

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.

PURCHASES FROM FISHING VESSELS (Northeast)

DEALER						DATE 6/28/77	
NAME OF VESSEL						VESSEL NUMBER	
PORT CODE 222	COUNTY CODE 07	DATE SAILED 6/27	DATE LANDED 6/27	GEAR 10	GROUNDS 513		
DAYS ABSENT 11	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	CENTS	
COD	Large	0811	395		18	-	
	Market	0813	153		54	-	
	Scrod	0814					
CUSK		0960					
HADDOCK	Large	1470	125		77	-	
	Scrod	1475					
HAKE	Red	1520					
	White	1530	3600		720	-	
OCEAN PERCH (Red fish)		2400					
POLLOCK		2691	300		75	-	
WHITING	Round	5090					
	Dressed	5093					
WOLFISH (Coffish)		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	360	30		4	-	
	Flak	0120	10		4	-	
TOTAL			4665		1054	-	

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

DICTIONARY LISTING

LOG. BLCK
REC. FCTR

0096 020

DICNAME	FIELDNAME	START FIELD	FIELD WIDTH	KEY	FIELD SORT	DATA	TITLE - COMMENT
WBDTL73	YEAR	0001	002		A		
WBDTL73	IMAGE	0001	096		A		
WBDTL73	INSET	0061	004		B		
WBDTL73	QTR	0003	001		A		
WBDTL73	DATE	0004	004		A		
WBDTL73	MON	0004	002	1	A		SAME AS MON
WBDTL73	DAY	0004	002		A		
WBDTL73	STATE	0006	002	6	A		
WBDTL73	PRT	0008	002		A		
WBDTL73	PORT1	0010	002		A		
WBDTL73	COUNTY	0011	001		A		
WBDTL73	PORT4	0012	002		A		
WBDTL73	PORT6	0008	004		A		
WBDTL73	GEAR	0008	006		A		
WBDTL73	STERN	0014	002	2	A		
WBDTL73	TON	0016	001	3	A		IF *1 AND GEAR *05, STERN TRAWL
WBDTL73	TONCL	0017	002		A		
WBDTL73	TONCLASS	0017	001		A		SAME AS TONCLASS
WBDTL73	VESSNO	0019	001		A		
WBDTL73	VESSEL	0017	004	4	A		COL.19 HAS SPACE (EG. * 134)
WBDTL73	VESSNO3	0020	003		A		
WBDTL73	AREA	0023	003	6	A		
WBDTL73	AREA2	0023	002		A		
WBDTL73	AREA1	0023	001		A		
WBDTL73	INTER	0026	001		A		
WBDTL73	DEPTH	0026	001		A		
WBDTL73	GROUP	0027	001	7	A		
WBDTL73	UTIL	0028	001		A		STUDY/GROUP
WBDTL73	SPLIT	0029	001		A		SPLIT/PURE
WBDTL73	CERT	0030	001	8	A		
WBDTL73	MAINSPP	0031	001		A		
WBDTL73	FZONE	0032	002		A		
WBDTL73	SPP	0034	001		A		1973 ONLY
WBDTL73	NESPP	0035	004	9	A		TRIP=0000
WBDTL73	SPP3	0035	004		A		NEW ENGLAND SPECIES CODE
WBDTL73	NESPP3	0035	003		A		
WBDTL73	WHSP3	0035	003		A		
WBDTL73	SPPICNF	0039	003		A		WOODS HOLE SPP CODE; NOT TRUE ICNAP
WBDTL73	ICSPP	0039	003		A		1973 CODES. TRIP=000
WBDTL73	ICSPP1	0039	003		A		SAME AS SPPICNF
WBDTL73	LBS	0039	001		A		
WBDTL73	LANDLBS	0042	008		A		
WBDTL73	VAL	0042	004		A		SAME AS LBS
WBDTL73	ZERO	0050	007		A		
WBDTL73	DF	0050	001		A		HI ORDR VAL PROBABLY ALWAYS 0
WBDTL73	DF3	0057	004		A		XXX.X
WBDTL73	TRPS	0058	003		A		XXX.X
WBDTL73	DA	0061	004		A		XXX.
WBDTL73	TRPLBS	0065	003		A		
WBDTL73	TOTLBS	0068	008		A		SAME AS TRPLBS

WEIGHTOUT DETAIL FILE, STANDARDIZED 73 FORMAT

DICTIONARY LISTING

10141 AUG 31, 1977

LOG. BLCK
REC. FCTR

DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	SORT DATA	KEY TYPE	TITLE	COMMENT
W8DTL73	LBSLIVE	0076	008	A			
W8DTL73	LIVELBS	0076	008	A			
W8DTL73	L8SPKD	0084	005	P			SAME AS LBSLIVE
W8DTL73	TRPLBSPK	0089	005	P			
W8DTL73	DFPKD	0094	003	P			

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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 [REDACTED]	DATE 29 MAR 1977	PORT 24	GEAR 05
VESSEL CODE [REDACTED]	DATE SAILED: TIME 3/27 11A	DATE LANDED: TIME 3/28 6P	STUDY VES. —
MESH SIZE 50'	TRIP TYPE 1	TIME LOST —	DAYS AB 1.2
TOTAL HAIL 50		COIL DAB	

GROUND OFF UANTASKET 12F	GROUND	GROUND
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AREA	POSITION	DEPTH	AREA	POSITION	DEPTH	AREA	POSITION	DEPTH
514	427025	1012						
DY. & NT. 1.0	DAY ONLY	NT. ONLY	DY. & NT.	DAY ONLY	NT. ONLY	DY. & NT.	DAY ONLY	NT. ONLY
NO. TOW 012	DUR. TOW 2.0	TIME DAY 3	NO. TOW	DUR. TOW	TIME DAY	NO. TOW	DUR. TOW	TIME DAY

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	

DICTIONARY LISTING

LOG. BLCK	REC. FCTR	DICTNAME	START FIELD	FIELD WIDTH	KEY TYPE	DATA	FIELDNAME	COMMENT
0080	020	INTVCRD3	0001	080	A	INTERVIEW DATA TYPE 3 ONLY, INFO FROM #1,2 INT	IMAGE	
		INTVCRD3	0001	002	A	CARD IMAGE	YEAR	
		INTVCRD3	0001	006	A	A TRIP HAS IDENTICAL	DATE	INFO FOR KEY FIELDS.
		INTVCRD3	0003	002	A		MON	
		INTVCRD3	0005	002	A	DF, TONS, TOWDR SAME ON ALL	DAY	SPP RECS FOR SAME TRIP
		INTVCRD3	0007	003	A		PORT3	
		INTVCRD3	0010	002	A		GEAR	
		INTVCRD3	0012	005	A	TOTAL LBS, DA, TIMELOST,	VESSEL	
		INTVCRD3	0012	002	A	NOT PRBRATED OVER SPLIT TRIPS,	TGN	
		INTVCRD3	0012	001	A	SO NOT CORRECT ON THESE	TGNCLASS	
		INTVCRD3	0017	001	A	RECORDS FOR SPLIT TRIPS	STUDY	
		INTVCRD3	0018	002	A	X.X	MESH	
		INTVCRD3	0020	001	A	NOT SPLIT-PURE, BUT TRIP TYPE	SPLITPUR	
		INTVCRD3	0021	003	A	FROM TYPE 1 -ENTIRE TRIP	TIMELOST	
		INTVCRD3	0024	003	A	FROM TYPE 1 (DAYS ABSENT)	DA	
		INTVCRD3	0027	004	A		AREA4	
		INTVCRD3	0027	002	A		AREA2	
		INTVCRD3	0027	003	A		AREA	
		INTVCRD3	0027	003	A		AREA3	
		INTVCRD3	0031	006	A		LGC	
		INTVCRD3	0031	002	A	DEGREES	LAT	
		INTVCRD3	0031	004	A		LATLON	
		INTVCRD3	0033	002	A		LON	
		INTVCRD3	0035	002	A		SUBDG	
		INTVCRD3	0035	001	A	1-A=50-59, 2-B=40-49, ...6=0-9	LONGUB	
		INTVCRD3	0036	001	A		LATSUB	
		INTVCRD3	0037	001	A		DPTHZONE	
		INTVCRD3	0038	003	A		DEPTH	
		INTVCRD3	0041	003	A	FROM TYPE 2 - DAYS FISHED XX.X	DF	
		INTVCRD3	0044	003	A	FROM TYPE 2 - NO. TONS	TONS	
		INTVCRD3	0047	002	A	FROM TYPE 2 - TON DURATION, HRS X.X	DUR	
		INTVCRD3	0049	004	A		SPP	
		INTVCRD3	0049	003	A		SPP3	
		INTVCRD3	0049	001	A		SPP1	
		INTVCRD3	0053	001	A		DAYNITE	
		INTVCRD3	0054	009	A		LBS	
		INTVCRD3	0052	007	A	FROM TYPE 1 (1001'S OF LBS)	TOTLBS	
		INTVCRD3	0072	001	A	QUARTER OF YEAR	QTR	
		INTVCRD3	0074	005	A		QDSQR	
		INTVCRD3	0078	001	A	1-LA15, L015, 2-PA15, 0-45, 3-A-45, 015, 4-45, 5	QTRDQ	
		INTVCRD3	0079	001	A		COL79	
		INTVCRD3	0080	001	A		COL80	

