Description of the NEFC Commercial Fishery and Bottom Trawl Survey Data Processing Formats

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Introduction

The following is a description of the forms and data processing formats used by the Northeast Fisheries Center, Woods Hole, Mass., to summarize commercial fishery catch, effort, and biological sample data and bottom trawl survey tow records.

Part A describes the commercial fishery data procedures and contains information on purchaser weighout data, fisherman interview records, commercial length and age samples, and a description of the biostatistical analysis program.

Part B contains a description of the bottom trawl survey computer file and programs used to analyze catch per tow and length/age data.

A. Commercial Fishery Records

1. Purchaser Weighout Data
2. Fisherman Interview Data
3. Commercial Length Samples
4. Commercial Age Samples
5. Biostatistical Analysis Output

1. Purchaser Weighout Data

Page 1 shows a typical weighout slip for a single fishing trip for a vessel fishing in Statistical Area 513 in June of 1977.

Pages 2 and 3 describe the format of the data on Page 1 as it exists on the computer tapes.

NOAA FORM 88-30 (1-73)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FORM APPROVED: O.M.B.NO. 41-R2596

PURCHASES FROM FISHING VESSELS (Northeast)

DEALER						DATE 6/28/77
NAME OF VESSEL [redacted]						VESSEL NUMBER [redacted]
PORT CODE 222	COUNTY CODE 07	DATE SAILED 6/27	DATE LANDED 6/27	GEAR 10		GROUNDS 513
DAYS ABSENT 1	DAYS FISHED 4	TRIPS	LOG/INTERVIEW 1			DEPTH 2
PRORATE	FISHING ZONE 3	A 43693	B 1	C	D	

SPECIES AND GRADE		CODE	POUNDS LANDED	PRICE PER POUND	SUBTOTAL DOLLARS	SUBTOTAL CENTS
COD	Large	0811	395		118	—
	Market	0813	155		54	—
	Scrod	0814				
CUSK		0960				
HADDOCK	Large	1470	175		79	—
	Scrod	1475				
HAKE	Red	1520				
	White	1530	3600		720	—
OCEAN PERCH	(Red fish)	2400				
POLLOCK		2691	300		75	—
WHITING	Round	5090				
	Dressed	5093				
WOLFISH (Catfish)		5120				
GREY SOLE	Large	1221				
	Small	1222				
LEMON SOLE		1201				
YELLOWTAIL	Large	1231				
	Small	1232				
BLACKBACK	Large	1202				
	Small	1203				
DAB	Large	1241				
	Small	1242				
FLUKE	Large	1210				
	Medium	1212				
	Small	1214				
BLUEFISH	Gutted	0232				
BUTTERFISH	Large	0510				
	Medium	0515				
	Small	0516				
HERRING, SEA		1085				
MACKEREL		2120				
SCUP	Large	3290				
	Medium	3292				
	Small	3293				
SEA BASS	Large	3351				
	Small	3355				
STRIPED BASS		4180				
TAUTOG		4380				
TILEFISH		4470				
SHRIMP		7360				
LOBSTER	Large	7274				
	Select	7273				
SCALLOPS, SEA		8009				
SQUID		8030				
OTHER FOR FOOD		5260				
OTHER FOR REDUCTION		5290				
	Skate	3650	30		4	—
	Mak	0120	10		4	—
		TOTAL	4665		1054	—

NOTE: Individual reports are confidential and only summary data are released.

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT
0096	020	WODTL73						WEIGHOUT DETAIL FILE, STANDARDIZED 73 FORMAT
		WODTL73	YEAR	0001	002		A	
		WODTL73	IMAGE	0001	096		A	
		WODTL73	INSET	0061	004		B	
		WODTL73	QTR	0003	001		A	
		WODTL73	DATE	0004	004		A	
		WODTL73	MON	0004	002	1	A	
		WODTL73	MO	0004	002		A	SAME AS MON
		WODTL73	DAY	0006	002	5	A	
		WODTL73	STATE	0008	002		A	
		WODTL73	PORT	0010	002		A	
		WODTL73	PORT1	0011	001		A	
		WODTL73	COUNTY	0012	002		A	
		WODTL73	PORT4	0008	004		A	
		WODTL73	PORT6	0008	006	2	A	
		WODTL73	GEAR	0014	002	3	A	
		WODTL73	STERN	0016	001		A	IF=1 AND GEAR=05, STERN TRAWL
		WODTL73	TON	0017	002		A	
		WODTL73	TONCL	0017	001		A	SAME AS TONCLASS
		WODTL73	TONCLASS	0017	001		A	
		WODTL73	VESSNO	0019	004		A	COL.19 HAS SPACE (EG. = 134,)
		WODTL73	VESSEL	0017	006	4	A	
		WODTL73	VESSNO3	0020	003		A	
		WODTL73	AREA	0023	003	6	A	
		WODTL73	AREA2	0023	002		A	
		WODTL73	AREA1	0023	001		A	
		WODTL73	INTER	0026	001		A	
		WODTL73	DEPTH	0027	001	7	A	
		WODTL73	GROUP	0028	001		A	STUDY/GROUP
		WODTL73	UTIL	0029	001		A	
		WODTL73	SPLIT	0030	001	8	A	SPLIT/PURE
		WODTL73	CERT	0031	001		A	
		WODTL73	MAINSPP	0032	002		A	
		WODTL73	FZONE	0034	001		A	1973 ONLY
		WODTL73	SPP	0035	004	9	A	TRIP=0000
		WODTL73	NESPP	0035	004		A	NEW ENGLAND SPECIES CODE
		WODTL73	SPP3	0035	003		A	
		WODTL73	NESPP3	0035	003		A	
		WODTL73	WHSPP	0039	003		A	WOODS HOLE SPP CODE, NOT TRUE ICNAF
		WODTL73	SPPICNF	0039	003		A	1973 CODES. TRIP=000
		WODTL73	ICSPP	0039	003		A	SAME AS SPPICNF
		WODTL73	ICSPP1	0039	001		A	
		WODTL73	LBS	0042	008		A	
		WODTL73	LANDLBS	0042	008		A	SAME AS LBS
		WODTL73	VAL	0050	007		A	
		WODTL73	ZERO	0050	001		A	HI ORDR VAL PROBABLY ALWAYS 0
		WODTL73	DF	0057	004		A	XXX.X
		WODTL73	DF3	0058	003		A	
		WODTL73	TRPS	0061	004		A	XXX.X
		WODTL73	DA	0065	003		A	XXX.
		WODTL73	TRPLBS	0068	008		A	
		WODTL73	TOTLBS	0068	008		A	SAME AS TRPLBS

LBG. BLCK REC. FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT
	W0DTL73	LBSLIVE	0076	008		A	
	W0DTL73	LIVELBS	0076	008		A	SAME AS LBSLIVE
	W0DTL73	LBSPKD	0084	005		P	
	W0DTL73	TRPLBSPK	0089	005		P	
	W0DTL73	DFPKD	0094	003		P	

2. Fishermen Interview Data

Page 1 shows a typical interview for a single fishing trip for a vessel fishing in Statistical Area 514 in March of 1977.

Page 2 describes the format of the data on Page 1 as it exists on the computer tape.

NEW ENGLAND STATES
NATIONAL MARINE FISHERIES SERVICE

INTERVIEW RECORD — CONFIDENTIAL

VESSEL	DATE	PORT	GEAR
[redacted]	29 MAR 1977	241	OT

VESSEL CODE	DATE SAILED: TIME	DATE LANDED: TIME	STUDY VES.
[redacted]	3/27 11A	3/28 [illegible]	—

MESH SIZE	TRIP TYPE	TIME LOST	DAYS AB	TOTAL HAIL	COH
50	1	—	1.2	5.0	[illegible]

GROUND	GROUND	GROUND
OFF NANTUCKET 12F		

AREA	POSITION	DEPTH	AREA	POSITION	DEPTH	AREA	POSITION	DEPTH
514	427025	1012						

DY. & NT.	DAY ONLY	NT. ONLY	DY. & NT.	DAY ONLY	NT. ONLY	DY. & NT.	DAY ONLY	NT. ONLY
1.0								

NO. TOW	DUR. TOW	TIME DAY	NO. TOW	DUR. TOW	TIME DAY	NO. TOW	DUR. TOW	TIME DAY
012	2.0	3						

COD, LARGE	0811			
COD, MKT.	0813	0.2		
COD, SCROD	0814	0.3		
HADDOCK LARGE	1470			
HADDOCK SCROD	1475			
REDFISH	2400			
YELLOWTAIL	1230	0.5		
FLUKE	1219			
BLACK BACK	1200	4.0		
LM. SOLE	1201			
DAB	1240			
GRAY SOLE	1220			
WHITE. RND.	5090			
POLL. DRN.	2691			
HERRING	1685			
SHRIMP	7360			
SEA SCALLOP	8009			
UNC. FOOD	5260			
UNC. REDUCT.	5290			
DISCARD	9			

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT
0080	020	INTVCRD3						INTERVIEW DATA TYPE 3 ONLY,INFO FROM #1,2 INT
		INTVCRD3	IMAGE	0001	080		A	CARD IMAGE
		INTVCRD3	YEAR	0001	002	1	A	A TRIP HAS IDENTICAL
		INTVCRD3	DATE	0001	006		A	INFO FOR KEY FIELDS.
		INTVCRD3	MON	0003	002	2	A	
		INTVCRD3	DAY	0005	002	6	A	DF,TOWS,TOWDUR SAME ON ALL
		INTVCRD3	PORT3	0007	003	3	A	SPP RECS FOR SAME TRIP
		INTVCRD3	GEAR	0010	002	4	A	
		INTVCRD3	VESSEL	0012	005	5	A	TOTAL LBS,DA,TIMELOST,
		INTVCRD3	TON	0012	002		A	NOT PRORATED OVER SPILT TRIPS,
		INTVCRD3	TONCLASS	0012	001		A	SO NOT CORRECT ON THESE
		INTVCRD3	STUDY	0017	001		A	RECORDS FOR SPILT TRIPS
		INTVCRD3	MESH	0018	002		A	X.X
		INTVCRD3	SPLITPUR	0020	001		A	NOT SPLIT-PURE, BUT TRIP TYPE
		INTVCRD3	TIMELOST	0021	003		A	FROM TYPE 1 -ENTIRE TRIP
		INTVCRD3	DA	0024	003		A	FROM TYPE 1 (DAYS ABSENT)
		INTVCRD3	AREA4	0027	004	7	A	
		INTVCRD3	AREA2	0027	002		A	
		INTVCRD3	AREA	0027	003		A	
		INTVCRD3	AREA3	0027	003		A	
		INTVCRD3	LOC	0031	006	8	A	
		INTVCRD3	LAT	0031	002		A	DEGREES
		INTVCRD3	LATLON	0031	004		A	
		INTVCRD3	LON	0033	002		A	
		INTVCRD3	SUBDG	0035	002		A	
		INTVCRD3	LONSUB	0035	001		A	
		INTVCRD3	LATSUB	0036	001		A	1=A=50-59, 2=B=40-49,...6=0-9
		INTVCRD3	DPTHZONE	0037	001		A	
		INTVCRD3	DEPTH	0038	003	9	A	
		INTVCRD3	DF	0041	003		A	FROM TYPE 2 - DAYS FISHED XX.X
		INTVCRD3	TOWS	0044	003		A	FROM TYPE 2 - NO. TOWS
		INTVCRD3	DUR	0047	002		A	FROM TYPE 2 - TOW DURATION, HRS X.X
		INTVCRD3	SPP	0049	004		A	
		INTVCRD3	SPP3	0049	003		A	
		INTVCRD3	SPP1	0049	001		A	
		INTVCRD3	DAYNITE	0053	001		A	FROM TYPE 2
		INTVCRD3	LBS	0054	009		A	100S OF LBS
		INTVCRD3	TOTLBS	0063	007		A	FROM TYPE 1 (100'S OF LBS)
		INTVCRD3	QTR	0072	001		A	QUARTER OF YEAR
		INTVCRD3	QDSQR	0074	005		A	QUARTER DEGREE SQUARE MIDPNT OF 30MIN.
		INTVCRD3	QTRDQ	0078	001		A	1=LA15,LO15,2=A15,O45,3=A45,O15,4=4545
		INTVCRD3	COL79	0079	001		A	= 3
		INTVCRD3	COL80	0080	001		A	

3. Commercial Length Samples

Page 1 shows the form used to record length frequency data from commercial landings.

