Trawl – Species Composition Sampling

INSERT INSTRUCTOR Name

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 effect species composition sampling
- Demonstrate ability to select & describe appropriate sampling method
- Demonstrate ability to complete the Catch Composition form

Effects on sampling

1. Vessel size / layout
2. Tow duration
3. Catch size
4. Catch composition - target
5. Sorting techniques

http://www.echomastermarine.co.uk

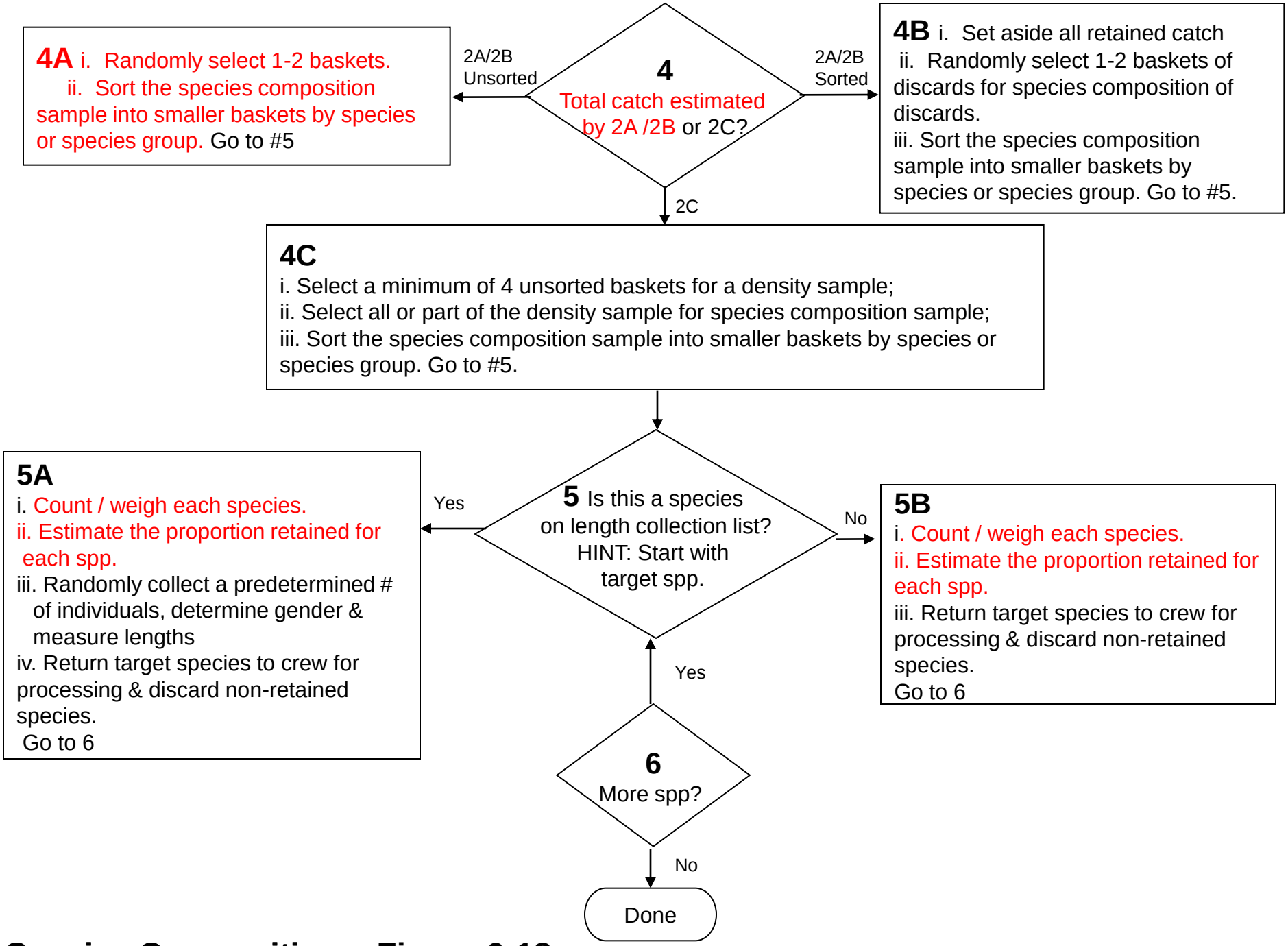
Shrimp trawl (Madagascar) http://www.ird.fr

