NOAA FISHERIES

Alaska Fisheries Science Center

Resource Assessment and Conservation Engineering

AUGUST 2021

GROUNDFISH SURVEY
DATA CODES & FORMS

U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service

GROUNDFISH SURVEY CODES

Resource Assessment and Conservation Engineering Division

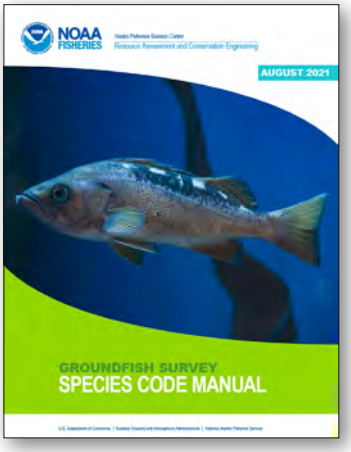
The data codes presented in this manual are a current summary of codes listed in the RACE division's central data processing system code file. This version replaces all previous data code lists.

The purpose of these codes is to code descriptive information for use on the race division's haulposition forms, species catch forms, lengthfrequency forms, specimen forms, predatorprey forms, tag release and recovery forms, and specimen special study forms. The source of these code listings is now in RACE_DATA database maintained at the Alaska Fisheries Science Center, Seattle. New assignments of data codes must be considered provisional until the new codes have been checked with, and incorporated within, the central code file in seattle. Submit proposed codes to the data processing manager, RACE, AFSC, 526-4209.

General Instructions

- The vessel, cruise, and haul numbers must be filled out on all forms. A haul number should be assigned each time sampling gear enters the water.
- For each cruise number, all hauls taken by a vessel must be numbered in sequential order from 001 to nnn (the final haul), regardless of whether hauls in the series were station tows, comparative fishing power tows, or other special studies.
- If any field has a missing value, leave the appropriate boxes on the coding forms blank. Do not write in dashes, x, or any other characters.
- For legitimate observations of a value of zero, write the zeroes in the appropriate boxes. For example, if a temperature was not taken, leave the temperature boxes blank. If the temperature was zero degrees, write the zeroes in the boxes.
- Do not write any commas or any alphabetic characters in any numeric fields.
- Integer numeric values should be entered in the appropriate boxes rightjustified, blank fields to the left.
- For fractional values, the decimal points are implied. As such, do not write any decimal points in the boxes. Instead, justify the digits according to the decimal point printed on the forms.
- Separate juvenile and adult species codes should only be used when absolutely required for hauls with a particularly difficult length frequency subsampling problem. When separate juvenile and adult species codes are used, they must be used consistently for both catch and length frequency data. The size range chosen to represent juveniles (e.G. Pollock less than 20 cm) must be established before a survey begins, and whenever juveniles are subsampled separately from adults, separate species codes and length frequency forms are required.
- For Specimen Data, Specimen I.D. Numbers For Each Species Must Be Sequenced 1 Through Nnn For The Entire Cruise, Not For Each Haul.

CONTENTS **PAGE**



See the companion manual for species codes.

RACE Groundfish Survey Data Codes

Performance Codes

0 Good performance

1 Satisfactory performance, hung up

- 1.1 minor hang(s)
  - 1.11 completed tow
  - 1.12 hauled back early due to hang(s)
- 1.2 major hang, stopped forward progress of vessel.
- 1.3 mid-water net touched bottom

2 Satisfactory performance, unspecified gear damage

- 2.1 wing damaged
- 2.2 breastline damaged
- 2.3 footrope damaged
- 2.4 belly damaged
- 2.5 bridle damaged
- 2.6 main wire damaged

3 Satisfactory performance, gear conflict, unspecified

- 3.1 caught pot, unspecified type
  - 3.11 sablefish pot
  - 3.12 Dungeness crab pot
  - 3.13 Alaskan crab pot
- 3.2 caught longline gear
- 3.3 caught trawl gear

4 Satisfactory performance, caught unspecified object

- 4.1 caught large rock
- 4.2 caught large quantity of mud
- 4.3 caught debris or wreckage
- 4.4 large fish catch affected net performance
- 4.5 large invertebrate catch affected net performance
- 4.6 large kelp catch affected performance

5 Satisfactory performance, unspecified gear performance problem

- 5.1 net came off bottom
- 5.2 net improperly configured, unspecified reason
  - 5.21 dandylines twisted
  - 5.22 floats missing or broken
- 5.3 weather affected trawl performance
- 5.4 unspecified door problem
  - 5.41 door digging or falling over
- 5.5 net crabbing severely
- 5.6 codend not closed properly
- 5.8 light footrope contact

6 Satisfactory, unspecified problems

- 6.1 depth change over tow exceeds survey defined limits
  - 6.11 average depth of tow outside survey depth limits
  - 6.12 depth range over tow exceeds stratum defined limits
- 6.2 unspecified main wire problems
  - 6.21 wire out less than recommended scope
  - 6.22 wire out greater than recommended scope
  - 6.23 unequal wire out
  - 6.24 scope changed during tow
- 6.3 unspecified mechanical problems
  - 6.31 haulback delayed due to mechanical problems
- 6.4 non-standard tow speed (use codes below)
  - 6.41 tow speed below minimum survey standard speed
  - 6.42 tow speed above minimum survey standard speed

7 Satisfactory performance, on deck sampling error (MACE)

8 Satisfactory performance, suspected but not proven little or no bottom contact

Bad Performance Codes

–1 Unsatisfactory performance, hung up

- –1.1 minor hang(s)
  - –1.11 completed tow
  - –1.12 hauled back early due to hang(s)
- –1.2 major hang, stopped forward progress of vessel.
- –1.3 mid–water net touched bottom

–2 Unsatisfactory performance, unspecified gear damage

- –2.1 wing damaged
- –2.2 breastline damaged
- –2.3 footrope damaged
- –2.4 belly damaged
- –2.5 bridle damaged
- –2.6 main wire damaged
- –2.7 net completely destroyed
- –2.8 net lost

–3 Unsatisfactory performance, gear conflict, unspecified

- –3.1 caught pot, unspecified type
  - –3.11 sablefish pot
  - –3.12 Dungeness crab pot
  - –3.13 Alaskan crab pot
- –3.2 caught longline gear
- –3.3 caught trawl gear

–4 Unsatisfactory performance, caught unspecified object

- –4.1 caught large rock
- –4.2 caught large quantity of mud
- –4.3 caught debris or wreckage
- –4.4 large fish catch affected net performance
- –4.5 large invertebrate catch affected net performance
- –4.6 large kelp catch affected performance

–5 Unsatisfactory performance, unspecified gear performance problem

- –5.1 net came off bottom
- –5.2 net improperly configured, unspecified reason
  - –5.21 dandylines twisted
  - –5.22 floats missing or broken
  - –5.23 Unsatisfactory performance headrope/footrope tangled
- –5.3 weather affected trawl performance
- –5.4 unspecified door problem
  - –5.41 door digging or falling over
  - –5.42 doors crossed
- –5.5 net crabbing severely
- –5.6 codend not closed properly
- –5.7 net unable to reach bottom due to strong currents
- –5.8 light footrope contact

–6 Unsatisfactory performance, unspecified problems

- –6.1 depth change over tow exceeds normal limits
  - –6.11 average depth of tow outside survey depth limits
  - –6.12 depth range over tow exceeds stratum defined limits
- –6.2 unspecified main wire problems
  - –6.21 wire out less than recommended scope
  - –6.22 wire out greater than recommended scope
  - –6.23 unequal wire out
  - –6.24 scope changed during tow
- –6.3 unspecified mechanical problems
  - –6.31 haulback delayed due to mechanical problems
- –6.4 non-standard tow speed (use codes below)
  - –6.41 tow speed below minimum survey standard speed
  - –6.42 tow speed above maximum survey standard speed

Haul Table Codes

Autotrawl Method

0	Unidentified method
1	Rapp Hydema
2	Scan Trawl
3	Tony Trawl

Bottom Contact Methods

0	Unidentified method
1	RACE bottom contact sensor pendulum/tilt
2	Furuno net sonde
3	Brancker XL200 data logger
4	Westmar net sonar
5	Hobo pendant G bottom contact sensor (accelerometer)

Bottom Depth Method

0	Unidentified method
1	Brancker XL200 data logger and net mensuration
2	Brancker XL200 data logger and estimated net height
3	Vessel echo sounder
4	Nautical chart
5	Sea-Bird SBE-39 data logger and net mensuration
6	Sea-Bird SBE-39 data logger and estimated net height
7	SeaPlot depth track/vessel echo sounder adjusting for distance of trawl behind ship and net mensuration
8	SeaPlot depth track/vessel echo sounder adjusting for distance of trawl behind ship and estimated net mensuration
9	Falmouth/Teledyne CTD and net mensuration
10	Falmouth/Teledyne CTD and estimated net height
11	Marport Trawl Explorer depth and net mensuration
12	Marport Trawl Explorer depth and estimated net height
13	Aanderaa Seguard data logger and net mensuration

Distance Fished Method

0	Unidentified method
1	Straight line calculation
2	Smoothed complete path calculation
3	Estimated from plotted track

Gear Depth Method

0	Unidentified method
1	Brancker XL200 data logger
2	Echo sounder
3	Nautical chart
4	Sea-Bird SBE-39 data logger (pendulum/tilt)
5	SeaPlot depth track/vessel echo sounder adjusting for distance of trawl behind ship
6	Falmath NXIC CTD
7	Marport Trawl Explorer
8	Aanderaa Seguard data logger

Net Mensuration Method

0	Unidentified method
1	Scanmar net mensuration
2	NetMind net mensuration
3	Furuno net mensuration
4	Estimated from other hauls
5	Estimated from warp angle
6	Marport net mensuration
7	Marport with sequential outlier rejection, smoothed mena, and adjusted for MKII offset (see AFSC Proc. Report Aluth Kotwicki 2014)

Position and Speed Methods

0	Unidentified method
1	Radar fix
2	Loran–A
3	Loran–C
4	Trimble TranspackII GPS
5	Rockwell PLGR GPS
6	Garmin model 152
7	Garmin GPS MAP 162
8	Furuno
9	Northstar
10	Reconstructed from ship's navigation system
11	USGlobalsat MR-350
12	Doppler echo sounder
13	Satellite fix

