

STOMACH COLLECTION

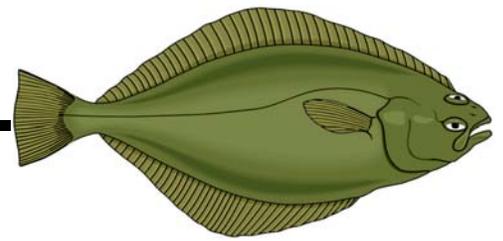


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INTRODUCTION

The data resulting from successful completion of the stomach collection project is very important. Stomach collections provide data on predation mortality of commercial stocks of fish and crabs, and are used to estimate the degree of this mortality. In addition, these data enhance our understanding of spatial, seasonal, and inter-annual patterns in the marine foodweb.

Your comments and suggestions about this project are important to the Food Habits Lab. At the end of this chapter is a questionnaire about the project to assist you in providing comments to the Food Habits Lab.

The stomach project is assigned to specific vessels rather than to specific observers. Therefore, your participation in the project will depend upon the vessel to which you are assigned. The project is primarily assigned to vessels that have historically provided an adequate sampling platform for this project.

- Please read all instructions carefully.
- Data for the stomach collections and related isotope collections are recorded on the standard Length and Specimen Form, and the data are entered into ATLAS.
- Stop by the Food Habits Lab if you have questions about this project prior to your deployment.

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Observers aboard catcher vessels must read the special instructions for completing stomach projects!

MATERIALS FOR STOMACH PROJECT

Observer Program field staff will provide this gear if it is not already available on your vessel.

- 1 liter of 100% formalin
- 1 5-gallon bucket
- 2 bucket lids (1 cut and 1 uncut)
- 2 large plastic bags
- Assorted sizes of specimen bags
- Small and large ziploc bags
- 100 Stomach Collection Labels
- Material Safety Data Sheets (MSDS) for 100% formalin

STOMACH COLLECTION: Stomach Sampling

- MSDS for 10% formalin

Please return all unused supplies and the empty plastic formalin bottle to the Food Habits Lab or to an FMA Division field office. Do not place unused sampling gear in a bucket with samples!

Formalin Handling Protocol for Observers

- Formalin is a relatively hazardous chemical and must be handled appropriately to ensure your safety. Stomach collections require only a small quantity of formalin and if these guidelines are followed your exposure will be well below established safe exposure levels.
- Read the MSDS before using formalin to understand its properties. You can find “Material Safety Data Sheet for 100% Formalin” on page A-74 and “Material Safety Data Sheet for 10% Formalin” on page A-78.
- **ALWAYS** wear gloves, rain gear, and the goggles provided in the kit when handling formalin.
- **ALWAYS** use formalin on an open deck. *Do not* use below decks or in your cabin.
- Inform captain and crew that you have formalin onboard, where it is stored, location of MSDS, potential hazards, and what to do in case of a spill.
- If the formalin is spilled, the quantity you have is small enough that you may dilute it with water and wash it overboard.
- Add formalin to a bucket half-full with seawater, rather than adding seawater to the formalin. This will dilute the formalin quickly, and will prevent formalin from splashing on you.
- Use extreme caution when adding formalin to the bucket of seawater. Hold the bucket lid over as much of the bucket opening as possible while pouring the formalin, using it as a shield.
- If formalin comes into contact with your skin or eyes, rinse skin immediately and thoroughly with water for 15 minutes as per the MSDS. Rinse your eyes with saline provided in kit, then use onboard eye wash (if available) or water as needed to flush eyes for 15 minutes as per the MSDS.

- If the formalin is ingested, Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Seek medical attention as soon as possible as per the MSDS.
- If you are overcome by fumes, move into fresh air. Administer oxygen if necessary and available, as per the MSDS.

Where to Keep Formalin Onboard

Formalin should be stored in a well ventilated space. Pure 100% formalin should be stored at or above 50°F. Below 50°F, a component precipitates out and the formalin loses potency. Pure formalin is a flammable material and should be stored in an appropriate flammable storage area until it has been diluted. Once diluted to a 10% solution, formalin can and should be stored on a weather deck. The solution will not freeze.

Store your bucket securely tied to an immobile object. Leave the bucket in place and carry samples to the bucket. This will avoid the potential of spilling formalin in the factory and will keep the formalin away from fish processing operations.

Do not submerge your gloves in the formalin when you add samples to the bucket. If the samples float, use a pair of forceps or some other tool to submerge the samples. Rinse the tool with water after formalin contact.

Anytime formalin gets spilled and/or inadvertently comes into contact with any object other than your samples, flush the object or area with plenty of water.

STOMACH SAMPLING

Determining Sex and Spawning Condition

To determine sex and spawning condition in flatfish and gadids, give the abdomen a light squeeze. The extrusion of milt (male) or eggs (female) indicates a fish in spawning condition. If no milt or eggs are released the fish is considered to be in a pre-spawn condition.

