



2013 Observer Program

Annual Deployment Plan – September 5th Draft version

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**NOAA
FISHERIES
SERVICE**

Groundfish Plan Team meeting

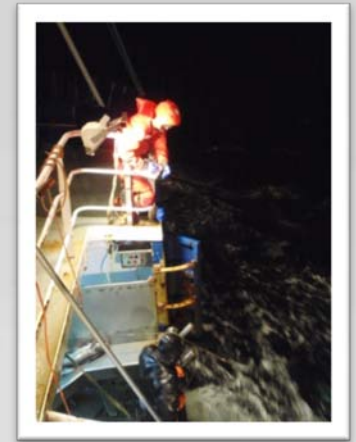
September 11, 2012

Observer Advisory Committee meeting

September 17-18, 2012

Why a draft version?

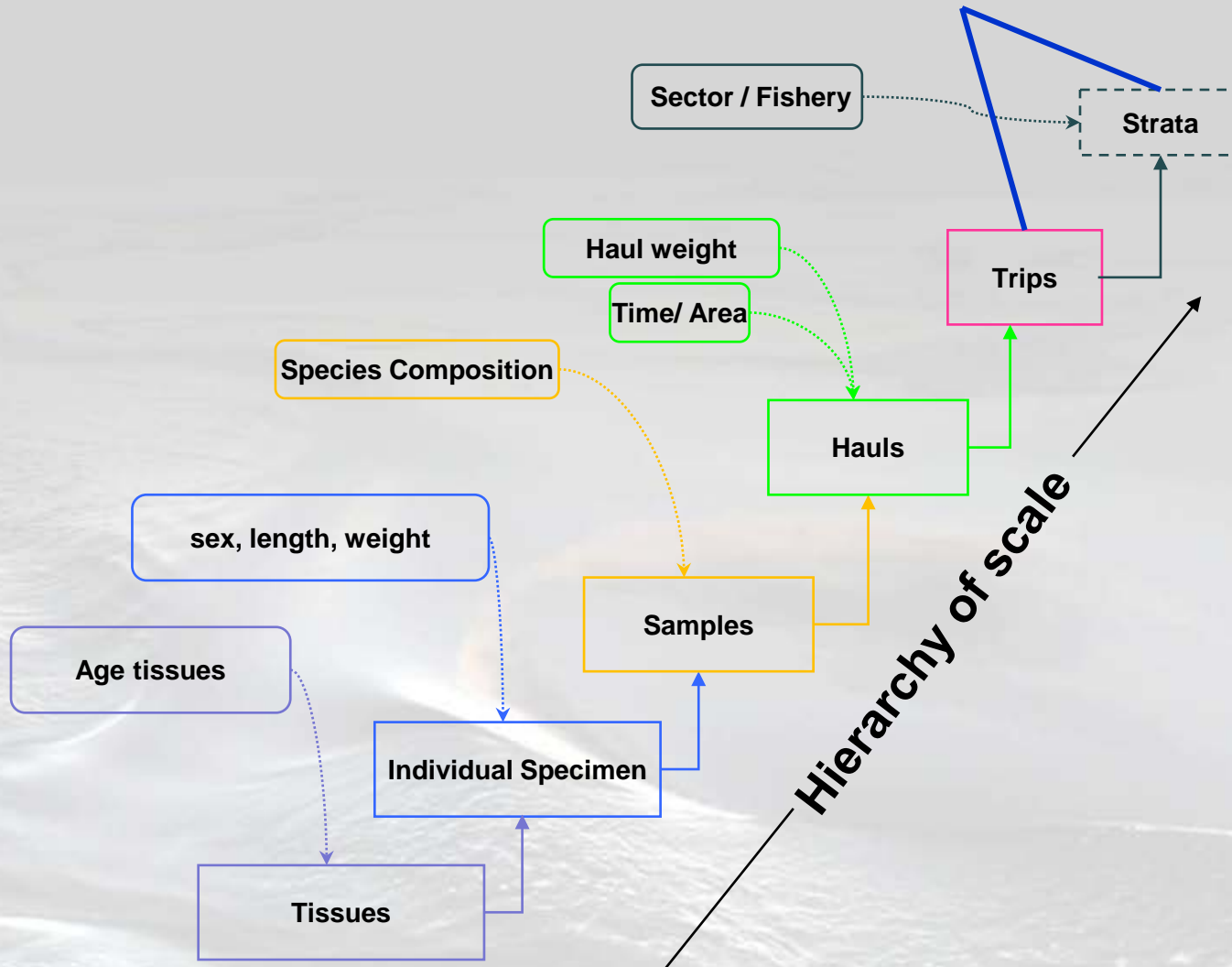
- This ADP is a draft methods document
- As of September 1st, the NMFS did not have cost estimates (EM or observer day)
- Cost estimates are expected by September 30th



Review

2013 Observer Program Sampling Design

"Restructure" pertains to these only



Review

2013 Observer Program Sampling Design

- Council 2010 Action
- Two classes of vessels
 1. CP and M
 - Pay-as-you-go
 - Complete coverage of trips
 2. CV
 - No cost (1.25% on landings funds future years)
 - Partial coverage of trips at rate based on available funds



Review

2013 Observer Program Sampling Design

- Two CV partial coverage deployment methods:
 1. “Vessel-selection”: 0-57.5’ LOA
 - All trips in a quarter are observed for selected vessels
 - Vessels <40’ have no probability of being selected in 2013
 2. “Trip-selection”: >57.5’ LOA
 - Each trip is logged into an Observer Declare and Deploy System (ODDS) and is given a probability of being selected for observer coverage