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	LENGTH SAMPLE																		Column 28-29														
			Males									Females																							
			Card Sequence																																
Vessel #1		37-41	1	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	27	28	29	30	31	32	33
Vessel #2		51-55	1	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	27	28	29	30	31	32	33
Date Landed		34-35	1	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	27	28	29	30	31	32	33
Date Sailed			1	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	27	28	29	30	31	32	33
Year		1-2	1	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	27	28	29	30	31	32	33
Area		3-6	1	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	27	28	29	30	31	32	33
Quarter		7	1	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	27	28	29	30	31	32	33
Month		8-9	1	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	27	28	29	30	31	32	33
Species/cat		10-13	1	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	27	28	29	30	31	32	33
Gear		14-16	1	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	27	28	29	30	31	32	33
Port		17-19	1	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	27	28	29	30	31	32	33
Sample No.		20-21	1	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	27	28	29	30	31	32	33
Depth		22	1	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	27	28	29	30	31	32	33
Sampling Meth.		23	1	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	27	28	29	30	31	32	33
Sex		25	1	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	27	28	29	30	31	32	33
Catch-Local		57-62	1	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	27	28	29	30	31	32	33
Effort		Total	1	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	27	28	29	30	31	32	33
Age Samples	No. Scales	43-45																																	
Sample Wt.	No. Otoliths	47-49																																	
		73-75																																	

Start L - F Columns with 1,16,31,46,61,76,91,106,121,136,151,etc.

Males

Females

DICTIONARY LISTING

LOG. BLCK
REC. FCTR
0080 020

DICTNAME	FIELDNAME	START FIELD FIELD WIDTH	FIELD WIDTH	START DATA KEY TYPE	SORT DATA KEY TYPE	TITLE - COMMENT
INTLNTH	YEAR	0001	002	A	1	
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	TGNCLASS	0016	001	A		
INTLNTH	PORT	0017	003	A		
INTLNTH	SAMPLENO	0020	002	A		
INTLNTH	DPHZONE	0022	001	A		
INTLNTH	METHOD	0023	001	A		
INTLNTH	TYPE	0024	001	A		
INTLNTH	SEX	0025	001	A		
INTLNTH	SEGNB	0028	002	A		
INTLNTH	INTLNTH6	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		
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		

COMMERCIAL INTERVIEWS, LENGTH DETAIL DATA.

DEPTH ZONE

15 - 3 COLUMN FIELDS.

DICTIONARY LISTING

LOG. BLCK REC. FCYR	DICTNAME	FIELDNAME	START FIELD	WIDTH	FIELD WIDTH	DATA KEY	TYPE	TITLE - COMMENT	LENGTH	HEADER
0050 020	INTLN98	YR	0001	002	002	1	A	COMMERCIAL INTERVIEWS.		.
	INTLN98	DIV	0003	002	002		A			.
	INTLN98	AREA	0003	004	004		A			.
	INTLN98	QTR	0007	001	001		A			.
	INTLN98	M6	0008	002	002		A			.
	INTLN98	SPP3	0010	003	003		A			.
	INTLN98	SPP	0010	004	004		A			.
	INTLN98	GEAR	0014	002	002		A			.
	INTLN98	T0NCLASS	0016	001	001		A			.
	INTLN98	PRRT	0017	003	003		A			.
	INTLN98	SAMPLEN0	0020	002	002		A			.
	INTLN98	DPTHZONE	0022	001	001		A			.
	INTLN98	METH0D	0023	001	001		A			.
	INTLN98	SEX	0025	001	001		A			.
	INTLN98	CRDE	0028	002	002		A	1981		.
	INTLN98	DAY	0034	002	002		A			.
	INTLN98	VESSELN0	0037	002	002		A			.
	INTLN98	SCALES	0043	003	003		A	NO. IN SAMPLE		.
	INTLN98	OT0LITHS	0047	003	003		A	NO. IN SAMPLE		.
	INTLN98	VESSN02	0051	005	005		A	SECOND VESSEL OF PAIR TRAWL		.
	INTLN98	CATCHL0C	0057	006	006		A	CATCH LOCALE (10 MIN SQUARE)		.
	INTLN98	NOFMALES	0067	003	003		A	NO. OF FEMALES IN SAMPLE		.
	INTLN98	NOFMALES	0070	003	003		A	NO. OF FEMALES IN SAMPLE		.
	INTLN98	T0TWT	0073	003	003		A	TOTAL WEIGHT OVER ALL SEXES		.
	INTLN98	T0TNG	0076	005	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.

DICTIONARY LISTING

LOG. BLCK REC. FCTR	DICTNAME	FIELDNAME	START FIELD FIELD WIDTH	KEY TYPE	DICTIONARY SORT DATA	TITLE - COMMENT
0080 020	AGE8AMP	YEAR	0001 002	A	1	COMMERCIAL AGE SAMPLES
	AGE8AMP	AREA4	0003 004	A		ICNAF AREA AND SAMPLING AREA
	AGE8AMP	AREA	0003 003	A		ICNAF AREA
	AGE8AMP	SAAREA	0006 001	A		ICNAF SAMPLING AREA
	AGE8AMP	QTR	0007 001	A		
	AGE8AMP	MONTH	0008 002	A	2	
	AGE8AMP	NESPP	0010 004	A		N.E. SPECIES CODE W/HKT. CATEGORY
	AGE8AMP	NESPP3	0010 003	A		
	AGE8AMP	GEARTONC	0014 003	A		N.E. GEAR CODE AND VESSEL TONCLASS
	AGE8AMP	GEAR	0014 002	A		N.E. GEAR CODE
	AGE8AMP	TONC	0016 001	A		
	AGE8AMP	PORT3	0017 003	A		PORT CODE
	AGE8AMP	SAMPNO	0020 002	A		SAMPLE NUMBER
	AGE8AMP	DEPTH	0022 001	A		
	AGE8AMP	SAMPMETH	0023 001	A		SAMPLING METHOD
	AGE8AMP	SAMPTYPE	0024 001	A		SAMPLE TYPE
	AGE8AMP	SEX	0025 001	A		
	AGE8AMP	LNTHCODE	0028 003	A		LENGTH CODE
	AGE8AMP	AGEINTV	0031 045	A		NO. PER AGE (15 POS. FIELDS 0-14)
	AGE8AMP	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.

K LEVEL* AMS2
 L LEVEL* JAN FEB MAR TBT

NUMBERS IN POPULATION

CLASS VAL	MALE	FEML	TBT
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	1069.	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.	653.	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.	115.	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	36.29	34.57
AV. AMT	.73	1.05	.89
TOTAL AMT	11340.	17088.	28928.

