



NOAA
FISHERIES

Alaska Fisheries
Science Center

Fishery dependent data collection in the North Pacific

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*NOAA Fisheries Science Program Review: Stock Assessment Data
(Fishery-Dependent and Fishery-Independent Data Program Review)*

August 27, 2013

Observers are people,
trained to collect reliable fishery-dependent
information *in situ*

Observers provide

- effort
- independent information on the quantity, identification, and disposition of catch
- biological tissues
- document mortality and interactions with protected (including Endangered Species Act) species



















Definitions of “in the program” have changed substantially since 2012

Element	2012	2013
Cooperatives:		
AFA pollock	100%	100%
A80 BSAI flatfish	100%	100%
Rockfish Program	100%	100%
CP Atka BSAI	100%	100%
CP*		100%
CV > 125'	100%	
CV 60-125'	Self-selection: 30% days or gear /quarter + 1 trip/fishery	
CV > 57.5'		Random: Trips at rates afforded.
CV 40-57.5'		Random: Vessels at rates afforded / 2 month period
Halibut fishery	no	yes
Dockside	Days / month by tons processed to collect delivery information and tissues	Kodiak and AFA for salmon bycatch genetics

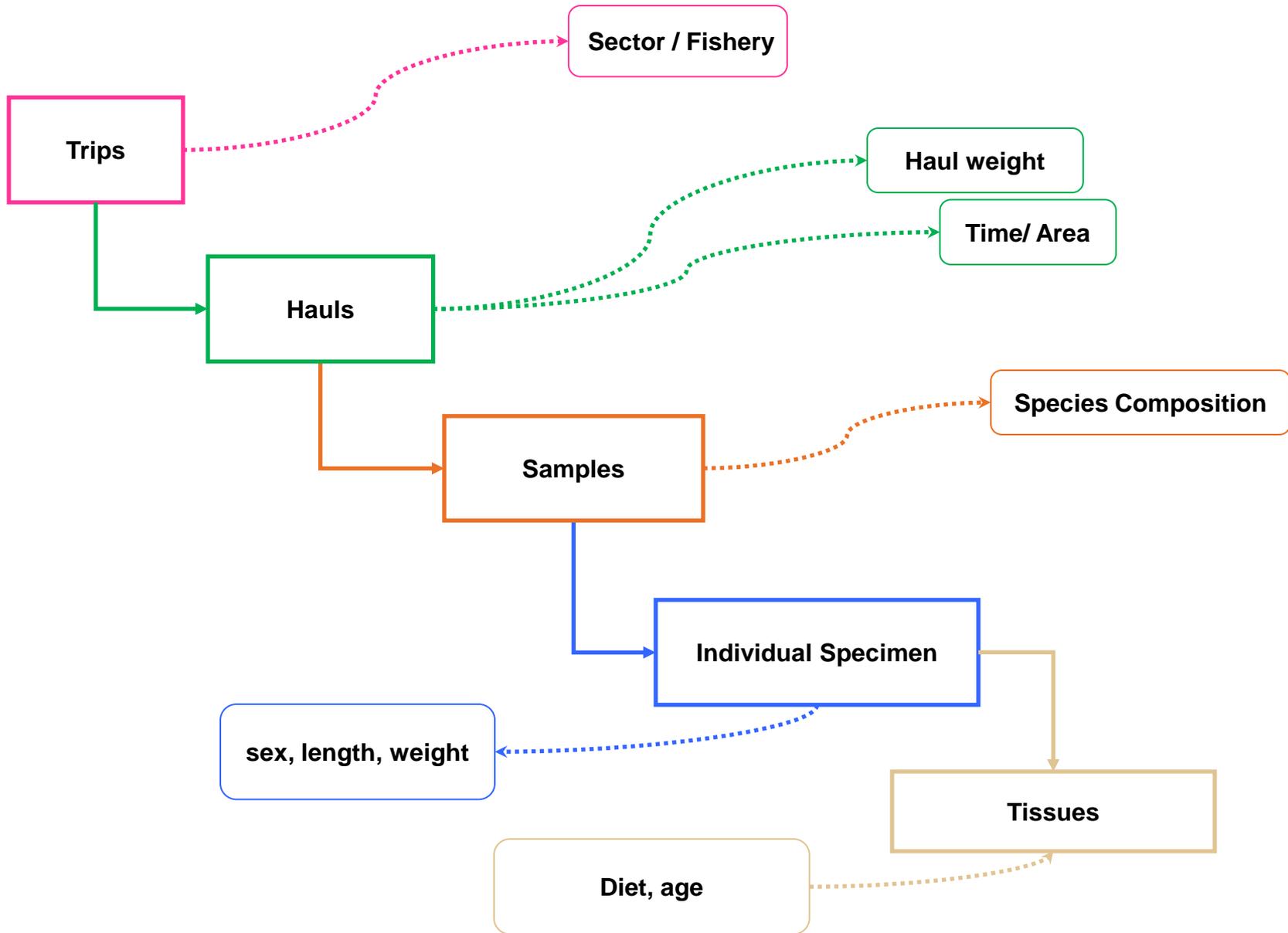
Comparison of Strata

Coverage Stratum	2012		2012 as 2013	
	Vessels	Trips	Vessels	Trips
Full	163	4,594	191	3,596
Partial	182	2,404	775	9,120
Zero	1,220	6,446	807	3,887