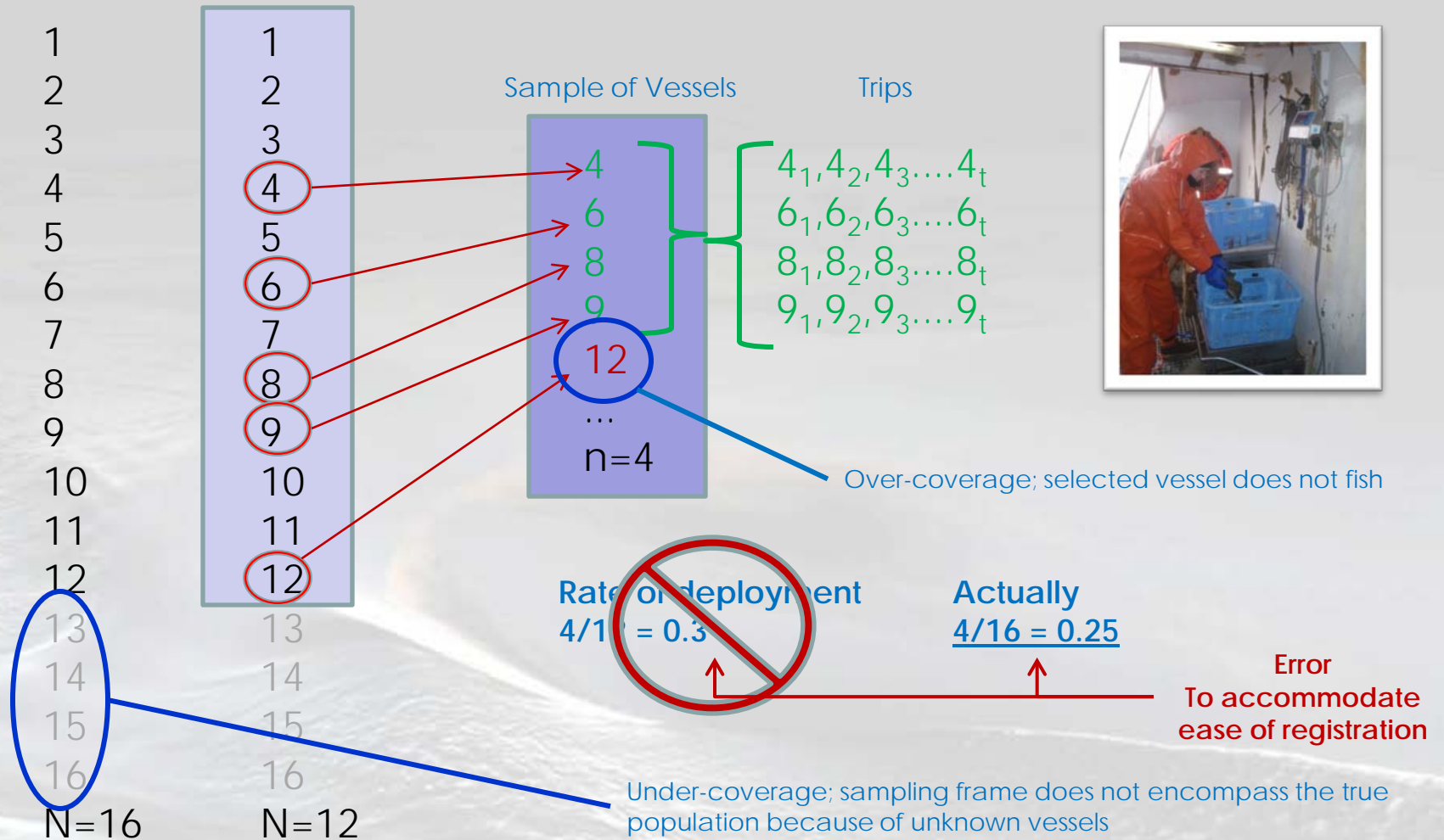


Review

How does VS selection and deployment work?

True Population

Sampling Frame



Review

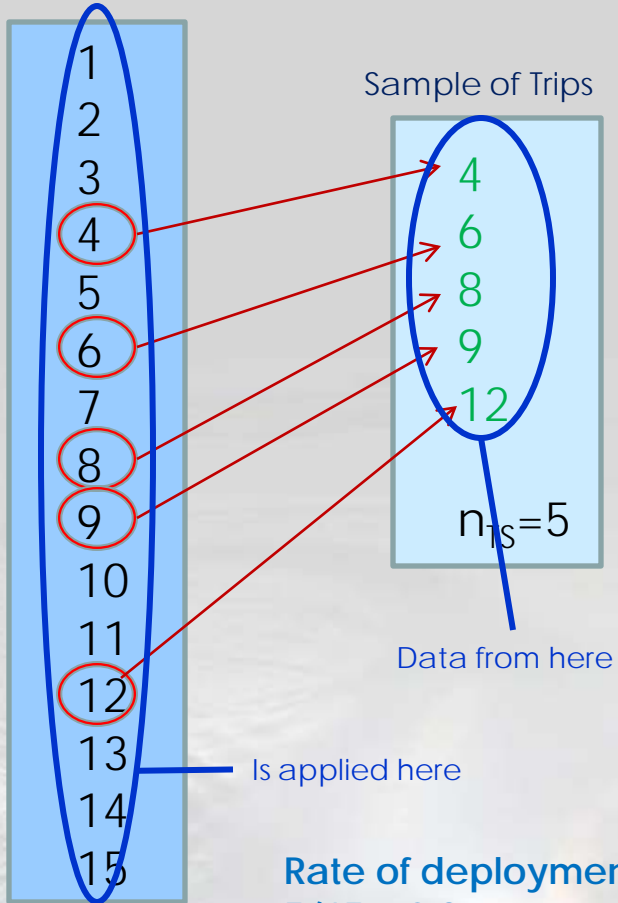
2013 Observer Program Sampling Design

Three estimation strata become four

- 1990-2012:
 1. Zero
 2. Partial
 3. Full coverage
- 2013(+):
 1. Zero
 2. Partial (trip-selection)
 3. Partial (vessel-selection)
 4. Full coverage



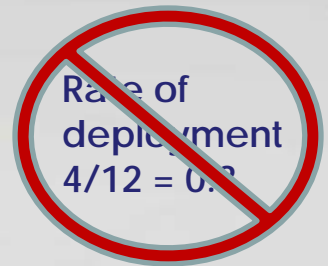
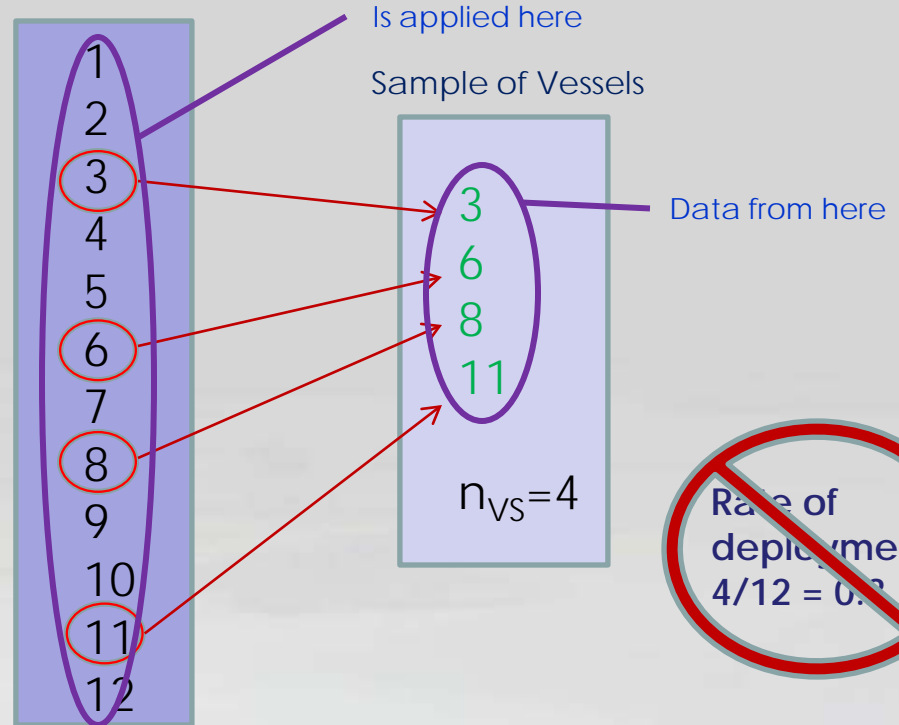
Trip selection



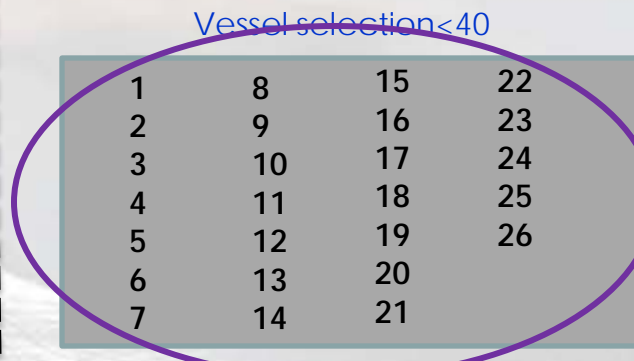
Rate of deployment
 $5/15 = 0.3$

SUMMED CATCH FROM HERE....

