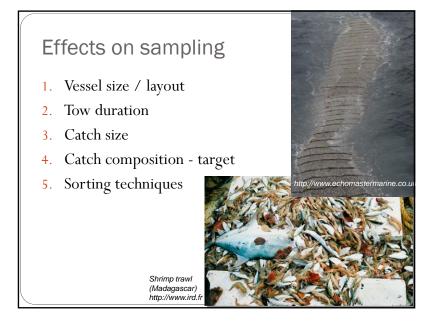


Sampling Priorities

- 1. Collect information on fishing effort
- 2. Randomly sample for catch composition
- 3. Record gear characteristics
- 4. Collect length-frequency data on target and non-target catch

Objectives

- List 4 things that can impact catch composition sampling
- Demonstrate ability to select & describe appropriate sampling method
- Demonstrate ability to complete the Catch Composition form



Catch composition

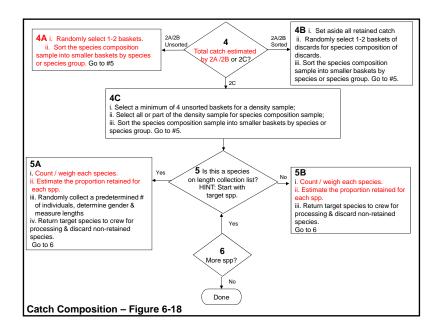
- Multiple sets/day how to choose?
- Observer logbook
- Sets/day Random sample table (RST)

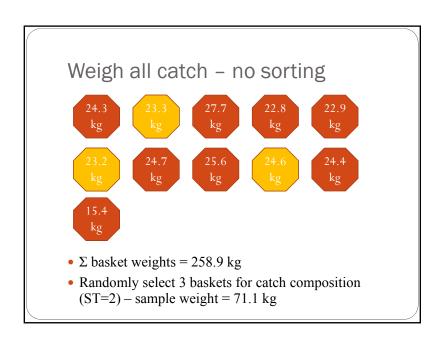
1-2 None – Sample all sets

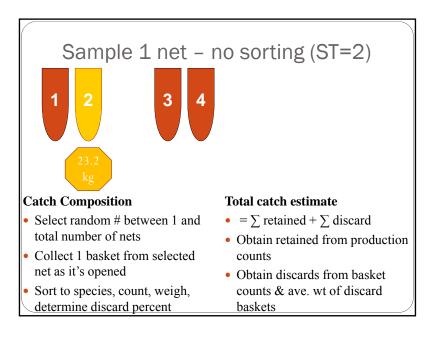
3-4 RST#1

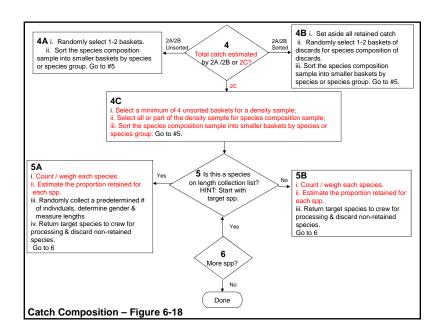
5+ RST#2

- How much to sample?
 - Diversity of catch (size, # species)
 - Time before next retrieval



