

**Results
of the Third Necropsy Session
of Harbor Porpoise
(*Phocoena phocoena*)
Incidentally Taken
During Commercial
Fishing Operations
in the Gulf of Maine**

by

John R. Nicolas

NOAA/National Marine Fisheries Service
Northeast Fisheries Science Center
Conservation and Utilization Division
Marine Mammal Investigation
Woods Hole, MA 02543-1026

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INTRODUCTION

The National Marine Fisheries Service (NMFS) observer program monitors several commercial fisheries off the Northeast coast of the United States. One fishery is the sink gill-net fishery for groundfish in the Gulf of Maine. Observers on fishing vessels collect a broad spectrum of biological data; marine mammal bycatch and biology data are of high priority. Harbor porpoise (*Phocoena phocoena*) is the marine mammal most frequently taken in this fishery. On occasion, observers have been able, with the cooperation of vessel captains, to return specimens in good condition for later necropsy studies at Woods Hole by teams of experts. Results of two similar sessions have been summarized (Nicolas 1993).

This report summarizes results of the third necropsy session in which 19 harbor porpoise were examined at the Northeast Fisheries Science Center's (NEFSC) Woods Hole laboratory at Woods Hole, Massachusetts during 3-7 January 1994. All porpoise were taken during commercial sink gill-net operations in the Gulf of Maine. Eighteen were taken between October and December of

1993, and one in June of 1993. As in previous sessions (Nicolas 1993), several scientists from the United States and Canada attended, representing many research disciplines.

METHODS

Acquisition, preservation and sample collection remained consistent with previous sessions. Members of the observer program are requested to retain carcasses of harbor porpoise taken during sink gill-net trips in the Gulf of Maine. The carcasses are immediately packed in ice, transported to port, and then frozen at -20°F. Periodically carcasses are relocated to the freezer facility at the NEFSC. When sufficient specimens are accumulated, a team of scientists is organized to necropsy the specimens. Teams are organized to represent a spectrum of research interests including, but not limited to: biology, chemistry, ecology, genetics, histopathology, life history, parasitology, physiology, systematics, and toxicology. Participants, their research interests, and affiliations are given in Table 1.

Table 1. Investigators, research interests and affiliations

Investigator	Research Interest	Research Institution
Cindy Driscoll	Assessment of human interactions with marine mammals	NOAA - NMFS Silver Springs, MD
Heather Koopman	Biochemical composition and structure of blubber	University of Guelph Ontario, Canada
David Johnston	Heavy metals	University of Guelph Ontario, Canada
John Nicolas	Sample archival Woods Hole, MA	NMFS/NEFSC
Ann Pabst and William Mc Lellen	Dorsal fin anatomy and temperature regulation/muscle development	James Madison U. Harrisonberg, Va.
Charles Potter	Skeleton archival/ Systematics	Smithsonian Inst. Washington, D.C.
Andrew Read	Life history	WHOI Woods Hole, MA.
Sentiel Rommel	Thermal regulation	Smithsonian Institution Washington, D.C.
Andrew Westgate	Organic contaminants	University of Guelph Ontario, Canada
Stephen Wise	Tissue banking	NIST Washington, D.C.

A standard set of observations is taken in all sessions, including external examination, sex determinations, and photographs. Total length is recorded to the nearest 1/10 cm, and total weight and blubber weight are also recorded to the nearest 1/10 kg (calculated with the aid of an electronic platform scale). Specific measurements are then taken following protocols developed by the participants (see appendix). Protocols used cover several general topics including: evaluating state of health, human interactions, life history studies, and morphology. Specifics in these protocols are given in the appendix.

RESULTS

Nineteen harbor porpoise taken during commercial fishing operations in the Gulf of Maine (Figure 1) were necropsied during this session. The sex, total length, and total weight of each animal examined are listed in Table 2. Thirty-two percent (n=6) were female. The females ranged in length from 100.0 to 126.9 cm; the average length was 118.2 cm (sd=10.19). The weight of the females ranged from 19.5 to 38.6 kg, with an average weight of 31.7 kg (sd= 7.45). The males ranged in length from 109.5 to 160.2 cm with an average length of 128.9 cm (sd=13.78). The male weights ranged from 29.3 to 66.5 kg, with an average weight of 41.2 kg (sd=10.24). In addition to a 24% decrease in females available for necropsy from the last two sessions, a significant decrease in length (23.0 cm) and weight (20.0 kg) was observed. The males increased only slightly in length (by 1.1 cm) and in weight (by 1.2 kg).