Page 2 describes the format of the length frequency sample as it exists on the computer tapes. The length data are recorded in 15 three-byte fields starting in Column 31. When the sequence number is punched as 01 (in Columns 28 and 29), the fields represent 1 cm intervals from 1 to 15 cm. Thus, the number of fish in the sample at 10 cm is entered in Columns 58-60. When the sequence number is punched as 02, the fields represent 1 cm intervals from 16 to 30 cm. In this case, the number of fish in the sample at 25 cm is entered in Columns 58-60. Larger fish are similarly handled by increasing the value of the sequence number. This system of encoding length frequency data allows for up to 14,985 (15 x 999) lengths to be recorded on one record.

Page 3 describes the format of the sample description data as it exists on the computer tapes. The column numbers for the fields match those on the sample form on Page 1.

Interview		Code	Column	Males						LENGTH SAMPLE						Females				Column 28-29
				Card Sequence																
Vessel #1			37-41																	
Vessel #2			51-55	1		6		1		6		1		6		1		6		31-33
Date Landed			34-35	2		7		2		7		2		7		2		7		34-36
Date Sailed				3		8		3		8		3		8		3		8		37-39
Year			1-2	4		9		4		9		4		9		4		9		40-42
Area			3-6	5		0		5		0		5		0		5		0		43-45
Quarter			7	6		1		6		1		6		1		6		1		46-48
Month			8-9	7		2		7		2		7		2		7		2		49-51
Species/cat			10-13	8		3		8		3		8		3		8		3		52-54
Gear			14-16	9		4		9		4		9		4		9		4		55-57
Port			17-19	0		5		0		5		0		5		0		5		58-60
Sample No.			20-21	1		6		1		6		1		6		1		6		61-63
Depth			22	2		7		2		7		2		7		2		7		64-66
Sampling Meth.			23	3		8		3		8		3		8		3		8		67-69
Sex			25	4		9		4		9		4		9		4		9		70-72
Catch-Locale			57-62	5		0		5		0		5		0		5		0		73-75
Effort			Total																	76-80
Age Samples	No. Scales		43-45	Start L - F Columns with 1,16,31,46,61,76,91,106,121,136,151,etc.																
	No. Otoliths		47-49																	
Sample Wt.			73-75	# Males [ ] 67-69								# Females [ ] 70-72								

DICTNARY LISTING 10:41 AUG 31,'77

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT
0080	020	INTLNTH						COMMERCIAL INTERVIEWS, LENGTH DETAIL DATA.
		INTLNTH	YEAR	0001	002	1	A	
		INTLNTH	DIV	0003	002		A	
		INTLNTH	AREA	0003	004		A	
		INTLNTH	QTR	0007	001		A	
		INTLNTH	MO	0008	002		A	
		INTLNTH	SPP3	0010	003		A	
		INTLNTH	SPP	0010	004		A	
		INTLNTH	GEAR	0014	002		A	
		INTLNTH	TONCLASS	0016	001		A	
		INTLNTH	PORT	0017	003		A	
		INTLNTH	SAMPLENO	0020	002		A	
		INTLNTH	DPTHZONE	0022	001		A	DEPTH ZONE
		INTLNTH	METHOD	0023	001		A	
		INTLNTH	TYPE	0024	001		A	
		INTLNTH	SEX	0025	001		A	
		INTLNTH	SEQNO	0028	002		A	
		INTLNTHS	INTLNTHS	0031	045		A	
		INTLNTH	INTLNTH1	0031	003		A	
		INTLNTH	INTLNTH2	0034	003		A	
		INTLNTH	INTLNTH3	0037	003		A	
		INTLNTH	INTLNTH4	0040	003		A	
		INTLNTH	INTLNTH5	0043	003		A	
		INTLNTH	INTLNTH6	0046	003		A	
		INTLNTH	INTLNTH7	0049	003		A	
		INTLNTH	INTLNTH8	0052	003		A	
		INTLNTH	INTLNTH9	0055	003		A	15 - 3 COLUMN FIELDS.
		INTLNTH	INTLNTHA	0058	003		A	
		INTLNTH	INTLNTHB	0061	003		A	
		INTLNTH	INTLNTHC	0064	003		A	
		INTLNTH	INTLNTHD	0067	003		A	
		INTLNTH	INTLNTHE	0070	003		A	
		INTLNTH	INTLNTHF	0073	003		A	
		INTLNTH	TOTLNTH	0076	005		A	

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE . COMMENT
0080	020	INTLN98						COMMERCIAL INTERVIEWS. LENGTH HEADER.
		INTLN98	YR	0001	002	1	A	.
		INTLN98	DIV	0003	002		A	.
		INTLN98	AREA	0003	004		A	.
		INTLN98	QTR	0007	001		A	.
		INTLN98	MO	0008	002		A	.
		INTLN98	SPP3	0010	003		A	.
		INTLN98	SPP	0010	004		A	.
		INTLN98	GEAR	0014	002		A	.
		INTLN98	TONCLASS	0016	001		A	.
		INTLN98	PORT	0017	003		A	.
		INTLN98	SAMPLENO	0020	002		A	.
		INTLN98	DPTHZONE	0022	001		A	.
		INTLN98	METHOD	0023	001		A	.
		INTLN98	SEX	0025	001		A	.
		INTLN98	CODE	0028	002		A	1981 .
		INTLN98	DAY	0034	002		A	.
		INTLN98	VESSELNO	0037	005		A	.
		INTLN98	SCALES	0043	003		A	NO. IN SAMPLE .
		INTLN98	OTOLITHS	0047	003		A	NO. IN SAMPLE .
		INTLN98	VESSNO2	0051	005		A	SECOND VESSEL OF PAIR TRAWL .
		INTLN98	CATCHLOC	0057	006		A	CATCH LOCALE (10 MIN SQUARE) .
		INTLN98	NOMALES	0067	003		A	NO. OF MALES IN SAMPLE .
		INTLN98	NOFMALES	0070	003		A	NO. OF FEMALES IN SAMPLE .
		INTLN98	TOTWT	0073	003		A	TOTAL WEIGHT OVER ALL SEXES .
		INTLN98	TOTNO	0076	005		A	TOTAL NUMBER OVER ALL SEXES .

4. Commercial Age Samples

Page 1 shows the form used to record age at length data derived from commercial landings samples.

Page 2 describes the format of the commercial age sample data as it exists on the computer tapes. The age data are recorded in 15 three-byte fields starting in Column 31. The corresponding length is punched in Columns 28-30. Thus, the number of fish at age 6 at 29 cm would be entered in Columns 46-48 and the length value 029 entered in Columns 28-30. The column numbers for the fields match those on the sample form on Page 1.

COMMERCIAL AGE SAMPLE

		CODE	COLUMN
VESSEL			
DATE LANDED			
DATE SAILED			
YEAR			1-2
AREA			3-6
QUARTER			7
MONTH			8-9
SPECIES			10-13
GEAR			14-16
PORT			17-19
SAMPLE NUMBER			20-21
DEPTH			22
SAMPLING METHOD			23
TYPE SAMPLE			24
SEX			25
CATCH LOCALE			
EFFORT			
NOT AGED			

LENGTH (28-30)	AGE 1	2	3	4	5	6	7	8	9	10	11	12			TOTA (76-
5															
6															
7															
8															
9															
0															
1															
2															
3															
4															
5															
6															
7															
8															
9															
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8															
9															
0															
1															
2															
3															
4															
5															
6															
7															
8															
9															

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT
0080	020	AGESAMP						COMMERCIAL AGE SAMPLES
		AGESAMP	YEAR	0001	002	1	A	
		AGESAMP	AREA4	0003	004		A	ICNAF AREA AND SAMPLING AREA
		AGESAMP	AREA	0003	003		A	ICNAF AREA
		AGESAMP	SAAREA	0006	001		A	ICNAF SAMPLING AREA
		AGESAMP	QTR	0007	001		A	
		AGESAMP	MONTH	0008	002	2	A	
		AGESAMP	NESPP	0010	004		A	N.E. SPECIES CODE W/MKT. CATEGORY
		AGESAMP	NESPP3	0010	003		A	
		AGESAMP	GEARTONC	0014	003		A	N.E. GEAR CODE AND VESSEL TONCLASS
		AGESAMP	GEAR	0014	002		A	N.E. GEAR CODE
		AGESAMP	TONC	0016	001		A	
		AGESAMP	PORT3	0017	003		A	PORT CODE
		AGESAMP	SAMPNO	0020	002		A	SAMPLE NUMBER
		AGESAMP	DEPTH	0022	001		A	
		AGESAMP	SAMPMETH	0023	001		A	SAMPLING METHOD
		AGESAMP	SAMPTYPE	0024	001		A	SAMPLE TYPE
		AGESAMP	SEX	0025	001		A	
		AGESAMP	LNTHCODE	0028	003		A	LENGTH CODE
		AGESAMP	AGEINTV	0031	045		A	NO. PER AGE (15 3POS. FIELDS 0-14)
		AGESAMP	TOTNO	0076	005		A	TOTAL NUMBER

5. Biostatistical Analysis Output

The example here is that of a yellowtail flounder biostatistics computer program output. This utilizes the landings data from the commercial weighout files, length frequency data from corresponding times and locations and the associated age data.

Page 1 shows the estimated numbers of fish landed by length and sex for the first quarter of 1976 from Georges Bank. These numbers are calculated from the landed weight data utilizing sample length frequencies broken out by sex, and length-weight equations for this time period and location. The average length and weight of yellowtail are also calculated.

Page 2 shows an age-length key for males from the same time and area. The number of fish in each age group at each length with row and column totals are summarized.

Page 3 shows the proportions of ages at each length as derived from data presented on Page 2.

Page 4 shows the calculated number of male yellowtail flounder landed by age and length during the first quarter of 1977 from Georges Bank with corresponding row and column totals. The numbers in each age group at each length are calculated by multiplying the ratios on Page 3 times the number of males at length from Page 1. These are also presented as row totals on Page 4 under the column headed TOTAL.

The column totals represent the calculated age composition of males for this quarter of the fishery. These results are used in the assessments as input to the virtual population analysis calculations.

YELL TAIL BSTAT SPEC RUN ON 76 LNS AND 75 AGES WT,100S LBS LAND.-NBS,100S-LN,CM B211JAN231975. ANYALYSIS DATE10:19 FEB 01

X LEVEL= AN52
Y LEVEL= JAN FEB MAR TOT

NUMBERS IN POPULATION

CLASS VAL	MALE	FEML	TOT
16.00	0.	0.	0.
17.00	0.	0.	0.
18.00	0.	0.	0.
19.00	0.	0.	0.
20.00	0.	0.	0.
21.00	0.	0.	0.
22.00	0.	0.	0.
23.00	16.	0.	16.
24.00	0.	0.	0.
25.00	32.	0.	32.
26.00	39.	32.	70.
27.00	95.	181.	276.
28.00	1065.	520.	1584.
29.00	1732.	1126.	2859.
30.00	2548.	1360.	3909.
31.00	2888.	1593.	4481.
32.00	1813.	1132.	2946.
33.00	919.	843.	1762.
34.00	759.	475.	1234.
35.00	401.	562.	963.
36.00	505.	572.	1078.
37.00	537.	641.	1178.
38.00	683.	989.	1672.
39.00	481.	1324.	1805.
40.00	389.	822.	1211.
41.00	408.	713.	1121.
42.00	350.	853.	1203.
43.00	399.	437.	836.
44.00	46.	442.	488.
45.00	49.	358.	407.
46.00	39.	343.	382.
47.00	0.	318.	318.
48.00	0.	179.	179.
49.00	0.	116.	116.
50.00	0.	149.	149.
51.00	0.	91.	91.
52.00	0.	32.	32.
53.00	0.	23.	23.
54.00	0.	0.	0.
55.00	0.	0.	0.
56.00	0.	0.	0.
57.00	0.	0.	0.
58.00	0.	0.	0.
59.00	0.	0.	0.
60.00	0.	0.	0.
TOTAL	16192.	16226.	32417.
AV. CLASS	32.85	38.29	34.57
AV. WT	.73	1.05	.89
TOTAL WT	11840.	17088.	28928.