Stomach Collection Procedure

1. Prior to the first haul from which you plan to collect stomachs, fill the white five gallon bucket half-full with sea water and add the contents of the one liter bottle of 100% formalin (37% formaldehyde) creating a 10% formalin solution (3.7% formaldehyde).

2. Seal with the cut lid. Add samples to this bucket as you collect them, one stomach per bag.
3. Collect stomach samples according to the length of fish (see “Selecting Fish for Your Samples” on page 17-4).
4. Use the tally sheet (Figure 17-1 on page 17-8) to keep track of the length categories that you need to fill.

You may collect fish from any haul sampled for composition.



Collect fish that do not show signs of net feeding or regurgitation. These signs include prey items (fresh or digested) in mouth or gill rakers or flaccid (loose and bloated) stomachs. **Do not keep these!**

Signs of “natural” stomachs include stomachs that are constricted tightly around the prey inside and naturally empty stomachs, which appear tight and contracted. **Keep these!**



If a fish is discarded due to regurgitation, take the next fish in the basket. If the subsequent fish has food in its stomach, go ahead and collect the specimen. If the subsequent fish has an empty stomach (naturally empty or regurgitated), discard it and go on to the next fish until a non-empty stomach is encountered. This special note applies only to the fish selected immediately after a regurgitation discard, because we don't want you to replace a regurgitated stomach with an empty stomach. A naturally empty stomach is a valid collection when not collected immediately following a regurgitated stomach.

5. Determine the sex, fork length, and spawning condition of each fish and collect the stomach (see methods for individual species).
6. Record the raw data on your Deck Form (see Figure 17-5 on page 17-11 and Figure 17-6 on page 17-12). Indicate on the Deck Form which sample the stomach came from, assign it a specimen number, and record whether it came from sex/length fish, or from the species composition sample only.

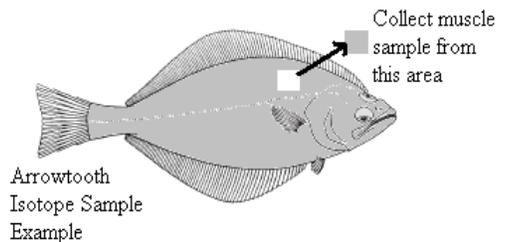
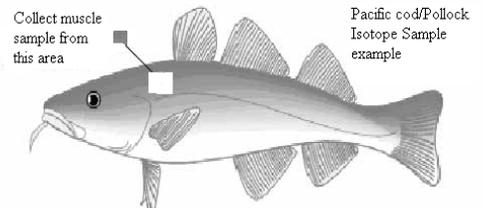
7. Record all information on a Stomach Collection Label (Figure 17-2 on page 17-8) as described in “Labels and Records” on page 17-6. Place each stomach in an individual cloth bag of the appropriate size and include the Stomach Collection Label. Please close the bag tightly shut with the drawstrings and secure it with a single overhand knot. **Do not double knot the drawstrings!** Place the bag into the bucket.

8. Enter stomach collection data into ATLAS or record data onto the Length and Specimen Form (Figure 17-7 on page 17-13 and Figure 17-8 on page 17-14) if you are not entering data into ATLAS.

Stop collecting when you have collected 80 stomachs or the bucket is full when loosely packed.

ISOTOPE SAMPLING PROCEDURES

When possible, collect isotope tissue samples from your stomach collection fish. If this is not possible, you may collect isotope tissue samples from fish outside of your stomach collection fish. If isotope tissue samples are not associated with a stomach collection, record information according to Length and Specimen Form rules (see “Length and Specimen Form Instructions” on page 13-17). When collecting stomachs from Pacific cod, pollock or arrowtooth flounder collect and freeze additional tissue samples: a liver sample and a muscle sample (up to 20 fish per haul and up to 80 per observer). Collect these samples from across a range of lengths.



STOMACH COLLECTION: Selecting Fish for Your Samples

1. Collect the 1 cubic cm muscle sample from the area just below the dorsal fin and above the pectoral fin. Collect a similar sized sample of the liver from the same fish.

2. Place each of these tissue samples in their own ziploc bag. Place the two ziploc bags containing samples into another ziploc bag labeled with a completed specimen tag (use a Stomach Collection Label).

3. These samples should be recorded as raw data on the Deck Form. Isotope data should be entered into ATLAS, or recorded on the Length and Specimen Form along with the corresponding stomach collection and maturity scan data. The specimen type is code 10. The specimen number is the same as the corresponding stomach and maturity scan specimen number. The weight should be recorded as .00 kg in ATLAS or on the Length and Specimen Form (Figure 17-7 on page 17-13).

4. FREEZE the isotope tissue sample. *These samples should not come into contact with formalin.* Upon disembarking your vessel, please place all frozen tissue samples into a large plastic bag, labeled with your name, cruise number, and vessel permit and drop them off at the Dutch Harbor Field office.