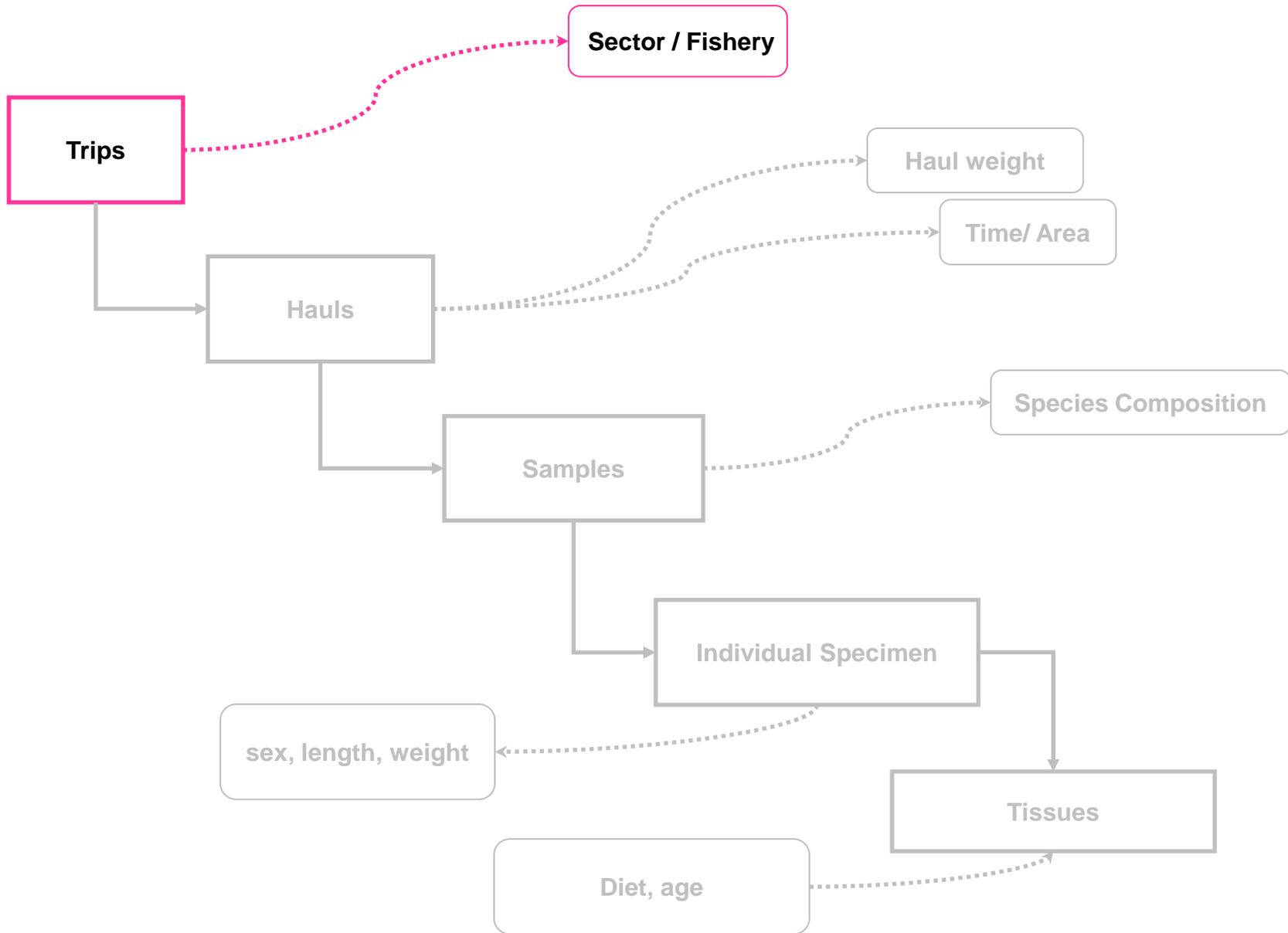
Overview: First Six Months- Entire Program

	2012		2013	
	N	Days	N	Days
Dockside	20	2,927	14	1,488
At-sea	253	19,074	317	19,978
Totals	273	22,001	331	21,446

The Observer Program employs a hierarchical design
with randomization at all levels



Sample Level	Sample Frame	Sample Unit	Sample Selection	Data / Observation
1° Unit: Trips	Set of all trips taken by CVs outside of state and catch share fisheries	Fishing trip	Bernoulli Sample	Departure and delivery ports, trip dates, <i>etc</i>
1° Unit: Vessels	Set of all vessels that fished the previous year in the same two month period	Two months of fishing activity (all trips taken by the selected vessel)	Simple Random Sample (SRS)	Departure and delivery ports, trip dates, <i>etc</i>
2° Unit: Hauls	Set of all fishing events on trip	Fishing event (haul, set)	Constrained SRS of set of all hauls	Effort data (total catch size, gear deployed, fishing location, <i>etc</i>)
3° Unit: Sample	Set of all sample units in the haul	Predefined weight, volume, or gear segment	Systematic Random Sample (SYS) / SRS / opportunistic from haul	Species composition data
4° Unit: Length Sample	All fish of given species within a sample	Individual fish	SRS generally from 3° sample	Sex, length, and weight
5° Unit: Otolith Sample	All fish in length (SLW) sample	Individual fish	SRS, generally from 4° sampled fish	Otoliths