YELL TAIL BSTAT SPEC RUN ON 76 LNS AND 75 AGES WT,100S LBS LAND--NOS,100S-LN,CM B211JAN231975. ANYALYSIS DATE10:19 FEB 01

K LEVEL= AR52
M LEVEL= JAN FEB MAR TOT
J LEVEL= MALE

LENGTH CLASS X AGE(YEARS) NO. IN SAMPLE

CLASS	0	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
16.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
17.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
18.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
19.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
20.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
22.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
23.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
24.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
25.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
26.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
27.00	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
28.00	0.	0.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4.
29.00	0.	0.	10.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	11.
30.00	0.	0.	21.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	22.
31.00	0.	0.	28.	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.	32.
32.00	0.	0.	28.	6.	3.	0.	0.	0.	0.	0.	0.	0.	0.	37.
33.00	0.	0.	15.	9.	4.	0.	0.	0.	0.	0.	0.	0.	0.	28.
34.00	0.	0.	9.	18.	10.	2.	0.	0.	0.	0.	0.	0.	0.	39.
35.00	0.	0.	2.	25.	11.	1.	2.	0.	0.	0.	0.	0.	0.	41.
36.00	0.	0.	4.	34.	15.	3.	0.	0.	0.	0.	0.	0.	0.	56.
37.00	0.	0.	0.	35.	13.	10.	1.	0.	0.	0.	0.	0.	0.	59.
38.00	0.	0.	0.	12.	19.	9.	3.	1.	0.	0.	0.	0.	0.	44.
39.00	0.	0.	0.	10.	13.	4.	5.	2.	0.	0.	0.	0.	0.	34.
40.00	0.	0.	0.	11.	4.	2.	4.	1.	1.	0.	0.	0.	0.	23.
41.00	0.	0.	0.	3.	7.	8.	6.	0.	0.	0.	0.	0.	0.	24.
42.00	0.	0.	0.	0.	2.	9.	2.	2.	0.	0.	0.	0.	0.	15.
43.00	0.	0.	0.	0.	5.	2.	0.	0.	0.	0.	0.	0.	0.	7.
44.00	0.	0.	0.	0.	0.	4.	1.	1.	2.	0.	0.	0.	0.	8.
45.00	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.	0.	0.	0.	6.
46.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
47.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
48.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
49.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
50.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
52.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
53.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
54.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
55.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
56.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
57.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
58.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
59.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
60.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	0.	0.	122.	168.	107.	54.	26.	10.	4.	0.	0.	0.	0.	491.

YELL TAIL BSTAT SPEC RUN ON 76 LNS AND 75 AGES WT,100S LBS LAND--NOS,100S-LN,CM B211JAN231975. ANYALYSIS DATE10:19 FEB 01

K LEVEL= AR52
M LEVEL= JAN FEB MAR TOT
J LEVEL= MALE

LENGTH CLASS X AGE(YEARS) PER MILLE PER LENGTH

CLASS	0	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
16.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
17.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
18.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
19.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
20.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
21.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
22.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
23.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
24.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
25.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
26.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
27.00	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
28.00	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
29.00	.000	.000	.909	.091	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
30.00	.000	.000	.955	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
31.00	.000	.000	.875	.094	.031	.000	.000	.000	.000	.000	.000	.000	.000	1.000
32.00	.000	.000	.757	.162	.081	.000	.000	.000	.000	.000	.000	.000	.000	1.000
33.00	.000	.000	.536	.321	.143	.000	.000	.000	.000	.000	.000	.000	.000	1.000
34.00	.000	.000	.231	.462	.256	.051	.000	.000	.000	.000	.000	.000	.000	1.000
35.00	.000	.000	.049	.610	.268	.024	.049	.000	.000	.000	.000	.000	.000	1.000
36.00	.000	.000	.071	.607	.268	.054	.000	.000	.000	.000	.000	.000	.000	1.000
37.00	.000	.000	.000	.593	.220	.169	.017	.000	.000	.000	.000	.000	.000	1.000
38.00	.000	.000	.000	.273	.432	.205	.068	.023	.000	.000	.000	.000	.000	1.000
39.00	.000	.000	.000	.294	.382	.118	.147	.059	.000	.000	.000	.000	.000	1.000
40.00	.000	.000	.000	.478	.174	.087	.174	.043	.043	.000	.000	.000	.000	1.000
41.00	.000	.000	.000	.125	.292	.333	.250	.000	.000	.000	.000	.000	.000	1.000
42.00	.000	.000	.000	.000	.133	.600	.133	.133	.000	.000	.000	.000	.000	1.000
43.00	.000	.000	.000	.000	.714	.286	.000	.000	.000	.000	.000	.000	.000	1.000
44.00	.000	.000	.000	.000	.000	.500	.125	.125	.250	.000	.000	.000	.000	1.000
45.00	.000	.000	.000	.000	.000	.000	.333	.500	.167	.000	.000	.000	.000	1.000
46.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
47.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
48.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
49.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
50.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
51.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
52.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
53.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
54.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
55.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
56.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
57.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
58.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
59.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
60.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
TOTAL	.000	.000	6.382	4.155	3.395	2.427	1.297	.883	.460	.000	.000	.000	.000	19.000

YELL TAIL BSTAT SPEC RUN ON 76 LNS AND 75 AGES WT,100S LBS LAND.-NOS,100S-LN,CM B211JAN231975. ANYALYSIS DATE10:13 FEB 01

K LEVEL= AR52
M LEVEL= JAN FEB MAR TOT
J LEVEL= MALE

LENGTH CLASS X AGE(YEARS) EST. NO. LANDED

CLASS	0	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
16.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
17.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
18.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
19.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
20.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
22.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
23.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
24.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
25.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
26.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
27.00	0.	0.	95.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	95.
28.00	0.	0.	1065.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1065.
29.00	0.	0.	1575.	157.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1732.
30.00	0.	0.	2432.	116.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2548.
31.00	0.	0.	2527.	271.	90.	0.	0.	0.	0.	0.	0.	0.	0.	2888.
32.00	0.	0.	1372.	294.	147.	0.	0.	0.	0.	0.	0.	0.	0.	1813.
33.00	0.	0.	492.	295.	131.	0.	0.	0.	0.	0.	0.	0.	0.	919.
34.00	0.	0.	175.	350.	195.	39.	0.	0.	0.	0.	0.	0.	0.	759.
35.00	0.	0.	20.	245.	108.	10.	20.	0.	0.	0.	0.	0.	0.	401.
36.00	0.	0.	36.	307.	135.	27.	0.	0.	0.	0.	0.	0.	0.	505.
37.00	0.	0.	0.	319.	118.	91.	9.	0.	0.	0.	0.	0.	0.	537.
38.00	0.	0.	0.	186.	295.	140.	47.	16.	0.	0.	0.	0.	0.	683.
39.00	0.	0.	0.	142.	184.	57.	71.	28.	0.	0.	0.	0.	0.	481.
40.00	0.	0.	0.	186.	68.	34.	68.	17.	17.	0.	0.	0.	0.	389.
41.00	0.	0.	0.	51.	119.	136.	102.	0.	0.	0.	0.	0.	0.	408.
42.00	0.	0.	0.	0.	47.	210.	47.	47.	0.	0.	0.	0.	0.	350.
43.00	0.	0.	0.	0.	285.	114.	0.	0.	0.	0.	0.	0.	0.	399.
44.00	0.	0.	0.	0.	0.	23.	6.	6.	11.	0.	0.	0.	0.	46.
45.00	0.	0.	0.	0.	0.	0.	16.	24.	8.	0.	0.	0.	0.	49.
46.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
47.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
48.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
49.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
50.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
52.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
53.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
54.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
55.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
56.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
57.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
58.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
59.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
60.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	0.	0.	9789.	2918.	1921.	880.	384.	137.	36.	0.	0.	0.	0.	16067.
PERCIL	.000	.000	.609	.182	.120	.055	.024	.009	.002	.000	.000	.000	.000	
AV LEN	.000	.000	30.386	34.614	37.285	39.988	40.026	41.299	42.367	.000	.000	.000	.000	

B. Bottom Trawl Survey Records

1. Trawl log
2. Chart of survey strata
3. Format of survey records on computer tapes
4. Length and age analysis
5. Weight/tow and number/tow analysis

1. <u>Bottom Trawl Survey Trawl Log</u>

   showing how to record numbers and weight of each species caught on a single tow. Length frequency tallies and station data are also shown.

Use General Recording Instructions as found on page 24 of Groundfish Survey Methods

Example Log

If tow has to be repeated, use next number, example; 143 Tearup, repeated as Sta 144

Boat time should be made clear on first Sta. log

Note - All species code numbers and brackets enclosing frequencies should be entered in red -

May be used for plankton

For Coding Instructions see Data Processing Methods

VESSEL	CRUISE	STRATUM-TOW	TRAWL STATION	BT SLIDE NO.
Alb. IV	73-8-II	13-7	143	178

DAY	MONTH	YEAR	OTHER STATION
20	10	74	

WIND DIR. (degrees)	WIND SPEED	DEPTH Maximum	DEPTH Minimum
280	6 Knots	57 fath.	53 fath.

WAVE HEIGHT	CLOUD AMOUNT	AIR TEMP.
1 ft.	9/10	56°F

NOTES ON SHIP OPERATIONS
Boat time equals Greenwich + 5 hrs.

Amount of wire in water

From depth sounder trace

TRAWL	WIRE OUT	COURSE (deg)	SPEED
#36 Yankee	175 fath.	90°	3.5 Knots

→	TIME	DEPTH	LATITUDE	LONGITUDE	LITTON LOG
START	1512	56 fath.	40°48'	67°00'	6215.43
END	1542	57 fath.	40°48.5'	66°58.5'	6217.32

→	1H3	LORAN 3H4
START	2707	6136
END	2692	6135

CONDITION OF TRAWL: No Damage

OTHER GEAR	WIRE OUT	COURSE (deg)	SPEED

→	TIME	DEPTH	LATITUDE	LONGITUDE	LITTON LOG
START					
END					

FISHING FLEET OBSERVATIONS
7 Polish herring trawlers 6 miles to the NE

CRUISE	STR	TOW	DAY / TEMP	MO	YEAR	P U	LAT	LONG	T M	DEPTH

GEAR	D R	N T	TEMP	AREA

BOT	WIRE OUT	CRSE	WIND DIR	WIND SPD	WAVE HGT	DEPTH MIN	DEPTH MAX	TOW DIST	AVG SPEED

R. Nixon
WATCH CHIEF
B. Edwards
RECORDER

STATION No 143

SPECIAL SAMPLES (S) Scale, (O) Oto, (F) Stom, (M) Maturity, and others	LENGTHS OF INDIVIDUAL FISH (Centimeters) (< 8 Individuals)	SPECIES (Every other line when possible)	SPP (Code Number)	WEIGHED PART OF CATCH (Circle basket portion measured) 1 Bushel (Gross Wgt)	2 Bushel (Gross Wgt)	Other (net)	Portion Discarded (Amount and Unit)	LF Expan Factor	TOTAL CATCH Weight	Number
	1	Non Species	300						1	1
	Good tow but no fish - must have "300 Non Species code"									
15 F 20 (S)(O)(M)		Haddock	074	64	122				167	33
				64 lbs. - 8 lbs. (1 bu. wt.) + 122 - 11 lbs (2 bu. wt.) =						
Frozen for Age and Growth	10, 7, 8, 7, 11 5, 9, 9	Silver Hake	072			<1			–	8
	Duplicates must be grouped for Keypuncher				If less than .5 lb. use <1		and leave blank here			
Saved live in tank	8♂, 9♀, 11♀	Lobster	301			4			4	2
	Sex for crabs and lobsters									
		Spiny Dogfish	015		150, 151, 163 155, 142		320 individuals	3.88	2757	431
List special samples that are saved here		Pandalid Shrimp	305			15			15	—
	Shrimp are only weighed				Discards may be by wt, or No; be sure to include unit					
		Pollock	075		*150, 149, 148 111, (146)		6 (2 bu.)	10.91	1473	644
					example: $\frac{649 + 137.25 \times 6}{135} = 10.91$				Totals are expanded	
		If you have an unidentified species, write down as much as you know								
Saved in 10% formalin	12	Unident. Decapod	248			<1			–	1
" " "	7	Unident. Lantern	230			<1			–	1
" " "	8	Unident. Hake	000			<1			–	1

Other Inverts	Wgt or No
Starfish, Sea Urchins	10 lbs.
4" Rock	3 bushels

Sampling * Pollock - use the 4 baskets > 140 for finding av. wt. of baskets discarded.