SELECTING FISH FOR YOUR SAMPLES

To reduce the confusion of recording the data and to streamline the specimen collection process, the fish from which you take stomachs should be taken from those fish which were selected for length samples. If the species of fish for which you are taking stomachs are not the same for which you are taking lengths, you may select the stomach specimen fish from within your sample. At no time should you collect fish from outside of your sample.

Stratify the stomach collection by size of fish. Each haul sampled should have no more than 5 stomach specimens collected per haul. It is acceptable to collect from multiple hauls each day.

Figure 17-1 on page 17-8 shows a tally sheet with species length and the number of specimens per size category and haul. There are four length categories. Refer to the chart below to determine the size category breakdown for the species from which you are collecting specimens. Fill in the blanks on your tally sheet according to the appropriate size category.

Collect 5 stomach specimens per haul. The 5 stomachs collected should come from a single size category. The stomach collection should take 16 hauls (4 different hauls per size category with 5 stomachs collected per haul until the desired numbers are collected). Depending on the catch composition, it may take several weeks to fill all of the size categories.

Pacific cod, Pacific halibut, Greenland turbot, and arrowtooth flounder:	
1) <31 cm	3) 51-70 cm
2) 31-50 cm	4) >70 cm
Walleye pollock:	
1) <30 cm	3) 40-49 cm
2) 30-39 cm	4) >50 cm
Yellowfin sole:	
1) <20	3) 25-29 cm
2) 20-24 cm	4) >29 cm
Flathead sole:	
1) <21 cm	3) 31-40 cm
2) 21-30 cm	4) >40 cm
Sablefish (Gulf of Alaska only)	
1) <50 cm	3) 60-70 cm
2) 50-60 cm	4) >70 cm

You may have difficulty finding specimens for a particular size strata (especially if your vessel targets large fish). If this happens, take more from the size categories you are finding (but no more than 5 per haul) or wait a few hauls if you think your vessel may catch a different size group. It is acceptable to take fewer than 5 stomach specimens for these hard to find size categories (*e.g.*, smaller cod). The total number of samples requested is a maximum. If your bucket is full when loosely packed before you have reached 80 specimens, **stop collecting**. The number which will fit in a bucket will depend on the size and fullness of the stomachs collected.

Method of Collecting Stomachs from Gadids

1. To examine a stomach for regurgitation, first examine the mouth and gill rakers, then cut through the skin of the fish as shown in Figure 17-3. **Be careful not to cut into the stomach.**

2. Open the body cavity at the incision and examine the stomach, if there is no sign of regurgitation.

3. Excise the stomach by cutting just anterior to the pyloric caeca and posterior to the gill chamber. Include all of the esophagus. Place the stomach in a specimen bag with a Stomach Collection Label and preserve it.

Method of Collecting Stomachs from Flatfish

1. To examine stomachs for regurgitation, cut through the skin of the blind side of the fish as shown in Figure 17-4. ***Be careful not to cut through the stomach.***
2. Lift flap and examine body cavity, if there is no sign of regurgitation, keep the fish and continue with the collection process.
3. If the fish is less than 20 cm in length, remove the entire head along with the digestive tract attached and put it in a sample bag with a Stomach Collection Label and preserve it.
4. If the fish is 20 cm or larger, remove the entire digestive tract from the beginning of the esophagus to the posterior end of the intestine just above the anus. Place the stomach with the intestine attached into a stomach bag with a Stomach Collection Label and preserve it.



For all of the large flatfishes (arrowtooth flounder and Greenland turbot) remove only the stomach and leave the intestine behind. Make an incision posterior to the gill chamber and anterior to the pyloric caeca. Be aware that arrowtooth are prone to regurgitation.

Dutch Harbor Catcher Vessel Collection

If you are on a catcher only trawl vessel delivering fish to Alyeska, Unisea or Westward Seafoods that is retrieving the last haul before delivery within 16 hours from port you can complete this collection. You will need to collect supplies from the blue flammable lockers at each plant or from the Dutch Harbor Field office (specimen bags, plastic bags, and Stomach Collection Labels) prior to your departure from port. During the last haul of the trip you will collect a maximum of 5 stomach and isotope samples, (with no size restrictions), from arrowtooth flounder, Pacific cod, and/or pollock. Stomach collections should come from within your species composition samples. You will fill out the Stomach Collection Label and place them into the specimen bag with the collected stomach, being sure to close the specimen bag carefully. You can

store these in plastic bags (do not allow the stomach samples to freeze) until you arrive into port where you will remove them from the plastic bags they were temporarily stored in and place them in the proper stomach collection bucket located in blue flammable lockers at the designated processing plant. Each blue locker has a unique combination which will be given to you during training/briefing. Isotopes should be collected according the isotope collection procedure (page 17-3). Be sure that these remain frozen until they can be dropped off at the Dutch Harbor field station. Any questions about this collection please contact the Dutch Harbor field office @ (907) 581-2060.