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

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	0	0	0	0	0	0	0	0	0	0	0	0
28.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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

K LEVEL# AR52
 M LEVEL# JAN
 J LEVEL# MALE

FEB MAR TOT

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	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
32.00	.000	.000	.757	.162	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
33.00	.000	.000	.536	.321	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
34.00	.000	.000	.231	.462	.051	.000	.000	.000	.000	.000	.000	.000	.000	1.000
35.00	.000	.000	.049	.268	.024	.000	.000	.000	.000	.000	.000	.000	.000	1.000
36.00	.000	.000	.071	.268	.054	.000	.000	.000	.000	.000	.000	.000	.000	1.000
37.00	.000	.000	.000	.220	.169	.017	.000	.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	.043	.000	.000	.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	.000	.000	.000	.000	.000	.000	1.000
43.00	.000	.000	.000	.000	.286	.286	.000	.000	.000	.000	.000	.000	.000	1.000
44.00	.000	.000	.000	.000	.500	.125	.000	.125	.250	.000	.000	.000	.000	1.000
45.00	.000	.000	.000	.000	.333	.500	.333	.500	.167	.000	.000	.000	.000	1.000
46.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
47.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
48.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
49.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
50.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
51.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
52.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
53.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
54.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
55.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
56.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
57.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
58.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
59.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
60.00	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
TOTAL	.000	.000	6.382	4.155	3.395	2.427	1.297	.883	.460	.000	.000	.000	.000	19.000

K LEVEL AR52
 M LEVEL JAN
 J LEVEL MAR TBT
 MALE

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	95	157	157	157	157	157	157	157	157	157	157	157
26.00	0	0	1575	116	116	116	116	116	116	116	116	116	116	116
27.00	0	0	2432	2/1	90	90	90	90	90	90	90	90	90	90
28.00	0	0	2527	294	147	147	147	147	147	147	147	147	147	147
29.00	0	0	1372	295	131	131	131	131	131	131	131	131	131	131
30.00	0	0	492	350	195	195	195	195	195	195	195	195	195	195
31.00	0	0	175	245	108	108	108	108	108	108	108	108	108	108
32.00	0	0	20	307	135	135	135	135	135	135	135	135	135	135
33.00	0	0	36	319	118	118	118	118	118	118	118	118	118	118
34.00	0	0	0	186	295	140	140	140	140	140	140	140	140	140
35.00	0	0	0	142	184	71	71	71	71	71	71	71	71	71
36.00	0	0	0	186	68	34	34	34	34	34	34	34	34	34
37.00	0	0	0	51	119	136	136	136	136	136	136	136	136	136
38.00	0	0	0	0	47	210	47	47	47	47	47	47	47	47
39.00	0	0	0	0	285	114	114	114	114	114	114	114	114	114
40.00	0	0	0	0	0	23	23	23	23	23	23	23	23	23
41.00	0	0	0	0	0	0	16	16	16	16	16	16	16	16
42.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
PER L	.000	.000	.609	.182	.120	.055	.024	.009	.002	.000	.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	.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. Bottom Trawl Survey Trawl Log

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

VESSEL A1b IV	CRUISE 73-8-II	STRATA-TOW 13-7	TRIM STATION 143	BT SLIDE NO. 178	
DAY 20	MONTH 10	YEAR 74	OTHER STATION		
WIND DIR. (degrees)	WIND SPEED 280	WIRE HEIGHT 1 ft.	DEPTH Maximum 57 fath.	Minimum 53 fath.	
CLOUD AMOUNT 9/10	AIR TEMP 56°F	NOTES ON SHIP OPERATIONS Boat time equals Greenwich + 5 hrs.			
Amount of starboard wire in minimum haul From depth sounder trace					
TRAVAL		WIRE OUT		COURSE (deg)	SPEED
START	1512	DEPTH	175 fath.	90°	3.5 Knots
END	1542	LATITUDE	40° 48'	LONGITUDE	67° 00'
		LITTON LOG			6215.43
OTHER GEAR		WIRE OUT		COURSE (deg)	SPEED
START	2707	DEPTH	6136	90°	No Damage
END	2692	LATITUDE	6135	LONGITUDE	
LITTON LOG		WIRE OUT		COURSE (deg)	SPEED
START		DEPTH		90°	
END		LATITUDE		LONGITUDE	
CONDITION OF TRAWL		WIRE OUT		COURSE (deg)	SPEED
				90°	

WAVE HGT	WAVE DIR	WAVE SPD	WIND DIR	WIND SPD	WIRE OUT	COURSE	DEPTH MIN	DEPTH MAX	TOW DIST	AVE SPEED

CRUISE	STR	TON	DAY	MO	YEAR	LAT	LONG	DEPTH	AREA	BOT

WATCH CHIEF R. Nixon	RECORDER B. Edwards
-------------------------	------------------------

FISHING FLEET OBSERVATIONS

7 Polish herring trawlers 6 miles to the NE

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

Sample Log

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0																																																												
Notes - all species code numbers and brackets enclosing frequencies should be entered in ref -																				Boat time should be recorded on first station																				May be used for plankton																				If you have to be repeated, use next numbers																				143 Trawl, repeated as station																			

For Coding Instructions see Data Processing Methods

From depth sounder trace

Amount of starboard wire in minimum haul

SPECIAL SAMPLES ① Sex, ② Age, ③ Size, ④ Maturity, and others	LENGTHS OF INDIVIDUAL FISH (Centimeters) (1 = 8 individuals)	SPECIES Every other line when possible	SPP Code Number	WEIGHED PART OF CATCH (Circle basket portion measured)		Portion Discarded (Amount and Unit)	LF Expon Factor	TOTAL CATCH		Haddock	Spiny Dogfish	Pollock
				1 Bushel (Gross Wgt)	2 Bushel (Gross Wgt)			Other (net)	Weight			
		Mon Species	300									
		Good haul but no fish - must have "300 Non Species Code"										
15 F		Haddock	074	64	123			147	33			
20 (SOM)				64 lbs. - 2 lbs. (1 bu wt.) + 123 - 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 Key puncher										
Saved live in tank	87, 99, 118	lobster	301		4			4	2			
		Sex for crabs and lobsters										
List special samples that are saved here		Spiny Dogfish	015	150, 151, 163	320 individuals		3.18	2157	431			
		Pandalid Shrimp	305	155, 142	15			15				
		Shrimp are only weighed										
		Discards may be by wt. or Major by sure to include unit										
		Pollock	075	150, 149, 148, 111, (946)	6 (2 bu.)		10.91	1473	644			
		If you have an unidentified species, write down as much as you know										
Saved in 10% Formalin	12	Unident. Deepwater	248									
" " "	7	Unident. lantern	220									
" " "	8	Unident. Hake	000									
Other Inverts Starfish Sea Urchins		Sampling * Pollock - use the 4 baskets > 140 for finding av. wt. of baskets discarded.										
		10 lbs.										
		4" Rock										
		3 bushels										