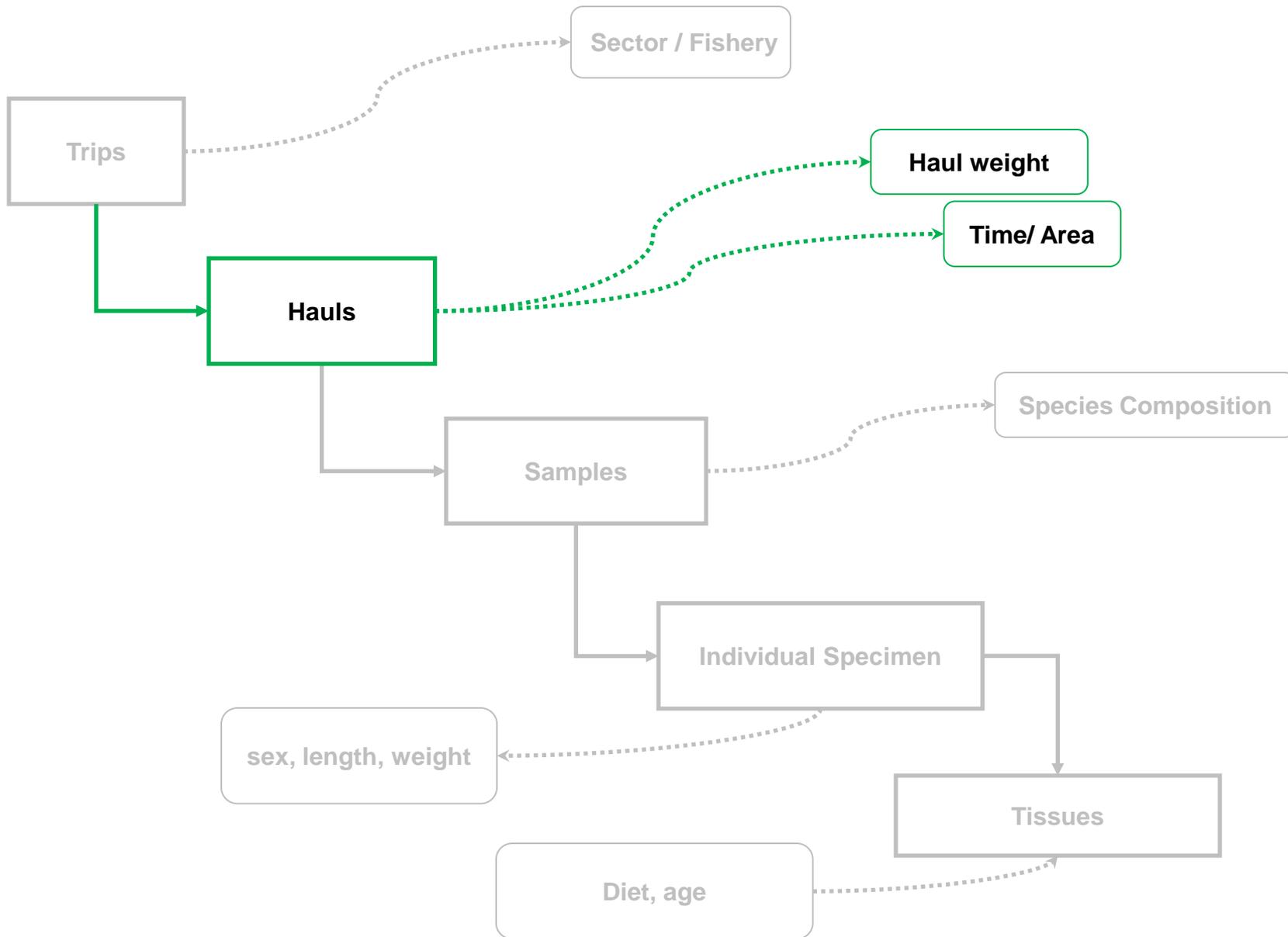


Overview: 2013 First Six Months- GOA

	Trawl		Longline		Pot		Jig	
	Vessels	Trips	Vessels	Trips	Vessels	Trips	Vessels	Trips
Full-Coverage (3.6% of Trips); Target Coverage = 100%								
CP/M	13	37	7	15				
Actual	100%	100%	100%	100%				
CV	24	111						
Actual	91%	86%						
Partial Coverage: Trip-selection (38% of Trips); Target Coverage = 15%								
CP			1	2				
Actual			100%	100%				
CV	63	727	147	686	53	258		
Actual	82%	20.8%	4.2%	15.5%	4.9%	16.3%		
Partial Coverage: Vessel Selection (32% of Trips); Target Coverage = 11%								
CV			299	1,246	22	151		
Actual			7.3%	6.1%	4.5%	5.9%		
Zero Coverage (26.5% of Trips)								
CV			211	675	2	9	152	495