Skipper Number

0	Unidentified skipper
1	Alf Allie
2	Norman Bakken
3	Steve Beret
4	Terry Buholm
5	Dana Carros
6	Tim Cosgrove
7	Bill Dalton
8	Kenneth (Maynard) Desrude
9	Monrad Farstad
10	Tim Gehring
11	Carl Hansen
12	Chris Hansen
13	Gary Hansen
14	Dan Hees
15	Allen Hokensen
16	Erling Jacobsen
17	Craig Jenssen
18	Ray Kellison
19	Bill Klop
20	Arthur Kuhr
21	Steve Mintel
22	Tom Moe
23	Camillo Neto
24	Otto Nordveit
25	Tom Oswald
26	Mike Peri
27	Rudy Petersen Jr.
28	Eddie Rose
29	Randy Rowland
30	Joe Spicianni
31	David Stansfield
32	Glen Sullivan
33	Kurt Vedoy
34	Olaf Vedoy
35	Jon Edson
36	Scott Clark
37	Steve Branstiter
38	Boi Njardvik
39	Scott Krey
40	Gary Petrae
41	Marion Larkin
42	Tim Carrier
43	Michael Lemon

Haul Table Codes *(continued)*

Skipper Number (continued)

44	Nancy Ash
45	Sarah Scherer
46	Jennifer Hickey
47	Russell Haner
48	Steve Wagner
49	Shawn O'Brien
50	Johan Mannes
51	Steve Robinson
52	John Roach
53	Jeff Boddington
54	Rich Horak
55	Brad Lougheed
56	Brian Dickens
57	Dean Smehil
58	Buck Graham
59	Chad Cary
60	Jennifer Washburn
61	Roger Eggers
62	Daniel Simon
63	Anne Lynch
64	Michael Gallagher
65	Timothy Clancy
66	Ken Sjong
67	Kyle Rice
68	Dan Clark
69	Miles Cavanaugh
70	Mike Reardon
71	John Gruver
72	Dan Carney
73	Ed French
74	Jerry Ellefson
75	Darin Vanderpol
76	Rick Loan
77	Lorin Perry
78	Mike Wiggins
79	Loren Reynolds
80	Jim Hampton
81	Vidar Ljung
82	Lou Laferriere
83	Bud Hanson
84	Jarl Hogseth
85	Steve Elliott
86	Shawn Russell
87	Bill Jensen
88	Bruce Baker
90	Per Ostergard

Event Types

0	Unidentified method
1	Scanmar program start time
2	Brake set time
3	On bottom time
4	Equilibrium time
5	Marked event time
6	Haulback time
7	Off bottom time
8	Doors up time
9	Doors down time
10	Surface temperature selection time
11	Start of downcast
12	End of downcast
13	Start of upcast
14	End of upcast
15	Start of haul operation
16	End of haul operation

Wire Out Method

0	Unidentified method
1	Autotrawl readout
2	Autotrawl readout, calibrated by cable meter
3	Cable marks, preexisting
4	Cable marks, calibrated by cable meter
5	Measured using 150' marked interval on dock, intervals measured with a tape measure

Environmental Observations

For all method codes, a NULL (i.e. no entry) will represent "Not measured".

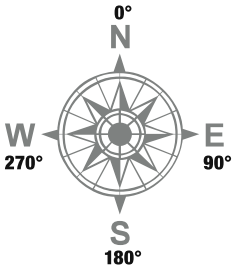
Bottom Steepness Types

Types		Methods	
0	Unidentified	0	Unidentified method
1	No slope (flat)	1	Echo sounder
2	Gentle slope		
3	Moderate slope		
4	Steep slope		

Bottom Type (Substrate)

Types		Methods	
0	Unidentified	0	Unidentified method
1	Mud	1	Echo sounder
2	Clay	2	Substrate on trawl
3	Sand	3	Substrate on doors
4	Gravel		
5	Cobbles		
6	Rocky		
7	Boulders		

Wind, Wave, Swell, and Current



Direction Values	
n°	**0° – 359°**
-2	Calm
-3	Variable

Wind

Direction Methods		Speed Methods	
0	Unidentified method	0	Unidentified method
1	Magnetic compass	1	Electric anemometer
2	Gyro compass	2	Hand anemometer
		3	Beaufort sea state photograph
		4	Estimated

Wave

Direction Methods		Height Methods	
0	Unidentified method	0	Unidentified method
1	Magnetic compass	1	Beaufort sea state photograph
2	Gyro compass	2	Estimated

Surface AND Gear Temperature

Methods	
0	Unidentified method
1	Brancker XL200 data logger
2	XBT (Expendable bathy thermograph)
3	CTD (Conductivity, temperature, depth)
4	Minimum recording thermometer
5	TDR (Temperature depth recorder)
6	Seabird SBE-39 data logger
7	Thermometer at surface
8	Thermometer in bucket
9	Intake thermometer
10	Falmath NXIC CTD
11	Marport Trawl Explorer
12	Calculated by external, post cruise method, supplied manually for global update.
13	Aanderaa Seaguard data logger
14	Algorithmically-selected single observation from the bathythermic datastream upcast at <= 1 m depth

Swell (Surface Sea)

Direction Methods		Height Method	
0	Unidentified method	0	Unidentified method
1	Magnetic compass	1	Beaufort sea state photograph
2	Gyro compass	2	Estimated

Current (Surface Current)

Direction Methods		Speed Methods	
0	Unidentified method	0	Unidentified method
1	Magnetic compass	1	Doppler echo sounder
2	Gyro compass	2	(unassigned)
3	ADCP (Acoustic Doppler Current Profiler)	3	ADCP (Acoustic Doppler Current Profiler)
4	Current table	4	Current table
		5	Skipper estimate

Haul-Position Form

POSITION FILE

Description
Vessel code (see vessel code table)
Cruise number
Haul number
Year
Month
Day Approximate starting position
Hemisphere, "+" = north "–" = south
Degrees latitude
Minutes latitude, in hundredths of a minute. There is an explicit decimal point between col. 24 and 26.
Hemisphere, "–" = west, "+" = east
Degrees longitude
Minutes longitude, in hundredths of a minute. There is an explicit decimal point between col. 33 And 35.
Ending Position
Hemisphere '+' = north, '' = south
Ending degrees latitude
Ending minutes latitude, in hundredths of a minute. There is an implied decimal point between columns 41 and 43.
Hemisphere '-' = west, '+' = east.

Description
Ending position degrees longitude.
Ending position, minutes longitude, in hundredths of a minute. There is an explicit decimal point between col. 50 And 52. Loran Start First Reading
Loran start rate (see loran table).
Loran start, first reading (Decimal Point Explicit Between Col. 62 And 64). Loran Start Second Reading
Loran start rate
Loran start, second reading (Decimal Point Explicit Between Col. 74 And 76). Loran End First Reading
Loran end rate
Loran end, first reading (Decimal Point Explicit Between Col. 86 And 88). Loran End Second Reading
Loran end rate
Loran end, second reading. (Decimal Point Explicit Between Col. 98 And 100).
Vessel, cruise, haul, year, month, day, start position are duplicated by the datalogging programs from the position information.
Gear depth, headrope (groundfish) or footrope (mace) weighted average in meters.
Bottom depth, weighted average, in meters.

HAUL FILE

Description

Equilibrium hour, to the nearest hour (0023).

For Bottom Trawls, The Equilibrium Time Is Defined As The Time The Gear Reaches Bottom.

Duration of tow, in hundredths of an hour.

Distance fished, in thousandths of a kilometer.

Haul type
opportunistic bottom sample (not a preprogrammed station)
1 offbottom sample
2 Offbottom tow with multiple gear depths (see trawl notebook for depths stepped oblique)
3 Standard bottom sample (preprogrammed station)
4 fishing power comparative sample
5 Commercial prospect sample
6 Bottom trawl on predetermined trackline targeted on fish as encountered.
7 Fishing gear experiment (not a quantitative sample)
8 Opportunistic off-bottom sample
9 Tow for collecting fish for tagging and release
10 Off-bottom sample, targeted for time of day
11 oblique tow.
12 Video camera sled tow.
13 Index sample tow.
14 Sample in wrong stratum due to incorrect depth or location.
15 Unknown.
16 Adaptive sampling (Auke Bay)
17 Crab resurvey tow
18 Crab experimental tow
19 Crab hot spot tow
20 Catch selectively sampled/processed
21 Yellowfin sole near shore station
22 Inadvertant Duplicate of an Allocated Station
23 Fishing Gear Experiment (Quantitative sample)

Stratum (numeric) normally stratum will be left blank, and will be added to the haul records by computer.

Trace depth average depth of target signals on echosounding Records, For Pelagic Hauls.

Surface temperature, in tenths of a degree, centigrade. If no temperature was taken, leave blank. A temperature of zero must be entered as '0000'.
There Is An Explicit Decimal Point Between Columns 70 And 72.

Gear temperature, in tenths of a degree centigrade.
If no temperature was taken, leave blank.
A temperature of zero must be entered as '000'.
There is an explicit decimal point between columns 76 and 78.

Cloud cover

Bottom type (See Bottom Type Table)

Wire out (scope) in meters.

Rpm

Gear code (See Gear Code Table)

Description

Door and accessories code (See Gear Accessories Table)

HAUL CATCH SAMPLE METHODS (p. 7)
0 Catch Not Processed
1 No Subsampling Done
2 Catch Subsampled - Load Cell
3 Catch Subsampled - Volumetric
4 Catch Subsampled - Visual Estimate
5 Unknown
6 Catch Subsampled - Basket Weight
7 Not Recorded
8 Catch Subsampled - Conveyor-belt Flow Scale
9 Non-quantitative Catch Sampling
10 Zero Catch (empty bag)
11 Selective catch sampling for quantitative purposes
12 Catch subsampled, without load cell weight of catch. Subsample fraction estimated by volumetric method. Density Lookup Table 2014 used.
13 Catch subsampled, without load cell weight of catch. Subsample fraction estimated by volumetric method. Density calculated on deck from haul sample.

Performance do not leave this blank.
If the tow is successful, enter a zero.