Kodiak Catcher Vessel Collection

If you are on a catcher only trawl vessel delivering to a Kodiak processing plant that is retrieving the last haul within 16 hours of the offload you can complete this collection. You will need to collect supplies (mesh bags, plastic bags, and Stomach Collection Labels) from the SWI bunkhouse, the Kodiak field office or from the flammable lockers located at all processing plants (with the exception of Global Seafoods) prior to your departure from port. These flammable lockers all have unique combinations that will be provided to you during your training/briefing. During the last haul of the trip you will collect a maximum of 5 stomachs and isotope tissue samples (with no size restrictions) from arrowtooth flounder, Pacific cod, and/or pollock. Stomach collections should come from within your species composition samples. You will fill out the Stomach Collection Label and place them into the specimen bag with the collected stomach, being sure to close the mesh bag carefully. You can store these in plastic bags (do not allow the stomach samples to freeze) until you arrive into port where you will place them in the proper stomach collection bucket located in flammable lockers at the designated processing plant. If you offload at Global Seafoods, please put your samples in the buckets located at the Trident Seafoods processing plant. If you need assistance please ask the plant observer. Isotope specimens should be collected according the isotope collection procedure (page 17-3). Be sure that these remain frozen until they can be dropped off at the Kodiak field station. Any questions about this collection, please contact the Kodiak field office @ (907) 481-1770.

STOMACH COLLECTION: Selecting Fish for Your Samples

Labels and Records

- Always use a pencil.
- Fill out a Tally Sheet for your species - C/Ps only (see Figure 17-1).
- Raw data must be recorded on the Deck Form. Include specimen number and whether the fish was from sex/lengths or from inside your sample. See Figure 17-5 and Figure 17-6.
- Fill out a Stomach Collection Label for each sample and place it in the bag with the stomach (see Figure 17-2).
- Record the stomach data on the Length and Specimen Form for the appropriate sample (see Figure 17-7). Enter these data into ATLAS if your vessel has the ATLAS system.

Length and Specimen Form Instructions

Record the stomach collection data on the Length and Specimen Form (see Figure 17-7). There should be one stomach collection specimen entry, one maturity scan entry, (and one isotope specimen entry if collected) for each stomach collected. Each stomach specimen must be recorded on two separate lines on the Length and Specimen Form, or three separate lines if an isotope specimen was collected. The specimen number for maturity scan and isotopes must be the same specimen number used for the stomach collection (see Figure 17-7).

- Record the stomach collection specimen code (code 9), the specimen number, and weight of the fish on line one.
- Record the specimen code for maturity scan (code 7), the specimen number, and enter the weight as 0 kg on line two.
- If isotopes were collected, record the specimen code for isotopes (code 10), the specimen number, and the weight as 0 kg on line three.

Complete the following fields on the Length and Specimen Form:

- Species name.
- Species code.
- Haul number.

- Sample or subsample number if taken from within composition sample.
- Sample design: The sample design column captures the method that was used to select the length fish from which the stomach specimen was collected. See “Completing the Length and Specimen Form” on page 13-18 for a more detailed description of these designs:

Code 4 - Size Selected: Use this code if your stomach specimens were taken from fish outside of your required length sample and you only chose fish of specific sizes from the sample. (Arrowtooth flounder will usually be collected using a size selected method because arrowtooth lengths are not collected in the BSAI).

Codes 6 - Simple Random: Use this code if your stomach specimens were taken from sex/length fish that were collected using a simple random method.

Code 7 - Systematic Random: Use this code if your stomach specimens were taken from sex/length fish that were collected using a systematic random method.

Code 9 - Other Random: Use this code if your stomach specimens were taken from sex/length fish that were collected using a random method not described above.

In most cases pollock and cod stomachs will be selected using one of the random methods above.

Code 10 - Census: Use this code if your stomach specimens were taken from fish outside of your required length sample and you used all the fish of that species that were in your sample. (Arrowtooth flounder may be collected using a census method if there are very few in the source sample.)

- Sex (“F” (female), “M” (male), or “U” (unsexed or uncertain)).
- Length in centimeters (fork length).
- Frequency

- Specimen Type
 - 7 - Maturity Scan
 - 9 - Stomach
 - 10 - Isotope
- Specimen number (number assigned consecutively throughout the entire cruise to each sample as it is collected).
- Weight for specimen code 9 only (specimen codes 7 and 10 require a weight entry of “0.00”)
- Maturity Scan code for specimen code 7 only:
 - 3 - Pre-Spawn
 - 4 - Spawning

Note: these are the only Maturity Scan codes used with stomach collection data!

Stomach Collection Label

Record the following where indicated.