Overview: 2013 First Six Months- BSAI

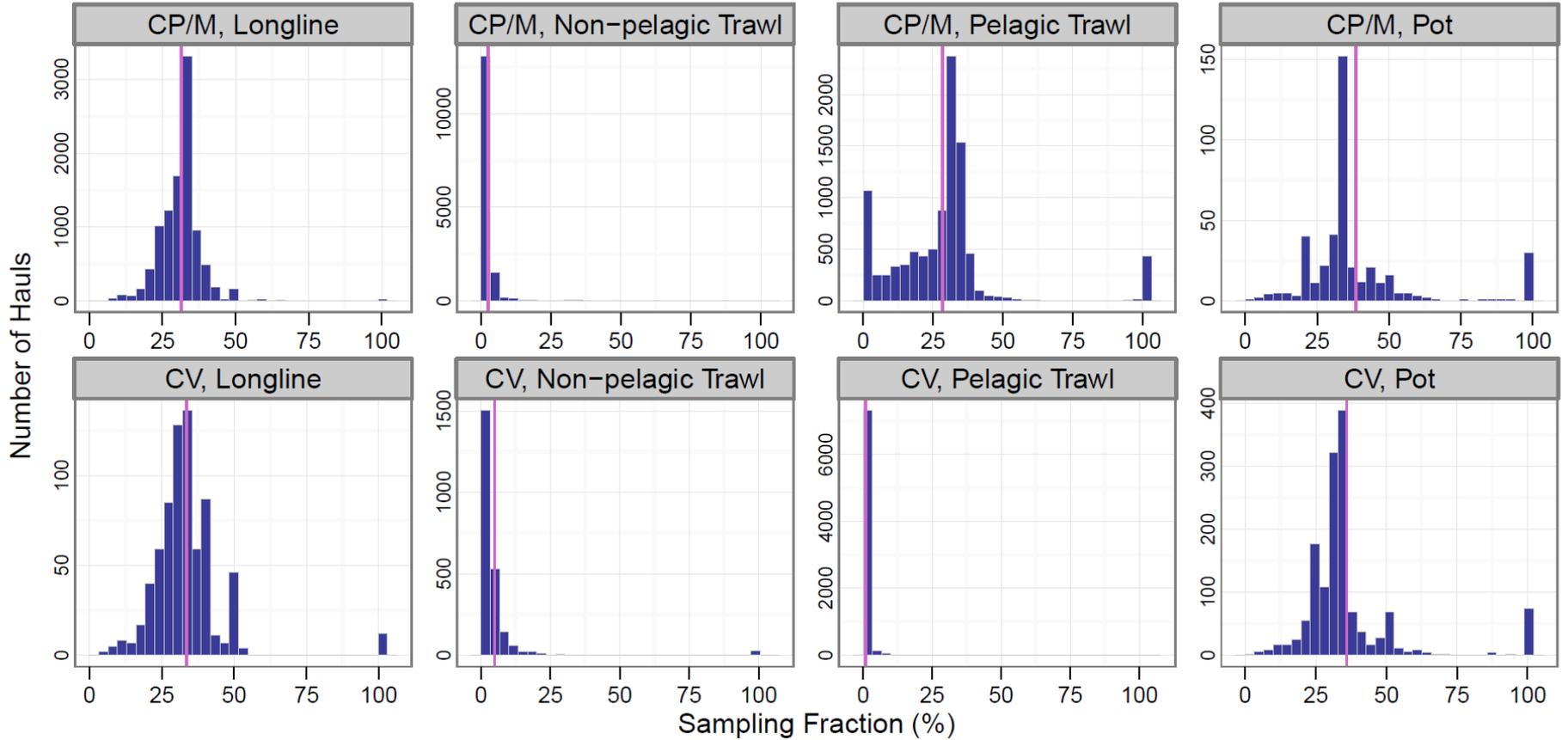
	Trawl		Longline		Pot		Jig	
	Vessels	Trips	Vessels	Trips	Vessels	Trips	Vessels	Trips
Full-Coverage: (65% of Trips); Target Coverage = 100%								
CP/M	52	1363	29	152	3	9		
Actual	100%	99%	100%	98%	100%	100%		
CV	84	1681	2	3				
Actual	99%	94.2%	100%	100%				
Partial Coverage: Trip-selection (8% of Trips); Target Coverage = 15%								
CP			1	1				
Actual			100%	100%				
CV	15	116	31	75	44	220		
Actual	73%	16.3%	29%	12%	34%	12.7%		
Partial Coverage: Vessel Selection (2% of Trips); Target Coverage = 11%								
CV			13	99	3	15		
Actual			7.6%	1.0%	33%	20%		
Zero Coverage (24% of Trips)								
CV			140	797			111	403



Haul information

- When, where, how much and by whom
- All hauls or a random selection of hauls are sampled