Density Lookup Table 2014

Species	Density
Gadus chalcogrammus, Walleye Pollock	**0.950**
Gadus macrocephalus, Pacific Cod	**0.900**
Pleurogrammus monopterygius, Atka Mackerel	**0.900**
Sebastes alutus, Pacific Ocean Perch	**0.800**
Sebastes polyspinis, Northern Rockfish	**0.840**
Albatrossia pectoralis, Giant Grenadier	**0.980**
Flatfishes (yellowfin, rocksole, arrowtooth, plaice, halibut, Kamchatka, flathead)	**0.945**

Species Catch Form

Contents
Vessel (See vessel code table)
Cruise
Haul
Species code (See species code book)
Weight to nearest thousandth of a kilo. Collected in pounds in 1993 and prior years.
Number of individuals

Length–Frequency Form

Description
Vessel (see vessel code table)
Cruise
Haul
Species code (see species code book)
Length in mm.
Frequency, must be at least 001.
Sex 1 Male 2 Female 3 Undetermined
Length Subsample Types 1 Randomly selected 2 Stratified by size 3 Stratified random 4 Selectively sampled 5 Unidentified
Length Types 1 Fork length measurement,from tip of snout to fork of tail. 2 Mideye to fork of tail. 3 Tip of snout to hypural plate (standard). 4 Mideye to hypural plate. 5 Total length (extremity to extremity). 6 Snout to second dorsal (e.G. Ratfish). 7 Length of carapace from back of right eye socket to end of carapace. 8 Width of carapace. 9 Head length (snout tip to posterior opercular margin). 11 Snout to anal fin origin (e.G. Rattails). 12 Mantle length (e.G. Squid). 13 Posterior of orbital to end of telson (e.G. Shrimp). 14 Wingtip to wingtip (e.g. skates and rays) 15 Outer tip of rostrum to end of telson (e.g. shrimp) 16 Modal, created in merge juveniles script 17 Length frequency estimited using size composition proportions from adjacent hauls with similar catch composition

Specimen Form

Description
Vessel (see vessel code table)
Cruise
Haul
Stratum, (numeric only) this may be used for otolith area or stratum code.
Species code (see species code book)
Sex 1 Male 2 Female 3 Undetermined
Maturity code (see maturity code tables)
Length in mm
Weight in grams
Age

Description
Specimen_subsample_method 1 Randomly selected 2 Stratified by size 3 Stratified random 4 Selectively sampled 5 Sub-sampled from original random sample and stratified by size 6 Stratified sex/length/area 7 Stratified sex/length/haul 8 Randomly selected age specimens collected from catch containing >= 20 individuals and stratified by historical catch density and haul. 9 Randomly selected age specimens collected from catch containing >= 20 individuals and stratified by life-stage (e.g., juveniles and adults), historical catch density, and haul. 10 Randomly select 10 fish if catch=10-500 fish; 20 if catch>500. If juvenile <25cm dominate, collect 2 of 25cm fish, allocate remainder to larger fish. 11 100% Sampled 12 100% Sampled up to a specified maximum number 13 100% sampled when specified threshold number occurs in catch. Not sampled when threshold not met. 14 Sampled up to specified maximum number per haul, when specified threshold number occurs in catch. Not sampled when threshold not met. 15 Stratified sex/haul 16 Stratified sex/haul/area
Specimen_sample_type if no age structure was collected, leave this blank. Otherwise code. 1 Otoliths 2 Scales 3 Otoliths and scales 4 Scales and dorsal fin spine 5 Dorsal fin spine or ray 6 Opercular bone 7 Oxytetracycline (otc) marked otolith 8 Length weight 9 Vertebra(e) 10 Whole animal 11 Genetic tissue and otoliths
Age_determination_method if no age was recorded in col. 45–46, Leave this blank. Otherwise code..... 1 Observed age 2 Backcalculated Age/Length 3 Otolith Surface Reading 4 Otolith Section Reading (Break & Burn) 5 Otolith Section Reading (Thin Section) 6 Otolith Section Reading (Break & Burn, Toasted) 7 Otolith Section Reading (Break & No Burn) 8 Cut And Stain 9 Oven Bake And Flame Burn 10 Thin Section And Stain 11 Ground
Specimen number (numeric) may be used for specimen identification, or container identification. Specimens should be sequenced 1 through nnn for each cruise throughout the cruise. Specimen numbers may not be repeated between hauls.
Maturity table used to record maturity code in Col. 25 (See maturity code tables)

General

Maturity Code — **Table 1**

General five-point maturity scale for egg-laying spawners (gadids, flatfish, etc.).
Use maturity table 2 for rockfish species. Use maturity table 3 for walleye pollock. Use maturity table 5 for pacific cod.
Use maturity table 6 for sablefish. See maturity table 8 for english sole.

Code	Condition	Description
1	Immature	Gonads small, situated close to vertebral column, and difficult to determine sex. Ovaries pink or translucent, testes translucent. Apparently has not spawned for the first time.
2	Developing	Gonads small, to about 1/2 length of ventral cavity. Transparent and/ or opaque ova visible to naked eye, testes swelling.
3	Spawning	Ova and sperm run under slight pressure. Most eggs translucent with few opaque eggs left in ovary.
4	Spent	Ovaries and testes flaccid and empty. Ovaries may contain remnants of disintegrating ova, testes bloodshot.
5	Inactive	Adults with gonads firm and shaped, but showing no development of ova or sperm.

Rockfish

Maturity Code — **Table 2**

Nine-point maturity scale for rockfish species. Use maturity table 1 for all egg-laying spawners except walley pollock, pacific cod, sablefish, and english sole.

FEMALES

Code	Condition	Description
1	Immature	Ovary small and translucent or small and yellow.
2	Maturing	Ovary firm, eggs yellowish and opaque.
3	Yolk cleared (eggs fertilized)	Ovary not firm, eggs yellowish and translucent.
4	Ripe (with embryos or larvae)	Ovary not firm,eggs translucent with black dots or visible larvae.
5	Spent	Ovary large and flaccid with a reddishpurple or dark grey color.
6	Sexually inactive	Ovary firm, grey or pink, some with black blotches.

MALES

Code	Condition	Description
1	Immature	Testes stringlike, translucent or translucent white.
7	Maturing	Testes large and swollen, somewhat rounded in crosssection, white. Sections of fresh testes produce freeflowing sperm.
8	Copulation	Milt can be expressed by applying pressure on the body. Testes divided into an inner layer of lighter color with sperm in ampullae, and a more transparent outer layer with voided ampullae.
9	Sexually inactive	Testes ribbonlike, triangular in crosssection, brown. Sections of fresh testes do not have freeflowing sperm.

Walleye Pollock

Maturity Code — **Table 3**

Five-point maturity scale for walleye pollock (established 1/5/79).

		FEMALES	MALES
Code	**Condition**	**Description**	**Description**
1	Immature	Ovaries small, transparent, tapered.	Testes thread-like, contained within a transparent membrane.
2	Developing	Ovaries tapered, two distinct lobes with well-developed red blood vessels. May be partially granular (some distinct ova).	Testes uniformly ribbon-like. Surface of testes appear smooth and uniformly textured.
3	Mature	Ova distinctly visible but cannot be extruded with compression. Ovaries are two large, distinct lobes. Gonads expelled through body wall incision.	Testes large and highly convoluted; sperm cannot be extruded. Gonads are expelled through a body wall incision.
4	Spawning	Ova extrude when ovaries are compressed, or ova are loose in ovaries.	Testes milk freely or extrude sperm when compressed.
5	Spent	Ovaries large but flaccid and watery. May contain remnants of disintegrated ova and associated structures.	Testes large but flaccid, watery, and bloodshot.

Sablefish

Maturity Code — **Table 4**

Seven-point maturity scale for sablefish. (This table is replaced by **maturity table 6** as of 1982.)

		FEMALES	MALES
Code	**Condition**	**Description**	**Description**
1	Immature	Pair of ovaries stringlike, dark maroon.	Pair of testes stringlike & dark maroon.
2	Developing	Ovaries not stringlike, enlarging, becoming light red, outline of developing eggs vaguely discernible.	Pair of testes firm, not stringlike, enlarging, becoming light red if not still maroon.
3	Developing	Same as 2, but becoming whitish and outline of developing eggs readily seen.	Pair of testes not stringlike, firm, enlarging, becoming spotty white with light red in color.
4	Gravid	Translucent eggs loose in body cavity or extruding from oviduct.	Testes milky white, somewhat flaccid & soft.
5		Includes stages 1 & 2.	Includes stages of development 1 & 2.
6	Spent	Ovaries shriveled.	Individual pair of gonads.
7		Includes stages 3 & 4.	Includes stages 3 & 4.

Pacific Cod

Maturity Code — **Table 5**

Five point maturity scale for pacific cod. (Established 1981)

Code	Condition	Description
1	Immature (will not spawn this season)	Gonads small, situated close to vertebral column, may be difficult to sex. Ovaries appear as pink or translucent paired sacs, no oocytes are visible to the eye. Testes are translucent and appear as "bumps" on threadlike strands that are closely associated with, and often indistinguishable from, the gut mesentery.
2	Developing	Gonads small, to about 1/2 the length of the body cavity. Transparent and/or opaque orange oocytes are distinct and visible through the ovary wall. The ovaries form 2 tapered, distinct lobes having welldeveloped red blood vessels. The testes appear uniformly ribbonlike, swollen in size and take on an increasing whitish color.
3	Prespawn/ mature	Ovaries form 2 large distinct lobes. Most eggs appear as mature, clear ova, some oocytes remain interspersed throughout the ovary. The testes are large, swollen white and highly convoluted "leaflobed" ribbons filling the entire body cavity.
4	Spawning (imminent spawning)	Ova and sperm run under slight pressure to the body. Ova are loose in the ovary and the testes milk freely.
5	Spent (this year spawning completed)	Gonads still large, but appear flaccid and watery. Ovaries may contain remnants of disintegrating ova and associated structures. Testes appear bloodshot.

Sablefish

Maturity Code — **Table 6**

Five point maturity scale for sablefish. (Replaces table 4. Revised 1982, 1987.)

