Purse Seine
Set Information & Sampling

Objectives

- Describe how data from the Set Information and Catch Composition form can be used
- Describe the preferred method for estimating total catch
- Explain 2 methods of catch sampling
- List 5 species that are a priority for lengths and describe the types of lengths needed
- Demonstrate ability to complete the Set Info & Catch Comp form

Sampling priorities

1. Record vessel activity continuously each day on board;
2. **Estimate total catch for each gear deployment;**
3. **Collect random samples for catch composition of each set and document species retained and discarded;**
4. Describe all floating objects sighted, especially those involved in a fishing set;
5. **Subsample catch for lengths;**
6. Record all sightings and interactions with marine mammals and sea turtles;
7. Record fishing gear characteristics.

When to complete the Set Information & Catch Comp form?

- 2 sections
- Set Information - every set
  - Gear deployment & retrieval times
  - Total catch
- Catch composition – every set (few exceptions)
  - Spp #, weight, % retained, discard reason

Total Catch Estimation

- 3 methods
  - Weigh entire catch – small catches or brailer scale
  - Vessel estimate
  - **Brail tally – tally * brailer capacity**

Photo courtesy of Steve Kink - www.historylink.org

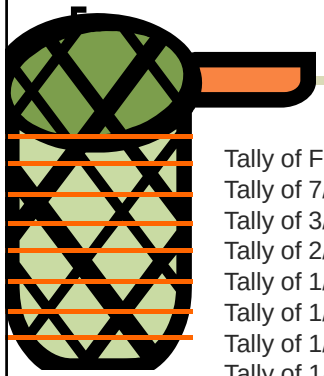
Total Catch Estimation

- Brail tally

Tally of Full	*	1	=	A
Tally of 7/8	*	0.875	=	B
Tally of 3/4	*	0.75	=	C
Tally of 2/3	*	0.667	=	D
Tally of 1/2	*	0.5	=	E
Tally of 1/3	*	0.333	=	F
Tally of 1/4	*	0.25	=	G
Tally of 1/8	*	0.125	=	H

Brailer total = A+B+C+D+E+F+G+H
If using ¼ increments, then A+C+E+H

- Total catch = brailer total * brailer capacity



Total Catch Estimation

	Tally			
Tally of Full	**5**	* 1	=	5.00
Tally of 7/8	**4**	* 0.875	=	3.50
Tally of 3/4	**15**	* 0.75	=	11.25
Tally of 2/3	**12**	* 0.667	=	8.00
Tally of 1/2	**8**	* 0.5	=	4.00
Tally of 1/3	**3**	* 0.333	=	1.00
Tally of 1/4	**1**	* 0.25	=	0.25
Tally of 1/8	**0**	* 0.125	=	0.00
		Total brailers		33.00
		x 800 kg/brailer		
		26,400 kg		
		≈ 26.40 MT		

Catch composition

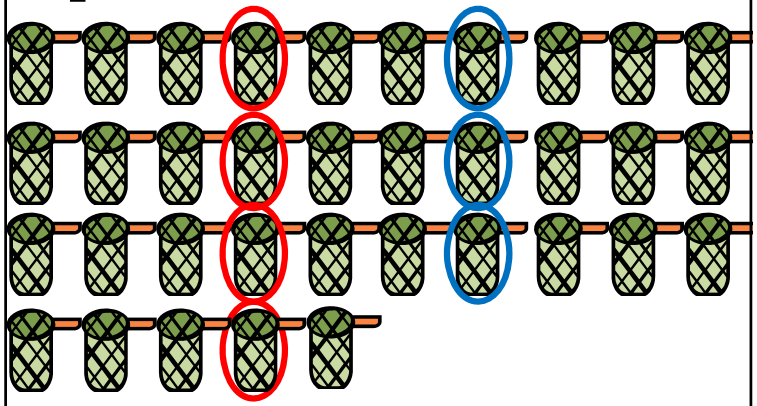
- 4 sample type options

1. Whole brail
2. Partial brail (“spill sample”)
3. Whole set (ST=1)
4. Other (ST=8) – if you see marine mammals or turtles in the net but none are in the brail sample, document the number and leave sample weight blank

Catch composition

- Considerations
  - Brailer capacity
  - Storage space
- Whole brail (ST=6A)
  - Ideal for small capacity brailers
  - Randomly select 2-3 brailers / set
  - Identify, count & weigh all catch to species level

