

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

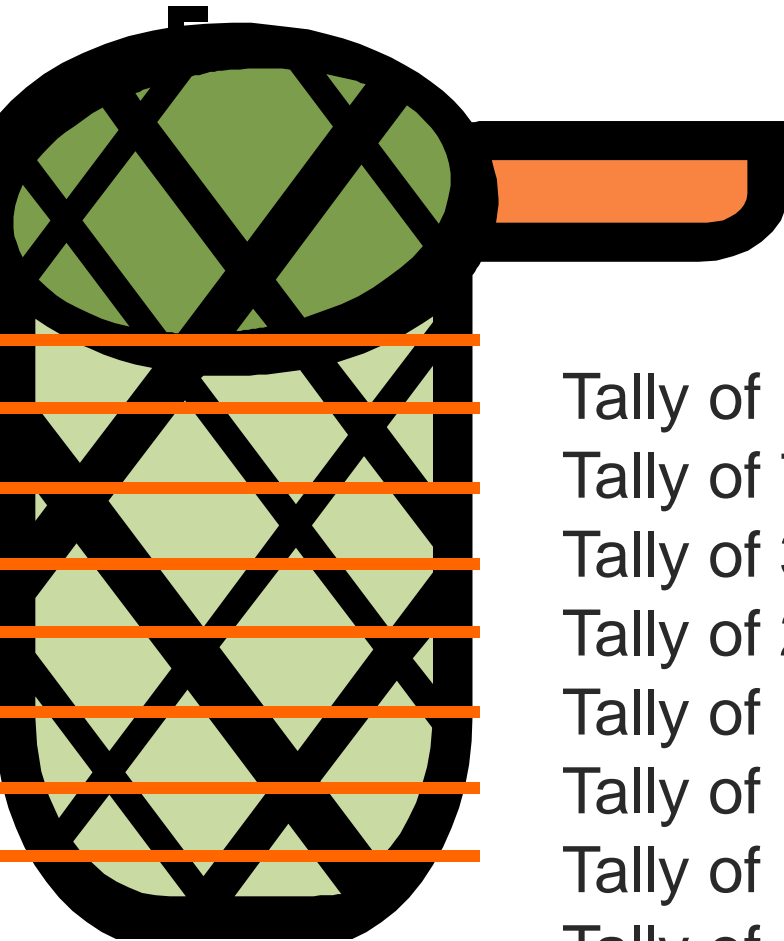
Tally of Full	*	1	=	A
Tally of 7/8	*	0.875	=	B
Tally of 3/4	*	0.75	=	C
Tally of 2/3	*	0.667	=	D
Tally of 1/2	*	0.5	=	E
Tally of 1/3	*	0.333	=	F
Tally of 1/4	*	0.25	=	G
Tally of 1/8	*	0.125	=	H

Brailer total = A+B+C+D+E+F+G+H
If using 1/4 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
<hr/>				
	Total brailers			33.00
		x 800 kg/brailer		26,400 kg
				≈ 26.40 MT