Forty-four harbor porpoise were necropsied during Sessions 1, 2, and 3. A length-weight regression for 43 of the 44 animals examined during the three sessions is shown in Figure 2. The average length of the 44 harbor porpoise was 132.9 cm (sd=15.22) with an average weight of 43.8 kg (sd=13.3). The males (n=23) ranged in length from 109.5 to 160.2 cm with an average length of 131.7 cm (sd=12.57); average weight was 41.8 kg (sd=8.62) ranging from 29.3 to 66.5 kg. The females (n=21) ranged in length from 100.0 to 163.0 cm and averaged 134.3 cm (sd=18.13). Female weights ranged from 19.5 to 82.0 kg with an average weight of 46.4 kg (sd=17.50).

Eighteen complete skeletons were transported to the National Museum of Natural History in, Washington D.C., for archiving, along with 190 soft tissues (skin, blubber, internal organs), 50 hard parts (teeth, skeletons), 18 stomachs, 930

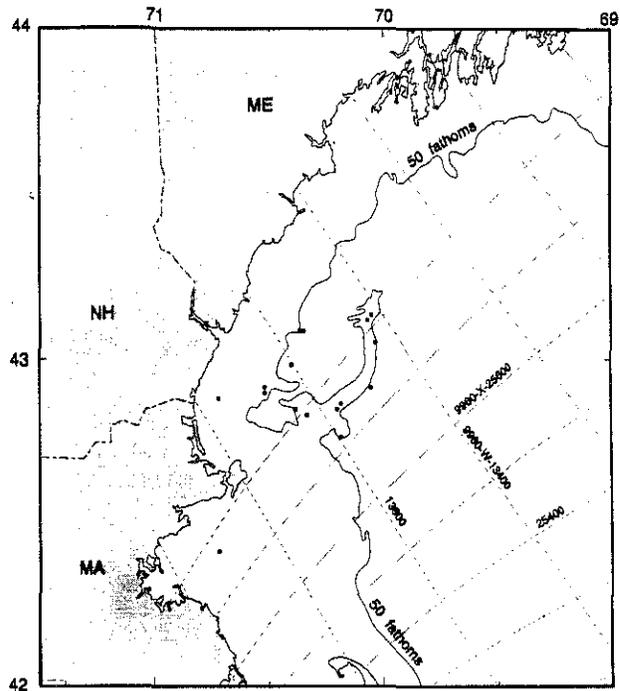


Figure 1. Necropsy specimen locations from the Gulf of Maine.

blubber thickness measurements, and 380 muscle and organ weights. A complete set of soft and hard tissues remain archived at NEFSC at Woods Hole, Massachusetts. A summary of all samples taken are listed in Table 3.

DISCUSSION

Rommel¹ suggests that stranded animals are typically in poor health and that animals in the by-catch are more representative of the population. The importance of harbor porpoise carcasses retrieved from the sink gill-net fishery in the Gulf of Maine was reconfirmed during the third necropsy session at Woods Hole. All specimens appeared to be in good health when taken, providing an opportunity to conduct gross and detailed necropsy protocols (Appendix). These sessions also stimulate scientific exchange among the researchers, which contributes to the overall understanding of this and other marine mammal species. As a result of these necropsy sessions, and the outstanding cooperation of the scientists involved, significant contributions have been made in understanding of the biology of this species. Future sessions are planned, and will serve to enhance the knowledge of the harbor porpoise in the Northwest Atlantic.

¹ Sentiel Rommel, 1993. National Museum of Natural History, Smithsonian Institution, Washington, D.C.; telephone conversation.