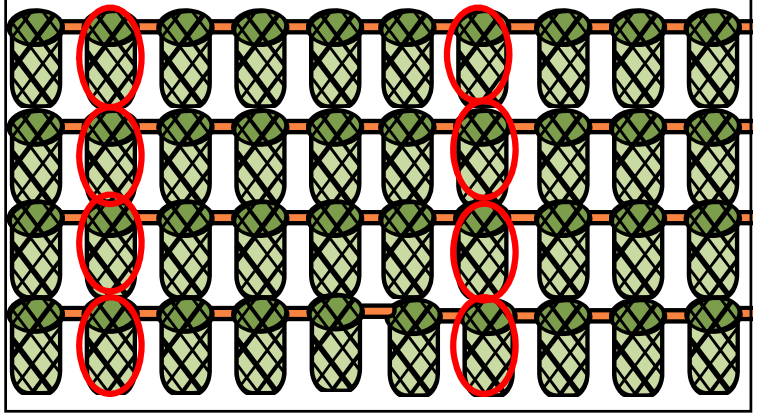
Catch composition



Catch composition

- Partial brail (“spill sample”) (ST=6B)

Catch composition



Set Information

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Set Information & Catch Composition - Purse Seine - Large Pelagics

Observer code	Vessel code	Trip ID	Set No.	Float.Object / Sighting No. /	MM Sighting No.

Set Information

School Association (check one)
- ☐ 1 Unassociated
- ☐ 2 Feeding - baitfish
- ☐ 3 Floating Object
- ☐ 4 Marine mammal
- ☐ 5 Other:

How Detected (check one)
- ☐ 1 Vessel sighting
- ☐ 2 Helicopter sighting
- ☐ 3 Floating object
- ☐ 4 Birds/bird radar
- ☐ 5 Sonar/depth sounder
- ☐ 6 Other vessel
- ☐ 7 Other:

Set Sequence Times

Start set	Begin pursing (winch on)	End pursing (rings up)	Begin brail	End brail	End set (skiff on board)

Brailer tally

Full	7/8ths	3/4th	2/3rd	Half	1/3rd	1/4th	1/8th	TOTAL

Total Catch (mt)

Total Catch Estimate	Method	Vessel Estimate

Total Catch Estimation Methods
1 Weigh entire catch
2 Vessel estimate
8 Brail tally

Problems (check all that apply)
- ☐ No problems
- ☐ Unfavourable SST
- ☐ Misssed mark
- ☐ Interaction w/ other vessel
- ☐ Breakdown
- ☐ Other:
- ☐ Tide
- ☐ Tangle

Set Information

Page ____ or ____

Set Information & Catch Composition - Purse Seine - Large Pelagics

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Catch Composition (form)

Catch Composition

Sample Type (ST)
6A Whole Brail — 1 Whole haul
6B Partial Brail — 8 Other

Reason Discard
1 Regulation — 4 Error
2 Market — 5 Other
3 Damage

Species Name	Species Code	ST	Number Individuals	Weight (kg)	Sample Size	% Ret.	Reason Discard

Catch Composition (form)

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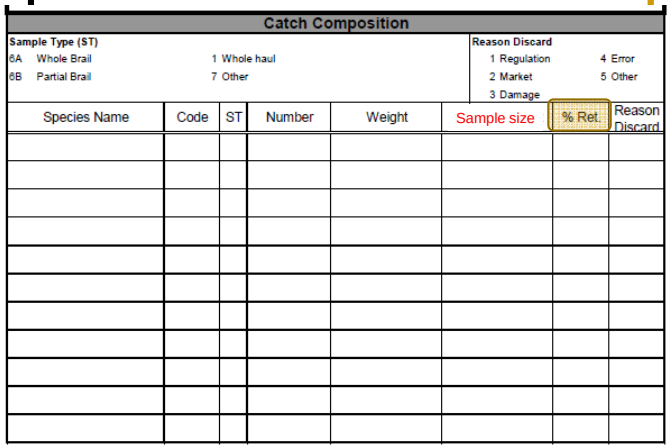
Catch Composition (form)

- Weights
  - Actual
  - Average weight * total count
    - Can use average weight to estimate number of individuals or total weight
    - Remember your algebra - A/B = C
  - Length-weight table

Catch Composition (form)