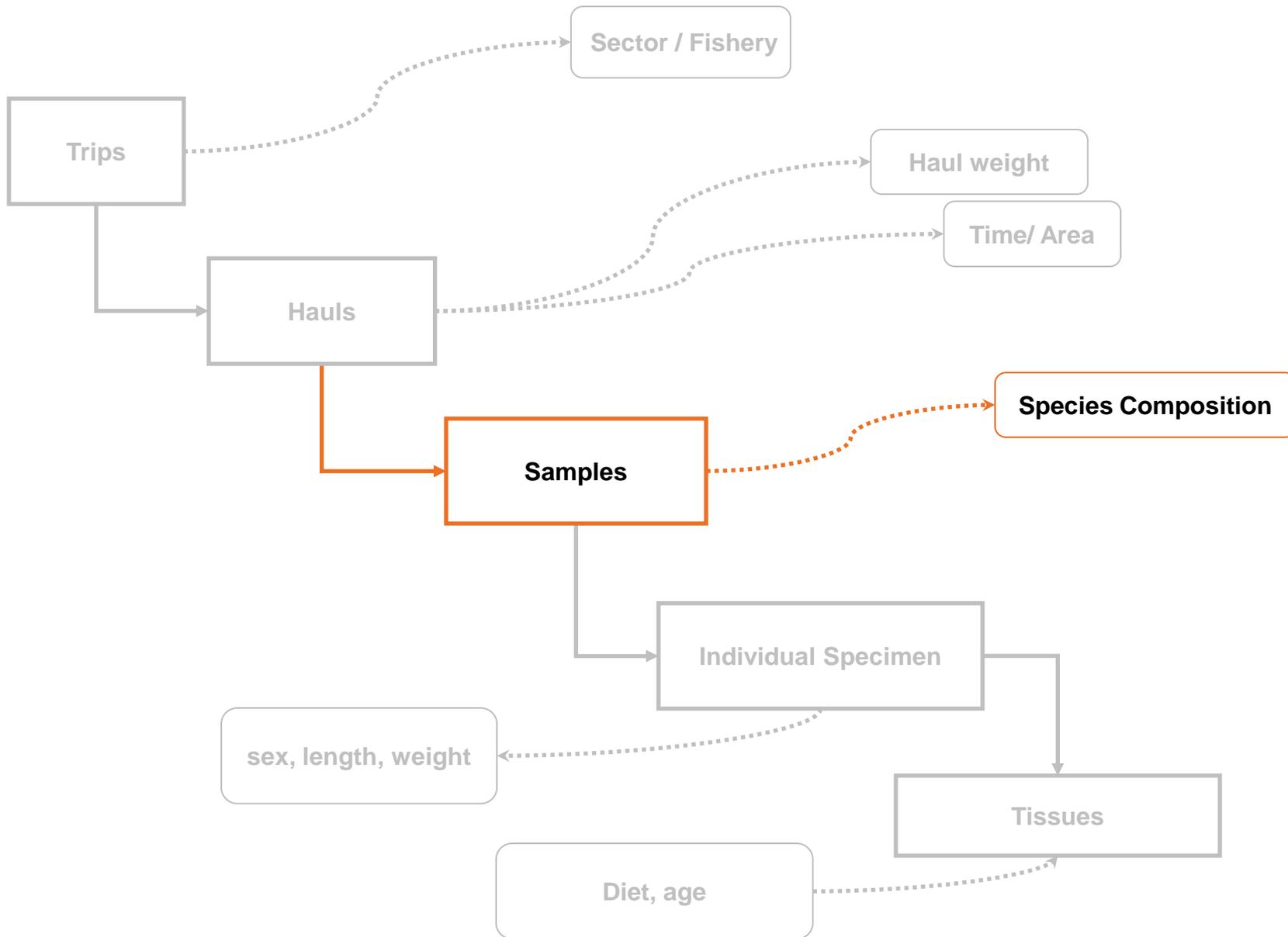
Haul sampling fractions differ by vessel and gear type











Species Composition Samples

- Identity, quantity and disposition of the total catch
- Current design since 2008
 - Systematic Sampling emphasized
 - Random start point
 - Large, multiple samples desired
- Sample design used has been recorded since 2010:
 - Observers have been able to follow design 95% of hauls