Table 2. Date of capture, NMFS tag number, USNM archival number, location of take, sex, and total length and weight of harbor porpoise specimens necropsied 1/3-1/7, 1994

Date	NMFS No.	USNM No.* ¹	Lat.	Lon.	Sex	Total Length (cm)	Total Weight (kg)
10/17/93	1055	571707	43-03	70-02	M	121.8	33.8
10/24/93	1261	571708	43-08	70-03	M	130.5	37.3
10/28/93	1262	571709	43-08	70-03	M	160.2	66.5
10/28/93	1263	571710	43-08	70-03	F	126.0	36.7
11/09/93	1264	571711	42-55	70-03	M	117.1	31.5
11/09/93	1265	571712	42-55	70-31	M	123.5	37.4
10/24/93	1266	571713	42-50	70-20	F	118.2	31.2
05/15/93	1418	571714	42-25	70-43	F	124.0	²
10/19/93	1471	571715	42-46	70-11	F	113.9	32.4
11/04/93	1477	571716	43-03	70-02	M	109.5	29.3
10/25/93	1478	571717	43-07	70-04	M	126.4	44.6
10/30/93	1479	571718	42-51	70-12	F	126.9	38.6
11/03/93	1571	571719	42-52	70-11	M	114.0	30.8
11/04/93	1572	571720	42-59	70-24	F	100.0	19.5
11/22/93	1573	571721	43-05	70-21	M	137.7	45.0
12/06/93	1574	571722 ³	43-05	70-22	M	121.6	37.6
12/18/93	1575	571723	42-53	70-43	M	146.1	51.4
11/19/93	1718	571724	42-51	70-23	M	134.5	47.9
11/15/93	1720	571725	42-54	70-31	M	133.0	42.7

¹ United States National Museum

² Sampled prior to necropsy, specimen not weighed

³ Skull only

ACKNOWLEDGMENTS

I wish to thank Dr. Cindy Driscoll (NMFS, Silver Springs Md.), Ms. Heather Koopman and Andrew Westgate (University of Guelph, Ontario Canada), Mr. Bill McLellen and Dr. Ann Pabst (James Madison University, Harrisonburg Va.) Mr Charles Potter and Dr. Sentiel Rommel (National Museum of Natural History, Washington D.C.), and Dr. Andy Read (Woods Hole Oceanographic Institution, Woods Hole Ma) for their participation in this session. Also, I wish to offer thanks to the sea going observers and the vessel captains and crew members who contributed specimens and other information without their efforts none of this work would be possible. Special thanks to Dr. Tim Smith and David Potter (NEFSC, Woods Hole Ma.) for their special help in getting these sessions off the ground, Daniel Sheehan for his assistance with computer graphics and Dr. Stephen Clark for his helpful review of this document.

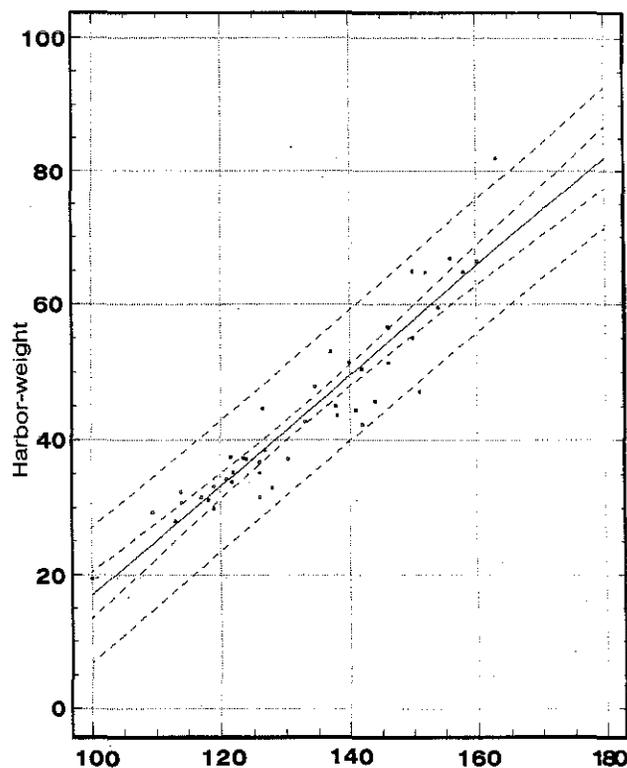


Figure 2. Harbor porpoise weight vs length for 43 carcasses necropsied during three sessions in 1993 and 1994.