Vessel selection ≥ 40



AND HERE!



$4/38 = 0.105$

Purple catch applied to gray boats is undesirable (possible bias)

...IS ADDED, NOT COMBINED WITH, CATCH FROM HERE

Review

2013 Observer Program Sampling Design

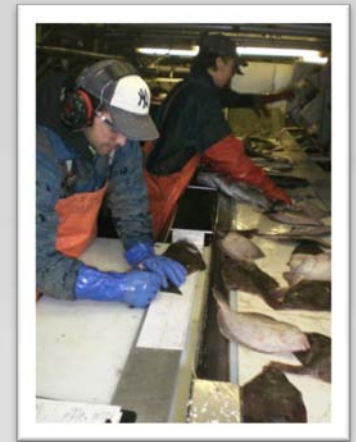
Dockside

- Pollock offloads will be fully observed for salmon enumeration and to support genetic research



Changes for 2013

- All CP vessels become fully covered*
- In CV sector:
 - deployment of observers is now randomized
 - At-sea deployment based on trip units and vessel units (e.g. not on days or pots per quarter)
- Dockside deployments to monitor salmon bycatch, not on MT processed

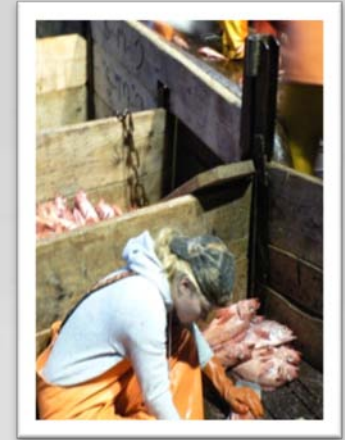


Evaluation Analyses

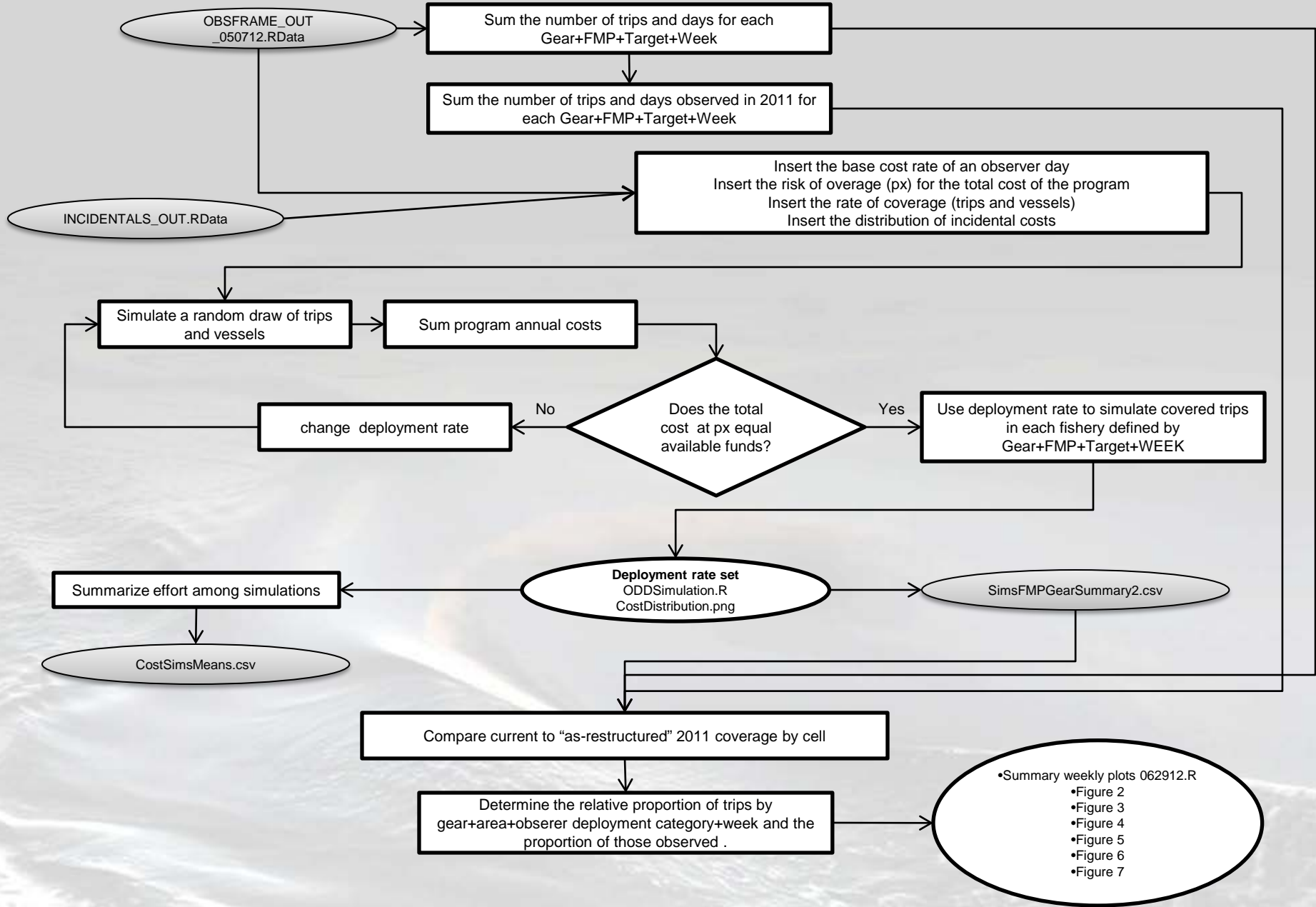
Evaluation Analysis 1: Determining the deployment rate

How much coverage can we afford in the CV fleet?

- Determined by simulating total program costs
 - 2011 as base year of effort (and therefore costs)
 - Rate will be that which results in 90% of simulated annual costs \leq program funds (\$4.2M)
- Methodology established and documented
 - Coding and testing complete



NPGOP restructure analyses- Effort Simulations



Evaluation Analyses

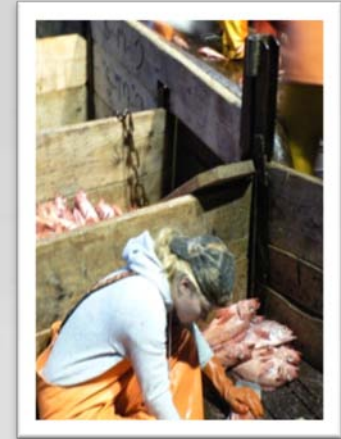
Evaluation Analysis 1: Determining the deployment rate