- Vessel permit number
- Cruise number.
- Haul number and sample number (if from a sample).
- Specimen number.
- Length.
- Sex (M, F or U) and Maturity Scan code.
- Name.

When Your Sea Time Is Finished (C/Ps only)

Label the uncut lid with your name, vessel name, species collected, and year. Seal the bucket with the uncut lid.

Normally, you should return the full bucket to the field office. It is possible to leave it on the vessel, if arrangements have been made to do so through the Observer Program. If you are the last observer on your vessel during the current sampling cycle, remove all stomach sampling gear and return it to the field office when you disembark. If you are unsure if this pertains to you, contact your inseason advisor.

During debriefing, please give your debriefer your debriefing questionnaire (your answers may be recorded in your daily notes and then photocopied).

DEBRIEFING QUESTIONNAIRE

Your Name:

Vessel Name:

1. Did you have any problems in carrying out this project (lack of sufficient equipment, lack of time, etc.)?
2. How long did it take you to collect your samples from one haul?
3. Was it difficult to collect the expected number of samples from different size groups at different time periods?
4. Do you have any suggestions that would improve the sampling procedure for this project?
5. Do you have any suggestions that would make it easier for you to successfully complete this project?
6. Where were the buckets and formalin stored onboard? Did you have difficulty locating them?

STOMACH COLLECTION: Debriefing Questionnaire

Stomach Collection Tally Sheet

Species Name: _____

Size 1: _____ CM	5	5	20
Size 2: _____ CM	5	5	20
Size 3: _____ CM	5	5	20
Size 4: _____ CM	5	5	20
Total:			80

Reminder: Try to collect one block of 5 stomach specimens at each haul that is sampled for stomachs.

Figure 17-1: Stomach Collection Tally Sheet

STOMACH COLLECTION LABEL

National Marine Fisheries Service, Trophic Interactions Lab.
7600 Sand Point Way NE, Seattle, WA 98115-0070