This is needed for use as an indicator if net is fishing bottom

This space is used to explain sampling, see also Data Processing methods, Pages 30-35

	Haddock		Spiny Dogfish		Pollock	
31			1		1	
2	074		2		2	
3			3		3	
34	1	1	4		4	
5	卌 1	6	5		5	
6	卌	5	6		6	
7	1	1	7		7	
8			8		8	
9			9	015	9	
40			60	1 1	30	
1	1	1	1		1	
2			2		2	
3			3	1 1	3	
4	1	1	4		4	
5			5		5	
6			6	1 1	6	
7	11	2	7		7	
8			8		8	
9			9		9	
50	1	1	70		40	
1			1		1	075
2			2	11 2	2	
3			3		43	1 1
4	1	1	4	1 1	4	11 2
5			5		5	卌 5
6			6	111 3	6	卌 1 6
7			7	11 2	7	卌 11 7
8			8	卌 5	8	卌 111 8
9	1	1	9	111 3	9	卌 111 8
60	11	2	80	卌 1111 9	50	卌 1 6
1	卌	5	1	卌 卌 1 11	1	卌 11 7
2	111	3	2	卌 1 6	2	111 3
3	1	1	3	卌 5	3	11 2
4			4	111 3	4	1 1
5			5	111 3	5	
6			6	1111 4	6	1 1
7	1	1	7	卌 1 6	7	
8			8	卌 5	58	11 2
9			9	111 3	9	
70	1	1	90	111 3	60	
1			1	1 1	1	59
2			2	1 1	2	
3	1	1	3	111 3	3	
4			4	11 2	4	
5			5	卌 5	5	
6	34		6	卌 1111 9	6	
7			7	卌 1 6	7	
8			8	卌 5	8	
9			9	1 1	9	
0			100		0	
1			101	1 1	1	
2			2		2	
3			3	111	3	
4			4		4	
5			5		5	

Leave space for code for species and number totals

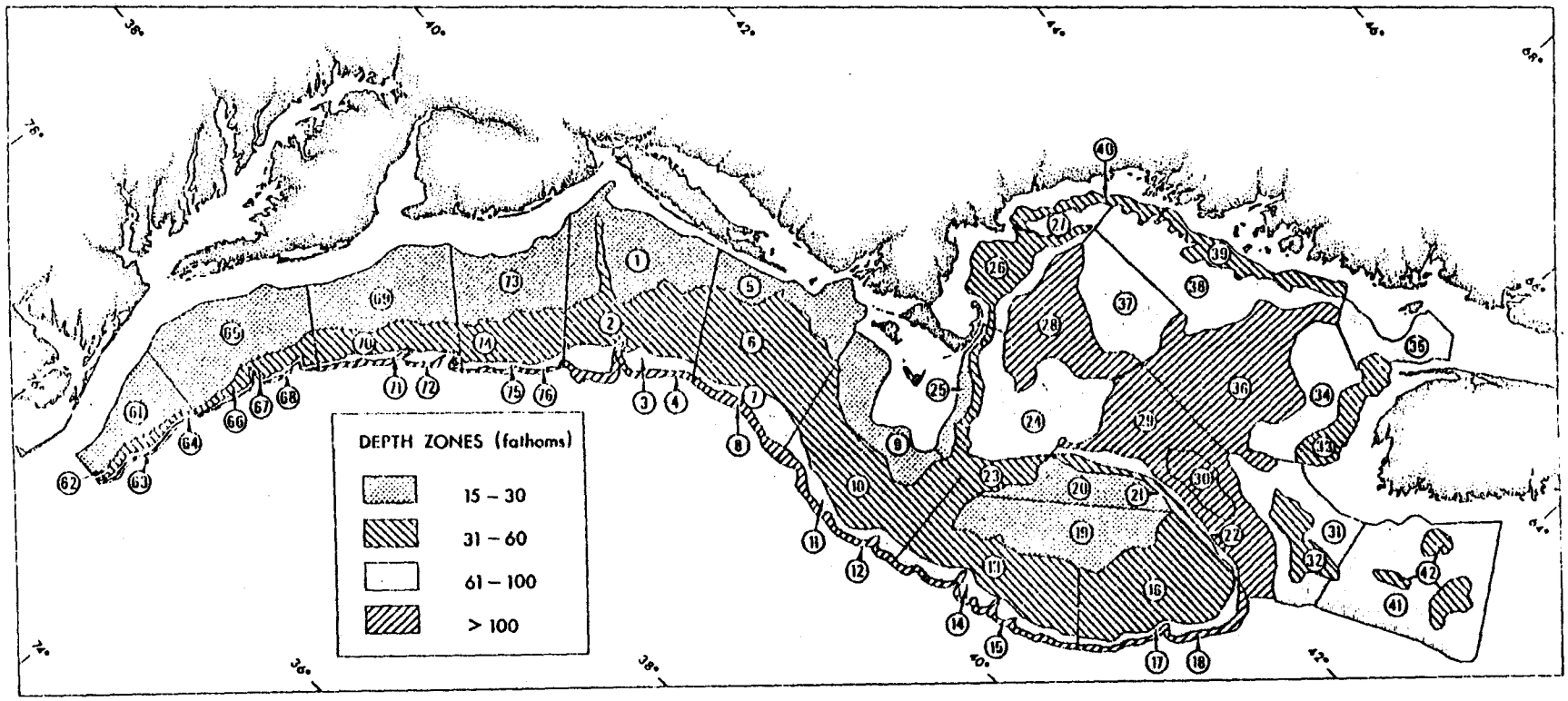
Place in the "ten digit" often

expand and place in total column

Plenty of room on other side

2. Bottom Trawl Survey Strata Chart

showing the geographical and depth boundaries used to delimit strata.


DEPTH ZONES (fathoms)
15 – 30
31 – 60
61 – 100
> 100

3. Bottom Trawl Survey Computer Tape Format.

On this listing, the file name (SURVEY 2) is followed by the name of each field, the starting position and width of each field, and a short description of the data in each field.

The survey data file contains five types of records:

Type 1 - Number and weight of each species caught per tow

Type 2 - Length measurements of each species

Type 3 - Age information for the species which are aged.

Type 4 - Number and weight of all species combined

Type 5 - Stations data for each tow.

The data recorded in a certain position depends on the type of record. For example, the longitude of the tow is recorded in columns 18, 19, 20 on the type 1, 2, 3, and 4 records while the time of the tow is recorded in columns 18 through 21 on the type 5 station records. This has been done to conserve space and to produce a more compact data file.

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT		
012_8	01_6	SURVEY2						SURVEY DATA, COLS1-80 CARD IMAGE, TYPE 1-5 ,PKD FLDS, APRL74,		
		SURVEY2	IMAGE	0001	080		A	CARD>IMAGE	1,2,3,4,5	.
		SURVEY2	STATION	0001	007		A	STATION	1,2,3,4,5	.
		SURVEY2	CRUISE	0001	00_3		A	CRUISE	1,2,3,4,5	.
		SURVEY2	ICRUI	0001	003		A	CRUISE	1,2,3,4,5	.
		SURVEY2	STRATUM	0004	002		A	STRATUM	1,2,3,4,5	.
		SURVEY2	STRATA	0004	002		A	STRATA	1,2,3,4,5	.
		SURVEY2	STRATOW	000_4	00_4		A	STRATUM-TOW	1,2,3,4,5	.
		SURVEY2	TOW	0006	002		A	TOW	1,2,3,4,5	.
		SURVEY2	ISTRT	0004	002		A	STRATUM	1,2,3,4,5	.
		SURVEY2	ITOW	0006	002		A	TOW	1,2,3,4,5	.
		SURVEY2	DAY	0008	002		A	DAY	1,4	.
		SURVEY2	SQTRAWL	000_8	00_3		A	SEQ>TRAWL	5	.
		SURVEY2	DATE	0008	006		A	DATE	1,4	.
		SURVEY2	MO	0010	002		A	MONTH	1,2,3,4	.
		SURVEY2	BTSTA	0011	003		A	BT STATION	5	.
		SURVEY2	KYR	001_2	00_2		A	YEAR	1,2,3,4	.
		SURVEY2	SEX3	0014	001		A	SEX, ON TYPE 3 AGE REC	3	.
		SURVEY2	PURP	0014	001		A	PURPOSE	1,2,4	.
		SURVEY2	OSTTYP	0014	001		A	OTHER>STATION>TYPE	5	.
		SURVEY2	LAT	0015	003		A	LAT	1,2,3,4	.
		SURVEY2	OSTNO	001_5	00_3		A	OTHER>STATION>NUMBER	5	.
		SURVEY2	LON	0018	003		A	LON	1,2,3,4	.
		SURVEY2	TIME5	0018	004		A	TIME	5	.
		SURVEY2	TIMEHI5	001_8	00_2		A	TIME HI	5	.
		SURVEY2	TIME	0021	001		A	TIME>OF>DAY	1,2,3,4	.
		SURVEY2	DEPTH	0022	003		A	63-75 FATHOMS, 76-METERS	1,2,3,4	.
		SURVEY2	DPTH	0022	003		A	DEPTH	1,2,3,4	.
		SURVEY2	TRWLCON	0023	001		A	TRAWL>CONDITION>CODE	5	.
		SURVEY2	QUAD5	0024	001		A	QUAD	5	.
		SURVEY2	LATD5	0025	00_2		A	LAT>DEG	5	.
		SURVEY2	ISPP	0025	003		A	SPECIES	1,2,3	.
		SURVEY2	SPP	0025	003		A	SPECIES	1,2,3	.
		SURVEY2	SPECIES	0025	003		A	SPECIES	1,2,3	.
		SURVEY2	LAT5	0025	00_4		A	LAT	5	.
		SURVEY2	LATM5	0027	002		A	LAT>MIN	5	.
		SURVEY2	GEAR	0028	002		A	GEAR>TYPE	1,4	.
		SURVEY2	ISEQ	0028	002		A	SEQ	2	.
		SURVEY2	ILNTH	0028	00_3		A	LNTH	3	.
		SURVEY2	LOND	0029	002		A	LON>DEG	5	.
		SURVEY2	LON5	0029	004		A	LON	5	.
		SURVEY2	TD	0030	001		A	TOW>DUR	1,4	.
		SURVEY2	SEX	0030	001		A	SEX	2	.
		SURVEY2	NET	0031	001		A	NET>COND	1,4	.
		SURVEY2	FTAB	0031	045		A	LN FRQ	2	.
		SURVEY2	AGEO	0031	003		A	AGE O	3	.
		SURVEY2	LONM5	0031	002		A	LOM>MIN	5	.
		SURVEY2	TEMP	0032	002		A	TEMPERATURE (CELSIUS)	1,4	.
		SURVEY2	DATE5	00_{33}	00_6		A	DATE	5	.
		SURVEY2	MO5	0033	002		A	MO	5	.
		SURVEY2	SUBAREA	0034	003		A	STATISTICAL AREA	1,4	.
		SURVEY2	STATAREA	0034	003		A	STATISTICAL AREA	1,4	.