Cost of a trip in trip-selection stratum

Cost of a trip in vessel-selection stratum

Annual cost of a simulated year

$$C_S = \sum_{i=1}^n c_i + \sum_{Q=1}^4 \sum_{v=1}^V c_{QV}$$



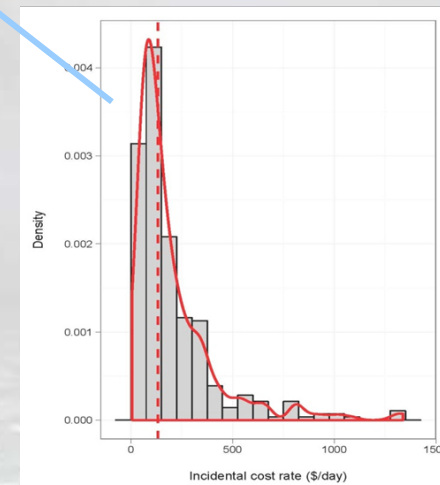
Base cost of an observer day

Random draw of incidental costs from 2011 CVs

$$c_i = (B + I_i) \times d_i$$

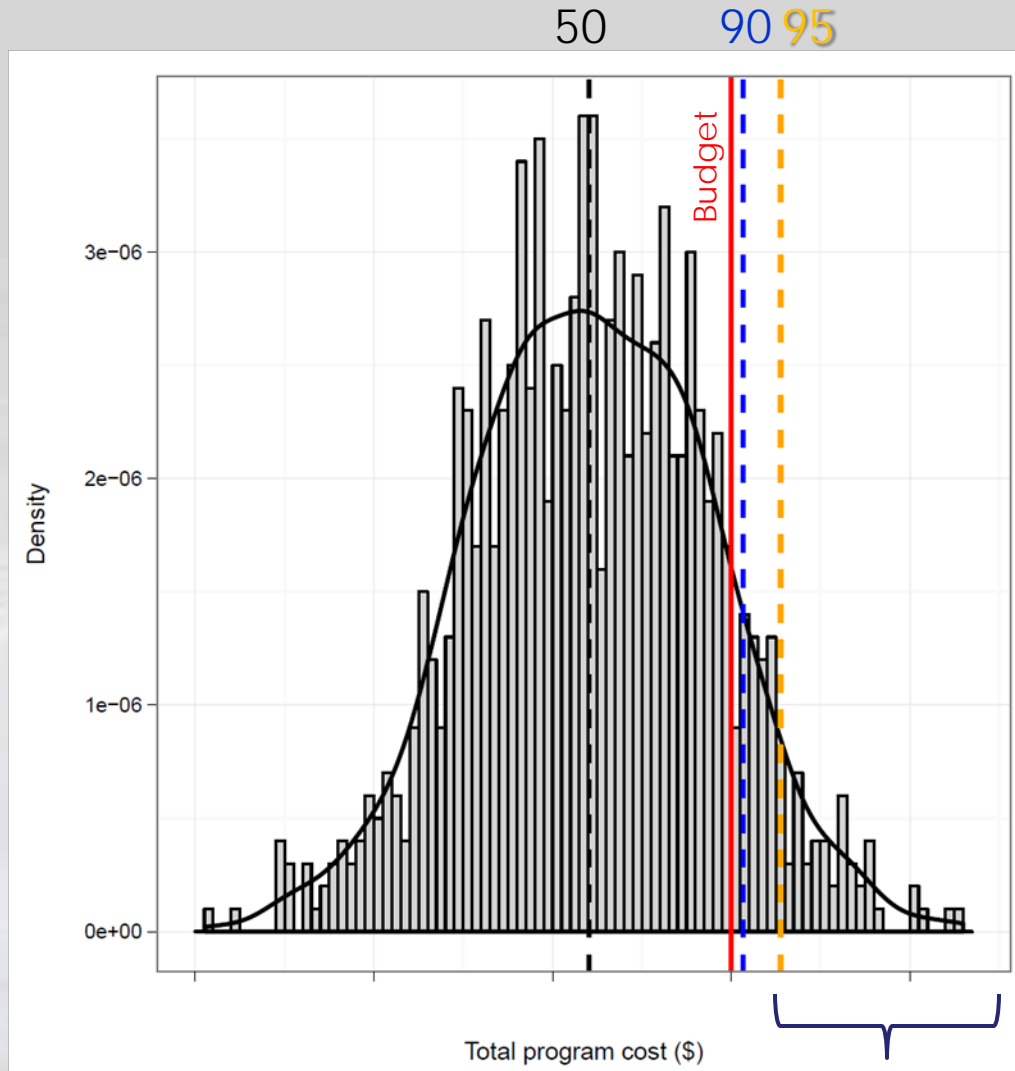
Days in a trip

$$c_{QV} = \sum_{i=1}^{N_{QV}} (B + I_i) \times d_i$$



Evaluation Analyses

Evaluation Analysis 1: Determining the deployment rate

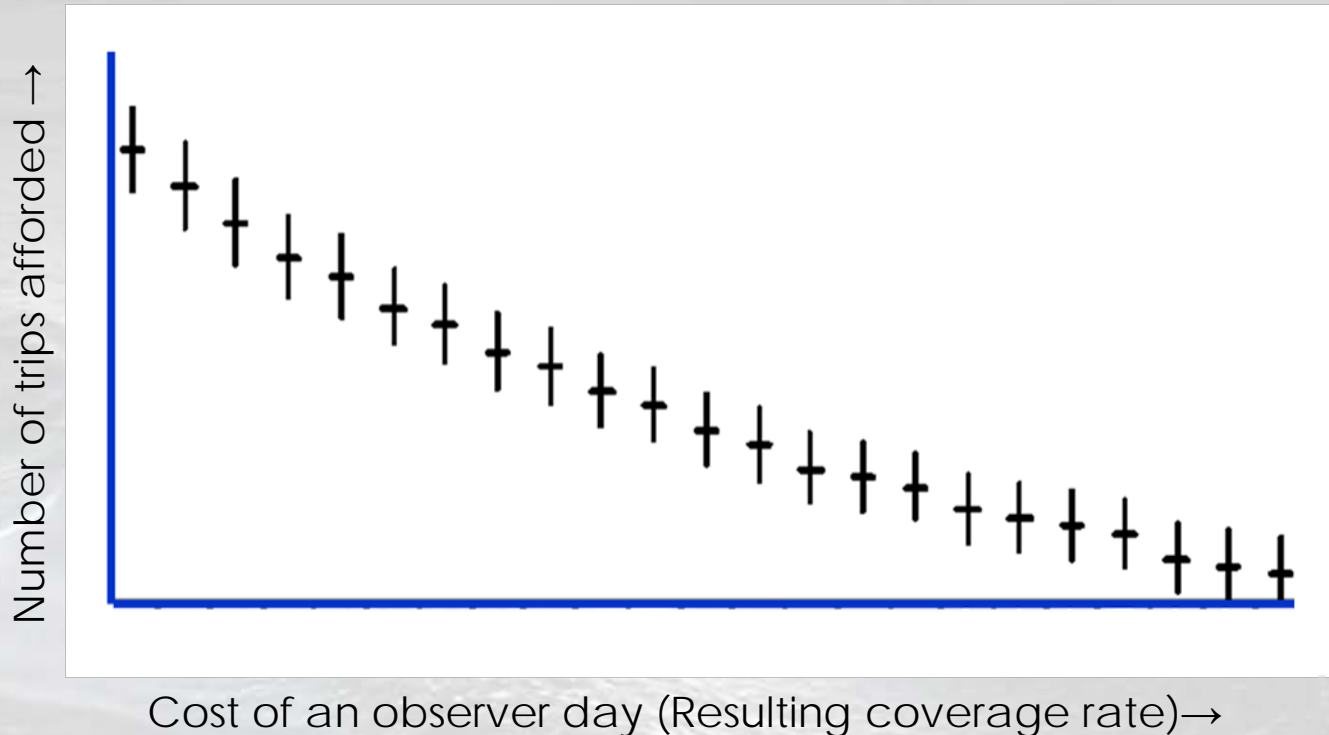


These simulations also provide an absolute maximum overage in \$

Evaluation Analyses

Evaluation Analysis 1: Determining the deployment rate

What can we expect for a observer deployment rate into the partial coverage fleet given a cost of an observer day of a certain value?