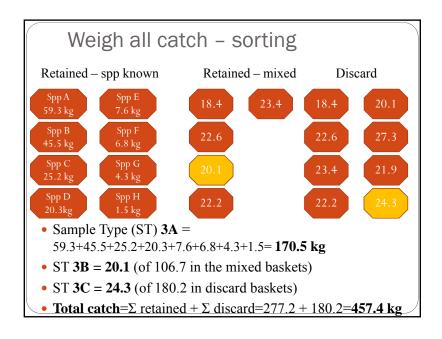


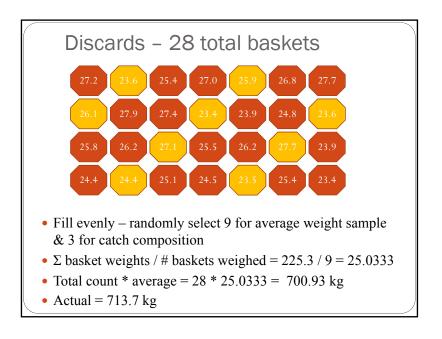


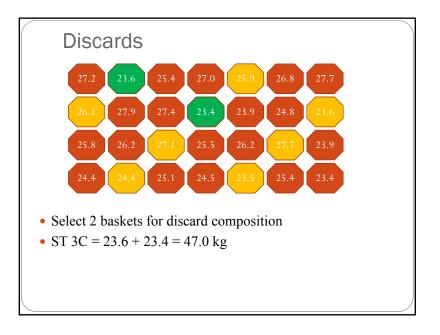


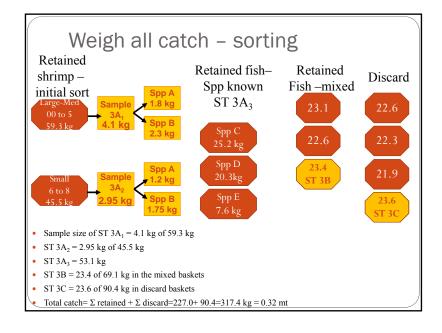
Catch composition – sorted catch (ST=3)

- Weigh all retained
 - By species (sample type 3A)
 - Mixed bags / samples (sample type 3B)
- Subsample discards for composition
 - Weigh all baskets
 - Weigh subsample of baskets
 - Randomly select a few baskets for catch composition of discards (sample type 3C)









Catch composition - helpful hints

- Remember to include any items or specimen removed prior to taking the catch composition sample on the catch composition form as sample type 1 or 8
- If the vessel is changing nets throughout a trip, it may be helpful to mark nets for easy identification

Sampling description

- Most trawl samples require extensive subsampling
 - 1. Systematic spatial with a random start
 - 2. Random spatial
 - 3. Systematic temporal with a random start and
 - 4. Random temporal

Sampling description

- Most trawl samples require extensive subsampling
 - 1. Systematic spatial with a random start
 - 2. Random spatial
- Observer logbook p 12
 - Define population
 - Describe sample frame type & units
 - Describe how random numbers were generated
 - Describe the sample method
- Multiple levels

Sampling description

2. Within Haul Composition Sampling:

Population: individuals in a haul (all codends combined)

Sampling Frame Type and Units: <u>Spatial sample frame — baskets</u>; <u>divide all mix or all discards into equal size baskets and select one or more baskets for comp. sample.</u>

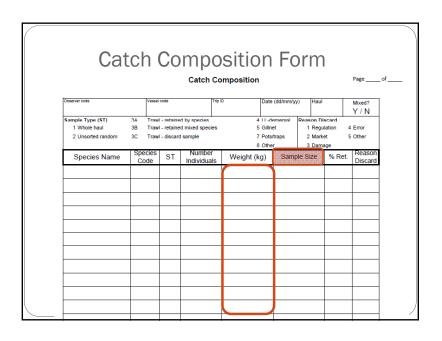
Expected number (range) of sampling units in population: <u>sorted retained – all weights</u> verified, counts from crew; <u>mixed species retained catch (small fish) – 3-10 baskets;</u> discard catch – 12-30 baskets

Random numbers generated by: Random number table

Sampling Method: All of the larger fish & shrimp were sorted/weighed by species and their weights were verified/recorded. Smaller fish and discards were subsampled for composition. For mixed fish retained sample, randomly select 1 bag/basket of 4-6 total for species specific assessment; for discard sample, randomly select 1 basket of 8-20 baskets for composition sample.

Describe any factors that affected your random sample: 1-crew sometimes forgot to keep all discards and threw some things overboard as they were sorting; 2-shovels were small so sometimes the larger discards got pushed around before they were eventually lifted into the discard baskets;

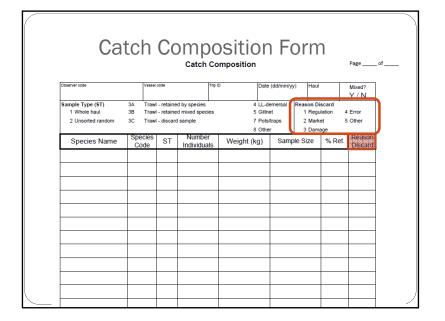
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Observer code	Ve	essel code		Trip ID		Date	(dd/mm/y)	/) Haul		Mixed?	1
										Y/N	
Sample Type (ST)		rawl - retaine						Reason D			
1 Whole haul 2 Unsorted random		rawl - retaine		ies		Gillne		1 Regu		4 Error 5 Other	
2 Unsorted random	3C T	rawl - discard	sample			Pots/ Other		2 Mark 3 Dam		5 Otner	
Species Name	Speci		Numbe Individua		Weight (k	0000000		le Size	% Ret.	Reason Discard	
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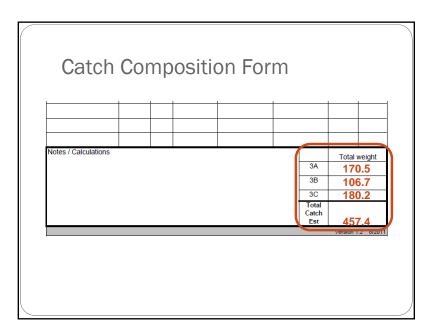