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT		
		SURVEY2	AGE1	0034	003		A	AGE 1	3	.
		SURVEY2	DY5	0035	002		A	DAY	5	.
		SURVEY2	AGE2	0037	003		A	AGE 2	3	.
		SURVEY2	YR5	0037	002		A	YR	5	.
		SURVEY2	BOTYP	0038	002		A	BOT>TYPE	1,4	.
		SURVEY2	DPZONE	0039	001		A	DPTH ZN	5	.
		SURVEY2	WIROUT	0040	003		A	WIRE>OUT	1,4	.
		SURVEY2	BTDPTH	0040	001		A	BT DPTH	6	.
		SURVEY2	AGE3	0040	003		A	AGE 3	3	.
		SURVEY2	DPTH5	0041	004		A	DEPTH (METERS ALL YEARS)	5	.
		SURVEY2	COURSE	0043	002		A	COURSE	1,4	.
		SURVEY2	AGE4	0043	003		A	AGE 4	3	.
		SURVEY2	WDIR	0045	002		A	WIND>DIR	1,4	.
		SURVEY2	TMPSUR	0045	004		A	SURFACE TEMP (CELSIUS)	6	.
		SURVEY2	AGE5	0046	003		A	AGE 5	3	.
		SURVEY2	WSPD	0047	002		A	WIND>SPEED	1,4	.
		SURVEY2	WVHT	0049	002		A	WAVE>HGHT	1,4	.
		SURVEY2	AGE6	0049	003		A	AGE 6	3	.
		SURVEY2	TMPBOT	0049	004		A	BOTTOM TEMP (CELSIUS)	6	.
		SURVEY2	MNTRDP	0051	002		A	MIN>TRAWL>DPTH	1,4	.
		SURVEY2	AGE7	0052	003		A	AGE 7	3	.
		SURVEY2	MXTRDP	0053	002		A	MAX>TRAWL>DPTH	1,4	.
		SURVEY2	TWDST	0055	003		A	TOW>DIST	1,4	.
		SURVEY2	AGE8	0055	003		A	AGE 8	3	.
		SURVEY2	ASPBT	0058	002		A	AVE SP>OVR BOT	1	.
		SURVEY2	AGE9	0058	003		A	AGE 9	3	.
		SURVEY2	MISC	0061	003		A	MISC	1	.
		SURVEY2	AGE10	0061	003		A	AGE 10	3	.
		SURVEY2	AGE11	0064	003		A	AGE 11	3	.
		SURVEY2	LFEFCT	0067	003		A	LF EXP>FCTR	1	.
		SURVEY2	AGE12	0067	003		A	AGE 12	3	.
		SURVEY2	TWEIGHT	0067	006		A	TOTAL WEIGHT>ALL SPECIES	4	.
		SURVEY2	TOTWT	0067	006		A	1963-75 LBS, 76-KILOGRAMS	4	.
		SURVEY2	TOTWGHT	0067	006		A	KILOGRAMS - XXXXX.X	4	.
		SURVEY2	TWTHUNS	0068	003		A	TOT WT>ALL SPP>(HUNDREDS)	4	.
		SURVEY2	WEIGHT	0070	006		A	1963-75 LBS, 76-KILOGRAMS	1	.
		SURVEY2	WGHT	0070	006		A	KILOGRAMS - XXXXX.X	1	.
		SURVEY2	WT	0070	006		A	WEIGHT	1	.
		SURVEY2	WTHUNS	0070	004		A	WEIGHT>(HUNDREDS)	1	.
		SURVEY2	AGE13	0070	003		A	AGE 13	3	.
		SURVEY2	AGE14	0073	003		A	AGE 14	3	.
		SURVEY2	TOTNO	0073	007		A	TOTAL NUMBER>ALL SPECIES	4	.
		SURVEY2	TNOTENS	0073	006		A	TOT NO>ALL SPP>(TENS)	4	.
		SURVEY2	TNOHUNS	0073	005		A	TOT NO>ALL SPP>(HUNDREDS)	4	.
		SURVEY2	NO	0076	004		A	NUMBER	1,2,3	.
		SURVEY2	NOTENS	0076	003		A	NUMBER>(TENS)	1,2,3	.
		SURVEY2	NOHUNS	0076	002		A	NUMBER>(HUNDREDS)	1,2,3	.
		SURVEY2	COLSO	0080	001		A	CARD>CODE	1,2,3,4,5	.
		SURVEY2	ICODE	0080	001		A	CODE	1,2,3,4,5	.
		SURVEY2	YEAR	0081	002	1	A	YEAR		.
		SURVEY2	DAYNITE	0083	001		A	DAY NIGHT CODE (CERTAIN COMP CRUISES)		.
		SURVEY2	KRECNO	0084	007	6	A	SEQ.REC.CT.		.

LOG. REC.	BLCK FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT KEY	DATA TYPE	TITLE - COMMENT
		SURVEY2	CRSTTOW	0091	007	2	A	STATION
		SURVEY2	KSPP	0098	003	3	A	SPP
		SURVEY2	KCOLSO	0101	001	4	A	COLSO
		SURVEY2	KSQ	0102	003	5	A	SEQ
		SURVEY2	INSET	0107	002		B	BINARY O
		SURVEY2	STMPCAL	0109	004		P	SURF>TEMP
		SURVEY2	TMPCALC	0113	002		P	TEMP
		SURVEY2	DPCALC	0115	002		P	DEPTH
		SURVEY2	BTOPCAL	0115	002		P	BT>DEPTH
		SURVEY2	WTCALC	0117	004		P	WEIGHT
		SURVEY2	BTMPCAL	0117	004		P	BOT>TEMP
		SURVEY2	DPCAL5	0121	004		P	DEPTH
		SURVEY2	NOCALC	0121	004		P	NUMBER
		SURVEY2	SEQCALC	0125	002		P	SEQ
		SURVEY2	LNCALC	0127	002		P	LNTH

4. Length frequency and age composition analysis of bottom trawl survey records.

Page 1 contains the number per tow for each length interval for each individual stratum and the weighted mean number per tow for the strata set (26, 27, 28, 36, 37, 38, 39, and 40). Stratum 27 is not listed individually because no haddock were caught in any of the tows in this stratum However, the area of stratum 27 (720 square miles) is included in the total area of the strata set (14028 square miles).

The weighted (stratified) number per tow is calculated by multiplying the number per tow at length of each stratum times the area weighting coefficient for that stratum (1014 square miles for stratum 26, for example) and summing this with the products of the other corresponding strata. The final sum is then divided by the area weighting coefficient of the strata set (14028 square miles in this example).

Page 2 contains the age-length key listing the number of fish in each age at each length.

Page 3 contains the ratios of the distribution of ages at each length calculated from the numbers on page 2.

Page 4 contains the number per tow in each age at each length with column and row totals, calculated by multiplying the ratios on page 3 times the weighted stratified number per tow at length on page 1.

Page 5 contains the percentages of the number per tow in each age at each length in terms of the total number per tow. For example, at length interval 20.5 and age group 1, the 2.0 represents {(.26/12.82) x 100} from page 4.

LENGTH FREQUENCY ANALYSIS SUR100-LSTL-S7 FEB 1976

LENGHT FREQUENCY OF HADDOCK FROM 1974 AND 1975 FALL ALB4 CRUISES

YEAR = 63
CRUI = 5

STAGE 2 CRUI = 5
STAGE 2 BLCK = 2

			CRUI 5 STRT 26		CRUI 5 STRT 28		CRUI 5 STRT 36		CRUI 5 STRT 37		CRUI 5 STRT 38		CRUI 5 STRT 39		CRUI 5 STRT 40	
WT COEFF (AREA)	TOTAL 14028.		1014.		2249.		4069.		2108.		2560.		730.		578.	
NO.TOWS			5.		4.		9.		5.		8.		2.		4.	
LN(CM)	STRAT NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT
.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
2.5	.032	.24	.0	.00	.0	.00	.1	2.38	.0	.00	.0	.00	.0	.00	.0	.00
4.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
6.5	.141	1.04	.8	1.16	.0	.00	.1	2.38	.2	3.70	.0	.00	.0	.00	.5	1.46
8.5	.106	.78	.6	.87	.0	.00	.1	2.38	.2	3.70	.0	.00	.0	.00	.0	.00
10.5	.231	1.70	1.6	2.32	.0	.00	.2	4.76	.2	3.70	.0	.00	.0	.00	.5	1.46
12.5	.102	.76	1.0	1.45	.0	.00	.0	.00	.2	3.70	.0	.00	.0	.00	.0	.00
14.5	.029	.21	.4	.58	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
16.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
18.5	.080	.59	.4	.58	.0	.00	.0	.00	.2	3.70	.0	.00	.0	.00	.5	1.46
20.5	.260	1.92	1.6	2.32	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	3.5	10.22
22.5	.848	6.26	6.6	9.57	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	9.0	26.28
24.5	.821	6.06	6.8	9.86	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	8.0	23.36
26.5	.295	2.18	3.8	5.51	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.5	1.46
28.5	.140	1.04	1.8	2.61	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.3	.73
30.5	.122	.90	1.4	2.03	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.5	1.46
32.5	.087	.64	1.2	1.74	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
34.5	.306	2.26	3.8	5.51	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.8	2.19
36.5	.344	2.54	4.2	6.09	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
38.5	.211	1.56	2.6	3.77	.0	.00	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
40.5	.393	2.90	4.6	6.67	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.5	1.46
42.5	.482	3.56	4.8	6.96	.3	1.10	.0	.00	.0	.00	.1	1.82	.0	.00	1.8	5.11
44.5	.481	3.55	3.8	5.51	.5	2.20	.1	2.38	.2	3.70	.1	1.82	.0	.00	1.0	2.92
46.5	.644	4.75	4.8	6.96	.5	2.20	.1	2.38	.8	14.81	.1	1.82	.0	.00	1.0	2.92
48.5	.737	5.44	4.4	6.38	.5	2.20	.2	4.76	.6	11.11	.5	7.27	.0	.00	2.3	6.57
50.5	.559	4.13	2.2	3.19	.5	2.20	.1	2.38	.0	.00	1.1	16.36	.0	.00	2.0	5.84
52.5	.793	5.86	1.8	2.61	2.0	8.79	.7	14.29	.4	7.41	.4	5.45	.0	.00	.5	1.46
54.5	.926	6.84	1.4	2.03	2.0	8.79	.9	19.05	.4	7.41	.6	9.09	1.0	66.67	.5	1.46
56.5	.752	5.55	1.2	1.74	2.3	9.89	.1	2.38	.6	11.11	1.0	14.55	.0	.00	.0	.00
58.5	.607	4.48	.4	.58	2.3	9.89	.6	11.90	.0	.00	.3	3.64	.0	.00	.3	.73
60.5	.829	6.12	.2	.29	3.5	15.38	.2	4.76	.8	14.81	.4	5.45	.0	.00	.0	.00
62.5	.386	2.85	.4	.58	.8	3.30	.2	4.76	.4	7.41	.5	7.27	.0	.00	.5	1.46
64.5	.665	4.91	.2	.29	2.3	9.89	.3	7.14	.2	3.70	.8	10.91	.5	33.33	.0	.00
66.5	.446	3.29	.0	.00	1.8	7.69	.3	7.14	.0	.00	.4	5.45	.0	.00	.0	.00
68.5	.255	1.89	.0	.00	1.3	5.49	.1	2.38	.0	.00	.1	1.82	.0	.00	.0	.00
70.5	.158	1.16	.2	.29	.8	3.30	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
72.5	.103	.76	.0	.00	.5	2.20	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
74.5	.072	.53	.0	.00	.3	1.10	.1	2.38	.0	.00	.0	.00	.0	.00	.0	.00
76.5	.040	.30	.0	.00	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
78.5	.023	.17	.0	.00	.0	.00	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
80.5	.040	.30	.0	.00	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
82.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
84.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
86.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
88.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
90.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
92.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
TOT	13.544	100.0	69.0		22.8		4.7		5.4		6.9		1.5		34.3	

MN LNTH= 45.8 VAR ABOUT MN LN= 294.54 STD.DV= 17.16
SUM(STRT.NO/TOW.LN**2)= .32050309E 05 SUM(STRT.NO/TOW.LN)= .61971484E 03 SUM**2= .38404644E 06

NUMBER OF FISH MEASURED, BY AGE AND LENGTH

LNTH (CM)	AGE (YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
12.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
14.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
16.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
18.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
20.5	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
22.5	0.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
24.5	0.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	11.
26.5	0.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
28.5	0.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4.
30.5	0.	0.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
32.5	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
34.5	0.	0.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.
36.5	0.	0.	9.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	10.
38.5	0.	0.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.
40.5	0.	0.	1.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7.
42.5	0.	0.	0.	11.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
44.5	0.	0.	0.	5.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
46.5	0.	0.	1.	0.	14.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.
48.5	0.	0.	0.	1.	15.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18.
50.5	0.	0.	0.	1.	14.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	24.
52.5	0.	0.	0.	3.	7.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	19.
54.5	0.	0.	0.	1.	6.	7.	1.	0.	1.	0.	0.	0.	0.	0.	0.	16.
56.5	0.	0.	0.	0.	9.	6.	1.	3.	0.	0.	0.	0.	0.	0.	0.	19.
58.5	0.	0.	0.	0.	4.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	12.
60.5	0.	0.	0.	0.	3.	9.	4.	1.	1.	0.	0.	0.	0.	0.	0.	18.
62.5	0.	0.	0.	0.	1.	4.	1.	1.	2.	0.	0.	0.	0.	0.	0.	9.
64.5	0.	0.	0.	0.	0.	3.	5.	1.	2.	1.	0.	0.	0.	0.	0.	12.
66.5	0.	0.	0.	0.	0.	1.	4.	3.	1.	3.	0.	0.	0.	0.	0.	12.
68.5	0.	0.	0.	0.	0.	0.	1.	1.	0.	2.	0.	0.	0.	0.	0.	4.
70.5	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.	2.
72.5	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.	0.	3.
74.5	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.	2.
76.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
78.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
80.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
82.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
84.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
86.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
88.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
90.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
92.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	0.	23.	24.	30.	83.	58.	20.	12.	8.	9.	1.	1.	1.	1.	0.	271.

RATIO OF AGED DATA TO TOTAL AGED DATA,BY AGE AND LENGTH.