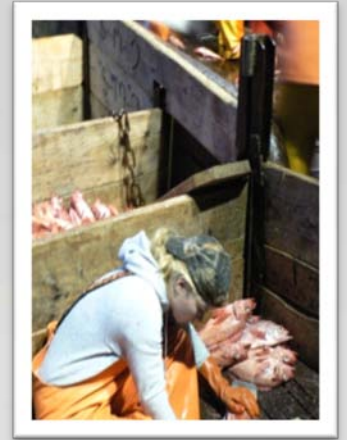


Evaluation Analyses

Evaluation Analysis 2: Anticipated changes in CV coverage

How will coverage be distributed within the 2013 CV fleet?

- Determined by simulating at-sea deployment for the 2011 year at the rate determined in the first analysis
 - Visualizations (FMP/Gear/Target/Week)
 - heat maps illustrate temporal gaps
 - histograms depict magnitude of differences among weeks
- Methodology established and documented
 - Coding and testing complete

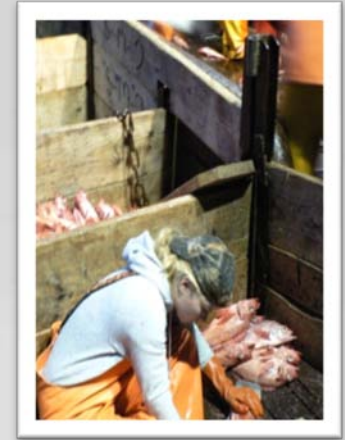


Evaluation Analyses

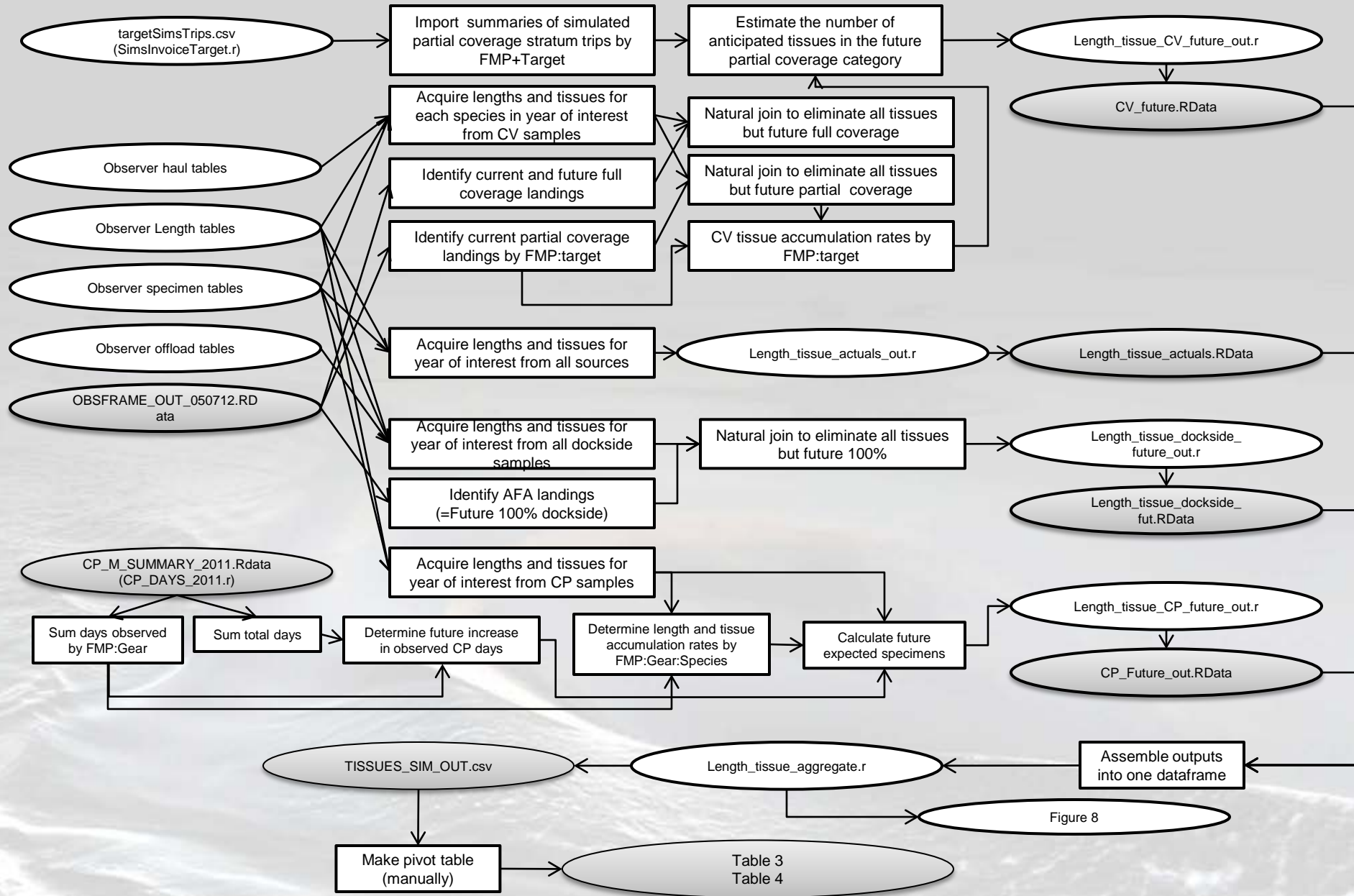
Evaluation Analysis 3: Anticipated changes to the number of lengths and specimens

How many lengths and specimens can we expect?

- Determined using existing biological specimen collection rates (FMP/Target) projected into simulated observed trips from our second analysis
 - Conducted for length measurements, aging structures, maturity stages, and stomachs from CP/M, CV, and dockside for each species
- Methodology established and documented
 - Coding and testing complete



NPGOP restructure analyses- Length and Tissue Simulations



Evaluation Analyses

Evaluation Analysis 3: Anticipated changes to the number of lengths and specimens

Specimens in 2011 partial coverage

Specimens in 2011 full coverage


Total days by CP & M in 2011

$$x_{CP13} = \left[\frac{x_G + x_{P_0}}{d_G + d_{P_0}} \times (D - (d_G + d_{P_0})) \right] + x_G + x_{P_0}$$

Length or tissue (x) accumulation rate in days (d)

Increase in x from all CP & M at full coverage

Existing 2011 x collected





Evaluation Analyses

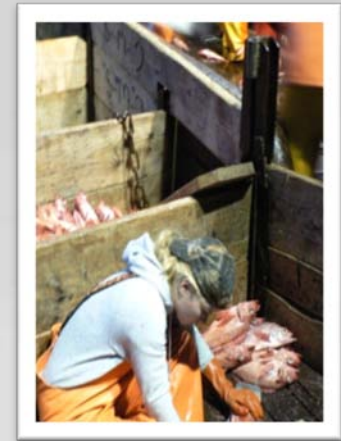
Evaluation Analysis 3: Anticipated changes to the number of lengths and specimens