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

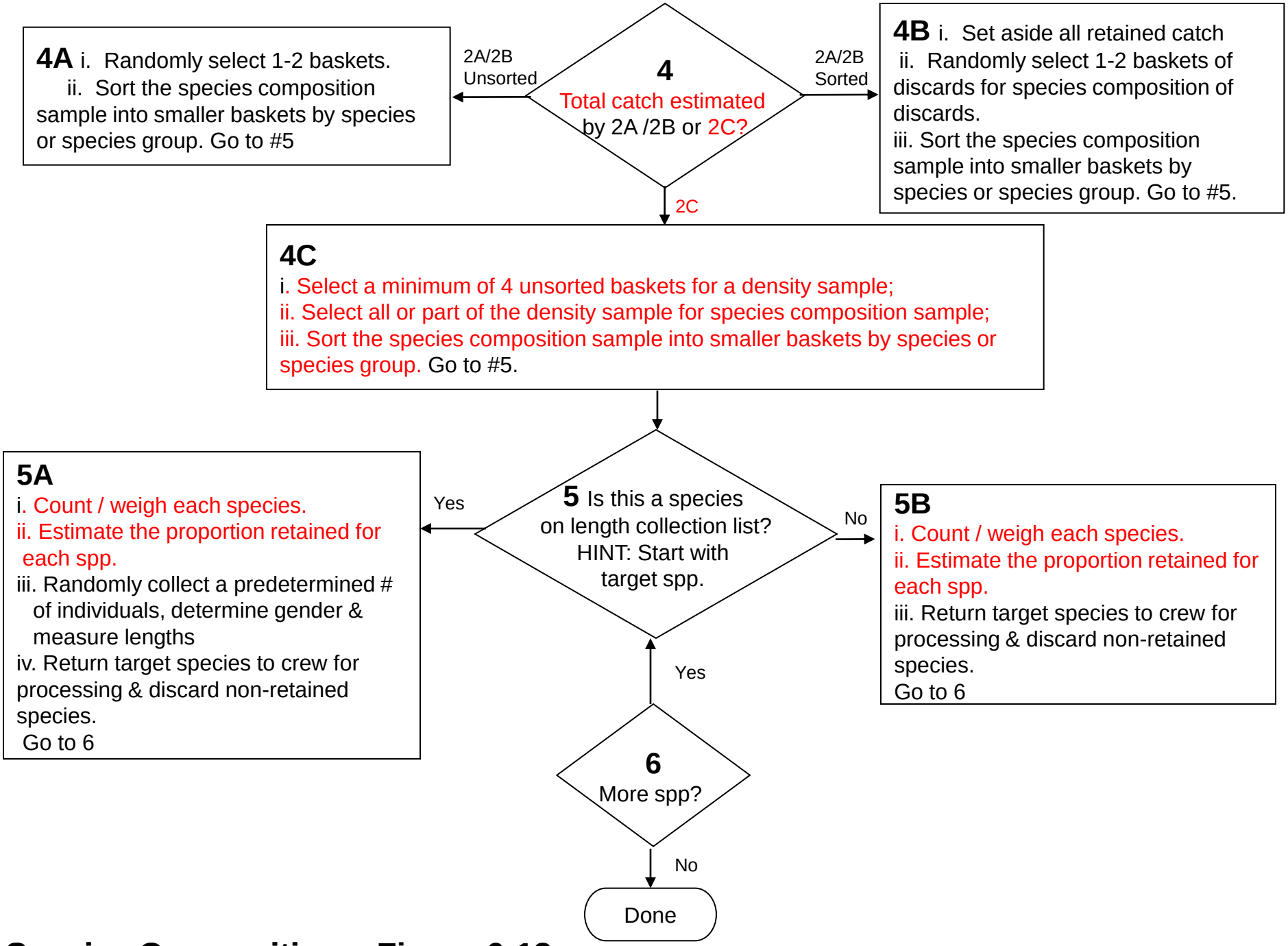
- How much to sample?
  - Diversity of catch (size, # species)
  - Time before next haulback