Table 3. Sample summary

Tag No.	HI	RP	Photo	MD	BT	DMSO	Teeth	Gon.	Stom.	DFIN	SK	DAP/WAM
1055	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1261	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1262	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1263	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1264	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1265	✓	✓	✓	✓		✓	✓				✓	
1266	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1418	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1471	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1477	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1478	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1479	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1571	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1572	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1573	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
1574	✓	✓		✓	✓	✓	✓	✓	✓	✓		
1575	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1718	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1720	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓

Notes: HI= human interactions; RP= Andy Read protocol; Photo= photographs taken; MD = mass dissection; BT= blubber thickness; DMSO= genetics; Teeth= teeth; Gon.= gonads; Stom. = stomach; DFIN= dorsal fin; SK= skeleton; DAP/WAM = Ann Pabst/William Mc Lellen protocol

LITERATURE CITED

Nicolas, J.R. 1993. Summarized results of two necropsy sessions of harbor porpoise *Phocoena phocoena* incidentally taken during commercial fishing operations in the Gulf of Maine. Woods Hole, MA: NOAA/NMFS/NEFSC. NEFSC Ref. Doc. 93-26. Available from: NEFSC, 166 Water Street, Woods Hole, MA. 02543.

APPENDIX

NECROPSY PROTOCOLS

Dr. Cindy Driscoll - NOAA/ NMFS

Mr. David Johnston - University of Guelph

Ms. Heather Koopman - University of Guelph

Dr. Ann Pabst and Mr. William Mc Lellen - James Madison University

Dr. Andy Read - Woods Hole Oceanographic Institute

**Dr. Cindy Driscoll
NOAA/NMFS**

Necropsy Protocol

PROTOCOL FOR EVALUATING HUMAN INTERACTIONS WITH MARINE MAMMALS

FIELD NO. _____ CATALOG NO. _____
SPECIES _____ OBSERVATION DATE ____/____/____
EXAMINER _____ PHOTOS TAKEN: YES / NO
CARCASS CONDITION ? Smithsonian Institution Scale (1-5) _____

A. EXTERNAL SIGNS

Body condition ? ROBUST ____ EMACIATED ____ CBD⁵ ____ N/E ____

External marks ? YES ____ NO ____ CBD ____ N/E ____

Describe (net/line or other obvious marks): _____

Penetrating wounds (marks, punctures, cuts) ? PRESENT ____ ABSENT ____

Characterize wounds: _____

Mutilation:

Bodies slit ? YES ____ NO ____ CBD ____ N/E ____

Describe: _____

Missing appendanges ? YES ____ NO ____ CBD ____ N/E ____

Describe: _____

Broken bones ? YES ____ NO ____ CBD ____ N/E ____

Describe: _____

Hemorrhaging ? YES ____ NO ____ CBD ____ N/E ____

Describe: _____

⁵CBD = Cannot Be Determined, N/E = Not Examined

B. INTERNAL SIGNS

Hemorrhaging (sub-dermal) ? YES ___ NO ___ CBD ___ N/E ___

Describe: _____

Side-dependency (lungs) ? YES ___ NO ___ CBD ___ N/E ___

Describe (Asymmetry in organ size, distribution of blood pooling (e.g., lungs)): _____

Stomach contents ? FULL ___ EMPTY ___ Contents saved ? Yes / No

Describe: _____

Lung contents ? FLUID ___ FROTH ___ AIR ___ CBD ___ N/E ___

Other broken bones ? YES ___ NO ___ CBD ___ N/E ___

Describe: _____

Scavenger damage ? YES ___ NO ___ CBD ___ N/E ___

Describe: _____

C. SUMMARY

YES RESPONSES ___ # NO RESPONSES ___ BODY COND. _____

FULL STOMACH: Yes / No

SCAVENGER DAMAGE: Yes / No

GEAR COLLECTED: Yes / No

HUMAN INTERACTION POTENTIAL: High / Low / Can't Determine

Comments: _____

**Mr. David Johnston
University of Guelph**

Necropsy Protocol

Heavy Metals in Tissues of the Harbour Porpoise (*Phocoena phocoena*)

Dave Johnston, Department of Zoology, University of Guelph, Guelph, Ont.