Expected number

$$\bar{x}_{CV13} = x_j + \text{round} \frac{A}{n_s}$$

Number of lengths or tissues (x) in the 2011 full-coverage category from co-ops (=2013 full coverage)

Number of simulations



$$A = \left[\left(\frac{x_{Y0}}{n_{Y0}} \right) \times S \right]$$

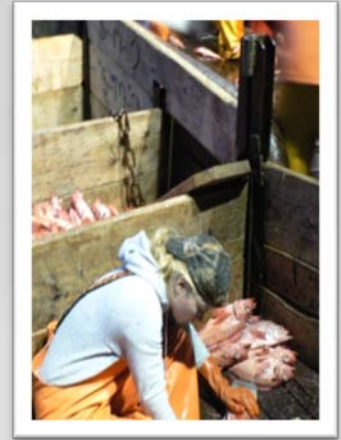
Number of observed trips in the 2013 partial coverage category in one simulation

Accumulation rate of x in 2011 partial coverage category

Evaluation Analyses

Evaluation Analysis 3: Anticipated changes to the number of lengths and specimens

The number of lengths and tissues expected from dockside sources will be set equal to those collected from within all pollock offloads in 2011



Evaluation Analyses

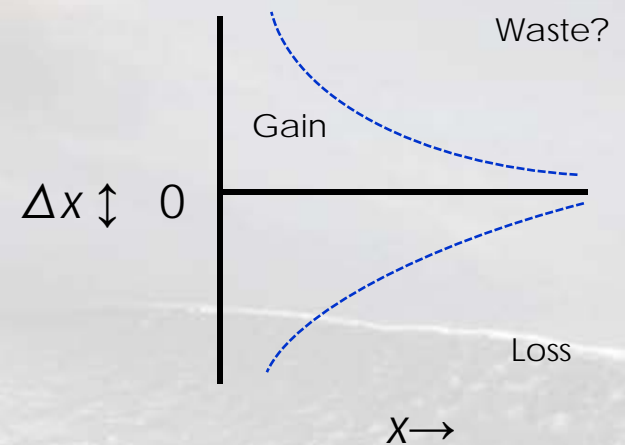
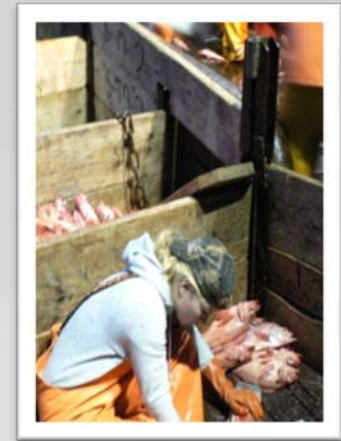
Evaluation Analysis 3: Anticipated changes to the number of lengths and specimens

For visualization, the relative change for each tissue type will be plotted against the number of that tissue

$$\Delta_x = \frac{x_e - x_0}{x_0}$$

Number of lengths or tissues (x) in the future state (i.e. expected, e)

Number of lengths or tissues (x) in 2011 (observed, 0)

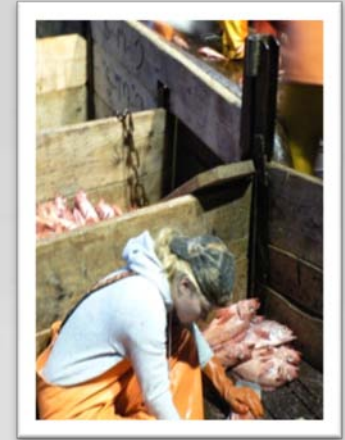


Evaluation Analyses

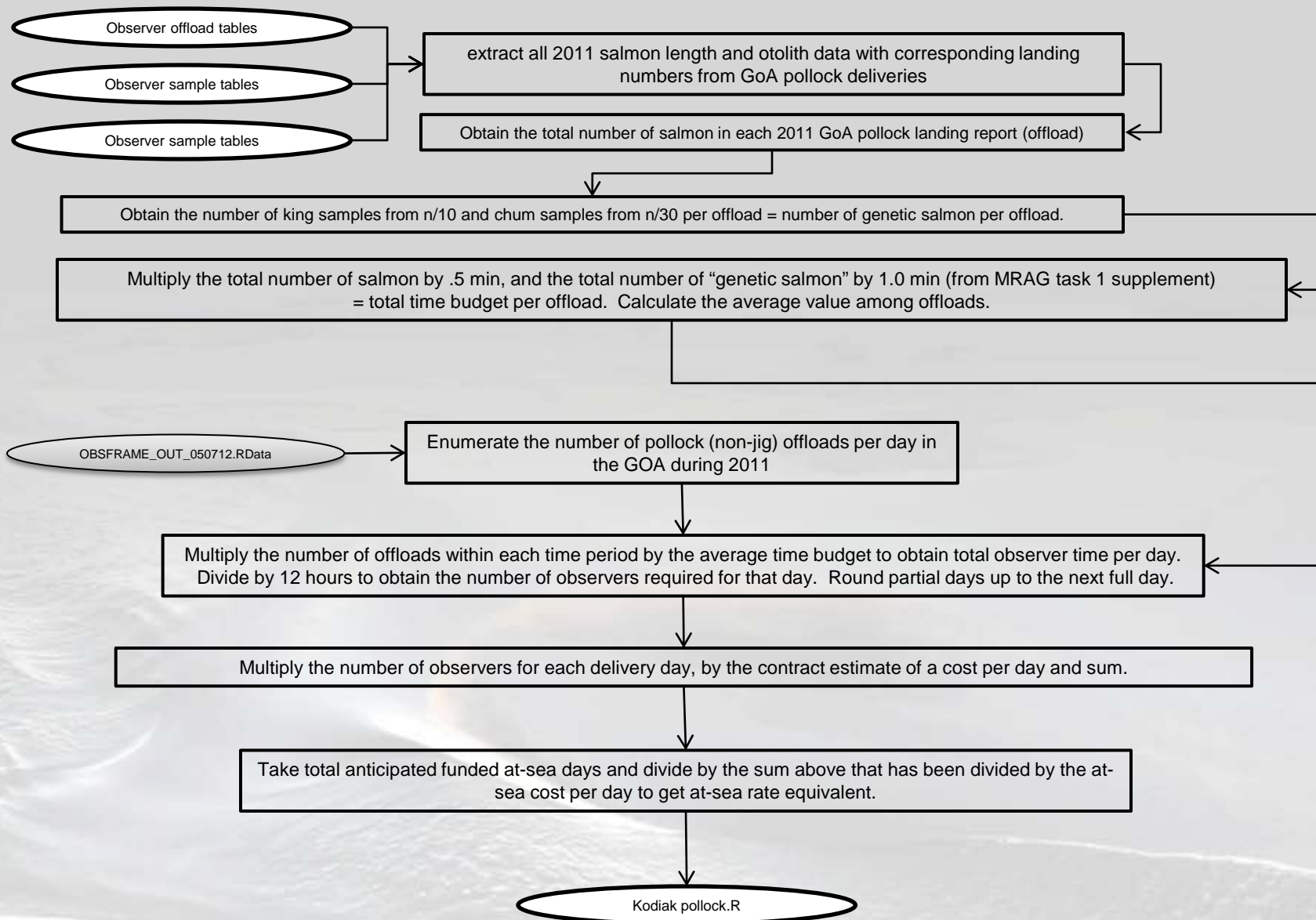
Evaluation Analysis 4: Anticipated cost of dockside sampling in the GOA pollock fishery

What is the cost of dockside deployment?