VESSEL 4321 CRUISE 6999 HAUL 16

SPECIMEN NUMBER 19

LENGTH (CM) 49 SEX: M U MATURITY: SP NSP

SPECIES IDENTIFICATION Arrowtooth

COMMENTS Flounder

COLLECTOR'S INITIALS S.B. PRESERVATIVE _____

☆GPO2004 690-454

Figure 17-2: Stomach Collection Label

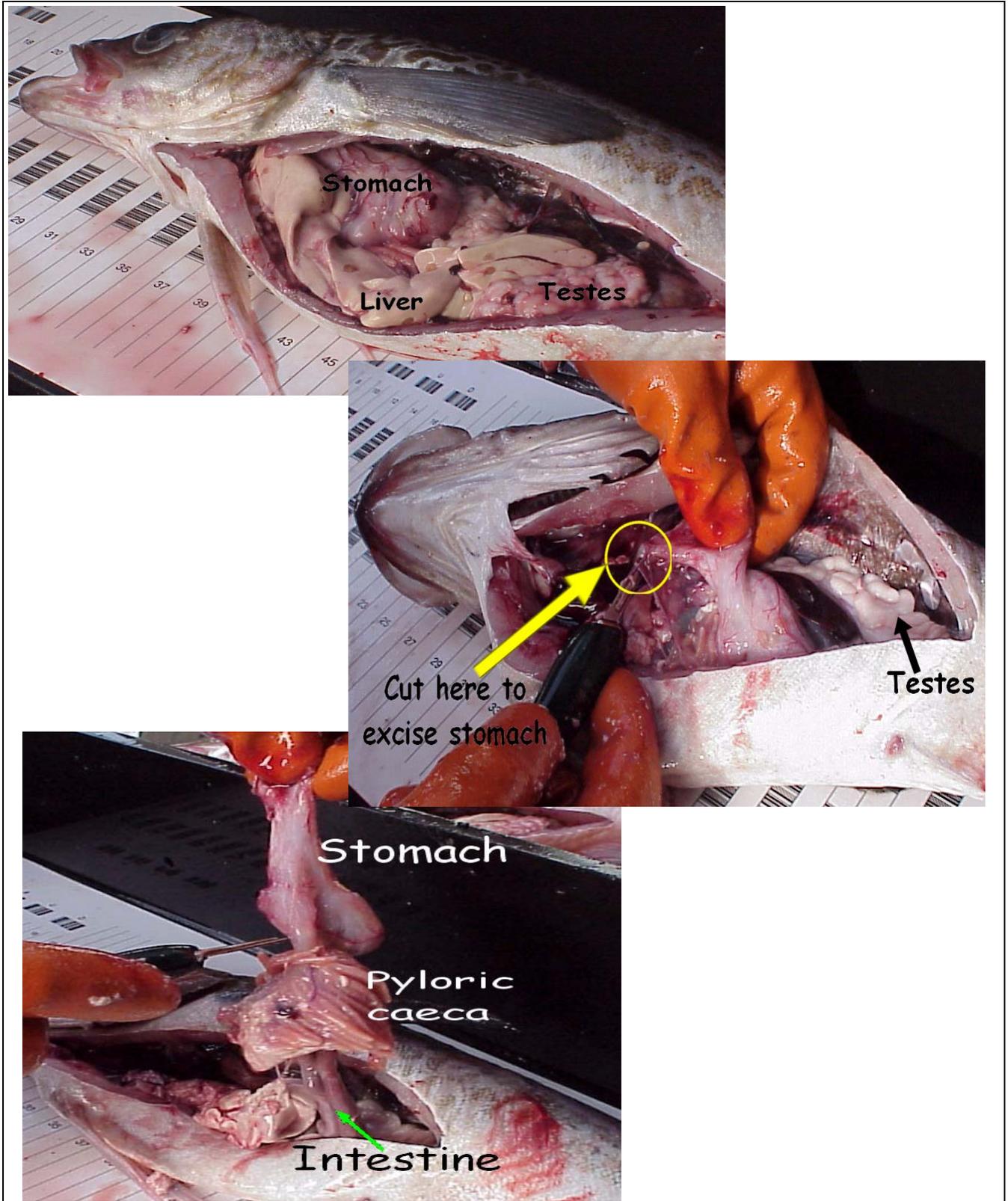


Figure 17-3: Removing a Gadid Stomach

STOMACH COLLECTION: Debriefing Questionnaire

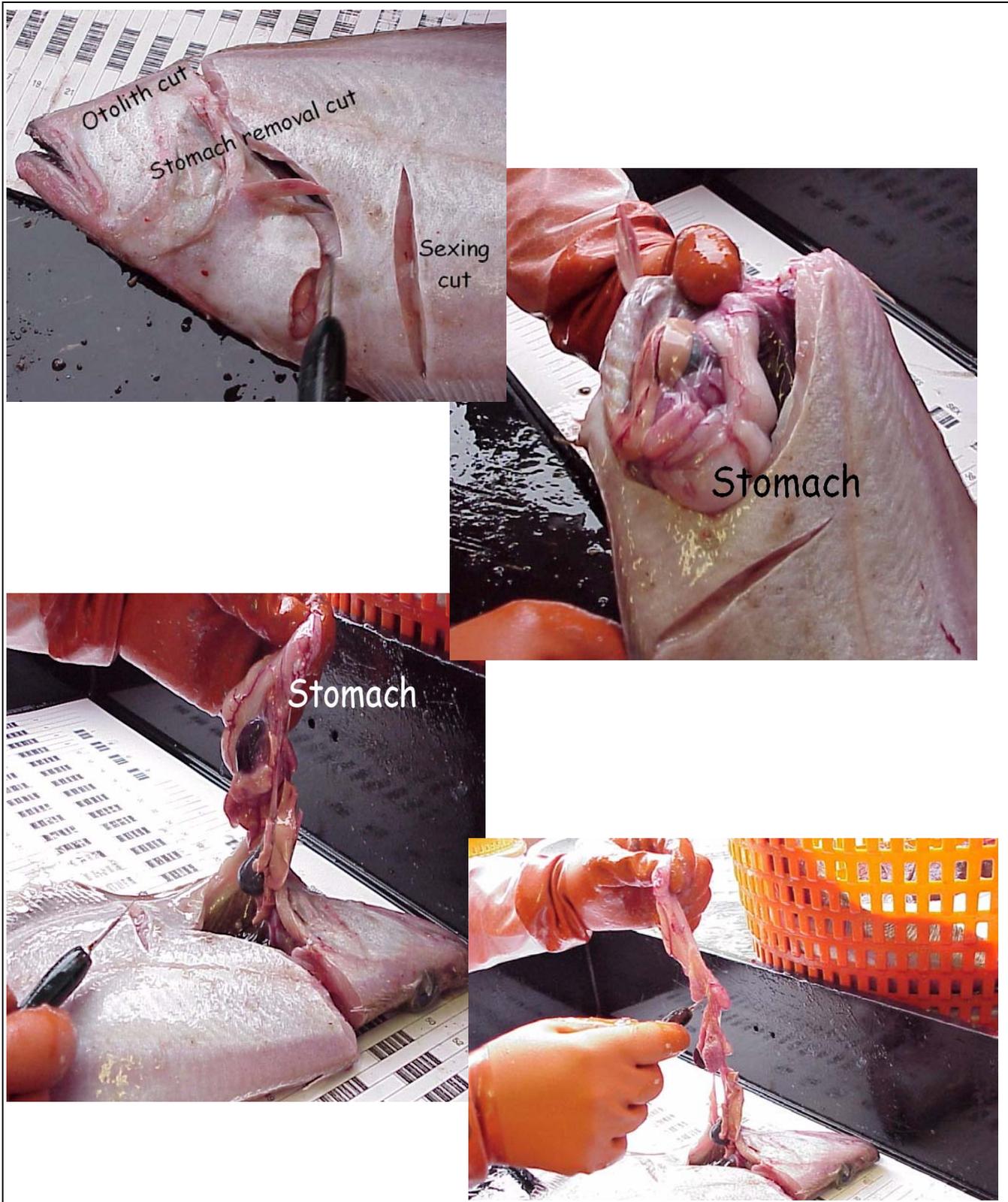


Figure 17-4: Removing a Flatfish Stomach

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.	Page <u>2</u> of _____ for Vessel/Plant
06/17/10	14000	1234	181		Page <u>2</u> of <u>3</u> for Haul/Offload

Sample #: <u>2</u>	Sub-Sample #:	Sample Size: <u>151.34</u> <small>Kgs Segments pots</small>	# of Sampled Hooks:
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>

Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:														
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	<u>144</u>	<u>151.34</u>	<input checked="" type="checkbox"/>	<p style="text-align: center;">POLLOCK S/L</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 5px;">M</td> <td style="padding: 5px;">F</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">36-2</td> <td style="padding: 5px;">28-1</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">37-3</td> <td style="padding: 5px;">36-4</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">39-1</td> <td style="padding: 5px;">44-3</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">43-3</td> <td style="padding: 5px;">48-2</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">46-1</td> <td style="padding: 5px;">49-1</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">47-1</td> <td style="padding: 5px;"></td> </tr> </table>	M	F	36-2	28-1	37-3	36-4	39-1	44-3	43-3	48-2	46-1	49-1	47-1	
M	F																		
36-2	28-1																		
37-3	36-4																		
39-1	44-3																		
43-3	48-2																		
46-1	49-1																		
47-1																			
POLLOCK		31	35.20	100															
POLLOCK		40	37.80	100															
POLLOCK		40	35.00	100															
POLLOCK		27	32.10	100															
P. COD		1	4.62	100															
FLATHEAD		2	1.48	100															
ARROWTOOTH		3	5.14	100															

Sample #:	Sub-Sample #:	Sample Size:	# of Sampled Hooks:
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>

Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:
----- KEYPUNCH -----	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<p style="text-align: center;">POLLOCK STOMACHS FROM SAMPLE # 2</p> <p>#1 48 F 1.12 kg spawn</p> <p>#2 48 F 1.08 kg spawn</p> <p>#3 49 F 1.10 kg spawn</p> <p>#4 47 m 1.08 kg prespawn</p> <p>#5 46 m .88 kg spawn</p>

National Marine Fisheries Service/Fisheries Monitoring and Analysis Division - OMB Control No. 0648-0593, expires 9-30-2012 Ver. 2010

Figure 17-5: Example of Deck Form with Pollock Stomach and Maturity Scan Information Collected from Sex/Lengths

STOMACH COLLECTION: Debriefing Questionnaire

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.	Page <u>3</u> of <u> </u> for Vessel/Plant