LNTH (CM)	AGE (YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
2.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
4.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
6.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
8.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
10.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
12.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
14.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
16.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
18.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
20.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
22.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
24.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
26.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
28.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
30.5	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
32.5	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
34.5	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
36.5	.000	.000	.900	.100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
38.5	.000	.000	.800	.200	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
40.5	.000	.000	.143	.857	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
42.5	.000	.000	.000	.786	.143	.071	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
44.5	.000	.000	.000	.357	.571	.071	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
46.5	.000	.000	.063	.000	.875	.063	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
48.5	.000	.000	.000	.056	.833	.111	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
50.5	.000	.000	.000	.042	.583	.333	.042	.000	.000	.000	.000	.000	.000	.000	.000	1.000
52.5	.000	.000	.000	.158	.368	.421	.053	.000	.000	.000	.000	.000	.000	.000	.000	1.000
54.5	.000	.000	.000	.063	.375	.438	.063	.000	.063	.000	.000	.000	.000	.000	.000	1.000
56.5	.000	.000	.000	.000	.474	.316	.053	.158	.000	.000	.000	.000	.000	.000	.000	1.000
58.5	.000	.000	.000	.000	.333	.583	.083	.000	.000	.000	.000	.000	.000	.000	.000	1.000
60.5	.000	.000	.000	.000	.167	.500	.222	.056	.056	.000	.000	.000	.000	.000	.000	1.000
62.5	.000	.000	.000	.000	.111	.444	.111	.111	.222	.000	.000	.000	.000	.000	.000	1.000
64.5	.000	.000	.000	.000	.000	.250	.417	.083	.167	.083	.000	.000	.000	.000	.000	1.000
66.5	.000	.000	.000	.000	.000	.083	.333	.250	.083	.250	.000	.000	.000	.000	.000	1.000
68.5	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500	.000	.000	.000	.000	.000	1.000
70.5	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	1.000
72.5	.000	.000	.000	.000	.000	.000	.000	.333	.000	.333	.000	.000	.333	.000	.000	1.000
74.5	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	1.000
76.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000	.000	.000	.000	.000	.000	1.000
78.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000	.000	1.000
80.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000	.000	.000	.000	.000	1.000
82.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
84.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
86.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
88.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
90.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
92.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000

ESTIMATED MEAN CATCH PER TOW, BY AGE AND LENGTH

LNTH (CM)	AGE (YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	MEAN AGE
.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
2.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
4.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
6.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
8.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
10.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
12.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
14.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
16.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
18.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
20.5	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
22.5	.00	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.26	1.0
24.5	.00	.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	1.0
26.5	.00	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.82	1.0
28.5	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.30	1.0
30.5	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	1.0
32.5	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	2.0
34.5	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	2.0
36.5	.00	.00	.31	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.31	2.0
38.5	.00	.00	.17	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.34	2.1
40.5	.00	.00	.06	.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.21	2.2
42.5	.00	.00	.00	.38	.07	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.39	2.8
44.5	.00	.00	.00	.17	.27	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.48	3.2
46.5	.00	.00	.04	.00	.56	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.48	3.7
48.5	.00	.00	.00	.04	.61	.08	.00	.00	.00	.00	.00	.00	.00	.00	.00	.64	3.9
50.5	.00	.00	.00	.02	.33	.19	.02	.00	.00	.00	.00	.00	.00	.00	.00	.74	4.0
52.5	.00	.00	.00	.13	.29	.33	.04	.00	.00	.00	.00	.00	.00	.00	.00	.56	4.3
54.5	.00	.00	.00	.06	.35	.41	.06	.00	.06	.00	.00	.00	.00	.00	.00	.79	4.3
56.5	.00	.00	.00	.00	.36	.24	.04	.12	.00	.00	.00	.00	.00	.00	.00	.75	4.7
58.5	.00	.00	.00	.00	.20	.35	.05	.00	.00	.00	.00	.00	.00	.00	.00	.61	4.8
60.5	.00	.00	.00	.00	.14	.41	.18	.05	.05	.00	.00	.00	.00	.00	.00	.83	4.7
62.5	.00	.00	.00	.00	.04	.17	.04	.04	.09	.00	.00	.00	.00	.00	.00	.39	5.3
64.5	.00	.00	.00	.00	.00	.17	.28	.06	.11	.06	.00	.00	.00	.00	.00	.66	5.8
66.5	.00	.00	.00	.00	.00	.04	.15	.11	.04	.11	.00	.00	.00	.00	.00	.45	6.4
68.5	.00	.00	.00	.00	.00	.00	.06	.06	.00	.13	.00	.00	.00	.00	.00	.26	7.0
70.5	.00	.00	.00	.00	.00	.00	.00	.08	.00	.08	.00	.00	.00	.00	.00	.16	7.7
72.5	.00	.00	.00	.00	.00	.00	.00	.03	.00	.03	.00	.00	.03	.00	.00	.10	8.0
74.5	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.04	.00	.00	.00	.07	9.3
76.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.04	9.5
78.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.02	9.0
80.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.04	13.0
82.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	10.0
84.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
86.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
88.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
90.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
92.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
TOTAL	.00	2.36	1.09	1.21	3.23	2.50	.93	.55	.37	.45	.04	.04	.03	.02	.00	12.82	
MEAN LENGTH	.00	23.83	35.83	43.88	51.10	56.45	62.03	64.51	63.17	68.88	80.50	74.50	72.50	78.50	.00		

PERCENT OF TOTAL ESTIMATED MEAN CATCH PER TOW, BY AGE AND LENGTH.

LNTH (CM)	AGE (YEARS)															
.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.5	.0	2.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.0
22.5	.0	6.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	6.6
24.5	.0	6.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	6.4
26.5	.0	2.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.3
28.5	.0	1.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1
30.5	.0	.0	.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9
32.5	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7
34.5	.0	.0	2.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.4
36.5	.0	.0	2.4	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.7
38.5	.0	.0	1.3	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.6
40.5	.0	.0	.4	2.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.1
42.5	.0	.0	.0	3.0	.5	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.8
44.5	.0	.0	.0	1.3	2.1	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.8
46.5	.0	.0	.3	.0	4.4	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.0
48.5	.0	.0	.0	.3	4.8	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.7
50.5	.0	.0	.0	.2	2.5	1.5	.2	.0	.0	.0	.0	.0	.0	.0	.0	4.4
52.5	.0	.0	.0	1.0	2.3	2.6	.3	.0	.0	.0	.0	.0	.0	.0	.0	6.2
54.5	.0	.0	.0	.5	2.7	3.2	.5	.0	.5	.0	.0	.0	.0	.0	.0	7.2
56.5	.0	.0	.0	.0	2.8	1.9	.3	.9	.0	.0	.0	.0	.0	.0	.0	5.9
58.5	.0	.0	.0	.0	1.6	2.8	.4	.0	.0	.0	.0	.0	.0	.0	.0	4.7
60.5	.0	.0	.0	.0	1.1	3.2	1.4	.4	.4	.0	.0	.0	.0	.0	.0	6.5
62.5	.0	.0	.0	.0	.3	1.3	.3	.3	.7	.0	.0	.0	.0	.0	.0	3.0
64.5	.0	.0	.0	.0	.0	1.3	2.2	.4	.9	.4	.0	.0	.0	.0	.0	5.2
66.5	.0	.0	.0	.0	.0	.3	1.2	.9	.3	.9	.0	.0	.0	.0	.0	3.5
68.5	.0	.0	.0	.0	.0	.0	.5	.5	.0	1.0	.0	.0	.0	.0	.0	2.0
70.5	.0	.0	.0	.0	.0	.0	.0	.6	.0	.6	.0	.0	.0	.0	.0	1.2
72.5	.0	.0	.0	.0	.0	.0	.0	.3	.0	.3	.0	.0	.3	.0	.0	.8
74.5	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.3	.0	.0	.0	.0	.6
76.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.3
78.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.2
80.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.3
82.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
84.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
86.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
88.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
90.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
92.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	.0	18.4	8.5	9.4	25.2	19.5	7.2	4.3	2.9	3.5	.3	.3	.3	.2	.0	

5. Weight/tow and number/tow analysis of bottom trawl survey records.

Listed here are data for haddock from spring and fall cruises in 1963, 1964, and 1965, for the strata set 26, 27, 28, 36, 37, 38, 39, and 40. The first part lists the results of analysis on non-transformed data, while the second lists the results based on the natural log transformation plus 1 (Ln (x+1)).

Results include stratified mean weight per tow and number per tow, biomass and population size estimates, and the associated variances. Also included are the mean bottom temperature and depth as well as the ratio F, which is the proportion of blocks sampled in the strata set out of the total number of blocks available. A block is the amount of area swept by the trawl in a standard 30 minute tow. More simply, F is the proportion of the total area in the strata set that was sampled. This ratio is one of the factors used for expansion in the calculation of total biomass and population size.

STRATIFIED ESTIMATES FOR STRATA SET 26 27 28 36 37 38 39 40 STST75 MAR 76

SPP	YR	CRS	TEMP	DPTH	F	MEAN WT	VAR MEAN	TOT WT	VAR TOT	MEAN NO	VAR MEAN	TOT NO	VAR TOT
							DATA NOT TRANSFORMED						
074HADDOCK	63	005	6.5	89.2	.028	42.64	.552190E 02	.598202E 08	.10863E 15	13.21	.990330E 01	.185329E 08	.19473E 14
074HADDOCK	63	007	7.3	90.5	.029	74.01	.149021E 03	.103327E 09	.29315E 15	46.68	.188478E 03	.654788E 08	.37081E 15
074HADDOCK	64	001	6.3	91.7	.031	46.62	.303113E 02	.653932E 08	.59609E 14	21.55	.166267E 02	.302239E 08	.32690E 14
074HADDOCK	64	013	5.7	94.1	.026	27.50	.264658E 02	.385800E 08	.52072E 14	9.51	.132924E 02	.133465E 08	.26144E 14
074HADDOCK	64	210	5.5	90.2	.024	43.53	.184502E 03	.610578E 08	.36290E 15	52.42	.982768E 03	.735347E 08	.19329E 16
074HADDOCK	65	002	4.5	91.2	.026	35.53	.642304E 02	.498470E 08	.12638E 15	20.01	.179534E 02	.280644E 08	.35319E 14
074HADDOCK	65	014	5.5	94.1	.027	25.84	.340597E 02	.362519E 08	.66995E 14	11.70	.181156E 02	.164134E 08	.35629E 14
074HADDOCK	65	510	5.1	88.6	.025	24.23	.201246E 02	.339912E 08	.39590E 14	16.79	.196850E 02	.235566E 08	.38720E 14
999ALL SPP	63	005	6.5	89.2	.028	273.65	.165822E 04	.383877E 09	.32624E 16	258.80	.255699E 04	.363051E 09	.50307E 16
999ALL SPP	63	007	7.3	90.5	.029	497.98	.200911E 04	.698565E 09	.39529E 16	450.93	.157991E 04	.632562E 09	.31084E 16
999ALL SPP	64	001	6.3	91.7	.031	336.97	.105370E 04	.472708E 09	.20732E 16	328.94	.304863E 04	.461433E 09	.59981E 16
999ALL SPP	64	013	5.7	94.1	.026	342.56	.192587E 05	.480545E 09	.37895E 17	234.54	.136643E 05	.329018E 09	.26887E 17
999ALL SPP	64	210	5.5	90.2	.024	285.35	.284407E 04	.400295E 09	.55955E 16	298.85	.306304E 04	.419227E 09	.60258E 16
999ALL SPP	65	002	4.5	91.2	.026	254.40	.183442E 04	.356877E 09	.36096E 16	204.87	.254812E 04	.287390E 09	.50139E 16
999ALL SPP	65	014	5.5	94.1	.027	230.42	.693630E 03	.323231E 09	.13645E 16	200.77	.800191E 03	.281637E 09	.15741E 16
999ALL SPP	65	510	5.1	88.6	.025	258.20	.139166E 04	.362200E 09	.27380E 16	218.07	.123256E 04	.305908E 09	.24249E 16
							DATA TRANSFORMED TO LN (X+1)						
074HADDOCK	63	005	6.5	89.2	.028	2.69	.619990E-01	.377616E 07	.10230E 12	1.80	.207307E-01	.253027E 07	.40781E 11
074HADDOCK	63	007	7.3	90.5	.029	3.57	.323063E-01	.500207E 07	.63562E 11	3.01	.395533E-01	.421812E 07	.77818E 11
074HADDOCK	64	001	6.3	91.7	.031	2.99	.285123E-01	.419279E 07	.56092E 11	2.37	.246346E-01	.332611E 07	.48464E 11
074HADDOCK	64	013	5.7	94.1	.026	2.56	.616566E-01	.358657E 07	.12131E 12	1.61	.312254E-01	.225183E 07	.61431E 11
074HADDOCK	64	210	5.5	90.2	.024	2.47	.776612E-01	.346568E 07	.15279E 12	1.68	.456066E-01	.236134E 07	.89717E 11
074HADDOCK	65	002	4.5	91.2	.026	2.56	.524437E-01	.359755E 07	.10318E 12	2.21	.343396E-01	.310385E 07	.67559E 11
074HADDOCK	65	014	5.5	94.1	.027	2.01	.745079E-01	.282518E 07	.14659E 12	1.39	.376557E-01	.194829E 07	.74079E 11
074HADDOCK	65	510	5.1	88.6	.025	2.18	.791008E-01	.305622E 07	.15563E 12	1.60	.473847E-01	.224616E 07	.93229E 11
999ALL SPP	63	005	6.5	89.2	.028	5.17	.252065E-01	.725624E 07	.49594E 11	4.96	.309324E-01	.695624E 07	.60860E 11
999ALL SPP	63	007	7.3	90.5	.029	6.00	.107262E-01	.841952E 07	.21104E 11	5.87	.102747E-01	.824060E 07	.20216E 11
999ALL SPP	64	001	6.3	91.7	.031	5.51	.202891E-01	.773561E 07	.39921E 11	5.28	.277394E-01	.741002E 07	.54579E 11
999ALL SPP	64	013	5.7	94.1	.026	5.02	.441770E-01	.703530E 07	.86919E 11	4.51	.420205E-01	.632426E 07	.82672E 11
999ALL SPP	64	210	5.5	90.2	.024	5.23	.211593E-01	.732995E 07	.41632E 11	4.98	.255627E-01	.698788E 07	.50296E 11
999ALL SPP	65	002	4.5	91.2	.026	5.13	.120423E-01	.720067E 07	.23692E 11	4.82	.197596E-01	.676648E 07	.38878E 11
999ALL SPP	65	014	5.5	94.1	.027	5.14	.202158E-01	.721489E 07	.39775E 11	4.88	.261710E-01	.684519E 07	.51494E 11
999ALL SPP	65	510	5.1	88.6	.025	5.26	.217620E-01	.737587E 07	.42819E 11	4.98	.242003E-01	.698819E 07	.47616E 11