- The number of observers per day needed was based on:
 - Time to count and sample salmon bycatch
 - Number of non-AFA landings
- Translated into costs using contract pay rates
- Methodology established and documented
 - Coding and testing complete



NPGOP restructure analyses- 2013 GOA salmon cost estimate



Evaluation Analyses

Evaluation Analysis 4: Anticipated cost of dockside sampling in the GOA pollock fishery

Total days that had non-AFA deliveries

$$total\ cost = \sum_{d=1}^D f_d \times \$cost\ of\ observer\ day$$

Total observers required per day

$$f_d = \left[round \frac{(L_d \times \bar{t})}{12} \right] + 1$$

Total salmon measured

Average time for tasks per offload

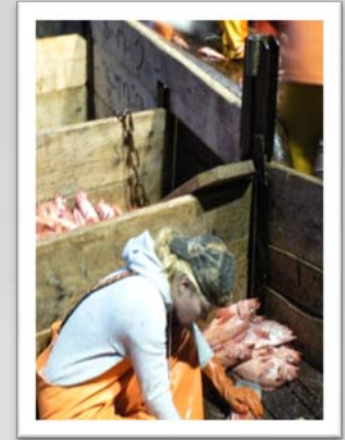
$$\bar{t} = \frac{\sum_{l=1}^L (W_l \times 0.008) + (x_l \times 0.17)}{L}$$

Average time for tasks per offload (MRAG 2004)

Number of genetic tissues (x) collected from all king (K) and Chum (H) salmon in non-AFA deliveries (L)

$$x_l = \frac{K_l}{10} + \frac{H_l}{30}$$

Rate of sample collections provided to FMA following Pella and Geiger (2009) protocols



Pella, J. J., and H.J. Geiger, H. J. 2009. Sampling considerations for estimating geographic origins of Chinook salmon bycatch in the Bering Sea Pollock fishery. ICES Document, Alaska Department of Fish and Game, Special Publication No. 09-08, Anchorage.

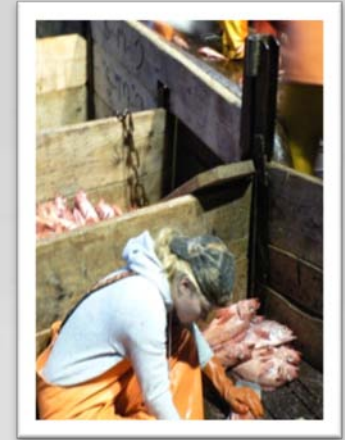
MRAG Americas, Inc. 2004. Evaluation and analysis of current field sampling used in North Pacific Groundfish fisheries Annex to the report of Task 1: Report on the second series of field trials to test proposed alternative sampling methods. 46 pp. Available from the Alaska Fisheries Science Center, Fisheries Monitoring and Analysis Division, Seattle.

Evaluation Analyses

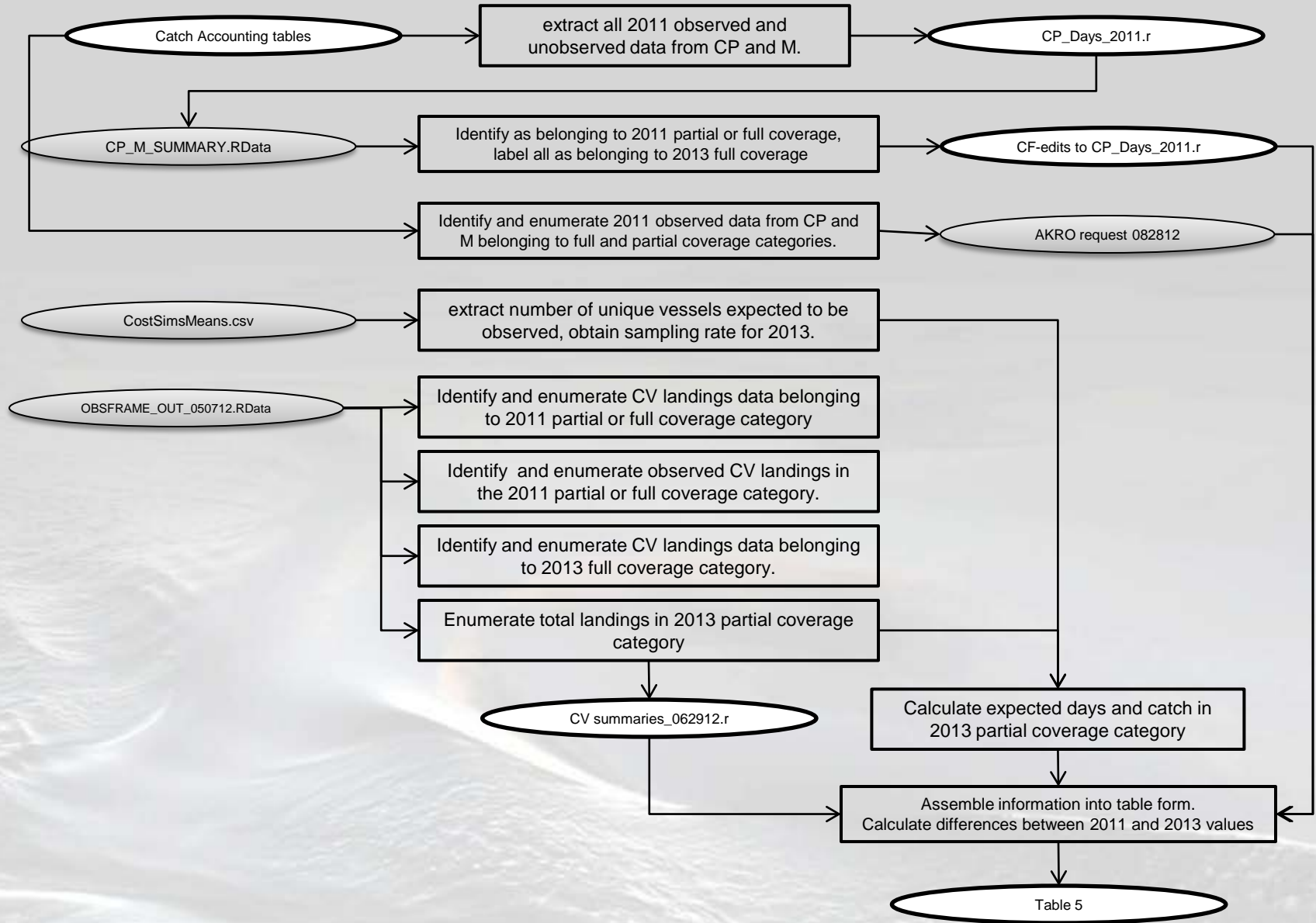
Evaluation Analysis 5: Summary of total observer deployment in the fleet

What are the differences in **observed** 2011 actual and “as-restructured”?