		FEMALES	MALES
Code	Condition	Description	Description
1	Immature	Ovaries appear as two narrow, stringlike lobes, almost clear in color.	Testes narrow and ribbonlike, almost clear in color, with four flat lobes.
2	Juvenile	Ovaries not stringlike, enlarging, still clear; eggs not readily seen. (Only fish which have not spawned previously.)	Testes enlarging, not ribbonlike, four prominent lobes light pink. (Only fish which have not spawned previously.)
3	Mature/ developing	Ovaries large, becoming white, small developing eggs readily discernable and firmly attached.	Testes large, white, with four lobes, no milt present.
4	Spawning	Ovaries very large, large translucent eggs loose in ovary or extruding from the oviduct.	Testes very large, white, extruding milt freely under slight pressure or when cut.
5	Spent/ post-spawning	Ovaries shriveled and opaque.	Testes large, shriveled, often with wrinkles. No milt present.

Ovarian Development

Maturity Code — **Table 7**

Four stage general maturity table based on natural phases of ovarian development.

FEMALES

Code	Condition	Description
1	Juvenile	Ovary developed as genital ridge or to a definite gonad, translucent. Oocytes transparent, not recognizable to the naked eye.
2	Ripening	Ovary elongated, not transparent. Oocytes opaque and at the beginning of vitellogenesis.
3	Running ripe	Ovary translucent, eggs transparent.
4	Spent	Ovary slack and shrunken, translucent or opaque, residual eggs.

English Sole

Maturity Code — **Table 8**

Five point scale for english sole. (Established 1989.)

Code	Condition	Description
1	Immature	Gonads small. Testes translucent, ovaries translucent pink and without blemishes. Fish apparently have not spawned for the first time.
2	Developing	Gonads swelling. Testes have no flowing sperm detectable. Ovaries have white opaque eggs, less than 50% of eggs are clear. Ovary firm.
3	Spawning	Testes have flowing sperm detectable by pressure or dissection. Ovaries have cleared eggs, less than 50% of eggs are opaque. Ovary may be partially or fully running ripe.
4	Spent	Gonad flaccid. Ovary dark, may have residual eggs.
5	Inactive	Gonad firm and shaped, but no distinguishable ova or sperm. Blemished ovary may help differentiate this code from code 1.

Yellowfin Sole

Maturity Code — **Table 9**

Four point maturity scale for yellowfin sole. (Established 1991).

		FEMALES	MALES
Code	Condition	Description	Description
1	Immature	Ovary clear to slightly pink or grey-pink. Gelatinous with no distinct eggs.	Clear tubules in body cavity or none may be found.
2	Mature	Ovary usually reddish with distinct eggs. A network of veins covers the ovary. Eggs are opaque colored (not hydrated).	Opaque or white mass, some in folds.
9	Transition	As above but some portion of eggs are clear-translucent (hydrated).	
3	Ripe	Running eggs with slight pressure. All eggs are clear-translucent.	Running sperm with slight pressure.
4	Spent	Deflated ovary, often with blood.	Deflated testes, little sperm left.

Shortspine Thornyhead

Maturity Code — **Table 10**

Maturity table for shortspine thornyhead.

		FEMALES	MALES
Code	**Condition**	**Description**	**Description**
1	Immature	Very small, clear, translucent, pink, somewhat flattened dorso-ventrally. Outer membrane very tight and smooth.	Very small, threadlike, transparent, difficult to find.
2	Maturing	Small but robust, translucent, pink.	Small, slight swelling, translucent, white.
3	Mature-developing	(ova) Large, firm, translucent or opaque, pink, ova small white (or yellow) and opaque, outer ovarian membrane transparent.	Medium, ribbon-like, swollen, brown to white.
4	Mature-	(with jelly) Large, white eggs surrounded by jelly, jelly often partially extruded.	(developed) Large, swollen, easily broken, milt in sperm duct.
5	Mature-spawning		Large, swollen, flowing milt when pressure applied, white.
6	Mature-spent	Large, flaccid, red, often with a few eggs being absorbed at posterior end.	Large-medium, milt in sperm duct, brown with white center.
7	Mature-resting	Moderate, pink, no visible eggs, outer membrane is looser than in immature stage, ovary not flattened dorso-ventrally.	Medium, ribbon-like, flat, firm, tan or brown, opaque.

MACE / Pollock

Maturity Code — **Table 11**

MACE maturity table for pollock.

		FEMALES	MALES
Code	**Condition**	**Description**	**Description**
2	Developing I	Ovaries translucent grayish-red; Length is less than half of ventral cavity; (Single eggs can be seen with magnifying glass); (Occasionally small orange ovaries)	Testes translucent grayish-red; Length is less than half of ventral
3	Developing II	Ovaries opaque with blood; Capillaries occupy about half the length of ventral cavity eggs visible to eye as whitish, granular	Testes opaque with blood capillaries; Occupy about half the length of ventral cavity
4	Prespawning I	Ovaries orange, reddish; Occupy about 2/3 of ventral cavity; Eggs clearly discernible, opaque	Testes reddish white convoluted; Occupy about 2/3 of ventral cavity; No milt drops appear with pressure
5	Prespawning II	Ovaries fill ventral cavity; Some eggs translucent (hydrated)	Highly convoluted testes fill ventral cavity white drops of milt fall with pressure
6	Spawning	Roe runs with slight pressure; Most eggs hydrated (translucent) with few opaque eggs left in ovary	Milt runs in a stream with slight pressure
7	Spent I	Ovaries not yet fully empty; Few opaque eggs left in ovary	Testes not yet fully empty, large, flaccid watery and bloodshot
8	Spent II	Ovaries empty, red; A few eggs in the state of reabsorption	Testes empty, red

Pacific Ocean Perch

Maturity Code — **Table 12**

Maturity table for female Pacific ocean perch.

Code	Condition	Ovary description
1	Immature	Small, translucent
2	Maturing	Small, yellow, translucent or opaque
3	Mature	Large, yellow, opaque
4	Fertilized	Large, orange-yellow, translucent
5	Ripe	Large, translucent yellow or gray, with black dots (contain embryos or larvae)
6	Spent	Large, flaccid, red. A few larvae may be present
7	Resting	Moderate size, firm, red-gray, with some black blotches

Popeye Grenadier

Maturity Code — **Table 13**

Maturity table for female popeye grenadier.

Code	Condition	Description
1	Mature	Oocyte seen
2	Immature	No oocytes seen

Northern and Southern Rock Sole

Maturity Code — **Table 14**

Anatomical maturity table for northern rock sole (l. Polyxystra) and southern rock sole (l. Bilineata) established 1/2001.

		FEMALES	MALES
Code	Condition	Description	Description
1	Immature	ovaries transparent, compact, located in the anterior portion of the dorsal mesentery.	testes translucent, compact, located in Anterior portion of the dorsal mesentery.
2	Intermediate	ovaries coloration gray or white, no visible ova.	testes opaque or white.
3	Ripe	ovaries coloration orange, no visible developing ova. Ovaries extend to the posterior portion of the dorsal mesentery.	testes large, engorged. Testes extend to the posterior portion of the dorsal mesentery.
4	Gravid (F) Spawning (M)	opaque ova distinctly discernable thru distended ovaries walls.	testes have milky appearance and expels imminent sperm when slightly palpated.
5	Spawning	transparent ova distinctly discernable thru ovaries walls.	sperm free flowing from cloaca, testes have milky coloration.
6	Spent	ovaries walls are flaccid, opaque. Ovaries atrophied, amorphous, blood clots may be visible and add purple coloration to the ovaries walls.	testes flaccid, may be hydrated, dull coloration, blood clots may be discernable and add a purple coloration to the testes.

Shortspine and Longspine Thornyheads

Maturity Code — **Table 15**

For shortspine and longspine thornyheads

		FEMALES	MALES
Code	**Condition**	**Description**	**Description**
1	Immature	gonads small, stringlike, and clear or transparent.	gonads small, stringlike, and clear or transparent.
2	Developing or Inactive	ovary swollen and translucent. No tiny eggs present. (Note: often the outer membrane of ovary must be removed to detect eggs.)	testes swollen, opaque or translucent, colored tan or white. No milt present in ducts or expressible when testis is sectioned.
3	Mature (active)	ovary swollen and translucent or opaque. Tiny eggs present in ovarian tissues.	testis swollen and opaque. Milt present in ducts posterior to testes.

Pacific Cod

Maturity Code — **Table 16**

Pacific cod maturity codes

		FEMALES	MALES
Code	**Condition**	**Description**	**Description**
1	Immature	Gonads small, close to vertebral column, may be difficult to sex. Ovaries appear as pink or transparent paired sacs, no oocytes are visible to the eye.	Gonads small, close to vertebral column, may be difficult to sex. Testes translucent “bumps” on threadlike strands closely associated with, and often indistinguishable from, the gut mesentery.
2	Developing	Gonads small, to about 1/2 the length of body cavity. Ovaries form 2 tapered, distinct lobes having welldeveloped blood vessels. Transparent and/or opaque orange oocytes are distinct and visible through the ovary wall. Oocytes stick together forming a solid mass.	Gonads small, to about 1/2 the length of body cavity. Testes appear uniformly ribbonlike, swollen in size, and take on an opaque or increasingly whitish color.
3	PreSpawn	Ovaries form 2 large distinct lobes. Most eggs appear as mature clear ova, some oocytes remain interspersed throughout the ovary. Ova are less adhesive resembling the consistency of Cream of Wheat the breakfast cereal.	Testes are large, swollen white and highly convoluted “leaflobed” ribbons filling the entire body cavity. Milt is emitted when wall is compromised (pinched).
4	Spawning	Eggs run under slight pressure to the body. Ova are loose in the ovary.	Testes milk freely under slight pressure to the body.
5	Spent	Gonads are still large, but appear flaccid and watery. Ovaries may contain remnants of disintegrating ova and associated structures.	Gonads are still large, but appear flaccid and watery. Testes appear bloodshot. There may be some areas of the testes that still contain milt.
6	Resting	Ovaries small, firm, may have some black or silver color. No oocytes are visible to the eye.	