Project Objective:

The main objective of this project is to determine the extent of heavy metal contamination in harbour porpoises in Eastern North American waters. Relationships between metal contamination and various biological parameters of the porpoise (age, sex, reproductive status, length, and weight) will be examined, as well as any differences that may occur between porpoises from the Gulf of Maine, Bay of Fundy, Gulf of St. Lawrence and Newfoundland/ Labrador.

Tissue Sampling:

Tissue samples were obtained from two necropsy sessions (January 1993 and January 1994) at the Northeast Fisheries Science Center (NEFSC) according to a necropsy protocol developed by Dr. Andrew Read. All porpoises sampled were incidental mortalities from sink gill-net fishing operations in the Gulf of Maine.

Tissue Analysis:

Samples of muscle, kidney, liver and brain will be analysed for copper (Cu), cadmium (Cd), zinc (Zn), lead (Pb), selenium (Se), mercury (Hg) and methylmercury (MeHg). Analyses of Cu, Cd, Zn and Pb will be completed using flame atomic absorption spectrophotometry and /or graphite furnace atomic absorption spectrophotometry. Hg and Se will be analysed using cold vapour atomic absorption spectrophotometry. All data generated by assays will be used in a M.Sc. thesis and subsequently published in the primary literature.

**Ms. Heather Koopman
University of Guelph**

Necropsy Protocol

**Protocol for Analysis of
Harbour Porpoise (Phocoena phocoena) Blubber**

Heather Koopman, Dept. of Zoology, University of Guelph
Guelph, Ontario, Canada N1G 2W1
Phone 1-519-824-4120 ext. 8386 Fax 1-519-767-1656

The objective of this project is to examine the distribution and chemical composition of lipid in the male harbour porpoise, eventually creating a "map" of blubber and skin in these animals, and examining sources of variation. The following questions will be addressed:

1. Do blubber and skin thickness vary over the body?
2. Does fatty acid composition vary over the body?
3. Is the composition of the blubber next to the skin (outer) different from the blubber adjacent to the muscle (inner)?
4. Is the fatty acid composition of the skin similar to the adjacent blubber?
5. Are there differences between immature and mature males (i.e. is there a developmental trend in composition)?
6. Are there any differences in blubber thickness and composition between male porpoises from the Gulf of Maine (sampled in Nov.-Jan.) and those from the Bay of Fundy (sampled in Aug.)?

Blubber Thickness

*This is the most important part of the protocol, and also the most time-consuming. Blubber thickness is measured in mm in situ, excluding skin, in 49 locations on one side of the body (preferably the right). First, a cut is made on the dorsal midline of the animal from the blowhole to the flukes. A ventral midline cut is then made from the posterior edge of the jaw to the flukes. All cuts made on the animal should go through the skin, blubber and nuchal (sub dermal) fat, but not the underlying musculature.

The total length of the animal is then divided by 8 (= x cm). Seven half-girth cuts (dorsal to ventral) are then made on the right side of the animal every x cm. Each of these dorso-ventral cuts (i.e. half-girths) must then be divided to make seven measurements. Each cut is measured and divided by 6 (= y cm). Take blubber measurements at the following places on each cut: at the top (on the dorsal ridge), at y cm, at $2y$ cm, at $3y$ cm, at $4y$ cm, at $5y$ cm and at the bottom (ventral midline).

The diagram (Fig. 1) makes this a lot easier to visualize.

- * make all cuts before measuring to ensure even strain/shrinkage on the tissue.

- * please note any damage on the animal that would affect the thickness measurements.

Additional blubber thicknesses

(These are also important. If time is limited, however, do only these measurements instead of the above)

Half girth cuts are made on one side of the animal at (I) the posterior insertion of the flipper, (II) just anterior to the dorsal fin, and (III) at the anus. Blubber thickness is measured in mm, excluding skin at three points on each cut: dorsal, lateral and ventral. The ventral (III) measurement is usually not taken.

Again, see diagram (Fig. 2).

Blubber Samples (10)

These are taken at precise locations along cuts made for blubber thickness. Blubber samples should include skin (still attached) and be about 10 x 10 cm. The blubber should be placed in a plastic bag clearly labeled with i) animal number and ii) position of sample on body, and frozen at - 20 °C.