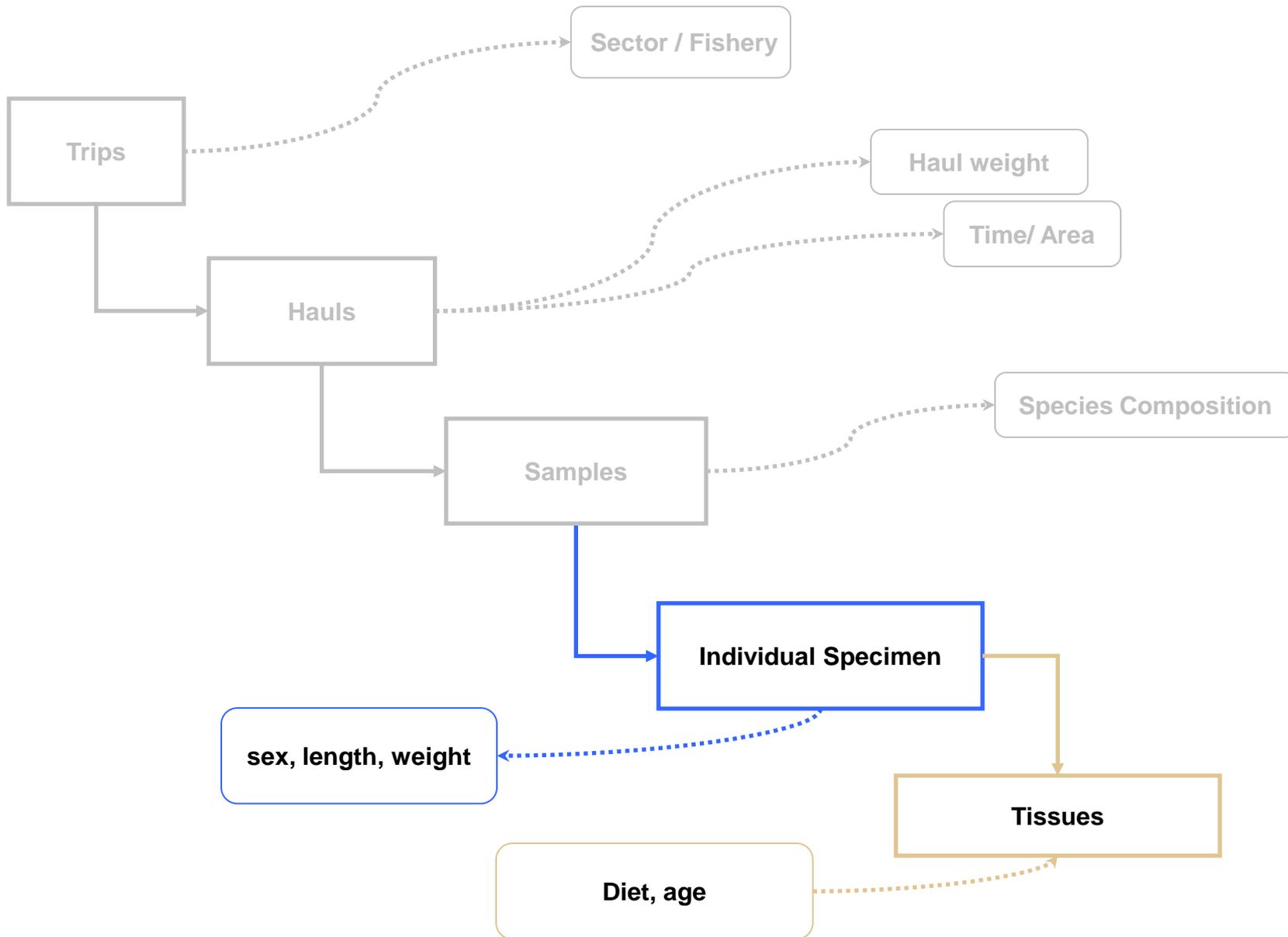
Estimated Species Weight for Haul or Set

- Trawl Gear: Species proportion from samples applied to total haul weight

$$\hat{W}_i = W \frac{\sum_{j=1}^J w_{i,j}}{\sum_j \sum_{i=1}^{I_j} w_{i,j}} = W \frac{\bar{w}_i}{\bar{w}}$$

- Fixed Gear: mean weight per fish applied to total gear fished (hooks or pots)

$$\hat{W}_i = \hat{H} \bar{w}_{i,h}$$



Individual Biometrics and Tissues

- Sampling effort is under the control of stock assessment authors within logistical limits

Based on predominant species and area

Length and Specimen Priority List for **Gulf of Alaska**



Determine the predominant species in your sample, then consult the block for that species. **If the predominant species in your sample is not in this 2 page chart, sample from the next most predominant species that is in this chart.**

If the predominant is Gulf of Alaska Pollock...		<u>Sex/Lengths:</u>	<u>Otoliths (taken from s/l fish):</u>	<u>Other Biological Data:</u>
Then Take:	→	~ 20 pollock	4 pairs	assess maturity of all female pollock otolith fish
Any From Another Species?	→	none	none	none
How Often?		Every Sampled Haul	Every Sampled Haul	Every Sampled Haul
If the predominant is Pacific Cod...		<u>Sex/Lengths:</u>	<u>Otoliths (taken from s/l fish):</u>	<u>Other Biological Data:</u>
Then Take:	→	~ 20 Pacific cod	3 pairs	assess maturity of all female Pacific cod otolith fish; every 5th sampled haul
Any From Another Species?	→	~ 10 from Shortraker/Rougheye	2 Shortraker/Rougheye otolith pairs	none
	→	5 from skates of any species	none	up to 5 vertebrae specimens from each of big and longnose skates from those selected for lengths**
How Often?		Every Sampled Haul	Every 5th Sampled Haul	See Above
If the predominant is Sablefish (aka Black Cod)...		<u>Sex/Lengths:</u>	<u>Otoliths (taken from s/l fish):</u>	<u>Other Biological Data:</u>
Then Take:	→	~ 20 Sablefish	3 pairs	none
Any From Another Species?	→	~ 10 from Shortraker/Rougheye	2 Shortraker/Rougheye otolith pairs	none
	→	~ 5 from Giant Grenadier (grenadier are measured from tip of snout to insertion of first anal fin ray!)	none	none
How Often?		Every Sampled Haul	Every Sampled Haul	N/A
If the predominant is Atka Mackerel...		<u>Sex/Lengths:</u>	<u>Otoliths (taken from s/l fish):</u>	<u>Other Biological Data:</u>
Then Take:	→	~ 20 Atka Mackerel	4 pairs	none
Any From Another Species?	→	~ 20 from Dark/Dusky Rockfish	none	none
How Often?		Every Sampled Haul	Every Sampled Haul	N/A



FMA Documents

All PDF files on this site can be accessed using [Adobe Acrobat Reader software](#) or [free tools for the visually disabled](#). If you have trouble accessing any of these documents, please contact the [FMA webmaster](#).

NPGOP Brochure

[Web version](#) [Print version](#)



What is a North Pacific Groundfish Observer?