Temporary code	
1001	
1002	
1003	
1004	
1005	
1006	
1007	
1008	
1009	
1010	
1011	
1012	
1013	
1014	
1015	
1016	
1017	
1018	
1019	
1020	
1021	
1022	
1023	
1024	
1025	

SUPPLEMENTARY TABLES Vessel Codes

Code Range	Vessel Type
001–399	U.S. Vessels
400–500	Canadian Vessels
501–600	Japanese Vessels
601–700	IPHC Vessels
701–800	Other Foreign Vessels
999–	Non-Vessel Fishing Platforms

Vessel Code	Vessel
UNITED STATES GOVERNMENT AND CHARTERED VESSELS	
01	R/V Chapman
02	R/V John N. Cobb
03	M/V Pacific Harvester
04	R/V Commando
05	M/V Mary Lou
06	M/V California Horizon
07	M/V Washington
08	M/V New Life
09	G.B.Reed
10	M/V Bering Star
11	M/V Sunset Bay
12	M/V Discovery Bay
13	M/V Ocean Leader
14	R/V Oregon
15	M/V Pacific Lady
16	M/V Mark I
17	M/V Anna Marie
18	M/V North Pacific
19	M/V Pat San Marie
20	M/V Smarag
21	R/V Miller Freeman
22	M/V Pacific Raider
23	M/V Dominator (Prev. U.S. Dominator)
24	M/V Noredick
25	David Starr Jordan
26	Discoverer
27	M/V Heidij
28	M/V Paragon Ii
29	M/V Sea Hawk
30	M/V Freeport
31	M/V Ocean Harvester
32	New Hope
33	Yaquina
34	John R. Manning
35	Annihilator
36	Queen Victoria
37	R/V Alaska
38	R/V Paragon 1
39	Warrior Ii
40	Nordfjord
41	R/V Resolution
42	M/V Commander

Vessel Code	Vessel
43	M/V Royal Baron
44	M/V Half Moon Bay
45	F/V Valiant
46	Steller
47	American Eagle (N. Pac. Ves. Own. Assoc.)
48	Goldnsun
49	George B. Kelez
50	Quest
51	N. B. Schofield
52	Miscellaneous California Sport Boats
53	Collier Brothers
54	Pacific Queen
55	Forene
56	Isis
57	Morning Star (Different Than Vessel #604)
58	Ocean Spray
59	Marathon
60	Argosy
61	Viking Queen
62	Murre Ii
63	Peregrine
64	Little Lady
65	Cape Falcon
66	Lets Go
67	Starlight
68	American Viking
69	Sitka Harbor
70	Prowler (Longliner Used In ‘87 & ‘88, Different Than # 108)
71	Martina
72	Oceanic
73	Golden Fleece
74	Western Dawn
75	Golden Pisces
76	Golden Pride
77	Western Flyer (Different Than Vessel #606)
78	Ocean Hope 3
79	Pelagos
80	Nancy Rose
81	Ocean Prowler
82	Townsend Cromwell
83	Green Hope
84	Continuity

Vessel Code	Vessel
85	Ocean Hope I
86	Mako (Cdf&G)
87	Tracy Anne
88	F/V Arcturus
89	F/V Aldebaran
90	Alsea
91	Muir Milach
92	F/V Progress
93	Unimak Enterprise
94	F/V Vesteraalen
95	F/V Pacific Knight
96	F/V Alaskan Leader
97	F/V Columbia
98	Topaz
99	Crawdad
100	Golden Dawn
101	Marine Surveyer
102	Seasdee
103	Fury Ii
104	Sccwrp Vessel
105	Van Tuna
106	Searcher (Sank)
107	Vallero Iv
108	Prowler (Sccwrp Vessel, Different Than Vessel #70)
109	Anton Doran
110	Sccwrp Vessel
111	Sccwrp Vessel
112	Sccwrp Vessel
113	Sccwrp Vessel
114	Sccwrp Vessel
117	Sccwrp Vessel
118	Sccwrp Vessel
119	F/V Caravelle
120	F/V Alliance
121	F/V Dawn
122	F/V Pacific Pride
123	F/V Pandalus (Adf&G Homer)
124	F/V Dominion
125	F/V Buck-N-Ann
126	F/V Laura
127	Nightwatch (Adf&G)
128	Sunrunner (Adf&G)
129	F/V Excaliber

Vessel Code	Vessel
130	F/V Olympic
131	F/V Michele Ann
132	Peggy Jo
133	Taasinge
134	Northwest Explorer
135	Margaret Lynn
136	Rebecca Irene
137	Ocean Peace
138	Arica
139	Brown's Point
140	Legacy
141	Hickory Wind
142	Sea Freeze Alaska
143	Sea Storm
144	Larkin
145	Hazel Lorraine
146	Sea Fisher
147	Gladiator
148	Ocean Explorer
149	Frosti
150	Medeia (Adf&G)
151	Pacific Star
152	Auriga
153	Fierce Allegiance
154	Sea Wolf
155	Nordic Fury
156	Shamook
157	Oscar Dyson
158	Wilfred Templeman
159	Pacific Explorer
160	Beauty Bay
161	Epic Explorer
162	Alaska Knight
163	R/V Adolf Jensen (Pathology)
164	F/V Nanna L. (Pathology)
165	F/V Monica Jene (Pathology)
166	Karma (Pathology)
167	Northwestern (Pathology)
168	F/V Loki (Pathology)
169	M/V Valkyrie (Pathology)
170	Stanley K (Pathology)
171	F/V Miss Linda (Pathology)
172	F/V Big Blue (Pathology)
173	Linnea (Pathology)
174	Bristol Explorer
175	F/V Gold Rush
176	Alaska Provider
177	Alaskan Endeavor
178	Cape Flattery
179	Ocean Starr
180	Bell Shimada
181	Big Valley
182	Ballyhoo
183	Decision
CANADIAN FISHERIES SURVEY AND TAGGING VESSELS	
400	Linda
401	Seapak
405	La Porshe
413	Talapus
415	Westerly
423	Southward Ho
426	Pacific Trident
427	Neekis
432	Ocean Pearl
435	La Pointe
438	Viking Star
450	M/V Belina
451	Ocean Trawler
452	Sharlene K.
453	Royal Canadian
454	A.K. Knight
456	Investigator
457	Eastward Ho
462	Blue Waters
474	Anna V Eagan
483	Wespak
498	Arctic Harvester
499	W.R. Ricker
JAPANESE FISHERIES SURVEY AND TAGGING VESSELS	
501	Kawachi Maru
502	Nisshin Maru
503	Chosui Maru
504	Yoko Maru
505	Inase Maru No.3
506	Tanshu Maru

Vessel Code	Vessel
507	Wakatori Maru No. 2
508	Shunyo Maru
509	Tomi Maru No. 52
510	Yakushi Maru
511	Shotoko Maru
512	Yakushi Maru No. 21
513	Shotoku Maru No. 35
514	Ryoan Maru No. 31
515	Ryujin Maru No. 8
516	Fukuyoshi Maru No. 8
517	Anyo Maru No. 21
518	Anyo Maru No. 22
519	Anyo Maru No. 8
520	Yan Yuan Maru No. 2
521	Chikuzen Maru
522	Seiju Maru No. 28
523	Tsune Maru No. 31
524	Fukuyoshi Maru No. 26
525	Fuki Maru No. 58
526	Fuki Maru No. 63
527	Wakashio Maru No. 68
528	Narita Maru No. 37
529	Shoyo Maru
530	Daian Maru No. 128
550	Hatsue Maru No. 55
551	Ryusho Maru No.15
552	Hatsue Maru No. 62
553	Kaiyo Maru (Launched 1967)
554	Daito Maru No. 38
555	Daikichi Maru No. 37
556	Daikichi Maru No. 32
557	Ginryu Maru No. 5
558	Shosin Maru No. 20
559	Shin-Ei Maru No. 63
560	Taisei Maru No. 35
561	Tomi Maru No. 88
562	Tomi Maru No. 51
563	Kaiyo Maru (Launched 1991)

INTERNATIONAL PACIFIC HALIBUT COMMISSION SURVEY VESSELS

603	M/V St.Michael
604	M/V Morning Star (Used In 1961 And 1962 Only)
606	M/V Western Flyer
620	M/V Tordenskjold
626	M/V Don Edwards
627	M/V Ocean Star
630	M/V Arthur H
631	M/V Harmony
632	M/V Tonquin
633	M/V Seymour

OTHER FOREIGN FISHERIES SURVEY AND TAGGING VESSELS

723	Siedlecki (Polish)
758	Novokotovsk (Soviet)
759	Tikhookeanski (Soviet)
760	Ogon (Soviet)
761	Seskar (Soviet)
762	Kameskoe (Soviet)
763	Ekvator (Soviet)
764	Poseydon (Soviet)
765	Pusan (Prior To 1985 Oh Dae San) (Korean)
766	Korean Longliners (Unnamed)
767	Seo Gang (Korean)
768	O Dae Yang No. 201 (Korean)
769	Kowang Myeong No. 81 (Korean)
780	D Dong Won No. 31 (Korean)
781	Shantar (Soviet)
782	Mys. Dalniy (Soviet)
783	Milogradova (Soviet)
784	Srtm 8459 (Soviet Side Trawler)
786	Mys. Babushkina (Soviet)
787	Gissar (Soviet)
788	Babaevsk (Soviet)
789	Sulak (Soviet)
790	Darvin (Soviet)
791	Gae Yang Ho (Korean)
792	Sunflower No. 7 (Korean)
793	Novodrutsk (Soviet)
794	Mliechnyi Put (Soviet)
795	Professor Kaganovskiy (Soviet)
796	R/V Tamgu (Korean)

NONVESSEL FISHING PLATFORMS

999	Shore And/Or Dock

Code Range	Gear Type
001–299	U.S. Bottom Trawls
001–149	1 Seam Per Side
150–299	2 Seam Per Side
300–499	U.S. Pelagic Trawls
500–599	U.S. Shrimp Trawls
600–699	U.S. Other Gear Types
700–899	Foreign Trawls
700–749	Japanese
750–769	Canadian & Iphc
770–799	Soviet
800–824	Korean
825–849	Polish
900–924	Generic Gear Types

NOTE: Gear and accessories codes were recoded in 1981. Contact the race database manager for a listing of old codes and corresponding new codes.