Leave 1 space for 2 code numbers and 3 totals

Place 4 in the "Ten digit" often

expand 84 and place 5 in 6 column - 7 column

Plenty of room on other side

Totals are expanded

If less than .5 lb. use < 1 and leave blank here

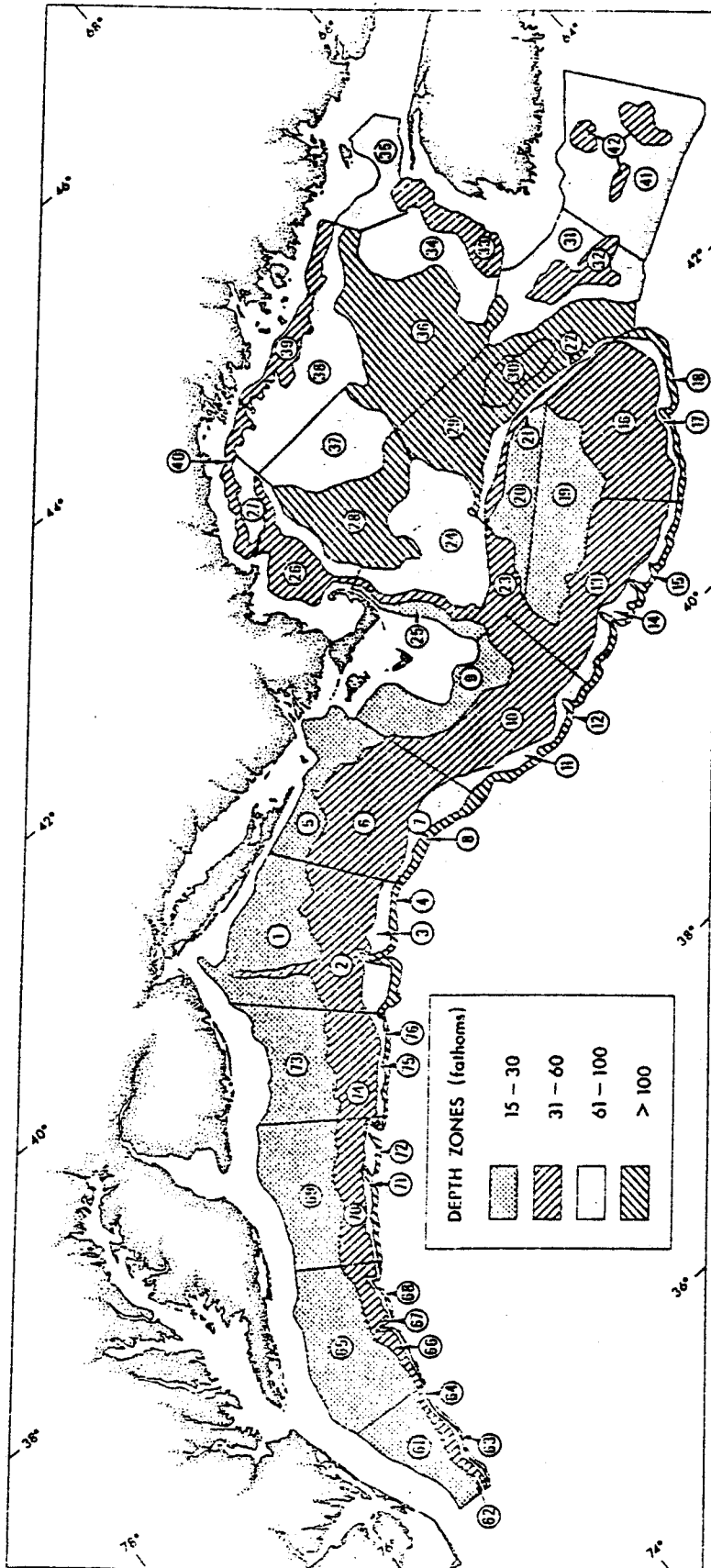
example: 649 + 13725 x 6 = 10.91

This space is used to explain sampling, for use as in net, at least or if net is fishing bottom

This is needed for use as in net, at least or if net is fishing bottom

2. Bottom Trawl Survey Strata Chart

showing the geographical and depth boundaries used to delimit strata.



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.

DICTIONARY LISTING

LOG. REC. FCTR	LOG. BLCK	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	KEY TYPE	DICTIONARY LISTING	COLS1-80	CARD IMAGE	TYPE
0128	016	SURVEY2	IMAGE	0001	080	A	SURVEY DATA.		1,2,3,4,5	.
		SURVEY2	STATION	0001	007	A	CARD>IMAGE		1,2,3,4,5	.
		SURVEY2	CRUISE	0001	003	A	STATION		1,2,3,4,5	.
		SURVEY2	ICRUI	0001	003	A	CRUISE		1,2,3,4,5	.
		SURVEY2	STRATUM	0004	002	A	CRUISE		1,2,3,4,5	.
		SURVEY2	STRATA	0004	002	A	STRATUM		1,2,3,4,5	.
		SURVEY2	STRATUM	0004	004	A	STRATA		1,2,3,4,5	.
		SURVEY2	TOW	0004	002	A	STRATUM>TOW		1,2,3,4,5	.
		SURVEY2	ISTR	0004	002	A	TOW		1,2,3,4,5	.
		SURVEY2	ITOW	0004	002	A	TOW		1,2,3,4,5	.
		SURVEY2	DAY	0006	002	A	STRATUM		1,2,3,4,5	.
		SURVEY2	SQTRAWL	0008	002	A	DAY		1,2,3,4,5	.
		SURVEY2	DATE	0008	003	A	SEQ>TRAWL		5	.
		SURVEY2	MO	0008	006	A	DATE		1,2,3,4	.
		SURVEY2	BISTA	0010	002	A	MONTH		5	.
		SURVEY2	KYR	0011	003	A	BT STATION		1,2,3,4	.
		SURVEY2	SEX3	0012	002	A	YEAR		1,2,3,4	.
		SURVEY2	PURP	0014	001	A	SEX, ON TYPE 3 AGE REC		3	.
		SURVEY2	OSTTYP	0014	001	A	PURPOSE		1,2,4	.
		SURVEY2	LAT	0014	001	A	OTHER>STATION>TYPE		5	.
		SURVEY2	OSTNO	0015	003	A	LAT		1,2,3,4	.
		SURVEY2	LON	0015	003	A	OTHER>STATION>NUMBER		5	.
		SURVEY2	TIMES	0018	004	A	LON		1,2,3,4	.
		SURVEY2	TIMEH15	0018	004	A	TIME		5	.
		SURVEY2	TIME	0021	001	A	TIME HI		1,2,3,4	.
		SURVEY2	DEPTH	0022	003	A	TIME>OF>DAY		1,2,3,4	.
		SURVEY2	DPHT	0022	003	A	63-75 FATHOMS, 76 METERS		1,2,3,4	.
		SURVEY2	TRWLCN	0023	003	A	DEPTH		1,2,3,4	.
		SURVEY2	QUADS	0024	001	A	TRAWL>CONDITION>CODE		5	.
		SURVEY2	LATD5	0025	002	A	QUAD		5	.
		SURVEY2	ISPP	0025	003	A	LAT>DEG		5	.
		SURVEY2	SPP	0025	003	A	SPECIES		1,2,3	.
		SURVEY2	SPECIES	0025	003	A	SPECIES		1,2,3	.
		SURVEY2	LATB	0025	003	A	SPECIES		1,2,3	.
		SURVEY2	LATH5	0027	002	A	LAT		5	.
		SURVEY2	BEAR	0028	002	A	LAT>IN		5	.
		SURVEY2	ISEQ	0028	002	A	GEAR>TYPE		1,4	.
		SURVEY2	ILNTH	0028	002	A	SEQ		2	.
		SURVEY2	LOND	0028	003	A	LNTH		3	.
		SURVEY2	LONS	0029	002	A	LON>DEG		3	.
		SURVEY2	TD	0030	004	A	LON		5	.
		SURVEY2	SEX	0030	001	A	TOW>DUR		5	.
		SURVEY2	NET	0030	001	A	SEX		1,4	.
		SURVEY2	FTAB	0031	001	A	NET>COND		2	.
		SURVEY2	AGEO	0031	045	A	LN FRQ		3	.
		SURVEY2	LON_5	0031	003	A	AGE O		3	.
		SURVEY2	TEMP	0031	002	A	LON_5		5	.
		SURVEY2	DATES	0032	002	A	TEMP		5	.
		SURVEY2	MO5	0033	006	A	TEMPERATURE (CELSIUS)		1,4	.
		SURVEY2	SUBAREA	0034	002	A	MO5		5	.
		SURVEY2	STATAREA	0034	003	A	STATISTICAL AREA		5	.
		SURVEY2		0034	003	A	STATISTICAL AREA		1,4	.