[Web version](#) [Print version](#)



Program Sampling Manuals

2013 Observer Sampling Manual

NPGOP Overview

2001 NPGOP Overview PDF [for Web](#) (1.3MB) and [for Print](#) (12.8 MB)

Presentations & Seminars

- FMA Home**
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- [Training Schedule](#)
- [Inseason Advising](#)
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- [Data-Spatial Maps](#)
- [Database](#)
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Strengths

- Observers are adaptable
- Safety culture (first priority)
- Excellent staff
- Fully randomized sampling design
- Comprehensive database integrity and integration
(data flow between users)
- Long history of cooperation with most of industry
- Solid working relationships between Observer Program, Sustainable Fisheries (Region), and Office of Law Enforcement
- Logical approach to implementing changes to program: Annual Deployment Plan and Annual Deployment Review.
- Support of the Council

Challenges to the Program

- Negative perceptions
 - Small number of detractors require a disproportionately large amount of staff resources
 - A lower rate of coverage does not equate to a worse program
 - Observers not under NMFS contract are not under NMFS control
- Observer (program) workload over time only grows
 - Council demands of observer analytics are now continuous
 - Data collection is almost always continued *ad infinitum*
- Access
 - New vessel configurations
 - Tender vessel operations
 - Concessions made to address logistical difficulties
- Big data
 - NORPAC et al, CAS, eLandings merges are now common
 - Inconsistent trip definitions
 - Lack of direct link between intended and actual events

Proposed Solutions

- Outreach
- Improve stratification
 - (requires objective weighting and performance metrics)
- Diversify contracts (avoid “to big to fail”)
- Ensure coordination between FMA and REFM
- Quantify gaps
- Improve trip-selection rules (2014)
- Improve vessel selection
 - e.g. require check-in/check-out, update §679.50 to include tender vessels
- Codify in regulations minimum requirements for EM
 - Include EM option for conditional release



2013 Observer Program

Changes to support sustainable fisheries



Supplementary information

Trip Logging System



Alaska Fisheries Science Center

NATIONAL MARINE FISHERIES SERVICE – NOAA FISHERIES

Login - Observer Declare and Deploy System

Observer Declare and Deploy System

For the North Pacific Groundfish and Halibut Observer Program

User ID

Password

- NOAA Data Technician Office (Call Center)
- 1-800-304-4846 (option # 1) or 907-586-7163

[Forgot Password \(Registered Vessel Owners Only\)](#)

[Frequently Asked Questions and Troubleshooting](#)

[ODDs User Manual for vessel owners or captains](#)





[NOAA Marine Weather Forecast](#)
[IFQ Login](#)

Add Trip Plan for LARGE WAVE

Trip Plan [Back to Trip Plan Log](#)

For this trip, will you be using trawl gear? Y N Is this a CDQ trip? N Y

Start / Leave Date: 08/27/2013 Start / Leave Time: Start / Leave Port: Seattle

Return Date: Return Port - Processor: Logged For: --

1 : 00 AM

Hour				Minutes			
AM		PM		00	05	10	15
1	2	3	4	20	25	30	35
5	6	7	8	40	45	50	55
9	10	11	12				

[Add / Save](#) [Continue](#)

Trip Plan Log [View Trip Log Calendar](#)

TRIP NUMBER	Start / Leave Date	Leave Date Plus 48hrs	Start / Leave Port	CDQ Flag	Trip Status	Observer Status
1381	02/01/2013 08:00 AM	02/03/2013 08:00 AM	Kodiak	N	Pending	Not Observed Trip
1382	01/24/2013 03:00 PM	01/26/2013 03:00 PM	Kodiak	N	Pending	Not Observed Trip
1383	01/20/2013 02:00 PM	01/22/2013 02:00 PM	Kaltag	N	Pending	Observed Trip - Obsvr Assigned

1 - 3



Select Vessel Back to Main Menu

Select Vessel

Trip Plan Log for

Close / Change Trip	Cancel Trip	Start / Leave Date	Return Date	Trip Number	Print	Leave Date Plus 48hrs	Start / Leave Port	Cdq Flag	Trip Status	Observer Status
Close	Cancel	08/24/2013 08:00 PM	08/28/2013	5046	Print Trip Receipt	09/26/2013 08:00 PM	Kodiak	N	Pending	Observer Trip - Require Obsvr
		08/08/2013 08:00 PM	08/10/2013	5048	Print Trip Receipt	09/10/2013 08:00 PM	Kodiak	N	Cancelled	Not Observed - Provider Release
Close	Cancel	08/04/2013 10:00 AM	08/07/2013	5047	Print Trip Receipt	08/05/2013 10:00 AM	Kodiak	N	Pending	Not Observed Trip
		07/10/2013 11:45 PM	07/12/2013	4626	Print Trip Receipt	07/12/2013 11:45 PM	Kodiak	N	Completed	Observed Trip - Obsvr Assigned
		06/11/2013 08:00 PM	06/14/2013	3097	Print Trip Receipt	06/13/2013 08:00 PM	Kodiak	N	Cancelled	Observer Trip - Require Obsvr
		06/08/2013 08:00 PM	06/10/2013	3467	Print Trip Receipt	06/10/2013 08:00 PM	Kodiak	N	Cancelled	Observer Trip - Require Obsvr
		05/18/2013 08:00 PM	05/21/2013	3098	Print Trip Receipt	05/20/2013 08:00 PM	Kodiak	N	Completed	Not Observed Trip
		04/28/2013 08:00 PM	04/30/2013	2706	Print Trip Receipt	04/30/2013 08:00 PM	Kodiak	N	Completed	Not Observed Trip
		04/23/2013 08:00 PM	04/26/2013	2550	Print Trip Receipt	04/25/2013 08:00 PM	Kodiak	N	Completed	Not Observed Trip
		04/14/2013 01:00 AM	04/16/2013	2449	Print Trip Receipt	04/15/2013 01:00 AM	Kodiak	N	Completed	Not Observed Trip
		04/10/2013 01:00 PM	04/11/2013	2380	Print Trip Receipt	04/12/2013 01:00 PM	Kodiak	N	Completed	Not Observed Trip
		04/06/2013 12:05 AM	04/06/2013	2192	Print Trip Receipt	04/08/2013 12:05 AM	Kodiak	N	Completed	Observed Trip - Obsvr Assigned
		03/31/2013 10:00 PM	04/03/2013	2186	Print Trip Receipt	04/02/2013 10:00 PM	Kodiak	N	Completed	Not Observed Trip
		03/29/2013 12:00 PM	04/01/2013	2157	Print Trip Receipt	03/31/2013 12:00 PM	Kodiak	N	Completed	Not Observed Trip
		03/24/2013 03:00 AM	03/25/2013	2131	Print Trip Receipt	03/26/2013 03:00 AM	Kodiak	N	Completed	Not Observed Trip