Code	Gear Description
UNITED STATES BOTTOM FISH TRAWLS (1 SEAM PER SIDE)	
01	Modified eastern trawl (increased vertical opening) with 94' footrope and 70' headrope. 5.5" Mesh (#42) in wings and body, 3.5" Mesh (#60) in intermediate, and 3.5" Mesh (#96) in codend. 21 Floats (8"diameter) on headrope, chain and rubber disks on footrope. Sampling dimensions should be similar to code 20.
02	Same as 01 but no chain on footrope. No data available on specific sampling dimensions.
03	Same as 01 except constructed of comparable strength cotton mesh.
03	Same as 01 except constructed of comparable strength cotton mesh.
05	Modified eastern trawl with 111' footrope, 5.5" Mesh in wings and body, 3.25" Mesh in intermediate, and 3" mesh in codend. 21 Floats - 18 of 8"diameter and 3 of 10"diameter. Sampling dimensions should be similar to code 30.
06	Same as 05 but with roller gear. Same dimensions.
10	Norwegian trawl. Mean effective path width of 20.42M, range is 19.8M-21.0M. Mean vertical opening of 2.1M, range is 1.8M-2.1M.
11	Same as 10 but with roller gear. Similar dimensions.
15	400-Mesh eastern trawl with expanded wings and roller gear. 4.5" Mesh throughout. 71' Headrope, 97' footrope. 65 8"Diameter floats on cork line, 40 8"diameter floats in intermediate and body. Horizontal opening 49.5', Vertical opening 13'. (Used by the washington 1979 pacific ocean perch survey.)
16	400-Mesh eastern otter trawl similar to that described by greenwood(1958) except: wings, square, belly - 4" mesh of #36 nylon, intermediate - 3.5" Mesh of #60 nylon, codend - 3.5" Mesh of #96 nylon;9-11 8"diameter floats.
17	400-Mesh eastern trawl, 3.5" Mesh throughout. 77' Footrope, 32' horizontal opening, 5' vertical opening. (Used on commando cr.715,724.)
18	Same as 17 except footrope made of 4" rubber disks. (Used on commando cr.735, 749, 754.)

Code	Gear Description
20	400-Mesh eastern trawl with 94' footrope and 71' headrope. 4" Mesh (#36) in wings, square, and belly; 3.5" Mesh (#60) in intermediate; and 3.5" Mesh (#96) in codend. 11 To 15 deepsea floats (8"diameter) on headrope. Mean effective path width is 12.19M. Mean vertical opening is 1.7M, range 1.4M-1.8M.
21	Same as 20 but with 21 floats. No data on specific sampling dimensions.
22	Same as 21 but also has roller gear.
23	Same as 20 but with 36 floats and roller gear. No data on specific sampling dimensions.
24	Same as 20, but path width = 45' (13.716M).
25	Same as 20, but path width = 44' (13.41M). (Used on alaska cr.811 Hauls 1-113.)
26	Same as 20, but path width = 47' (14.33M). (Used on alaska cr.811 Hauls numbered greater than 113.)
27	400-Mesh eastern trawl, 71' headrope, 94' footrope, both of 3/8" wire rope wrapped with 3/8" polypropylene. Polyethylene web, 4" mesh throughout, cord sizes 2.5Mm-3mm-4mm single bar-6mm single bar top to codend. 1.25" Mesh (#18) nylon codend liner. 15 8" Diameter, 5.5Lbs buoyancy deep-sea floats on headrope, 5.5" Rubber disks packed on 1/2" long-link beacon 7 deck lashing chain on footrope. Mean effective path width 11.1M, range 9.1-12.7M. (Used on nancy rose cr.891.)
28	400 Mesh adf&g eastern trawl. 70' Headrope 95' footrope. 18-8" Floats. Footrope weighted with 3/8" chain. 4" 42T nylon mesh at front end (body and wings). 3.5" 60T nylon mesh in intermediate section. 3.5" 120T nylon mesh in codend. 1.25" Liner in codend. Horizontal opening approximately 40'. Vertical opening approximately 9'. (Used on r/v resolution during annual gulf of alaska crab surveys since 1990).
29	400 Mesh adf&g eastern trawl. 70' Headrope 95' footrope. 18-8" Floats. Footrope weighted with 3/8" chain. 4" 42T nylon mesh at front end (body and wings). 3.5" 60T nylon mesh in intermediate section. 3.5" 120T nylon mesh iin codeend. 1.25"Liner in codend. Horizontal opening approximately 45'. Vertical opening approximately 6'. (Used on r/v pandalus during annual cook inlet and pwd crab surveys 1990-2001).

Code	Gear Description
30	Eastern trawl with 112' footrope and 83' headrope. 4" Mesh #60 thread (#48 prior to approx 1984) in wings and body, 3.5" Mesh (#96) in intermediate and codend. 41 Floats on headrope of 8"diameter. Mean effective path width = 17.00M, no data on range. Mean vertical opening = 2.3M, range is 1.9M-2.7M. **When this gear is used with scanmar equipment, use code 44.**
31	Same as 30 but with 35-36 floats on headrope. No data on specific sampling dimensions.
32	Same as 30, but path width = 65' (19.812M).
33	Same as 30, but path width = 54.64' (16.65M). (Used on chapman cr.823.)
34	Same as 30, but path width = 53.36' (16.26M). (Used on pat san marie cr.821.)
35	Same as 30, but path width = 59.00' (17.98M). (Used on chapman cr.813.)
37	Same as 30, but path width = 54.264' (16.54M). (Used on chapman cr.833.)
38	Same as 30, but path width = 53.852' (16.41M). (Used on alaska cr.831, 841, 851, 861, And 871.)
39	Same as 30, but path width = 59.055' (18.00M). (Used on argosy cr.851.)
40	Same as 30, but path width = 54.068' (16.48M) and vertical opening = 3.0M. (Used on pat san marie cr.871.)
42	Same as 30, but path width = 54.71' (16.67M) in depths less than 100m. (Used on pat san marie cr.871.)
43	Same as 30, but path width = 58.41' (17.80M) in depths greater than 100m. (Used on pat san marie cr.871.)
44	Same as 30. Acoustic net mensuration equipment attached. Trawl opening dimensions determined for each tow.
45	400 Mesh adf&g eastern trawl. 78' Headrope 95' footrope. 18-8" Floats. Footrope weighted with 3/8" chain. 4" 42T nylon mesh at front end (body and wings). 3.5" 60T nylon mesh in intermediate section. 3.5" 120T nylon mesh in codend. 1.25" Liner in codend. Horizontal opening approximately 45'. Vertical opening approximately 6'. (Used on r/v pandalus during annual cook inlet and pwd crab surveys 2002-present).
46	Trouser trawl.

Code	Gear Description
47	Same as 30. Fixed net width replaced with either an observed net width from SCANMAR acoustic net mensuration or with an estimated net width using the relationship between inverse scope and trawl width described in: Rose, C. S., and G. E. Walters. 1990. Trawl width variation during bottom trawl surveys: causes and consequences, p. 57-67. In L-L. Low (editor), Proceedings of the symposium on application of stock assessment techniques to gadids. Int. North Pac. Fish. Comm. Bull. 50. Supersedes gear codes 33, 34, 37, 38, 39, 40, 42, and 43.

UNITED STATES BOTTOM FISH TRAWLS
(2 SEAMS PER SIDE)

Code	Gear Description
150	Mystic trawl with roller gear. 28' Horizontal and 21' vertical openings. (Used on new life cr.791.)
151	Mark i universal trawl with 121' footrope and 121' headrope, 2.5" Mesh throughout wings, body and codend, with 1.5" Mesh codend liner. No data on specific sampling dimensions.
152	Mark ii (modified) universal trawl with 94' footrope and 94' headrope, 5.5" (#36) Mesh in wings and forward sections, 2.5" (#36) Mesh in after sections, 3.5" (#96) Mesh in codend. 31 8"Diameter floats on headrope. Sampling dimensions should be similar to code 20.
153	Western otter trawl, 94' footrope. No data available on specific sampling dimensions.
154	Same as 153 but with 1.5" Mesh liner.
155	Demersal trawl, 95' headrope, 105' footrope. 8" Mesh in wings and mouth, 3" mesh in codend and intermediate. 30' Vertical opening. (Used on annihilator.)
156	Modified atlantic western demersal trawl. 108' Headrope, 128' footrope. 8" Mesh in wings and mouth, 5" mesh in intermediate and codend. Roller gear. 50' Horizontal and 25' vertical openings. (Used on the q.Victoria.)
157	700-Mesh bering sea western trawl. 125' Headrope, 143.4' Footrope. Cutaway lower wings. (Used on morning star cr.861.)
158	Bering sea combination trawl, polyethylene web. 107' Headrope, 138' footrope, cutaway lower wings. (Used on morning star cr.861.)
160	Nor'eastern trawl, 90' headrope, 105' footrope. 22 13"Diameter plastic floats on headrope, 5" mesh in body, 3.5" Mesh in intermediate and codend. Mean effective path width = 13.44M, range 11.6M-16.5M. Mean vertical opening = 9.2M, range 8.2M-9.9M.
161	Same as 160, but path width = 55' (16.764M).
162	Same as 160, but #72 thread mesh used in trawl belly section.
163	Same as 160, but path width = 17.98M.
164	Same as 160, but path width = 18.29M when used with accessories code 40. (Used on morning star cr.841 And 842, miller freeman cr.843, And ocean spray cr.841.)
165	Same as 160, but path width = 16.45M. (Used on let's go cr.861.)
166	Same as 160, but scanmar gear mensuration equipment used. Path width determined by tow: see c. Rose or d. Roetcisoender for data. (Used on miller freeman cr. 909.)
170	Modified nor'eastern trawl, polyethylene with nylon codend. 92' Headrope is 5/8" wire rope wrapped with 3/8" 3-strand polypropylene. 82.5' Footrope is 1/2" wire rope wrapped with 1/2" 3-strand polypropylene. 21 12"Diameter floats on headrope. Approximate sampling dimensions: 64' width, 18' vertical opening when used with accessories 58. (Used on morning star cr.841.)
171	Same as 170, but path width = 18.29M when used with accessories 40. (Used on morning star cr.841 And 842.)
172	Poly-nor'eastern, four seam, hard bottom, high rise rockfish trawl constructed of polyethylene. 27.2M (89'1") headrope is galvanized wire rope wrapped with 3-strand polypropylene. 37.4M (122'8") footrope: 24.7M (81'7") middle section is galvanized wire rope wrapped with polypropylene, connected to lower "flying wings" with 6.4M (19'6") sections of wire rope with rubber disks. Codend is 8.9Cm (3 1/2") stretch mesh poly, liner of 3.2Cm (1 1/4") nylon, 315 meshes circumference and 200 meshes deep.
173	Same as 172, but effective net width = 16.23M when used with accessories code 58. (Used on miller freeman cr.888.)
174	One 30' center section of 21-24" auto tires. Loose pack. Chain 5/8" long link. Chain droppers 1/2", 5 links and 1 ring spaced along footrope every 12". Two wing ends of 21-24" rock hopper disc approximately 24' each. Spaced 18" apart with 6" rubber disc between each rock hopper disk. Core chain 5/8" long link alloy. Rock hopper chain 1/2" long link alloy. Drop chains 1/2", 5 links and 1 ring evenly spaced between each rock hopper disk. When 3 pieces are joined, over all length of 79' 6" including all connecting hardware. 4 Wing extensions (flying wings) 17" each. 5/8" Long link alloy chain. 21-24" Rock hopper disc spaced 24" apart with 8" disc between each rock hopper disc. 3/8" Plate chain washers at end.