LENGTH FREQUENCY ANALYSIS SUR100-LSTL-S7 FEB 1976

LENGHT FREQUENCY OF HADDOCK FROM 1974 AND 1975 FALL ALBA CRUISES

YEAR = 63
CRUI = 5

STAGE 2 CRUI = 5
STAGE 2 BLCK = 2

			CRUI 5 STRT 26		CRUI 5 STRT 28		CRUI 5 STRT 36		CRUI 5 STRT 37		CRUI 5 STRT 38		CRUI 5 STRT 39		CRUI 5 STRT 40	
WT COEFF (AREA)	TOTAL 14028.		1014.		2249.		4069.		2108.		2560.		730.		578.	
NO.TOWS			5.		4.		9.		5.		8.		2.		4.	
LN(CM)	STRAT NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT	NO/TOW	MEAN PCT
.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
2.5	.032	.24	.0	.00	.0	.00	.1	2.38	.0	.00	.0	.00	.0	.00	.0	.00
4.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
6.5	.141	1.04	.8	1.16	.0	.00	.1	2.38	.2	3.70	.0	.00	.0	.00	.5	1.46
8.5	.106	.78	.6	.87	.0	.00	.1	2.38	.2	3.70	.0	.00	.0	.00	.0	.00
10.5	.231	1.70	1.6	2.32	.0	.00	.2	4.76	.2	3.70	.0	.00	.0	.00	.5	1.46
12.5	.102	.76	1.0	1.45	.0	.00	.0	.00	.2	3.70	.0	.00	.0	.00	.0	.00
14.5	.029	.21	.4	.58	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
16.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
18.5	.080	.59	.4	.58	.0	.00	.0	.00	.2	3.70	.0	.00	.0	.00	.5	1.46
20.5	.260	1.92	1.6	2.32	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	3.5	10.22
22.5	.848	6.26	6.6	9.57	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	9.0	26.28
24.5	.821	6.06	6.8	9.86	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	8.0	23.36
26.5	.295	2.18	3.8	5.51	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.5	1.46
28.5	.140	1.04	1.8	2.61	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.3	.73
30.5	.122	.90	1.4	2.03	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.5	1.46
32.5	.087	.64	1.2	1.74	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
34.5	.306	2.26	3.8	5.51	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.8	2.19
36.5	.344	2.54	4.2	6.09	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
38.5	.211	1.56	2.6	3.77	.0	.00	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
40.5	.393	2.90	4.6	6.67	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.5	1.46
42.5	.482	3.56	4.8	6.96	.3	1.10	.0	.00	.0	.00	.1	1.82	.0	.00	1.8	5.11
44.5	.481	3.55	3.8	5.51	.5	2.20	.1	2.38	.2	3.70	.1	1.82	.0	.00	1.0	2.92
46.5	.644	4.75	4.8	6.96	.5	2.20	.1	2.38	.8	14.81	.1	1.82	.0	.00	1.0	2.92
48.5	.737	5.44	4.4	6.38	.5	2.20	.2	4.76	.6	11.11	.5	7.27	.0	.00	2.3	6.57
50.5	.559	4.13	2.2	3.19	.5	2.20	.1	2.38	.0	.00	1.1	16.36	.0	.00	2.0	5.84
52.5	.793	5.86	1.8	2.61	2.0	8.79	.7	14.29	.4	7.41	.4	5.45	.0	.00	.5	1.46
54.5	.926	6.84	1.4	2.03	2.0	8.79	.9	19.05	.4	7.41	.6	9.09	1.0	66.67	.5	1.46
56.5	.752	5.55	1.2	1.74	2.3	9.89	.1	2.38	.6	11.11	1.0	14.55	.0	.00	.0	.00
58.5	.607	4.48	.4	.58	2.3	9.89	.6	11.90	.0	.00	.3	3.64	.0	.00	.3	.73
60.5	.829	6.12	.2	.29	3.5	15.38	.2	4.76	.8	14.81	.4	5.45	.0	.00	.0	.00
62.5	.386	2.85	.4	.58	.8	3.30	.2	4.76	.4	7.41	.5	7.27	.0	.00	.5	1.46
64.5	.665	4.91	.2	.29	2.3	9.89	.3	7.14	.2	3.70	.8	10.91	.5	33.33	.0	.00
66.5	.446	3.29	.0	.00	1.8	7.69	.3	7.14	.0	.00	.4	5.45	.0	.00	.0	.00
68.5	.255	1.89	.0	.00	1.3	5.49	.1	2.38	.0	.00	.1	1.82	.0	.00	.0	.00
70.5	.158	1.16	.2	.29	.8	3.30	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
72.5	.103	.76	.0	.00	.5	2.20	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
74.5	.072	.53	.0	.00	.3	1.10	.1	2.38	.0	.00	.0	.00	.0	.00	.0	.00
76.5	.040	.30	.0	.00	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
78.5	.023	.17	.0	.00	.0	.00	.0	.00	.0	.00	.1	1.82	.0	.00	.0	.00
80.5	.040	.30	.0	.00	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
82.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
84.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
86.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
88.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
90.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
92.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
TOT	13.544	100.0	69.0		22.8		4.7		5.4		6.9		1.5		34.3	

MN LNTH= 45.8 VAR ABOUT MN LN= 294.54 STD.DV= 17.16
SUM(STRT.NO/TOW.LN**2)= .32050309E 05 SUM(STRT.NO/TOW.LN)= .61971484E 03 SUM**2= .38404644E 06

NUMBER OF FISH MEASURED, BY AGE AND LENGTH

LNTH (CM)	AGE (YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
12.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
14.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
16.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
18.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
20.5	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
22.5	0.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
24.5	0.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	11.
26.5	0.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
28.5	0.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4.
30.5	0.	0.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
32.5	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
34.5	0.	0.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.
36.5	0.	0.	9.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	10.
38.5	0.	0.	4.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.
40.5	0.	0.	1.	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7.
42.5	0.	0.	0.	11.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
44.5	0.	0.	0.	5.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14.
46.5	0.	0.	1.	0.	14.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.
48.5	0.	0.	0.	1.	15.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18.
50.5	0.	0.	0.	1.	14.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	24.
52.5	0.	0.	0.	3.	7.	8.	1.	0.	0.	0.	0.	0.	0.	0.	0.	19.
54.5	0.	0.	0.	1.	6.	7.	1.	0.	1.	0.	0.	0.	0.	0.	0.	16.
56.5	0.	0.	0.	0.	9.	6.	1.	3.	0.	0.	0.	0.	0.	0.	0.	19.
58.5	0.	0.	0.	0.	4.	7.	1.	0.	0.	0.	0.	0.	0.	0.	0.	12.
60.5	0.	0.	0.	0.	3.	9.	4.	1.	1.	0.	0.	0.	0.	0.	0.	18.
62.5	0.	0.	0.	0.	1.	4.	1.	1.	2.	0.	0.	0.	0.	0.	0.	9.
64.5	0.	0.	0.	0.	0.	3.	5.	1.	2.	1.	0.	0.	0.	0.	0.	12.
66.5	0.	0.	0.	0.	0.	1.	4.	3.	1.	3.	0.	0.	0.	0.	0.	12.
68.5	0.	0.	0.	0.	0.	0.	1.	1.	0.	2.	0.	0.	0.	0.	0.	4.
70.5	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.	2.
72.5	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.	0.	3.
74.5	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.	2.
76.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
78.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
80.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
82.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
84.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
86.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
88.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
90.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
92.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	0.	23.	24.	30.	83.	58.	20.	12.	8.	9.	1.	1.	1.	1.	0.	271.

RATIO OF AGED DATA TO TOTAL AGED DATA, BY AGE AND LENGTH.

LNTH (CM)	AGE (YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
2.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
4.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
6.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
8.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
10.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
12.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
14.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
16.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
18.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
20.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
22.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
24.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
26.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
28.5	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
30.5	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
32.5	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
34.5	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
36.5	.000	.000	.900	.100	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
38.5	.000	.000	.800	.200	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
40.5	.000	.000	.143	.857	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
42.5	.000	.000	.000	.786	.143	.071	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
44.5	.000	.000	.000	.357	.571	.071	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
46.5	.000	.000	.063	.000	.875	.063	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
48.5	.000	.000	.000	.056	.833	.111	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
50.5	.000	.000	.000	.042	.583	.333	.042	.000	.000	.000	.000	.000	.000	.000	.000	1.000
52.5	.000	.000	.000	.158	.368	.421	.053	.000	.000	.000	.000	.000	.000	.000	.000	1.000
54.5	.000	.000	.000	.063	.375	.438	.063	.000	.063	.000	.000	.000	.000	.000	.000	1.000
56.5	.000	.000	.000	.000	.474	.316	.053	.158	.000	.000	.000	.000	.000	.000	.000	1.000
58.5	.000	.000	.000	.000	.333	.583	.083	.000	.000	.000	.000	.000	.000	.000	.000	1.000
60.5	.000	.000	.000	.000	.167	.500	.222	.056	.056	.000	.000	.000	.000	.000	.000	1.000
62.5	.000	.000	.000	.000	.111	.444	.111	.111	.222	.000	.000	.000	.000	.000	.000	1.000
64.5	.000	.000	.000	.000	.000	.250	.417	.083	.167	.083	.000	.000	.000	.000	.000	1.000
66.5	.000	.000	.000	.000	.000	.083	.333	.250	.083	.250	.000	.000	.000	.000	.000	1.000
68.5	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500	.000	.000	.000	.000	.000	1.000
70.5	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	1.000
72.5	.000	.000	.000	.000	.000	.000	.000	.333	.000	.333	.000	.000	.333	.000	.000	1.000
74.5	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	1.000
76.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000	.000	.000	.000	.000	.000	1.000
78.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000	.000	1.000
80.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000	.000	.000	.000	.000	1.000
82.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
84.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
86.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
88.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
90.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
92.5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000