1 - 15 [Next](#)

[Log Trip](#)

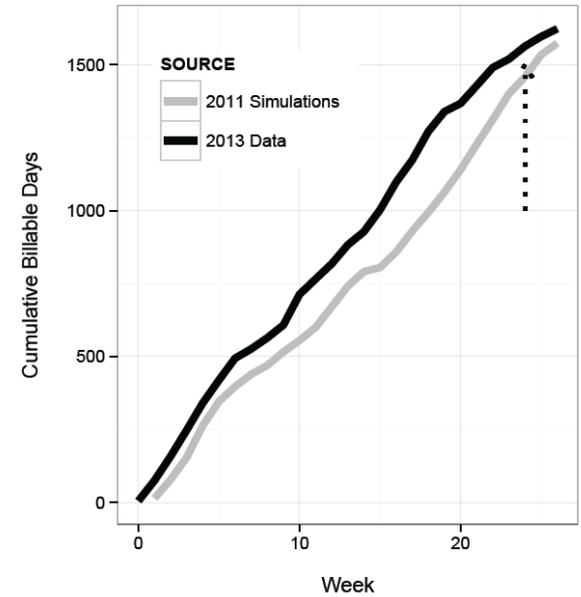
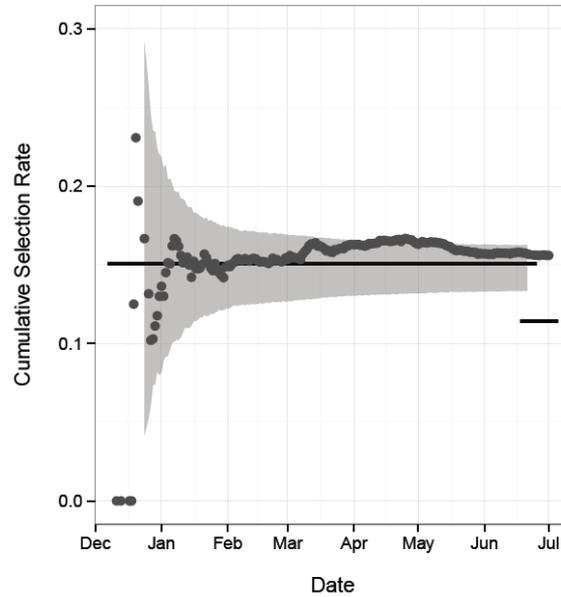
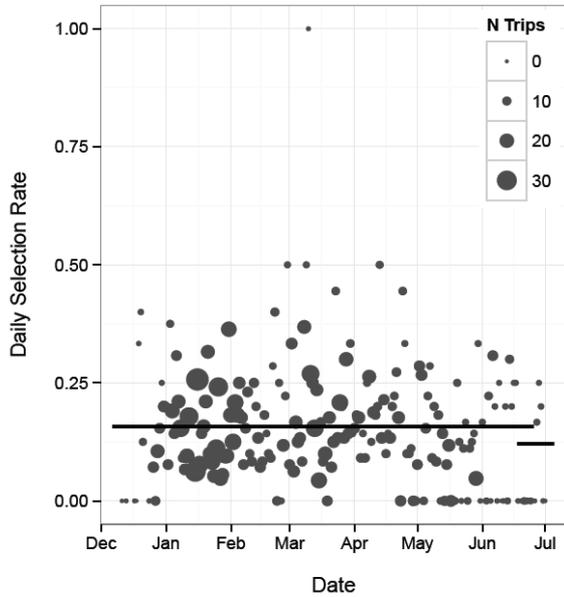
Logged Trips Calendar

[Monthly](#)
[Weekly](#)
[Daily](#)
[< Previous](#)
[Today](#)
[Next >](#)

August 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				01	02	03
04 5047 10:00 AM	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24 5046 08:00 PM
25	26	27	28	29	30	31

Utility of Trip Logging System



Faunce et al. ICES CM J17