DICTIONARY LISTING

LOG. REC. FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	DICTIONARY LISTING	FIELD SORT	KEY TYPE	TITLE - COMMENT
	SURVEY2	AGE1	0034	003	A	A	A	AGE 1
	SURVEY2	DAY5	0035	002	A	A	A	DAY
	SURVEY2	AGE2	0037	003	A	A	A	AGE 2
	SURVEY2	YRS	0037	002	A	A	A	YR
	SURVEY2	BOYP	0038	002	A	A	A	BOY TYPE
	SURVEY2	DPZMS	0039	001	A	A	A	DPH ZN
	SURVEY2	WIROUT	0040	003	A	A	A	WIRE OUT
	SURVEY2	BTDPH	0040	001	A	A	A	BT DPTH
	SURVEY2	AGE3	0040	003	A	A	A	AGE 3
	SURVEY2	DPHS	0041	004	A	A	A	DEPTH (METERS ALL YEARS)
	SURVEY2	CPURSE	0043	002	A	A	A	CPURSE
	SURVEY2	AGE4	0043	003	A	A	A	AGE 4
	SURVEY2	WDIR	0045	002	A	A	A	WIND DIR
	SURVEY2	TPSUR	0045	004	A	A	A	SURFACE TEMP (CELSIUS)
	SURVEY2	AGE5	0046	003	A	A	A	AGE 5
	SURVEY2	WSPD	0047	002	A	A	A	WIND SPEED
	SURVEY2	WVHT	0049	002	A	A	A	WAVE HGT
	SURVEY2	AGE6	0049	003	A	A	A	AGE 6
	SURVEY2	TPB8T	0049	004	A	A	A	BOTTOM TEMP (CELSIUS)
	SURVEY2	MNTRDP	0051	002	A	A	A	MIN TRAWL DPTH
	SURVEY2	AGE7	0052	003	A	A	A	AGE 7
	SURVEY2	MNTRDP	0052	003	A	A	A	MAX TRAWL DPTH
	SURVEY2	TWDST	0055	003	A	A	A	TOW DIST
	SURVEY2	AGE8	0055	003	A	A	A	AGE 8
	SURVEY2	ASBPT	0058	002	A	A	A	AVE SP OVER BOT
	SURVEY2	AGE9	0058	003	A	A	A	AGE 9
	SURVEY2	MISC	0061	003	A	A	A	MISC
	SURVEY2	AGE10	0061	003	A	A	A	AGE 10
	SURVEY2	AGE11	0064	003	A	A	A	AGE 11
	SURVEY2	LFEFCT	0067	003	A	A	A	LF EXP FCTR
	SURVEY2	AGE12	0067	003	A	A	A	AGE 12
	SURVEY2	TWEIGHT	0067	006	A	A	A	TOTAL WEIGHT ALL SPECIES
	SURVEY2	TBTWT	0067	006	A	A	A	1963-75 LBS / 76 KILOGRAMS
	SURVEY2	TWTWHT	0067	006	A	A	A	TOTAL WEIGHT ALL SPECIES
	SURVEY2	TWTHUNS	0068	004	A	A	A	1963-75 LBS / 76 KILOGRAMS
	SURVEY2	WEIGHT	0070	006	A	A	A	TOTAL WEIGHT ALL SPECIES
	SURVEY2	WT	0070	006	A	A	A	1963-75 LBS / 76 KILOGRAMS
	SURVEY2	WTHUNS	0070	004	A	A	A	TOTAL WEIGHT ALL SPECIES
	SURVEY2	AGE13	0070	003	A	A	A	AGE 13
	SURVEY2	AGE14	0073	003	A	A	A	AGE 14
	SURVEY2	TNTNS	0073	007	A	A	A	TOTAL NUMBER ALL SPECIES
	SURVEY2	TNTHUNS	0073	006	A	A	A	TOTAL NUMBER ALL SPECIES
	SURVEY2	N8	0073	005	A	A	A	TOTAL NUMBER ALL SPECIES
	SURVEY2	N8	0076	004	A	A	A	NUMBER
	SURVEY2	NHUNS	0076	003	A	A	A	NUMBER (TENS)
	SURVEY2	BL80	0080	002	A	A	A	NUMBER (HUNDREDS)
	SURVEY2	IC80E	0080	001	A	A	A	CARD CODE
	SURVEY2	YEAR	0081	001	A	A	A	CODE
	SURVEY2	DAYNITE	0081	002	A	A	A	YEAR
	SURVEY2	KRECNO	0083	001	A	A	A	DAY NIGHT CODE (CERTAIN COMP CRUISES)
	SURVEY2		0084	007	A	A	A	SEQ. REC. CT.

DICTIONARY LISTING

LOG: BLCK REC: FCTR	DICTNAME	FIELDNAME	START FIELD	FIELD WIDTH	START KEY	FIELD TYPE	DICTIONARY TITLE	COMMENT
	SURVEY2	CRSTTON	0091	007	2	A	STATION	.
	SURVEY2	KSPP	0098	003	3	A	SPP	.
	SURVEY2	KCOL80	0101	001	4	A	COL80	.
	SURVEY2	KSQ	0102	003	5	A	SEQ	.
	SURVEY2	INSET	0107	002		B	BINARY 0	.
	SURVEY2	BTMPCAL	0109	004		P	SURF>TEMP	.
	SURVEY2	TMPCALC	0113	002		P	TEMP	.
	SURVEY2	DPCALC	0115	002		P	DEPTH	.
	SURVEY2	BTDFCAL	0115	002		P	BT>DEPTH	.
	SURVEY2	WTALC	0117	004		P	WEIGHT	.
	SURVEY2	BTMPCAL	0117	004		P	BT>TEMP	.
	SURVEY2	DPCAL3	0121	004		P	DEPTH	.
	SURVEY2	NOCALC	0121	004		P	NUMBER	.
	SURVEY2	SECCALC	0125	002		P	SEQ	.
	SURVEY2	LNCALC	0127	002		P	LNTM	.

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 $\{(.26/12.82) \times 100\}$ from page 4.

LENGTH FREQUENCY ANALYSIS

SUR100-LSTL-S7 FEB 1976

LENGTH FREQUENCY OF HAUDOCK FROM 1974 AND 1975 FALL ALBA CRUISES

YEAR = 63
CRUI = 5

STAGE 2 CRUI = 5
STAGE 2 BLCK = 2

WT COEFF (AREA) NO/TONS	TOTAL 14028	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	
		NO/TOW	PCT	NO/TOW	PCT	NO/TOW	PCT	NO/TOW	PCT	NO/TOW	PCT	NO/TOW	PCT	NO/TOW	PCT
.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2.5	.032	.24	.00	.00	.00	.01	2.38	.00	.00	.00	.00	.00	.00	.00	.00
4.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6.5	.141	1.04	.8	1.16	.00	.01	2.38	.2	3.70	.00	.00	.00	.00	.05	1.46
8.5	.106	.78	.6	.87	.00	.01	2.38	.2	3.70	.00	.00	.00	.00	.00	.00
10.5	.231	1.70	1.6	2.32	.00	.02	4.76	.2	3.70	.00	.00	.00	.00	.05	1.46
12.5	.102	.76	1.0	1.45	.00	.00	.00	.2	3.70	.00	.00	.00	.00	.00	.00
14.5	.029	.21	.4	.58	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16.5	.000	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18.5	.080	.59	.4	.58	.00	.00	.00	.2	3.70	.00	.00	.00	.00	.05	1.46
20.5	.260	1.92	1.6	2.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22.5	.848	6.26	6.6	9.57	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.5	10.22
24.5	.821	6.06	6.8	9.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.0	26.28
26.5	.295	2.18	3.8	5.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	1.46
28.5	.140	1.04	1.8	2.61	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.73
30.5	.122	.90	1.4	2.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	1.46
32.5	.087	.64	1.2	1.74	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
34.5	.306	2.26	3.8	5.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.08	2.19
36.5	.344	2.54	4.2	6.09	.3	1.10	.00	.00	.00	.00	.00	.00	.00	.00	.00
38.5	.211	1.56	2.6	3.77	.00	.00	.00	.00	.00	.1	1.82	.00	.00	.00	.00
40.5	.393	2.90	4.6	6.67	.3	1.10	.00	.00	.00	.00	.00	.00	.00	.05	1.46
42.5	.482	3.56	4.8	6.96	.3	1.10	.00	.00	.00	.1	1.82	.00	.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	.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	.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	.00	2.3	6.57
50.5	.559	4.13	2.2	3.19	.5	2.20	.1	2.38	.00	1.1	16.36	.00	.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	.00	.05	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
56.5	.752	5.55	1.2	1.74	2.3	9.89	.1	2.38	.6	11.11	1.0	14.55	.00	.00	.00
58.5	.607	4.48	.4	.58	2.3	9.89	.6	11.90	.00	.00	.3	3.64	.00	.03	.73
60.5	.829	6.12	.2	.29	3.5	15.38	.2	4.76	.8	14.81	.4	5.45	.00	.00	.00
62.5	.386	2.85	.4	.58	.8	3.30	.2	4.76	.4	7.41	.5	7.27	.00	.05	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	.00
66.5	.446	3.29	.00	.00	1.8	7.69	.3	7.14	.00	.00	.4	5.45	.00	.00	.00
68.5	.255	1.89	.00	.00	1.3	5.49	.1	2.38	.00	.00	.1	1.82	.00	.00	.00
70.5	.158	1.16	.2	.29	.8	3.30	.00	.00	.00	.00	.1	1.82	.00	.00	.00
72.5	.103	.76	.00	.00	.5	2.20	.00	.00	.00	.00	.1	1.82	.00	.00	.00
74.5	.072	.53	.00	.00	.3	1.10	.1	2.38	.00	.00	.00	.00	.00	.00	.00
76.5	.040	.30	.00	.00	.3	1.10	.00	.00	.00	.00	.00	.00	.00	.00	.00
78.5	.023	.17	.00	.00	.00	.00	.00	.00	.00	.1	1.82	.00	.00	.00	.00
80.5	.040	.30	.00	.00	.3	1.10	.00	.00	.00	.00	.00	.00	.00	.00	.00
82.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
84.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
86.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
88.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
90.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
92.5	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.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)= .32750309E 05 SUM(STRT.NO/TOW*LN)= .61971484E 03 SUM**2= .38404644E 06