06/21/10	14000	3456	242		Page <u>3</u> of <u>3</u> for Haul/Offload

Sample #: <u>3</u>	Sub-Sample #:	Sample Size: <u>177.37</u> <small>Kgs Segments pots</small>	# of Sampled Hooks:
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>

Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:																																
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	<u>248</u>	<u>177.37</u>	<input checked="" type="checkbox"/>	<p style="text-align: center;">s/L collection</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Flathead</td> <td colspan="2" style="text-align: center;">N. Rock Sole</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">M</td> <td style="border: 1px solid black; text-align: center;">F</td> <td style="border: 1px solid black; text-align: center;">M</td> <td style="border: 1px solid black; text-align: center;">F</td> </tr> <tr> <td style="text-align: center;">6-1</td> <td style="text-align: center;">17-1</td> <td style="text-align: center;">13-1</td> <td style="text-align: center;">17-1</td> </tr> <tr> <td style="text-align: center;">18-1</td> <td style="text-align: center;">19-2</td> <td style="text-align: center;">16-1</td> <td style="text-align: center;">22-1</td> </tr> <tr> <td style="text-align: center;">25-3</td> <td style="text-align: center;">22-2</td> <td style="text-align: center;">29-1</td> <td></td> </tr> <tr> <td style="text-align: center;">27-2</td> <td style="text-align: center;">24-2</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">29-2</td> <td style="text-align: center;">25-1</td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">26-1</td> <td></td> <td></td> </tr> </table>	Flathead		N. Rock Sole		M	F	M	F	6-1	17-1	13-1	17-1	18-1	19-2	16-1	22-1	25-3	22-2	29-1		27-2	24-2			29-2	25-1				26-1		
Flathead		N. Rock Sole																																			
M	F	M	F																																		
6-1	17-1	13-1	17-1																																		
18-1	19-2	16-1	22-1																																		
25-3	22-2	29-1																																			
27-2	24-2																																				
29-2	25-1																																				
	26-1																																				
Flathead sole		<u>63</u>	<u>32.66</u>	<u>100</u>																																	
Flathead sole		<u>68</u>	<u>33.24</u>	<u>100</u>																																	
Flathead sole		<u>52</u>	<u>28.34</u>	<u>100</u>																																	
Arrowtooth		<u>28</u>	<u>38.22</u>	<u>0</u>																																	
Pollock		<u>14</u>	<u>27.33</u>	<u>100</u>																																	
N. Rock sole		<u>17</u>	<u>5.78</u>	<u>100</u>																																	
Halibut		<u>2</u>	<u>2.71</u>	<u>0</u>																																	
Bigmouth		<u>1</u>	<u>3.70</u>	<u>0</u>																																	
AK. Plaice		<u>1</u>	<u>1.17</u>	<u>0</u>																																	
Plain sculpin		<u>1</u>	<u>1.00</u>	<u>0</u>																																	
P. cod		<u>1</u>	<u>3.22</u>	<u>100</u>																																	