Code	Gear Description
175	Poly-nor'eastern:4 seam, high rise trawl constructed of 12.7Cm stretched mesh polyethylene. 27.2M headrope and 24.7M footrope. Tire gear mounted along footrope consisting of center section 4.6M long of 61cm diameter split auto tires. On each side of the tire section was a 5.4M section of 9 rubber rockhopper discs, followed by a 4.4M section of (5) 45.7Cm steel bobbins. Codend constructed of 8mm twine with 10.2Cm stretched mesh.
176	Peter munro (desc pending)
177	Same as number 172 with 5mm material in body and 5mm double-bar in wings.
178	83/112 Eastern bottom trawl (gear code 44) fished with an underbag having separate footrope and codend. For detailed net plans see munro p. T. And d. A.Somerton 2002. Estimating net efficiency of a survey trawl for flatfishes. Fisheries reasearch 55:267-279.
179	Beam trawl. 3" Pipe frame with semicircle 3" flat strap end runners. 7 Ft. Wide overall x 2 ft high. 1 1/4 Inch nylon net with 118 inch footrope. 5/16 Proof coil chain weight sewn on footrope. Net 22 ft overall with 1/2 inch knotless cod end. (Used on arcturus cruise 199801 towed behind 83/112 trawl with an underbag)
180	Same as 178 with 2' long extensions added to aft end main-trawl riblines from which a beam trawl (gear code 179) is trailed to capture benthic fauna escaping beneath the underbag. The beam trawl is connected to each ribline by a 5 ft-long, 1/2" double braid nylon line using a 1" flat link combined with a g-hook.
181	Same as 178, but fished with 10 web escapement bags designed to collect fauna passing through mesh of the main trawl and the underbag. Bags are centrally located in wings, body and intermediates. Main trawl web escapement bags are located on each wing above the ribline, on the on the top and bottom side of the intermediate where the single mesh and the double mesh sections unite. Underbag web escapement bags are located on each wing below the ribline, on the bottom side of the body, and on the top and bottom sides where the single mesh is joined to the double mesh section. Wing and intermediate bags cover a 20 x 20 mesh area. Bags over the body cover a 60 mesh wide by 20 mesh deep area. All bags have a 1.25" Mesh liner.
203	360 H.P. High rise aberdeen rockfish trawl, 75' headrope, 90' footrope, roller gear, 15 12"diameter floats, 20fm dandylines (10fm single + 10fm double), 5.5" Mesh in body of trawl, 3" in codend, 5mm polyethylene thread. Vertical opening 19.5'.
204	Same as 203 but codend made of 3" nominal inside-stretch-measure, square-mesh, braided-knotless polyethylene.
205	Same as 203 but codend made of 5" mesh 5mm polyethylene.
206	Same as 203 but codend made of 6" mesh 5mm polyethylene.
213	Same as 203 but with 2" mesh codend cover of #21 nylon.
214	Same as 204 but with 2" mesh codend cover of #21 nylon.
215	Same as 205 but with 2" mesh codend cover of #21 nylon.
216	Same as 206 but with 2" mesh codend cover of #21 nylon.
217	Plum staff beam trawl (ellis highliner demersal sampling system constructed by research nets). 5.1M footrope. 4.1M headrope; 1.0M breastlines. Tickler chain arrays (4.3 And 4.9M sections of 1.9Cm chain). 9.5 Kg plum weights attached to wingtips. 3.8 Cm x 3.1 M aluminum beam. Upper net bridle, 1.0 Cm x 1.8 M. Lower bridle, 1.3 Cm x 1.4 M. Body, 79 mm square knotless nylon mesh. Codend with 4.9 mm liner. Codend retrieval line with 20cm float. Beam bridle, 1.3 Cm x 3.1 M. Total length, wings to codend, is 7.9 M. Towline, 3/8 inch nylon.
218	Description: Brendas' Plum Staff Beam Trawl (University of Alaska, Fairbanks). Footrope 5.1-m. Headrope 4.1-m. Tickler chain arrays (4.3 and 4.9-m sections of 1.9-cm chain). Plum weights 9.5 kg attached to wingtips. Reinforced steel beam 3.8 cm x 3.1 m . Upper net bridle 1.0-cm x 1.8-m. Lower bridle, 1.3-cm x 1.4-m. Body 7-mm square knotless nylon mesh. Codend liner 4- mm nylon mesh. A 20-cm plastic float was attached to each end of beam. Beam bridle 1.3-cm x 3.1-m. Total length, wings to codend, 7.9-m. Towline, 3/4 inch nylon.
219	3-meter beam trawl as originally described by Gunderson and Ellis (1986), but with a modified bridle, and the addition of a top panel and roller gear (and removal of the tickler chain) as described in Abookire and Rose (2005), and with a 3 meter 1" OD steel pipe (reinforced with another 1.5 meter 1" steel pipe welded to the center section) as used by Brenda Norcross (UAF) . 9.5 kg tip weights.

UNITED STATES PELAGIC TRAWLS

Code	Gear Description
300	Alaska diamond midwater trawl #1000. 16” Mesh in wings, 32”mesh in body, 3.5”Mesh in codend with liner. 50Kg weights on each wing. Vertical trawl opening range 10fm-16fm. No other data available on specific sampling dimensions. (Used on miller freeman cr.801.)
301	Same as 300 but with 177’ headrope, 177’ footrope, 177’ breastline, 125 kg weights on each wing. (Used on miller freeman cruise 901)
302	Modified stauffer midwater trawl. 80’ Headrope. (Used on david starr jordan cr.875.)
305	Marinovich midwater trawl, 30’ headrope, footrope, and wings. Mesh sizes are 3” stretch in wings and square, 2.5” Belly, 2” body, 1.5” Funnel, 1.25” Intermediate and codend. Designed sampling dimensions = 6.10M path width, 6.10 Vertical opening.
306	2/3 Scale cobb pelagic trawl. 2” Mesh (#18) multifilament in body and 2” mesh (#60) multifilament in codend. 41 Floats. No data on specific sampling dimensions.
307	Modified cobb pelagic trawl. 8” Mesh in wings and first section, 4” mesh in second section. 7.3M vertical opening measured by sounder. (Used on miller freeman cr.772.)
308	Herman engle pelagic trawl. 22” Mesh in wings and forward section, tapering to 1.5” Mesh in codend. 165’ Headrope, 165’ footrope, and 150’ breastlines. 40’-50’ Vertical opening measured by sounder. (Used on pacific raider cr.762.)
309	Norwegian capelin midwater trawl. 7” Stretched mesh in wings and forward part of body, tapering to 1.25” Mesh in codend. 45’-60’ Vertical opening measured by sounder. (Used on pat san marie.)
310	3/4 Scale norse midwater trawl.
311	Full scale norse midwater trawl.
312	Standard no.8 Gourock polish rope trawl. (Used on ocean leader cr.821.)
313	Standard no.9A gourock rope wing midwater and bottom trawl. (Used on dominator cr.821.)
314	Northern gold 1200 rope trawl (n.E.T. Systems, inc.). 298’ Headrope, 278.5’ Footrope, 202’ breastlines. Rope wings. 64” Mesh forward, tapering to 3.5” Mesh in codend. Designed sampling dimensions are 182’ headrope spread and 118’ breastline spread. Measured dimensions were 30-40m vertical opening and 40-50m horizontal opening (by scanmar). (Used on miller freeman cr.881.)
315	Same as 314, but modified to a bridleless configuration. 310’ Headrope, 164’ footrope, 260.5’ Breastlines. Designed sampling dimensions are 182’ headrope spread and 134’ footrope spread. (Used on miller freeman cr.891.)
316	Same as 305, but has additional 6 12” cycolac trawl floats. (Used on miller freeman cr. 909.)
317	Aleutian wing 30/26 trawl. Full mesh wing trawl constructed of nylon except to polyethylene towards the aft section of the body and the codend. The head and foot rope measured 81.69 M and mesh sizes tapered from 3.25 Cm in the forward section of the net to 8.9 Cm in the codend.
318	Midwater trawl used by the f/v unimak enterprise for experimental rockfish trawling in 1999. No information on construction or design of net. Vertical opening ~21.9 M and horizontal opening ~43.9 M.
318	LFS 1421 - New MACE midwater net replacing AWT - specifications forthcoming

UNITED STATES SHRIMP TRAWLS

Code	Gear Description
500	Pelagic shrimp trawl, 2/3 scale, fine mesh. No data on specific sampling dimensions.
502	Oregon state university 23’ semi-balloon shrimp trawl with 1.5” Mesh.
504	Shrimp vertical distribution sampler. No data on specific sampling dimensions.
506	43’ Flat gulf shrimp trawl (used throughout alaska exploratory cruises). 43’ Footrope, 44’ headrope, 1.5” Mesh throughout. 43’ Quarter-inch ground chain.
507	High-opening shrimp trawl, 61’ footrope and 61’ headrope, nylon netting, without height-regulating chain and tickler chain.
508	High-opening shrimp trawl, 61’ footrope and 61’ headrope, nylon netting, with footrope and tickler chains. Mean effective path width = 9.75M, range 9.7M-10.4M. Mean vertical opening = 3.8M, range 3.5M-4.1M. Fishes 30cm off bottom.
509	Same as 507, but with 5/16” looped chain on footrope, 15 links per foot.
510	Kodiak shrimp trawl, 65’ footrope. No data on specific sampling dimensions.

