessments
  - typically run on calendar years for all species