Catch Composition Form

- Weights
 - Actual
 - Average weight > estimated individuals or wt
 - Remember your algebra A/B = C
 - Cartoon count * average cartoon weight
 - Estimate

Cat	ch	ı Cc			SITIOI	n	Fo	rm		Page	_of
Observer code		Vessel code		Trip ID		Date	(dd/mm/yy) Haul		Mixed? Y / N	
Sample Type (ST) 1 Whole haul 2 Unsorted random	3A 3B 3C		ned by species ned mixed spec ard sample	ies	5	LL-de Gillne Pots/ Other	et traps	Reason Di 1 Regu 2 Mark 3 Dam	lation 4 et 5	Error Other	
Species Name	Spe Co	cies ST	. Numbe Individua		Weight (k	g)	Samp	le Size	% Ret	Reason Discard	
		3A							100		
		3B	1	1					100		
				_							
				1							





Summary

- What are four things that can affect a sample?
- How can a sample be biased?

Activity #1

- Spit into groups
- Create a sampling plan of unsorted catch
- Estimate volume of the bin or codend. Scale measurements by 10X (1cm = 10cm)
- Sample according to your plan (above)
- Each of you will complete the catch composition form, sampling description (ONLY #2) & total catch estimation

Activity #2

- Spit into groups. Sort the catch according to the retained/discard on the handout.
- Set the "retained" catch aside. You are provided with the average weights and carton counts for the retained portion of the sample.
- Take a sample (50% or less) of the 'discard' portion for catch composition. Sort the discard sample by species and use the weights provided to estimate the average basket weight. Multiply the average basket weight by the total number of discarded baskets.
- Each of you will complete the catch composition form, sampling description template & total catch estimation calculation on the handout provided.

References

• Pauly, D. 1984. Some simple methods for the assessment of tropical fish stocks. FAO Fish. Tech. Paper 234, FAO, Rome.

Trawl Catch Composition Sample Activity #1 – Unsorted catch

Name:

What you need: pencil, blank Catch Composition form, sample description form to describe sampling procedures, calculator, ruler, bin or "codend" full of catch

- Gather in groups to decide on a sampling strategy for unsorted catch. The catch is highly diverse.
- Make measurements of the codend or the bin and sample for catch composition. Scale your measurements from 1 cm measured to 10cm actual. Use the bin/codend volume and density given below to estimate total catch weight. Put your calculations in the table below.
- Each of you will complete the sampling description template
- Complete the catch composition form based on the information provided and your group's sample counts. Use the average weights for the various types of 'fish' listed at the end of the handout to calculate weights on the catch composition form.
- Record 0% or 100% in the percent retained column as appropriate. Reasons are also provided for the various species.

Your Observer code: FS345, Vessel code: LIB9997, Trip #7, retrieval date: May 17, 2011, Haul 45 was not mixed.

Haul #: Total catch WT:	Total Weight Calculation
Density / Other Calculation	
= 0.9875 mt/m3	

2. Within Haul Composition Sampling:	
Population:	
Sampling Frame Type (spatial, temporal, other) and Units (include typical size of san	nple unit):
Expected number (range) of sampling units in population:	-
Random numbers generated by:	
Sampling Method:	

For the purpose of the catch composition form, use the following weights.

Catch	Average weight per individual (kg)	Retained/ Discard	Discard reason
red bead	0.25	Retained	
yellow bead	0.65	Retained	
sparkly squares	0.85	Retained	
big tortoise buttons	4.15	Retained	
tri-bead (multi-color)	2.75	Retained	
white bead	8.0	Discard	Market
green bead	0.4	Discard	Market
white button	0.05	Discard	Market
foam (misc. shapes)	0.4	Discard	Market
black button/beads	0.5	Discard	Market
black faceted bead	1.75	Discard	Market
blue button	1.8	Discard	Other
red button	0.85	Discard	Market
yellow buttons	0.3	Discard	Market
puff balls	0.7	Discard	Regulation
flower button	10.9	Discard	Market
shark/diver/whale/ pirate/turtle/marble	40.1	Discard	Regulation