NUMBER OF FISH MEASURED, BY AGE AND LENGTH

LNTH (CM)	AGE (YEARS)											TOTAL				
	0	1	2	3	4	5	6	7	8	9	10		11	12	13	14
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
205	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
265	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
305	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
325	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
345	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
365	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0
385	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0
405	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0
425	0	0	0	11	2	0	0	0	0	0	0	0	0	0	0	0
445	0	0	0	5	8	1	0	0	0	0	0	0	0	0	0	0
465	0	0	1	0	14	1	0	0	0	0	0	0	0	0	0	0
485	0	0	0	1	15	2	0	0	0	0	0	0	0	0	0	0
505	0	0	0	1	14	8	1	0	0	0	0	0	0	0	0	0
525	0	0	0	3	7	8	1	0	0	0	0	0	0	0	0	0
545	0	0	0	1	6	7	1	0	0	0	0	0	0	0	0	0
565	0	0	0	0	9	6	1	0	0	0	0	0	0	0	0	0
585	0	0	0	0	4	7	1	0	0	0	0	0	0	0	0	0
605	0	0	0	0	3	9	4	0	0	0	0	0	0	0	0	0
625	0	0	0	0	1	4	1	0	0	0	0	0	0	0	0	0
645	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0
665	0	0	0	0	0	4	3	0	0	0	0	0	0	0	0	0
685	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
705	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
725	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
745	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
765	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
785	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
805	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
825	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
865	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
885	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
905	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	23	24	30	43	58	20	12	8	9	1	1	1	1	0	271

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	YH	CPS	TEMP	OPTH	F	MEAN WT	DATA NOT TRANSFORMED	TOT WT	VAR TOT	MEAN NO	VAR MEAN	TOT NO	VAR TOT
074HADD8CK	63	005	6.5	89.2	.028	42.64	.55290E 02	.59820E 08	.10863E 15	13.21	.990330E 01	.185232E 08	.19473E 14
074HADD8CK	63	007	7.3	90.5	.029	74.01	.149021E 03	.103327E 09	.29315E 15	46.68	.188478E 03	.654788E 08	.37081E 16
074HADD8CK	64	001	6.3	91.7	.031	46.62	.303113E 02	.653932E 08	.59609E 14	21.55	.166267E 02	.302239E 08	.32690E 14
074HADD8CK	64	013	5.7	94.1	.026	27.50	.264658E 02	.385800E 08	.52072E 14	9.51	.132924E 02	.133465E 08	.26144E 14
074HADD8CK	64	210	5.5	90.2	.024	43.53	.184502E 03	.610578E 08	.36270E 15	52.42	.982768E 03	.735347E 08	.19332E 16
074HADD8CK	65	002	4.5	91.2	.026	35.53	.642304E 02	.48470E 08	.12638E 15	20.01	.179534E 02	.280644E 08	.35315E 14
074HADD8CK	65	014	5.5	94.1	.027	25.84	.340577E 02	.362519E 08	.66935E 14	11.79	.181156E 02	.164134E 08	.35622E 14
074HADD8CK	65	510	5.1	88.6	.025	24.23	.201246E 02	.332912E 08	.39590E 14	258.80	.255690E 02	.235566E 08	.38730E 14
999ALL SPP	63	003	6.3	89.2	.028	273.65	.185822E 04	.333877E 09	.32624E 16	450.93	.157991E 04	.632562E 09	.53307E 16
999ALL SPP	63	007	7.3	90.5	.029	497.98	.200911E 04	.698565E 09	.39529E 16	328.94	.304863E 04	.461433E 09	.59981E 16
999ALL SPP	64	001	6.3	91.7	.031	336.97	.105370E 04	.47270E 09	.20732E 16	234.54	.136643E 05	.329018E 09	.26887E 17
999ALL SPP	64	013	5.7	94.1	.026	342.56	.192587E 05	.480545E 09	.37895E 17	298.85	.306304E 04	.419227E 09	.62258E 16
999ALL SPP	64	210	5.5	90.2	.024	285.35	.284407E 04	.400295E 09	.55355E 16	204.87	.254812E 04	.287390E 09	.50137E 16
999ALL SPP	65	002	4.5	91.2	.026	254.40	.183442E 04	.356877E 09	.36096E 16	200.77	.800191E 03	.281637E 09	.15744E 16
999ALL SPP	65	014	5.5	94.1	.027	230.42	.693630E 03	.323231E 09	.13645E 16	218.07	.123255E 04	.305908E 09	.24249E 16
999ALL SPP	65	510	5.1	88.6	.025	258.20	.139166E 04	.362200E 09	.27380E 16				
DATA TRANSFORMED TO LN (X+1)													
074HADD8CK	63	005	6.5	89.2	.028	2.69	.619990E-01	.377616E 07	.10230E 12	1.80	.207307E-01	.253027E 07	.40781E 11
074HADD8CK	63	007	7.3	90.5	.029	3.57	.323063E-01	.500207E 07	.63562E 11	3.01	.395533E-01	.421812E 07	.77818E 11
074HADD8CK	64	001	6.3	91.7	.031	2.99	.285123E-01	.419279E 07	.56092E 11	2.37	.246346E-01	.332611E 07	.48464E 11
074HADD8CK	64	013	5.7	94.1	.026	2.56	.616566E-01	.358657E 07	.12131E 12	1.61	.312254E-01	.225183E 07	.61431E 11
074HADD8CK	64	210	5.5	90.2	.024	2.47	.776612E-01	.346568E 07	.15279E 12	1.68	.456066E-01	.236134E 07	.89717E 11
074HADD8CK	65	002	4.5	91.2	.026	2.56	.524437E-01	.359755E 07	.10318E 12	2.21	.343336E-01	.310385E 07	.67559E 11
074HADD8CK	65	014	5.5	94.1	.027	2.01	.745079E-01	.282512E 07	.14659E 12	1.39	.376557E-01	.194829E 07	.74079E 11
074HADD8CK	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	007	7.3	90.5	.029	6.00	.252045E-01	.725624E 07	.49594E 11	4.96	.309324E-01	.695624E 07	.68600E 11
999ALL SPP	64	001	6.3	91.7	.031	5.51	.202891E-01	.841952E 07	.21104E 11	5.87	.102747E-01	.824060E 07	.23216E 11
999ALL SPP	64	013	5.7	94.1	.026	5.02	.441770E-01	.773561E 07	.39921E 11	5.28	.277394E-01	.741002E 07	.54579E 11
999ALL SPP	64	210	5.5	90.2	.024	5.23	.211593E-01	.703533E 07	.86919E 11	4.51	.420205E-01	.637426E 07	.82672E 11
999ALL SPP	65	002	4.5	91.2	.026	5.13	.732995E-01	.732995E 07	.41632E 11	4.98	.255627E-01	.698788E 07	.50296E 11
999ALL SPP	65	014	5.5	94.1	.027	5.14	.120423E-01	.720067E 07	.23692E 11	4.82	.197596E-01	.676648E 07	.38878E 11
999ALL SPP	65	510	5.1	88.6	.025	5.26	.202158E-01	.721489E 07	.39775E 11	4.82	.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