Species Composition – Figure 6-18

Weight all catch – no sorting

- Σ basket weights = 258.9 kg
- Randomly select 3 baskets for spp comp – sample weight = 71.1 kg

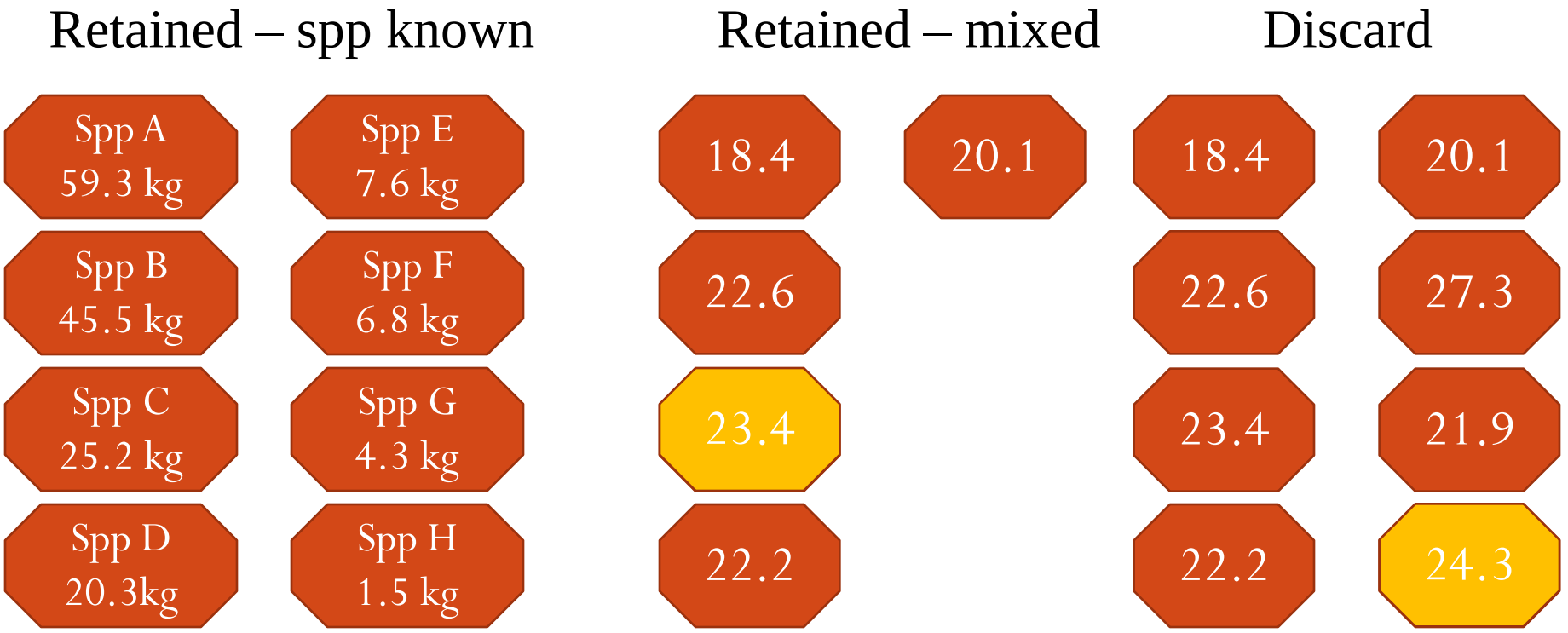


Species Composition – Figure 6-18

Catch composition – sorted catch