Samples are taken at the eight sites of blubber thickness measurement described in "additional blubber thicknesses" (see Fig. 2), just posterior to the first half-girth cut (on the head) and just anterior to the last half-girth cut (on the caudal peduncle) described in the main blubber thickness measurement section (Fig. 1). A visual representation of all ten sampling locations is given in Fig. 3.

Nuchal fat samples

Nuchal fat is the soft fat layer beneath the blubber layer, generally found around the head and ribs. After the blubber has been removed, the thickness of the nuchal fat can be measured (in mm) just laterally to the dorsal midline at 0, 3, 6, 9, 12 and 15 cm posterior to the nuchal crest. This fat can then be gently separated from the underlying connective tissue and muscle with a scalpel. For the purpose of my study, the posterior margin of nuchal fat is defined by the last rib, the ventral margin by the attachment of the panniculus, the dorsal margin by the midline, and anteriorly by the nuchal crest. The nuchal fat between the anterior edge of the scapula and the skull, down to the insertion of the pectoral flipper, is also included. The fat can be completely removed from one side of the animal in this defined area, weighed, and frozen at -20 °C.

Figure 1. Cuts for blubber thickness measurements of harbour porpoise (*Phocoena phocoena*).

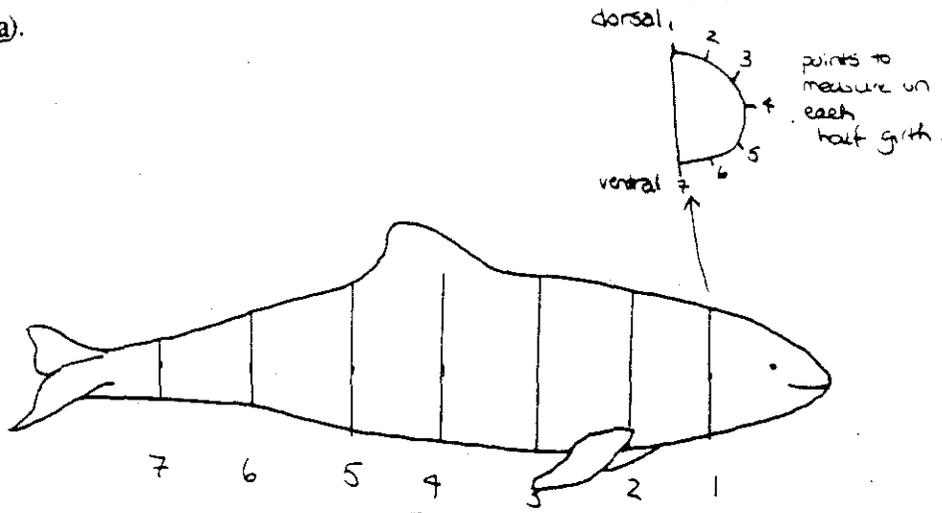


Figure 2. Cuts for additional blubber thickness measurements of harbour porpoise.

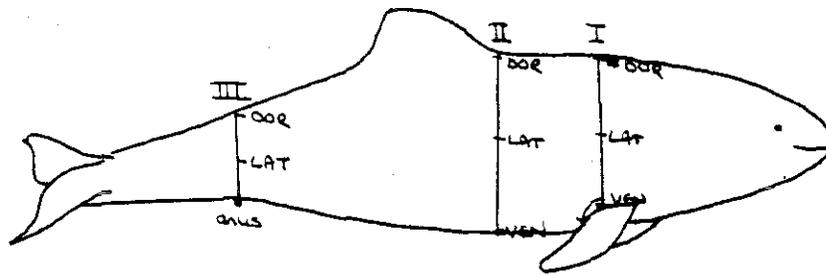
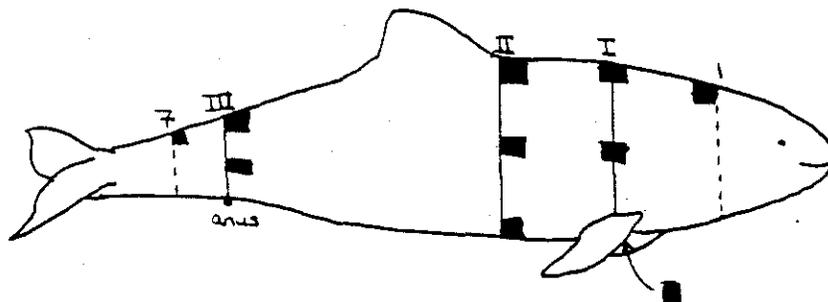


Figure 3. Sites of blubber sampling on harbour porpoise.