ESTIMATED MEAN CATCH PER TOW, BY AGE AND LENGTH

LNTH (CM)	AGE (YEARS) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	MEAN AGE
.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
2.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
4.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
6.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
8.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
10.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
12.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
14.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
16.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
18.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
20.5	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
22.5	.00	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.26	1.0
24.5	.00	.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	1.0
26.5	.00	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.82	1.0
28.5	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.30	1.0
30.5	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	1.0
32.5	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	2.0
34.5	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	2.0
36.5	.00	.00	.31	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.31	2.0
38.5	.00	.00	.17	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.34	2.1
40.5	.00	.00	.06	.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.21	2.2
42.5	.00	.00	.00	.38	.07	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.39	2.8
44.5	.00	.00	.00	.17	.27	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.48	3.2
46.5	.00	.00	.04	.00	.56	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.48	3.7
48.5	.00	.00	.00	.04	.61	.08	.00	.00	.00	.00	.00	.00	.00	.00	.00	.64	3.9
50.5	.00	.00	.00	.02	.33	.19	.02	.00	.00	.00	.00	.00	.00	.00	.00	.74	4.0
52.5	.00	.00	.00	.13	.29	.33	.04	.00	.00	.00	.00	.00	.00	.00	.00	.56	4.3
54.5	.00	.00	.00	.06	.35	.41	.06	.00	.06	.00	.00	.00	.00	.00	.00	.79	4.3
56.5	.00	.00	.00	.00	.36	.24	.04	.12	.00	.00	.00	.00	.00	.00	.00	.93	4.7
58.5	.00	.00	.00	.00	.20	.35	.05	.00	.00	.00	.00	.00	.00	.00	.00	.75	4.8
60.5	.00	.00	.00	.00	.14	.41	.18	.05	.05	.00	.00	.00	.00	.00	.00	.61	4.7
62.5	.00	.00	.00	.00	.04	.17	.04	.04	.09	.00	.00	.00	.00	.00	.00	.83	5.3
64.5	.00	.00	.00	.00	.00	.17	.28	.06	.11	.06	.00	.00	.00	.00	.00	.39	5.8
66.5	.00	.00	.00	.00	.00	.04	.15	.11	.04	.11	.00	.00	.00	.00	.00	.66	6.4
68.5	.00	.00	.00	.00	.00	.00	.06	.06	.00	.13	.00	.00	.00	.00	.00	.45	7.0
70.5	.00	.00	.00	.00	.00	.00	.00	.08	.00	.08	.00	.00	.00	.00	.00	.26	7.7
72.5	.00	.00	.00	.00	.00	.00	.00	.03	.00	.03	.00	.00	.03	.00	.00	.16	8.0
74.5	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.04	.00	.00	.00	.10	9.3
76.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.07	9.5
78.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.04	9.0
80.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.02	13.0
82.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	10.0
84.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
86.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
88.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
90.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
92.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.0
TOTAL	.00	2.36	1.09	1.21	3.23	2.50	.93	.55	.37	.45	.04	.04	.03	.02	.00	12.82	
MEAN LENGTH	.00	23.83	35.83	43.88	51.10	56.45	62.03	64.51	63.17	68.88	80.50	74.50	72.50	78.50	.00		

PERCENT OF TOTAL ESTIMATED MEAN CATCH PER TOW, BY AGE AND LENGTH.

LNTH (CM)	AGE (YEARS)															
.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.5	.0	2.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.0
22.5	.0	6.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	6.6
24.5	.0	6.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	6.4
26.5	.0	2.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.3
28.5	.0	1.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1
30.5	.0	.0	.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9
32.5	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7
34.5	.0	.0	2.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.4
36.5	.0	.0	2.4	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.7
38.5	.0	.0	1.3	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.6
40.5	.0	.0	.4	2.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.1
42.5	.0	.0	.0	3.0	.5	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.8
44.5	.0	.0	.0	1.3	2.1	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.8
46.5	.0	.0	.3	.0	4.4	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.0
48.5	.0	.0	.0	.3	4.8	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.7
50.5	.0	.0	.0	.2	2.5	1.5	.2	.0	.0	.0	.0	.0	.0	.0	.0	4.4
52.5	.0	.0	.0	1.0	2.3	2.6	.3	.0	.0	.0	.0	.0	.0	.0	.0	6.2
54.5	.0	.0	.0	.5	2.7	3.2	.5	.0	.5	.0	.0	.0	.0	.0	.0	7.2
56.5	.0	.0	.0	.0	2.8	1.9	.3	.9	.0	.0	.0	.0	.0	.0	.0	5.9
58.5	.0	.0	.0	.0	1.6	2.8	.4	.0	.0	.0	.0	.0	.0	.0	.0	4.7
60.5	.0	.0	.0	.0	1.1	3.2	1.4	.4	.4	.0	.0	.0	.0	.0	.0	6.5
62.5	.0	.0	.0	.0	.3	1.3	.3	.3	.7	.0	.0	.0	.0	.0	.0	3.0
64.5	.0	.0	.0	.0	.0	1.3	2.2	.4	.9	.4	.0	.0	.0	.0	.0	5.2
66.5	.0	.0	.0	.0	.0	.3	1.2	.9	.3	.9	.0	.0	.0	.0	.0	3.5
68.5	.0	.0	.0	.0	.0	.0	.5	.5	.0	1.0	.0	.0	.0	.0	.0	2.0
70.5	.0	.0	.0	.0	.0	.0	.0	.6	.0	.6	.0	.0	.0	.0	.0	1.2
72.5	.0	.0	.0	.0	.0	.0	.0	.3	.0	.3	.0	.0	.3	.0	.0	.8
74.5	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.3	.0	.0	.0	.6
76.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.3
78.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.2
80.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.3
82.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
84.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
86.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
88.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
90.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
92.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	.0	16.4	8.5	9.4	25.2	19.5	7.2	4.3	2.9	3.5	.3	.3	.3	.2	.0	

5. Weight/tow and number/tow analysis of bottom trawl survey records.

Listed here are data for haddock from spring and fall cruises in 1963, 1964, and 1965, for the strata set 26, 27, 28, 36, 37, 38, 39, and 40. The first part lists the results of analysis on non-transformed data, while the second lists the results based on the natural log transformation plus 1 (Ln (x+1)).

Results include stratified mean weight per tow and number per tow, biomass and population size estimates, and the associated variances. Also included are the mean bottom temperature and depth as well as the ratio F, which is the proportion of blocks sampled in the strata set out of the total number of blocks available. A block is the amount of area swept by the trawl in a standard 30 minute tow. More simply, F is the proportion of the total area in the strata set that was sampled. This ratio is one of the factors used for expansion in the calculation of total biomass and population size.

STRATIFIED ESTIMATES FOR STRATA SET 26 27 28 36 37 38 39 40 STST75 MAR 76

SPP	YR	CRS	TEMP	DPTH	F	MEAN WT	VAR MEAN	TOT WT	VAR TOT	MEAN NO	VAR MEAN	TOT NO	VAR TOT
						DATA NOT TRANSFORMED							
074HADDOCK	63	005	6.5	89.2	.028	42.64	.552190E 02	.598202E 08	.10863E 15	13.21	.990330E 01	.185329E 08	.19473E 14
074HADDOCK	63	007	7.3	90.5	.029	74.01	.149021E 03	.103327E 09	.29315E 15	46.68	.188478E 03	.654788E 08	.37081E 16
074HADDOCK	64	001	6.3	91.7	.031	46.62	.303113E 02	.653932E 08	.59609E 14	21.55	.166267E 02	.302239E 08	.32690E 14
074HADDOCK	64	013	5.7	94.1	.026	27.50	.264658E 02	.385900E 08	.52072E 14	9.51	.132924E 02	.133465E 08	.26144E 14
074HADDOCK	64	210	5.5	90.2	.024	43.53	.184502E 03	.610578E 08	.36290E 15	52.42	.982768E 03	.735347E 08	.19329E 16
074HADDOCK	65	002	4.5	91.2	.026	35.53	.642304E 02	.498470E 08	.12638E 15	20.01	.179534E 02	.280644E 08	.35319E 14
074HADDOCK	65	014	5.5	94.1	.027	25.84	.340597E 02	.362518E 08	.66995E 14	11.70	.181156E 02	.164134E 08	.35629E 14
074HADDOCK	65	510	5.1	88.6	.025	24.23	.201246E 02	.339912E 08	.39590E 14	16.79	.196850E 02	.235566E 08	.38720E 14
999ALL SPP	63	005	6.5	89.2	.028	273.65	.165822E 04	.383877E 09	.32624E 16	258.80	.255699E 04	.363051E 09	.50307E 16
999ALL SPP	63	007	7.3	90.5	.029	497.98	.200911E 04	.698565E 09	.39529E 16	450.93	.157991E 04	.632562E 09	.31084E 16
999ALL SPP	64	001	6.3	91.7	.031	336.97	.105370E 04	.472708E 09	.20732E 16	328.94	.304863E 04	.461433E 09	.59981E 16
999ALL SPP	64	013	5.7	94.1	.026	342.56	.192587E 05	.480545E 09	.37895E 17	234.54	.136643E 05	.329018E 09	.26887E 17
999ALL SPP	64	210	5.5	90.2	.024	285.35	.284407E 04	.400295E 09	.55955E 16	298.85	.306304E 04	.419227E 09	.60258E 16
999ALL SPP	65	002	4.5	91.2	.026	254.40	.183442E 04	.356877E 09	.36096E 16	204.87	.254812E 04	.287390E 09	.50139E 16
999ALL SPP	65	014	5.5	94.1	.027	230.42	.693630E 03	.323231E 09	.13645E 16	200.77	.800191E 03	.281637E 09	.15741E 16
999ALL SPP	65	510	5.1	88.6	.025	258.20	.139166E 04	.362200E 09	.27380E 16	218.07	.123256E 04	.305908E 09	.24249E 16
						DATA TRANSFORMED TO LN (X+1)							
074HADDOCK	63	005	6.5	89.2	.028	2.69	.619990E-01	.377616E 07	.10230E 12	1.80	.207307E-01	.253027E 07	.40781E 11
074HADDOCK	63	007	7.3	90.5	.029	3.57	.323063E-01	.500207E 07	.63562E 11	3.01	.395533E-01	.421812E 07	.77818E 11
074HADDOCK	64	001	6.3	91.7	.031	2.99	.285123E-01	.419279E 07	.56092E 11	2.37	.246346E-01	.332611E 07	.48464E 11
074HADDOCK	64	013	5.7	94.1	.026	2.56	.616566E-01	.358657E 07	.12131E 12	1.61	.312254E-01	.225183E 07	.61431E 11
074HADDOCK	64	210	5.5	90.2	.024	2.47	.776612E-01	.346568E 07	.15279E 12	1.68	.456066E-01	.236134E 07	.89717E 11
074HADDOCK	65	002	4.5	91.2	.026	2.56	.524437E-01	.359755E 07	.10318E 12	2.21	.343396E-01	.310385E 07	.67559E 11
074HADDOCK	65	014	5.5	94.1	.027	2.01	.745079E-01	.282518E 07	.14659E 12	1.39	.376557E-01	.194829E 07	.74079E 11
074HADDOCK	65	510	5.1	88.6	.025	2.18	.791008E-01	.305622E 07	.15563E 12	1.60	.473847E-01	.224616E 07	.93229E 11
999ALL SPP	63	005	6.5	89.2	.028	5.17	.252065E-01	.725624E 07	.49594E 11	4.96	.309324E-01	.695624E 07	.60860E 11
999ALL SPP	63	007	7.3	90.5	.029	6.00	.107262E-01	.841952E 07	.21104E 11	5.87	.102747E-01	.824060E 07	.20216E 11
999ALL SPP	64	001	6.3	91.7	.031	5.51	.202891E-01	.773561E 07	.39921E 11	5.28	.277394E-01	.741002E 07	.54579E 11
999ALL SPP	64	013	5.7	94.1	.026	5.02	.441770E-01	.703530E 07	.86919E 11	4.51	.420205E-01	.632426E 07	.82672E 11
999ALL SPP	64	210	5.5	90.2	.024	5.23	.211593E-01	.732995E 07	.41632E 11	4.98	.255627E-01	.698788E 07	.50296E 11
999ALL SPP	65	002	4.5	91.2	.026	5.13	.120423E-01	.720067E 07	.23692E 11	4.82	.197596E-01	.676648E 07	.38878E 11
999ALL SPP	65	014	5.5	94.1	.027	5.14	.202158E-01	.721489E 07	.39775E 11	4.88	.261710E-01	.684519E 07	.51494E 11
999ALL SPP	65	510	5.1	88.6	.025	5.26	.217620E-01	.737587E 07	.42819E 11	4.98	.242003E-01	.698819E 07	.47616E 11