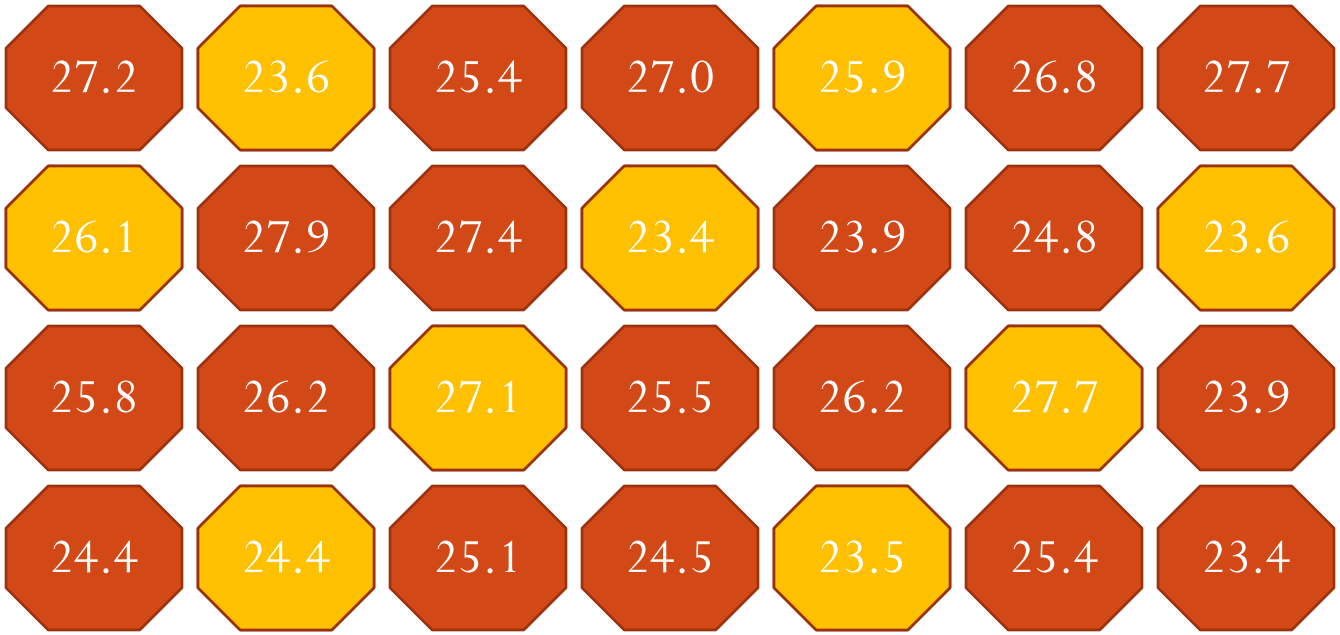
- Weigh all retained
  - By species (sample type 3A)
  - Mixed bags (sample type 3B)
- Subsample discards for composition
  - Weigh all baskets
  - Weigh subsample of baskets
  - Randomly select a few baskets for spp comp of discards (sample type 3C)