**Dr. Ann Pabst and Mr. William McLellen
James Madison University**

Necropsy Protocol

PHOCOENA MASS DISSECTION

Field Number	_____	Total Length	_____
Total Weight	_____	Sex & Age estimate	_____
Left Flipper	_____	Right Flipper	_____
Fluke lobes	_____	Dorsal Fin	_____
Left Blubber	_____	Right Blubber	_____
Left Panniculus	_____	Right Panniculus	_____
Left Illiosternalis	_____	Right Illiosternalis	_____
Left Epaxial	_____	Right Epaxial	_____
Left Mammary	_____	Right Mammary	_____
Left Scalenes	_____	Right Scalenes	_____
Left Sternomastoid	_____	Right Sternomastoid	_____
Left Sternohyoid	_____	Right Sternohyoid	_____
Left Sternothyroid	_____	Right Sternothyroid	_____
Left Shoulder (comp)	_____	Right Shoulder (comp)	_____
Left Shoulder muscle	_____	Right Shoulder muscle	_____
Left Scapula	_____	Right Scapula	_____
Left Ribs w/ muscle	_____	Right Ribs w/ muscle	_____
Left Intercostals	_____	Right Intercostals	_____
Left Ribs	_____	Right Ribs	_____
Left Rectus abdominus	_____	Right Rectus abdominus	_____
Left Ischiocaudalis	_____	Right Ischiocaudalis	_____
Left Hypaxial	_____	Right Hypaxial	_____

PHOCOENA MASS DISSECTION

Left Kidney	_____	Right Kidney	_____
Left Adrenal	_____	Right Adrenal	_____
Left Ovary	_____	Right Ovary	_____
Left Testis	_____	Right Testis	_____
Left Gonad dimensions	_____	Right Gonad dimensions	_____
Left Epididymis	_____	Right Epididymis	_____
Sperm present?	_____	Bladder full/empty	_____ / _____
Male repro-tract	_____	Uterus	_____
Left Lung	_____	Right Lung	_____
Heart	_____	Thymus	_____
Intestine	_____	Thyroid	_____
Liver	_____	Dorsal Aorta & Rete	_____
Diaphragm	_____		
Pancreas	_____		
Mesenteric lymph-node	_____		
Spleen	_____		
Esophagus	_____		
Stomach full	_____	Stomach empty	_____
Fore Stomach	_____	Main Stomach	_____
Pyloric Stomach	_____	Duodenum	_____
Stomach volume	_____		
Stomach contents:			

PHOCOENA MASS DISSECTION

Head Intact	_____		
Ventral Blubber	_____	Dorsal Blubber	_____
Ventral Misc.	_____	Dorsal Misc.	_____
Brain	_____	Trachea	_____
Skull weight	_____	Hyoids	_____
Larynx	_____	Pelvics	_____
Sternum	_____	Ribs #Double/#Single	_____
Vertebral count	cervical	thoracic	lumbar caudal
Vertebral weight	cervical/thoracic		lumbar caudal

PARASITES

Crassicauda:

Monorygma:

Phyllobothrium:

Anterior

Posterior



Campulla:

Stenurus:

Nasitrema:

Lung worm:

COMMENTS:

Dr. Andy Read
Woods Hole Oceanographic Institution

Necropsy Protocol

CETACEAN SPECIMEN RECORD

SPECIES _____ SEX _____ LENGTH _____

LOCATION _____

CONDITION _____

CAUSE OF DEATH _____

COMMENTS _____

FIELD NO. _____

CATALOG NO. _____

PHOTO NOS. _____

OBSERVERS _____

CAPTURE DATE _____

NECROPSY DATE _____

Tooth Wear _____

Tooth Counts UL _____ UR _____ LL _____ LR _____

BLUBBER THICKNESS cm

I-DOR	.
I-LAT	.
I-VEN	.