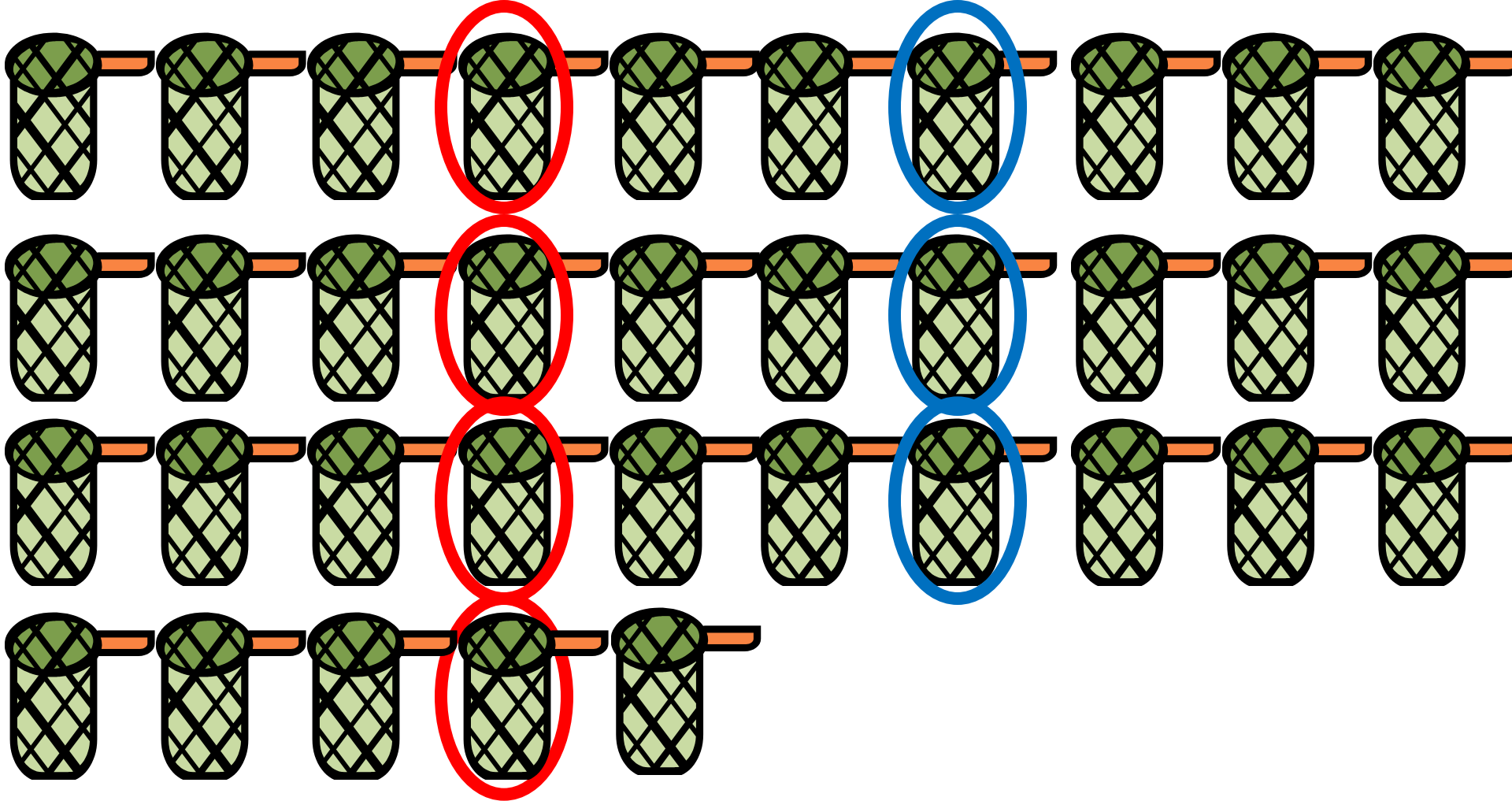
[Catch composition]