Weigh all catch – sorting



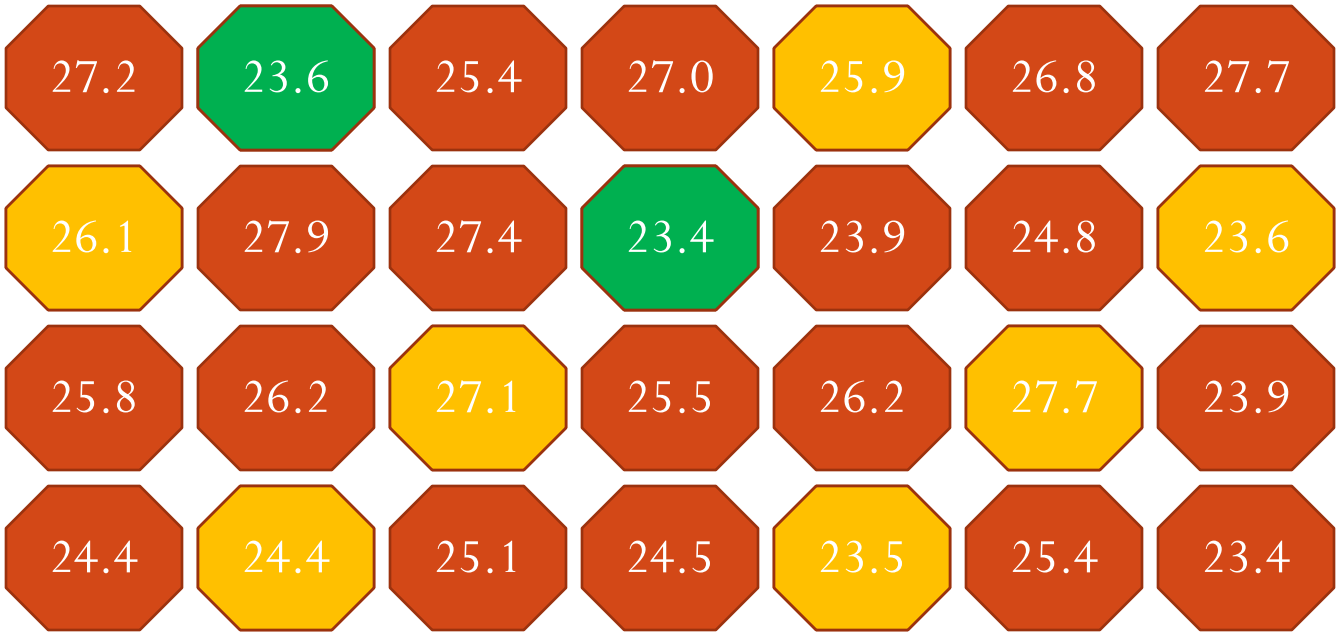
- Total catch = Σ retained + Σ discard = 277.2 + 180.2 = 457.4
- Sample Type (ST) 3A = 170.5 kg
- ST 3B = 23.4 (of 106.7 in the mixed baskets)
- ST 3C = 24.3 (of 180.2 in discard baskets)

Discards



- Fill evenly – randomly select 10 for weight sample & 3 for spp comp
- Σ basket weights / # baskets weighed = 225.3 / 9 = 25.0333
- Total count * average = 28 * 25.0333 = 700.93 kg
- Actual = 713.7 kg

Discards



- Select 2 baskets for discard composition
- ST 3C = 23.6 + 23.4 = 47.0 kg

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 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: Spatial sample frame – baskets; divide all mix or all discards into equal size baskets and select one or more baskets for comp. sample.

Expected number (range) of sampling units in population: sorted retained – all weights verified, counts from crew; mixed species retained catch (small fish) – 2-6 baskets; discard catch – 8-20 baskets

Random numbers generated by: dice, Random number table

Sampling Method: All of the larger fish & shrimp were sorted/weight by species and their weights are verified/recorded. Smaller fish and discards are 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 are small so sometimes the larger discards get pushed around before they are eventually lifted into the discard baskets;

Catch Composition Form

Observer code	Vessel code	Trip ID	Date (dd/mm/yy)	Haul	Mixed? Y / N

Sample Type (ST)

1 Whole haul	3A	Shrimp trawl - retained by species	4 LL-demersal
2 Unsorted random	3B	Shrimp trawl - retained mixed species	5 Gillnet
	3C	Shrimp trawl - discard sample	7 Pots/traps
			8 Other

Reason Discard

1 Regulation	4 Error
2 Market	5 Other
3 Damage	

Species Name	Code	ST	Number	Weight	Sample Size	% Ret.	Reason Discard

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Catch Composition Form

- Weights
  - Actual
  - Average weight
  - Estimate

Catch Composition Form

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Activity

- Spit into groups
- Create a sampling plan for a diverse haul
- Make measurements of either the bin or codend
- Each of you will complete the catch composition form, sampling description & total catch estimation

Summary

- What are four things that can affect a sample?