- Evaluated for:
 - The number of vessels
 - Fleet
 - Fishing trip days
 - NMFS program cost and fishing effort
 - Total catch
 - Resource

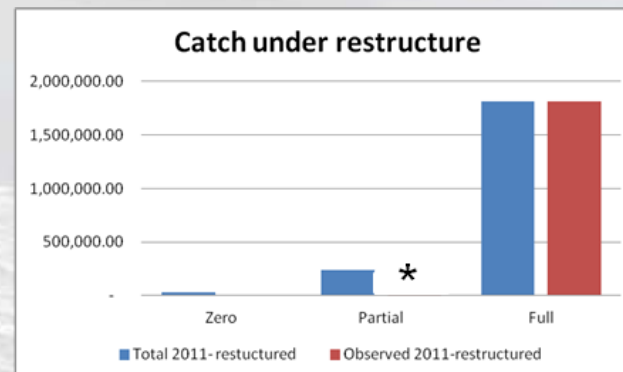
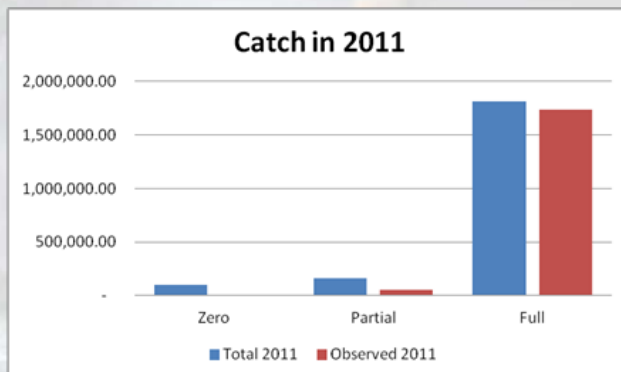
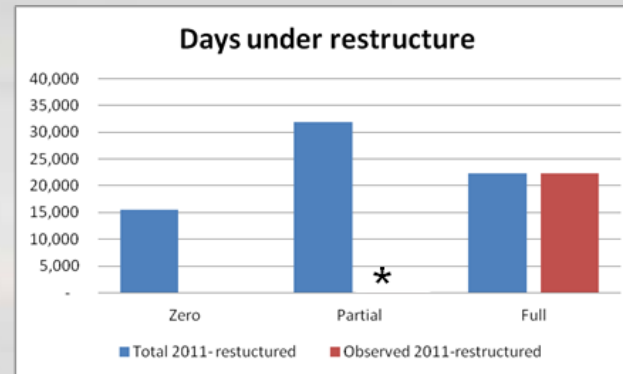
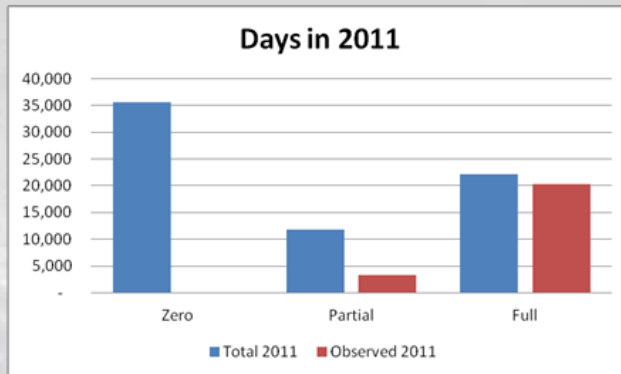
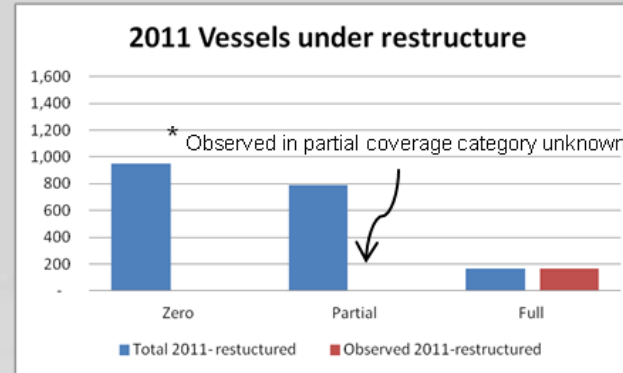
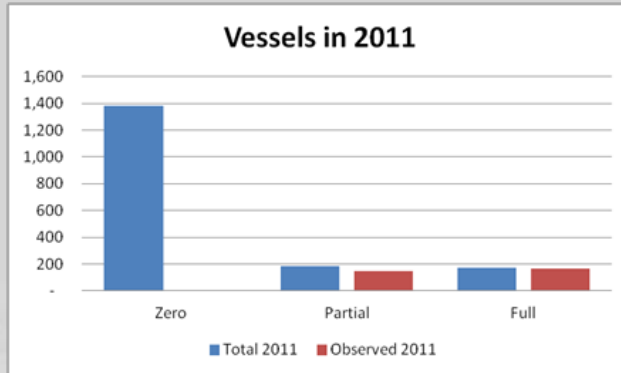


NPGOP restructure analyses- 2011 and 2013 total fleet comparisons



Evaluation Analyses

Evaluation Analysis 5: Summary of total observer deployment in the fleet

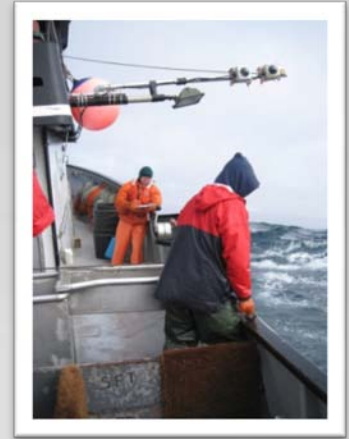


Full coverage category summaries do not include jig or halibut-only CP landings information.

Innovation

EM is to be incorporated into the 2013 ADP

Camera systems will be used to monitor compliance with full retention requirements for Demersal Shelf Rockfish within the IFQ hook and line fleet* out of selected southeast Alaska ports during the Halibut and Sablefish season



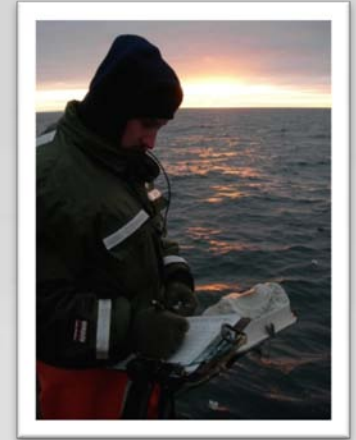
* Defined by NMFS as a hook and line gear vessel with an IFQ holder on-board

Expectations

What in general we can say about this ADP vs. Status quo

Although final evaluation analyses are pending, we expect that observer coverage under a randomized deployment will be more representative of the fleet because

- Decreased ability and incentive to introduce an observer effect
- Distribution of observed trips should be proportional to fishing effort

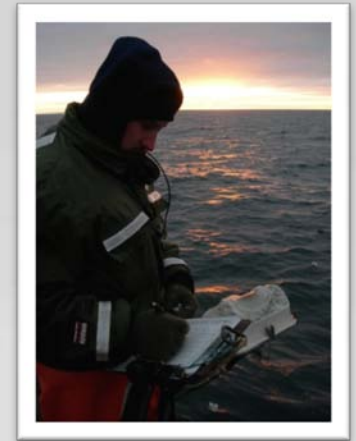


Future considerations

Questions we would like input on to improve this ADP

In preparation of this ADP, we have used the most recent year of data (2011) as a proxy for what effort would be in 2013:

- For the 2014 ADP, we would like to improve on this assumption. We have considered using:
 - an average of prior years
 - predicting future year based on trend in past year
 - a model that incorporates other factors (e.g. TAC)
- What additional summaries can the observer program and our group provide to aid stock assessors and the plan teams?



Recommendations?



2013 Observer Program

Changes to support sustainable fisheries