LENGTH FREQUENCY OF HAUDOCK FROM 1974 AND 1975 FALL ALBA CRUISES

YEAR = 63
CRUI = 5

STAGE 2 CRUI = 5
STAGE 2 BLCK = 2

WT COEFF (AREA) NO/TOMS	TOTAL 14028	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	
		MEAN NO/TOM	PCT	MEAN NO/TOM	PCT	MEAN NO/TOM	PCT	MEAN NO/TOM	PCT	MEAN NO/TOM	PCT	MEAN NO/TOM	PCT	MEAN NO/TOM	PCT
.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
2.5	.032	.24	.0	.00	.0	.00	.1	2.38	.0	.00	.0	.00	.0	.00	.0
4.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
6.5	.141	1.04	.8	1.16	.0	.00	.1	2.38	.2	3.70	.0	.00	.0	.00	.5
8.5	.106	.78	.6	.87	.0	.00	.1	2.38	.2	3.70	.0	.00	.0	.00	.0
10.5	.231	1.70	1.6	2.32	.0	.00	.2	4.76	.2	3.70	.0	.00	.0	.00	.5
12.5	.102	.76	1.0	1.45	.0	.00	.0	.00	.2	3.70	.0	.00	.0	.00	.0
14.5	.029	.21	.4	.58	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
16.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
18.5	.080	.59	.4	.58	.0	.00	.0	.00	.2	3.70	.0	.00	.0	.00	.5
20.5	.240	1.92	1.6	2.32	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	3.5
22.5	.848	6.26	6.6	9.57	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	9.0
24.5	.821	6.06	6.8	9.86	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	8.0
26.5	.295	2.18	3.8	5.51	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.5
28.5	.140	1.04	1.8	2.61	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.3
30.5	.122	.90	1.4	2.03	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.5
32.5	.087	.64	1.2	1.74	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
34.5	.306	2.26	3.8	5.51	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.8
36.5	.344	2.54	4.2	6.09	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0
38.5	.211	1.56	2.6	3.77	.0	.00	.0	.00	.0	.00	.1	1.82	.0	.00	.0
40.5	.393	2.90	4.6	6.67	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.5
42.5	.482	3.56	4.8	6.96	.3	1.10	.0	.00	.0	.00	.1	1.82	.0	.00	1.8
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
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
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
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
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
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
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
58.5	.607	4.48	.4	.58	2.3	9.89	.6	11.90	.0	.00	.3	3.64	.0	.00	.3
60.5	.829	6.12	.2	.29	3.5	15.38	.2	4.76	.8	14.81	.4	5.45	.0	.00	.0
62.5	.386	2.85	.4	.58	.8	3.30	.2	4.76	.4	7.41	.5	7.27	.0	.00	.5
64.5	.665	4.91	.2	.29	2.3	9.89	.3	7.14	.2	3.70	.8	10.91	.5	33.33	.0
66.5	.446	3.29	.0	.00	1.8	7.69	.3	7.14	.0	.00	.4	5.45	.0	.00	.0
68.5	.255	1.89	.0	.00	1.3	5.49	.1	2.38	.0	.00	.1	1.82	.0	.00	.0
70.5	.158	1.16	.2	.29	.8	3.30	.0	.00	.0	.00	.1	1.82	.0	.00	.0
72.5	.103	.76	.0	.00	.5	2.20	.0	.00	.0	.00	.1	1.82	.0	.00	.0
74.5	.072	.53	.0	.00	.3	1.10	.1	2.38	.0	.00	.0	.00	.0	.00	.0
76.5	.040	.30	.0	.00	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0
78.5	.023	.17	.0	.00	.0	.00	.0	.00	.0	.00	.1	1.82	.0	.00	.0
80.5	.040	.30	.0	.00	.3	1.10	.0	.00	.0	.00	.0	.00	.0	.00	.0
82.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
84.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
86.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
88.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
90.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
92.5	.000	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
TOT	13.544	100.0	69.0	22.8	4.7	5.4	6.9	1.5	34.3						

MN LNTH= 45.8 VAK ABOUT MN LN= 294.54 STD. DEV= 17.16
SUM(STRT.NO/TOM*LN**2)= .32253309E 05 SUM(STRT.NO/TOM*LN)= .61971484E 03 SUM**2= .38404644E 06

NUMBER OF FISH MEASURED, BY AGE AND LENGTH

LNTH (CM)	AGE (YEARS)														TOTAL	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13		14
.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
22.5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24.5	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26.5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.5	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30.5	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
32.5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
34.5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
36.5	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
38.5	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0
40.5	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0
42.5	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0
44.5	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0
46.5	0	0	1	8	1	0	0	0	0	0	0	0	0	0	0	0
48.5	0	0	1	14	1	0	0	0	0	0	0	0	0	0	0	0
50.5	0	0	1	15	2	0	0	0	0	0	0	0	0	0	0	0
52.5	0	0	1	14	4	1	0	0	0	0	0	0	0	0	0	0
54.5	0	0	3	7	8	1	0	0	0	0	0	0	0	0	0	0
56.5	0	0	1	6	7	1	0	0	0	0	0	0	0	0	0	0
58.5	0	0	0	9	6	1	0	0	0	0	0	0	0	0	0	0
60.5	0	0	0	4	7	1	0	0	0	0	0	0	0	0	0	0
62.5	0	0	0	3	9	4	0	0	0	0	0	0	0	0	0	0
64.5	0	0	0	1	4	1	0	0	0	0	0	0	0	0	0	0
66.5	0	0	0	0	3	5	0	0	0	0	0	0	0	0	0	0
68.5	0	0	0	0	1	4	1	0	0	0	0	0	0	0	0	0
70.5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
72.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	43	58	20	12	8	9	1	1	1	1	0	271

ESTIMATED MEAN CATCH PER TON, BY AGE AND LENGTH

LNTH (CM)	AGE (YEARS)														TOTAL	MEAN AGE	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13			14
.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20.5	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22.5	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24.5	.00	.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26.5	.00	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28.5	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30.5	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
32.5	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
34.5	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
36.5	.00	.00	.31	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
38.5	.00	.00	.17	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
40.5	.00	.00	.06	.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
42.5	.00	.00	.00	.38	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
44.5	.00	.00	.00	.17	.27	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
46.5	.00	.00	.00	.04	.56	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
48.5	.00	.00	.00	.04	.61	.08	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
50.5	.00	.00	.00	.02	.33	.19	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
52.5	.00	.00	.00	.13	.29	.33	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
54.5	.00	.00	.00	.06	.35	.41	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
56.5	.00	.00	.00	.00	.36	.24	.04	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00
58.5	.00	.00	.00	.00	.20	.35	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
60.5	.00	.00	.00	.00	.14	.41	.18	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00
62.5	.00	.00	.00	.00	.04	.17	.04	.04	.09	.00	.00	.00	.00	.00	.00	.00	.00
64.5	.00	.00	.00	.00	.00	.17	.28	.06	.11	.06	.00	.00	.00	.00	.00	.00	.00
66.5	.00	.00	.00	.00	.00	.04	.15	.11	.04	.11	.00	.00	.00	.00	.00	.00	.00
68.5	.00	.00	.00	.00	.00	.06	.06	.06	.00	.13	.00	.00	.00	.00	.00	.00	.00
70.5	.00	.00	.00	.00	.00	.00	.08	.00	.00	.08	.00	.00	.00	.00	.00	.00	.00
72.5	.00	.00	.00	.00	.00	.00	.03	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00
74.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
76.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.04	.00	.00	.00	.00	.00
78.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
80.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
82.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
84.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
86.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
88.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
90.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
92.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	.00	2.36	1.09	1.21	3.23	2.50	.93	.55	.37	.45	.04	.04	.03	.02	.00	.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	.00	