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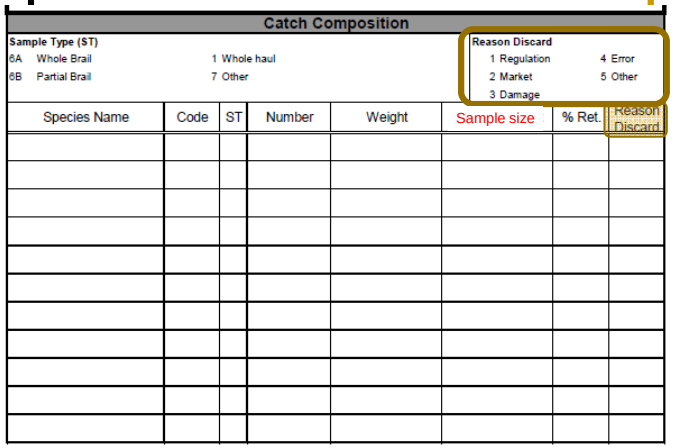

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Species Name	Code	ST	Number	Weight	Sample size	% Ret.	Reason Discard

Lengths

How many?	Common Name	Scientific Name
Tunas		
All	Atlantic bluefin tuna	*Thunnus thynnus*
Subsample 20-50	Bigeye tuna	*Thunnus obesus*
Subsample 20-50	Albacore tuna	*Thunnus alalunga*
Subsample 20-50	Yellowfin tuna	*Thunnus albacores*
All	Little tunny	*Euthynnus alletteratus*
All	Skipjack tuna	*Katsuwonus pelamis*
All	Frigate tuna	*Auxis thazard*
All	Bullet tuna	*Auxis rochi*

Lengths

How many?	Common Name	Scientific Name
Billfish		
All	Swordfish	*Xiphias gladius*
All	Atlantic sailfish	*Istiophorus albicans*
All	Atlantic blue marlin	*Makaira nigricans*
All	Black marlin	*Makaira indica*
All	Atlantic white marlin	*Tetrapturus albidus*
All	Shortbill spearfish	*Tetrapturus angustirostris*
Other Finfish		
All	Atlantic bonito	*Sarda sarda*
All	If catch <15 of any finfish	
Subsample 15-20	If catch >15 of any finfish	

Lengths

How many?	Common Name	Scientific Name
Sharks		
All	Bigeye thresher shark	*Alopias superciliosus*
All	Silky shark	*Carcharhinus falciformis*
All	Oceanic whitetip shark	*Carcharhinus longimanus*
All	Scalloped hammerhead	*Sphyrna zygaena*
All	Smooth hammerhead	*Sphyrna lewini*
All	Shortfin mako	*Isurus oxyrinchus*
All	Porbeagle	*Lamna nasus*

Activity

- Groups of 4
- 1“winch operators” & 3 observers
- Complete the Set Information & Catch Composition form using
  - Information provided
  - Sample from “purse seine”
- Complete Sample description form
- Questions at end of p2
- Exercise will be turned in

Activity

- What did you get for Total Catch?
- What percent of your catch sample was the predominate species?

Sampling Description

- Briefly describe the flow of fish:

Catch was brailed onto the vessel using a 1000 kg brailer. The brailer was emptied directly into the fish hold

Sampling Description

2. Within Haul Composition Sampling:

- Population: *All catch in the net*
- Sampling Frame Type (spatial, temporal, other) and Units (include typical size of sample unit): *Spatial sampling frame; a whole brailer was the sample unit (~1000 kg)*
- Expected number (range) of sampling units in population: *Targeted 2 sample units out of a total of 10-15*_____
- Random numbers generated by: *Random number table_*
- Sampling Method:*watched all brailers come aboard and asked crew to divert the brailers randomly selected for the catch composition sample. Once sample was collected, I tallied each species individually and either weighed them all (if there weren't very many) or collected an average weight and multiplied by the tally (#pieces) to get species weights in the sample*

Activity

- Length types by spp
  - Tuna – straight fork length (01S)
  - Sharks
    - Fork distinct, straight fork length (01S)
    - Fork not distinct, straight stretched length (13S)
  - Billfish – curved lower jaw to fork (05C)
- Sample biases
- What were the sampling challenges?

Summary

- How can data from the Set Information & Catch Composition form can be used?
- Describe the preferred method for estimating total catch
- Explain 2 methods of catch sampling
- List 5 species that are a priority for lengths. What types of lengths are needed for each?