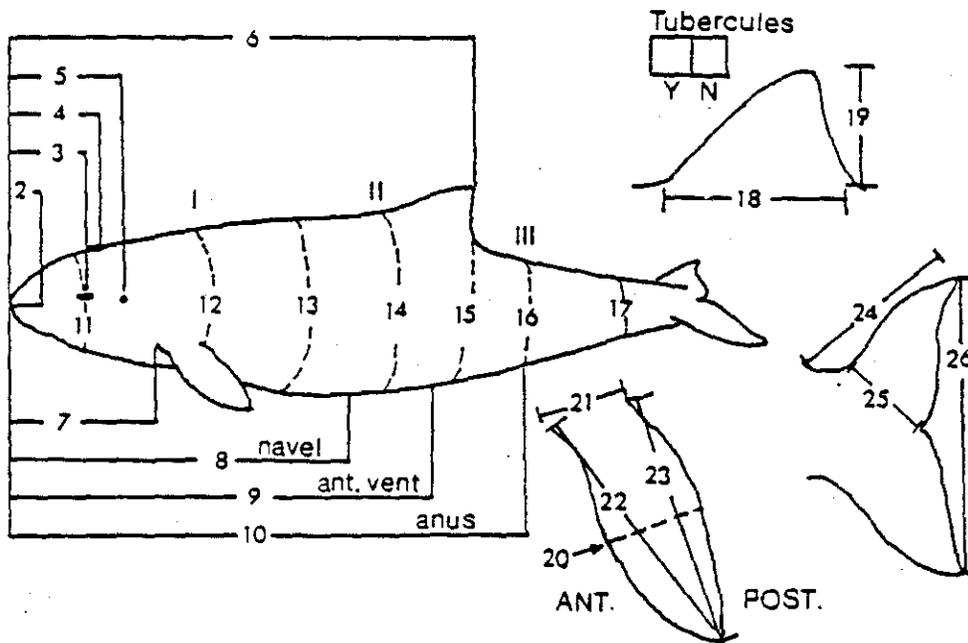
II-DOR	.
II-LAT	.
II-VEN	.

III-DOR	.
III-LAT	.

BODY WT. _____

BLUBB. WT. _____

MEASUREMENTS STRAIGHT LINE & AXIAL



LEFT SIDE:

2	.....
3	.....
4	.....
5	.....
6	.....
7	.....
8	.....
9	.....
10	.....
11	.....
12	.....
13	.....
14	.....
15	.....
16	.....
17	.....
18	.....
19	.....
20	.....
21	.....
22	.....
23	.....
24	.....
25	.....
26	.....

REPRODUCTIVE TISSUES

FIELD NO. _____

Gonad Dimensions L x W x D Left _____ Right _____
 Lactating _____ Mammary Gland Colour _____ LxWxD _____
 Pregnant _____ Foetus Length _____ Wt _____ Sex _____
 C. Lutea _____ C. Albicantia _____ Uterine Diam. L. _____ R. _____
 Sperm in Epididymus _____ Testis Wt. L. _____ R. _____
 Comments _____

STOMACH CONTENTS

	Full Wt.	Empty Wt.	Contents
FORE	_____	_____	_____
MAIN	_____	_____	_____
PYLORIC	_____	_____	_____

Comments _____

ORGAN WEIGHTS:(g)

Heart	_____	L. Kidney	_____	Stomachs	_____
L. Lung	_____	R. Kidney	_____	Skeleton	_____
R. Lung	_____	Pancreas	_____	Brain	_____
Liver	_____	L. Adrenal	_____	Intestines	_____
Spleen	_____	R. Adrenal	_____	Muscle	_____

PARASITES & PATHOLOGY

Stomach _____
 Intestine _____
 Kidney _____
 Pancreas _____
 Mammary _____
 Liver _____
 Lungs _____
 Heart _____
 Brain _____
 Sinuses _____
 Other _____

SPECIMEN CHECKLIST

Teeth	_____	Gonads	_____	Parasites	_____	Brain	_____
Skull	_____	Mammary	_____	Blubber	_____	Stom. Cont.	_____
Skeleton	_____	Foetus	_____	Muscle	_____	Liver	_____
				Kidney	_____	Other	_____