- 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

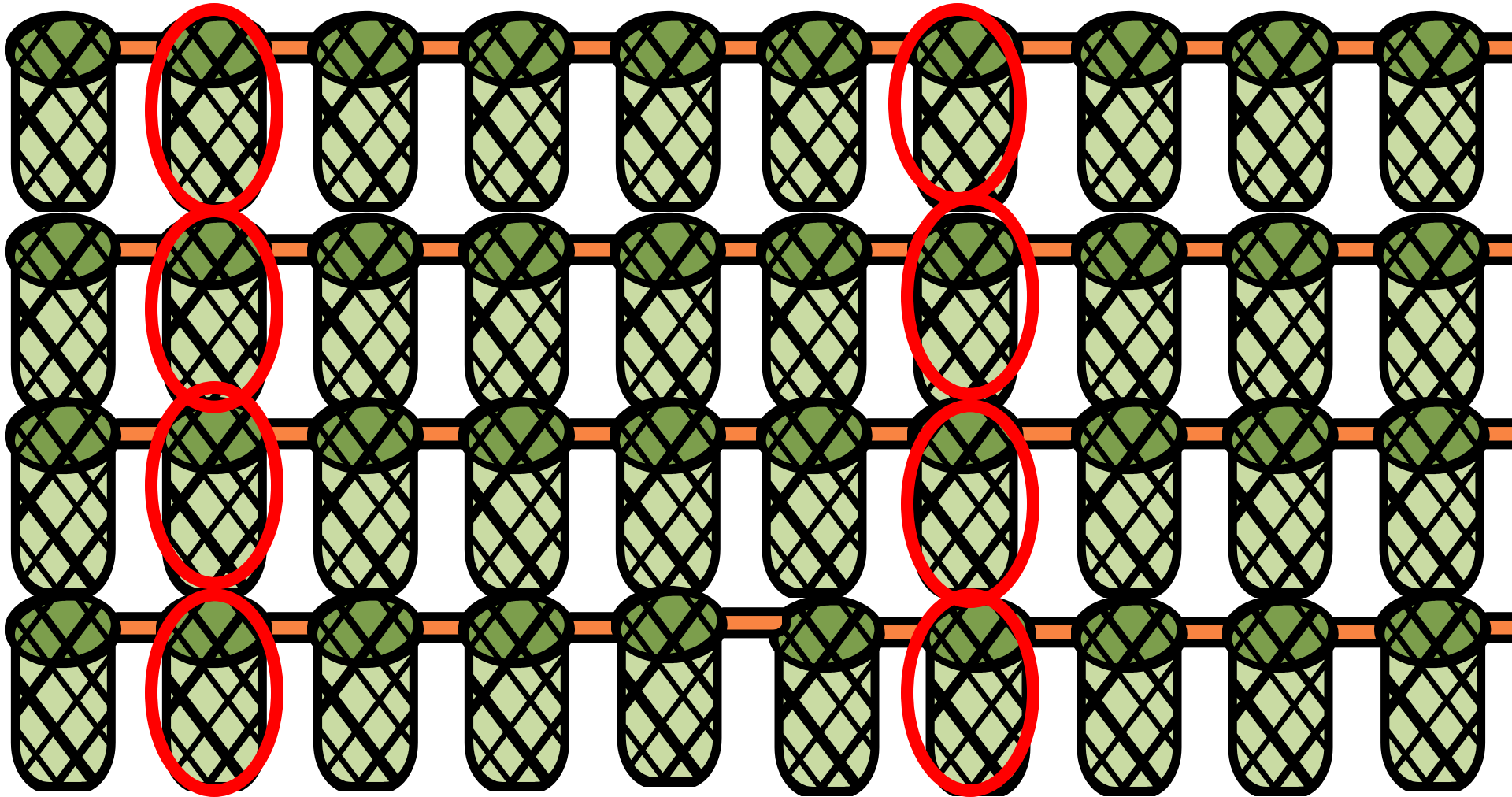
Catch composition



Catch composition

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

Catch composition



Set Information

Set Information & Catch Composition - Purse Seine - Large Pelagics

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

School Association (check one)

- 1 Unassociated 4 Marine mammal
 2 Feeding - baitfish 5 Other:
 3 Floating Object

How Detected (check one)

- 1 Vessel sighting 5 Sonar/depth sounder
 2 Helicopter sighting 6 Other vessel
 3 Floating object 7 Other:
 4 Birds/bird radar

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

Problems (check all that apply)

- No problems Unfavourable SST Missed mark
 Interaction w/ other vessel Breakdown Other:
 Tide Tangle

Total Catch Estimation Methods

- 1 Weigh entire catch 2 Vessel estimate
 8 Brail tally

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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

Lengths

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

[Lengths]

How many?	Common Name	Scientific Name
Billfish		
All	Swordfish	<i>Xiphias gladius</i>
All	Atlantic sailfish	<i>Istiophorus albicans</i>
All	Atlantic blue marlin	<i>Makaira nigricans</i>
All	Black marlin	<i>Makaira indica</i>
All	Atlantic white marlin	<i>Tetrapturus albidus</i>
All	Shortbill spearfish	<i>Tetrapturus angustirostris</i>
Other Finfish		
All	Atlantic bonito	<i>Sarda sarda</i>
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	<i>Alopias superciliosus</i>
All	Silky shark	<i>Carcharhinus falciformis</i>
All	Oceanic whitetip shark	<i>Carcharhinus longimanus</i>
All	Scalloped hammerhead	<i>Sphyrna zygaena</i>
All	Smooth hammerhead	<i>Sphyrna lewini</i>
All	Shortfin mako	<i>Isurus oxyrinchus</i>
All	Porbeagle	<i>Lamna nasus</i>

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?