Tally KP

Sample #:	Sub-Sample #:	Sample Size:	# of Sampled Hooks:
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>

Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:								
----- KEYPUNCH -----	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<p style="text-align: center;">Arrowtooth lengths For Stomachs</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; text-align: center;">M</td> <td style="border: 1px solid black; text-align: center;">F</td> </tr> <tr> <td style="text-align: center;">54-1</td> <td style="text-align: center;">50-1</td> </tr> <tr> <td></td> <td style="text-align: center;">51-1</td> </tr> <tr> <td></td> <td style="text-align: center;">52-2</td> </tr> </table> <p style="text-align: center;">Stomach Plus Isotopes</p> <p># 1-51 F e 1.44kg pre spawn 2-52 F e 1.50kg pre spawn 3-54 M e 1.68kg pre spawn 4-52 F e 1.82kg pre spawn 5-50 F e 1.40kg pre spawn</p>	M	F	54-1	50-1		51-1		52-2
M	F												
54-1	50-1												
	51-1												
	52-2												

Stomachs that are size selected from outside your random sex/length collection will be given sample design code 4 - Size Selected. See page 17-6 for a description of sample design codes.

Tally KP

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Figure 17-6: Example of Deck Form with Arrowtooth Stomach, Isotope and Maturity Scan Information Collected Outside of Sex/Lengths

Page 1 of 1

Length and Specimen Form

Cruise	Permit
14000	1234

Observer Name Puffy Tummy Vessel/Plant Name Apple Bee

Resubmission (Circle All Changes)

Species Name	Species Code	Haul No.	Offload No.	Sample or Sub-Sample No.	Sample Design	Sex	Crab		Halibut		Specimen Data							
							Eggs? Y/N	Viability (From/Pop)	Injury (Long/ine)	Length	Freq.	Specimen Type	Specimen Number	Weight	Maturity			
Pollock	201	181		2	6	M												
↓	201	181		2	6	M												
	201	181		2	6	M												
	201	181		2	6	M												
	201	181		2	6	M												
	201	181		2	6	M												
Pollock	201	181		2	6	M												
Pollock	201	181		2	6	F												
	201	181		2	6	F												
	201	181		2	6	F												
	201	181		2	6	F												
↓	201	181		2	6	F												
	201	181		2	6	F												
	201	181		2	6	F												
	201	181		2	6	F												

Page _____ of _____ for Transmission

Ver. 2010

Figure 17-7: Example of Pollock Lengths, Stomach and Maturity Scan Information on the Paper Length and Specimen Form

Length and Specimen Form

Cruise	Permit
1400	3456

Observer Name Patty Tummy Vessel/Plant Name Bumble Bee

Resubmission
(Circle All Changes)

Species Name	Species Code	Haul No.	Offload No.	Sample or Sub-Sample No.	Sample Design	Sex	Crab		Length	Freq.	Specimen Data			
							Eggs? Y/N	Viability (Trawl/Pool) Injury (Longline)			Specimen Type	Specimen Number	Weight	Maturity
Arrowtooth	141	242			4	M			54	1	9	3	1.68	
											7	3	.00	3
											10	3	.00	
Arrowtooth	141	242			4	F			60	1	9	5	1.40	
											7	5	.00	3
											10	5	.00	
	141	242			4	F			51	1	9	1	1.44	
											7	1	.00	3
											10	1	.00	
	141	242			4	F			52	2	9	2	1.50	
											7	2	.00	3
											10	2	.00	
											9	4	1.82	
											7	4	.00	3
Arrowtooth											10	4	.00	
													.	
													.	

Figure 17-8: Example of Arrowtooth Lengths, Stomach, Maturity Scan, and Isotope Information on the Paper Length and Specimen Form