Observer code	Vessel	code	Trip	Date	e (dd/mm/y	y) Haul		Mixed?
								Y / N
Sample Type (ST)	3A Traw	- retaine	d by species	4 LL-0	demersal	Reason Di	iscard	
1 Whole haul	3B Traw	- retaine	d mixed species	5 Gillr	net	1 Regu	ulation 4	4 Error
2 Unsorted random	3C Traw	- discard	d sample	7 Pots	s/traps	2 Mark	et !	5 Other
				8 Oth		3 Dam	age	
Cassiss Name	Species	СТ	Number	Maight (kg)	Com	•	% Ret.	Reason
Species Name	Code	ST	Individuals	Weight (kg)	Sam	ole Size	% Rei.	Discard
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Catch Composition

Page _____ of ____

Species Name	Code	ST	Number Individuals	Weight (kg)	Samp	le Size	% Ret.	Reason Discard
Notes / Calculations							Total	weight
						ЗА		
						3B		
						3C Total		
						Catch		
						Est	Version 1	.2 8/2011

Trawl Catch Composition Sample Activity #2 – Sorted catch

Name:

What you need: pencil, blank Catch Composition form, sample description form to describe sampling procedures, calculator, ruler, bin or "codend" full of catch

- Gather in groups. Sort "discards" from retained catch & set retained catch aside. You don't need the retained for this activity.
- Decide on a sampling strategy for discards (ideally sample ~20%). Each of you will complete the sampling description template (Question #2 only).
- Use the mean carton weight (20.0kg) and the counts to calculate sample weights of retained species.
- Complete the catch composition form based on the information provided for retained and your groups discard sample counts. Use the average weights provided for the various types of 'fish' listed at the end of the handout to calculate weights on the catch composition form.
- Record 0% or 100% in the percent retained column as appropriate. Reasons are also provided for the various species.
- Put your calculations for total catch weight in the table below.

Your Observer code: G027, Vessel code: GAB38, Trip #2, retrieval date: March 18, 2011, Haul 41 was not mixed.

Haul #: Total catch WT:	Total Weight Calculation
Density / Other Calculation	

2. Within Haul Composition Sampling:	
Population:	
Sampling Frame Type (spatial, temporal, other) and Units (include typical size of sam	ple unit):
Expected number (range) of sampling units in population:	
Random numbers generated by:	
Sampling Method:	

Trawl – Catch Composition

January 19, 2012

For the purpose of the catch composition form, use the following weights.

Catch	Average weight per individual (kg)	Retained/Discard	Discard reason	# cartons
red bead	0.25	Retained		5.00
yellow bead	0.65	Retained		3.50
sparkly squares	0.85	Retained		0.25
big tortoise buttons	4.15	Retained		1.25
tri-bead (multi-color)	2.75	Retained		1.00
white bead	0.8	Discard	Market	
green bead	0.4	Discard	Market	
white button	0.05	Discard	Market	
foam (misc. shapes)	0.4	Discard	Market	
black button/beads	0.5	Discard	Market	
black faceted bead	1.75	Discard	Market	
blue button	1.8	Discard	Other	
red button	0.85	Discard	Market	
yellow buttons	0.3	Discard	Market	
puff balls	0.7	Discard	Regulation	
flower button	10.9	Discard	Market	
shark/diver/whale/ pirate/turtle/marble	40.1	Discard	Regulation	

Observer code	Vessel	code	Trip	ID Date	e (dd/mm/y	y) Haul		Mixed?
								Y/N
Sample Type (ST)	3A Traw	- retaine	d by species	4 LL-0	demersal	Reason Di	iscard	
1 Whole haul	3B Traw	- retaine	d mixed species	5 Gillr	net	1 Regu	ulation 4	1 Error
2 Unsorted random	3C Traw	- discard	d sample	7 Pots	s/traps	2 Mark	et :	5 Other
				8 Oth		3 Dam	age	
Cassiss Name	Species	СТ	Number	Maight (kg)	Com	•	% Ret.	Reason
Species Name	Code	ST	Individuals	Weight (kg)	Sam	ole Size	% Kel.	Discard
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				-				1
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Catch Composition

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Species Name	Code	ST	Number Individuals	Weight (kg)	Samp	le Size	% Ret.	Reason Discard
Notes / Calculations							Total weight	
						ЗА		
						3B		
						3C Total		
						Catch		
						Est	Version 1	.2 8/2011