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

LNTH (CM)	AGE (YEARS)										TOTAL		
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9			
.5	.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	
4.5	.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	
8.5	.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	
12.5	.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	
16.5	.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	
20.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
22.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
24.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
26.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
28.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
30.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
32.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
34.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
36.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
38.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
40.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
42.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
44.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
46.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
48.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
50.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
52.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
54.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
56.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
58.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
60.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
62.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
64.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
66.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
68.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
70.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
72.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
74.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
76.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
78.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
80.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
82.5	.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	
86.5	.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	
90.5	.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	
TOTAL	.0	18.4	8.5	5.4	25.2	19.5	7.2	4.3	2.5	3.5	.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	CMS	TEMP	OPTH	F	MEAN WT	DATA NOT TRANSFORMED		TOT WT	VAR TOT	MEAN NO	VAR MEAN	TOT NO	VAR TOT
							VAR	MEAN						
07HADDRCK	63	005	6.5	89.2	.028	42.64	.59202E 04	.10865E 04	.59202E 04	1.0865E 15	13.21	.990330E 01	1.85232E 08	.19475E 14
07HADDRCK	63	007	7.3	90.5	.029	74.01	.103202E 04	.29315E 15	.103202E 04	2.9315E 15	46.68	.188478E 01	.654788E 08	.37081E 14
07HADDRCK	64	001	6.3	91.7	.031	46.62	.653932E 08	.59609E 14	.653932E 08	5.9609E 14	21.55	.166267E 02	.302239E 08	.32690E 14
07HADDRCK	64	013	5.7	94.1	.026	27.50	.385900E 08	.52022E 14	.385900E 08	5.2022E 14	9.51	.132924E 02	.133465E 08	.26144E 14
07HADDRCK	64	210	5.5	90.2	.024	43.53	.614502E 03	.36227E 15	.614502E 03	3.6227E 15	52.42	.982768E 03	.735347E 08	.19322E 14
07HADDRCK	65	002	4.5	91.2	.026	35.53	.49847E 08	.12638E 15	.49847E 08	1.2638E 15	20.91	.179534E 02	.280644E 08	.35312E 14
07HADDRCK	65	014	5.5	94.1	.027	25.84	.342518E 04	.66995E 14	.342518E 04	6.6995E 14	11.79	.181156E 02	.164134E 08	.35622E 14
07HADDRCK	65	510	5.1	88.6	.028	24.23	.339912E 04	.39595E 14	.339912E 04	3.9595E 14	258.80	.235566E 08	.363051E 09	.50307E 16
999ALL SPP	63	007	7.3	90.5	.029	49.79	.125822E 04	.32622E 16	.125822E 04	3.2622E 16	450.93	.157991E 04	.632562E 09	.31089E 16
999ALL SPP	64	001	6.3	91.7	.031	336.97	.47270E 09	.20722E 16	.47270E 09	2.0722E 16	328.94	.304863E 04	.461433E 09	.99981E 16
999ALL SPP	64	013	5.7	94.1	.024	342.56	.440544E 09	.37895E 17	.440544E 09	3.7895E 17	234.54	.136643E 05	.329018E 09	.26887E 17
999ALL SPP	64	210	5.5	90.2	.024	285.35	.284407E 04	.55955E 16	.284407E 04	5.5955E 16	298.85	.30304E 04	.419227E 09	.60259E 16
999ALL SPP	65	002	4.5	91.2	.026	254.40	.356877E 09	.36098E 16	.356877E 09	3.6098E 16	204.87	.254812E 04	.287390E 09	.50139E 16
999ALL SPP	65	014	5.5	94.1	.027	230.42	.323231E 09	.13645E 16	.323231E 09	1.3645E 16	200.77	.800191E 03	.281637E 09	.15741E 16
999ALL SPP	65	510	5.1	88.6	.025	258.20	.362200E 09	.27340E 16	.362200E 09	2.7340E 16	218.07	.123256E 04	.305908E 09	.24249E 16
DATA TRANSFORMED TO LN (X+1)														
07HADDRCK	63	005	6.5	89.2	.028	2.69	.377616E 07	.10230E 12	.377616E 07	1.0230E 12	1.80	.207307E-01	.253027E 07	.40781E 11
07HADDRCK	63	007	7.3	90.5	.029	3.57	.600207E 07	.63562E 11	.600207E 07	6.3562E 11	3.01	.395533E-01	.421812E 07	.77818E 11
07HADDRCK	64	001	6.3	91.7	.031	2.99	.41979E 07	.5609E 11	.41979E 07	5.609E 11	2.37	.246346E-01	.332611E 07	.48464E 11
07HADDRCK	64	013	5.7	94.1	.026	2.56	.38457E 07	.12131E 12	.38457E 07	1.2131E 12	1.61	.312254E-01	.225183E 07	.61431E 11
07HADDRCK	64	210	5.5	90.2	.024	2.47	.346568E 07	.15279E 12	.346568E 07	1.5279E 12	1.68	.456066E-01	.235134E 07	.89717E 11
07HADDRCK	65	002	4.5	91.2	.026	2.56	.359755E 07	.10318E 12	.359755E 07	1.0318E 12	2.21	.343396E-01	.310385E 07	.67559E 11
07HADDRCK	65	014	5.5	94.1	.027	2.01	.282512E 07	.14659E 12	.282512E 07	1.4659E 12	1.39	.374557E-01	.194429E 07	.74079E 11
07HADDRCK	65	510	5.1	88.6	.025	2.18	.505622E 07	.15563E 12	.505622E 07	1.5563E 12	1.60	.473847E-01	.224616E 07	.93229E 11
999ALL SPP	63	005	6.5	89.2	.028	5.17	.252065E-01	.49594E 11	.252065E-01	4.9594E 11	4.96	.303344E-01	.695624E 07	.60860E 11
999ALL SPP	63	007	7.3	90.5	.029	6.00	.841952E 07	.21104E 11	.841952E 07	2.1104E 11	5.87	.102747E-01	.424060E 07	.20216E 11
999ALL SPP	64	001	6.3	91.7	.031	5.51	.773561E 07	.39921E 11	.773561E 07	3.9921E 11	5.28	.277394E-01	.424060E 07	.20216E 11
999ALL SPP	64	013	5.7	94.1	.026	5.02	.441770E-01	.86919E 11	.441770E-01	8.6919E 11	4.51	.420205E-01	.63426E 07	.82672E 11
999ALL SPP	64	210	5.5	90.2	.024	5.23	.732999E 07	.41632E 11	.732999E 07	4.1632E 11	4.98	.255627E-01	.698788E 07	.50296E 11
999ALL SPP	65	002	4.5	91.2	.026	5.13	.120423E-01	.23692E 11	.120423E-01	2.3692E 11	4.82	.377596E-01	.674648E 07	.38878E 11
999ALL SPP	65	014	5.5	94.1	.027	5.14	.721008E-01	.721008E 11	.721008E-01	7.21008E 11	4.88	.261710E-01	.684519E 07	.51494E 11
999ALL SPP	65	510	5.1	88.6	.025	5.26	.737587E 07	.42819E 11	.737587E 07	4.2819E 11	4.98	.242003E-01	.698819E 07	.47616E 11