Code	Gear Description
511	Same as 509, but with 5/16" chain removed from footrope and used as a loose tickler chain from wing-tip to wing-tip. (Used as bottom trawl on alaska cr.853, Hauls #6-end.)
512	70' Gulf semi-balloon shrimp trawl, 70'footrope, 57.5' Headrope, 1.5" Mesh in wings and intermediate, 1.625" Mesh in codend.
514	Kodiak shrimp trawl, 80' footrope, with 3/4" mesh liner in codend. No data on specific sampling dimensions.
516	Nordby shrimp trawl, 80' footrope, 65' headrope, 3/8" x 74' tickler chain.
518	Universal shrimp trawl, 85' footrope. No data on specific sampling dimensions.

UNITED STATES OTHER GEAR TYPES

600	Sablefish trap, 8' x 34" x 34", collapsible, with 2.5" Nylon mesh. One tunnel entrance. 10 Traps per 550fm groundline.
601	Conical sablefish traps, "korean" style. 54" Bottom diameter, 3" nylon mesh with one tunnel entrance on side. 10 Traps per 550fm groundline.
602	Combination of 600 and 601, with 5 rectangular and 5 conical traps alternating along 550fm groundline.
603	"Cloverleaf"-shaped sablefish traps. 5 Traps on vertical line so that they occur at heights of 0, 5, 10, 20, and 35 meters off bottom.
604	Beam trawl, heavy duty, 10' width x 2' height. Net is 31.8Mm stretch mesh nylon with 12.7Mm stretch mesh codend liner. Equipped with chafing gear and 3/8" proof coil tickler chain. Used on ocean hope iii cruise 910.
605	Modified two-bag dutch trawl with 39.5' Footrope.
606	Modified two-bag dutch trawl, 56.5' Footrope, polyethylene, with 5.5" Mesh replaceable sieve panel. No data on specific sampling dimensions.
607	Same as 606 but with 4.5" Mesh sieve panel.
608	Same as 606 but with 3" mesh sieve panel.
609	Same as 606 but with 2" mesh in bottom 5 rows of sieve panel.
610	Beam trawl, 20' width.
611	Oregon state university 3m beam trawl, 1" mesh throughout, metered wheels towing edgerton deep seas camera (#372) and twin lights (#382).
612	Oregon state university unistrut rectangular frame with twin edgerton cameras (#372) & duo lights (#382).
613	Snag cable or chain drag (no trawl attached).
614	Gillnet, seven 50fm x 3fm panels of the following sizes (stretched mesh measure): 0.83", 1.38", 1.65", 2.50", 3.25", 4.50", And 5.25".
615	Scallop dredge, new bedford type, 8' width.
616	South carolina scallop trawl, 25' footrope.
617	Scallop dredge, 11' bar.
618	Scallop dredge, new bedford type, 13' width, 3" rings.
619	Scallop dredge, new bedford type, 13' width, 4" rings.
620	Clam harvester, steel construction, 7' wide and 18' long, weight 13,000 lbs. Effective path width = 0.914M, sampling depth = 15-18cm sediment depth.
621	East coast style hydraulic clam harvester (5,500 lbs.). 72" (Fishing width) knife. Steal guard crab diverter.
622	Isaacs-kidd midwater plankton trawl. Estimated dimensions 50cm x 50cm mouth opening, 1000 micron aperture mesh.
623	Japanese research longline, comprised of 160 hachi (sections of longline) tied together. Each hachi 100m long with 45 hooks. (Used on the hatsue maru no.55 Cr.781).
624	Circular plankton trawl, 1m diameter. 555-Micron aperture mesh. (Used on david starr jordan cr.875.)
625	Dredge:18" x 40" opening. Ring and link bag 57" long with 2" x 1/4" rings. Inside liner of 1/2" knotless nylon mesh. Total weight 450 lbs. Used on ocean hope iii cruise 910
626	Methot trawl:5.17 Sq meter rigid opening, 2 x 3 mm mesh. Codend 1 mm mesh.
627	Wakefield camera sled. The video camera sled is made primarily of hot-dipped galvanized schedule 40 two inch steel pipe. The sled measures 366 cm long by 213 cm wide by 152 cm high and weighs about 500 kg. The video camera system is a "deepsea power and light" avcs system with two sets of 24 volt, 38 amp hour batteries and two 150 watt sealites.
628	Tucker trawl.
629	Goa (desc pending). Invertebrate dredge.

FOREIGN TRAWLS — JAPANESE

Code	Gear Description
700	Japanese bottom trawl. 51.3M headrope, 61.5M footrope. Mesh sizes: wing--180mm, body--150mm, intermediate--150mm-90mm, codend--90mm. Mean horizontal opening 25.0M, mean vertical opening 5.0M.
701	Japanese bottom trawl. 53.4M headrope, 65.2M footrope. Mesh sizes: wing--180mm, body--135mm, intermediate--120mm-90mm, codend--90mm. Mean horizontal opening 25.0M, mean vertical opening 5.0M. Footrope with 18 550mm steel bobbins and 17 440mm rubber bobbins.
702	Same as 701 except footrope has 2 350mm steel, 40 350mm rubber, and 39 200mm steel bobbins.
703	Fishery agency of japan surveys, nimai-ami trawl. 48M footrope, 35.4M headrope. Mesh sizes: wings & body--60mm-180mm, intermediate--48mm-54mm, codend--42mm. No data on specific sampling dimensions.
704	Fishery agency of japan surveys, yomai-ami trawl. 48M footrope, 39.4M headrope. Mesh sizes: wings & body--120mm-180mm, intermediate--75mm-105mm, codend--75mm. No data on specific sampling dimensions.
705	Japanese far seas fisheries laboratory (shimizu) combination midwater/bottom trawl, with 2” codend mesh. Estimated sampling dimensions: 30m path width, 30m vertical opening.
706	Flounder trawl. Overall length 83.3M, including 18m codend. 55.0M headrope, 65.0M footrope. Mesh sizes: wings--180mm, body and intermediate--120mm, codend--90mm. Mean vertical opening 4.5M, mean path width 21.6M. (Used on hatsue maru no.62 Cr.801.)
707	Roller gear trawl. Overall length 72m, including 18m codend. 32.0M headrope, 44.0M footrope. 58.0M roller gear made of auto tires. Mesh sizes: wings--180mm, body--150mm, intermediate--110mm-120mm, codend--90mm. Mean vertical opening 5.2M, mean path width 28.79M. (Used on hatsue maru no.62 Cr.801.)
708	Japanese bottom trawl. 56.4M headrope, 64.6M footrope. Net length 76.6M. Codend mesh size 100mm. 440Mm bobbins. Mean horizontal opening 24.3M, mean vertical opening 5.6M.
709	Roller gear trawl. Total net length 75m, codend length 18m. Roller gear made of auto tires. 54.5M headrope, 64m footrope. Mesh sizes: wings--240mm-180mm, body--180mm-135mm, intermediate--120mm-90mm, codend and liner--90mm. Mean vertical opening 4.55M, mean horizontal opening 23.0M. (Used on ryujin maru no.8 Cr.821.)
710	Japanese bottom trawl. Four-seam polyethylene with 49.1M headrope, 57.0M footrope. Mesh sizes from 240mm in wings to 100mm (triple-layered mesh) in codend. Approx. 20 400Mm floats on headrope. (Used on daikichi maru no.37 Cr.841.)
711	Japanese bottom trawl with roller gear. Total net length 80.3M, including 22m codend. 52.4M headrope, 63.9M footrope. Mesh sizes: wings--180mm-240mm, body--100mm-150mm, triple-layered codend--100mm. Steel bobbins (440mm) and rubber washers (240mm). Mean horizontal opening 35m. Vertical unknown. (Used on daikichi maru no.32 Cr.851.)
712	Japanese bottom trawl with roller gear. 38M headrope, 54m footrope. Mesh sizes: wings--180mm, body--150mm-135mm-120mm-90mm, intermediate--90mm, codend--120mm double web. Horizontal opening 22.83M, vertical opening 4.5M. (Used on ginryu maru no.5 Cr.861.)
713	Japanese bottom trawl with roller gear. Total net length 33.5M. 52.9M headrope, 63.4M footrope. Mesh sizes: wings--180mm, body--150mm, intermediate--90mm-120mm, codend 100mm. Rubber bobbins 150mm diameter. Vertical opening 5-6m, horizontal opening 18-28m. (Used on shosin cr.861 And shinei cr.861.)
714	Same as 713, but with 10 1.5M chains between footrope and roller gear, with floats on the footrope. Total lift power is 160kg. (Used on shosin cr.861 And shinei cr.861.)
715	Same as 713 but with 10 2m chains between footrope and roller gear, with floats on footrope. Total lift power is 160kg. (Used on shosin cr.861 And shinei cr.861.)
716	Japanese roller gear trawl. Four seam, with 46.8M headrope, 58m footrope. Mesh sizes: wings--180mm, body--150mm, intermediate--120mm, codend--100mm-90mm. Horizontal opening 28.3M, vertical opening 5.0M. (Used on the daito maru no.38 Cr.831.)
717	Japanese polytrawl with roller gear. Polyethylene web, 55.6M (182.4’) Headrope, 65m (213.3’) Footrope. Wingspread varied from 26.6M (87.3’) At depths under 100m, to 30.0M (98.4’) At depth over 200m. (Used on taisei maru cr.871.)
718	Japanese midwater rope trawl. 53M headrope, 53m footrope. Total net length approx. 126M. Approx. Opening dimensions 50m wide, 45m high. Mesh sizes: 3.2M in forward end reducing to 1.6M-1m-0.6M-0.4M-0.3M-0.2M-0.15M-0.12M-0.09M just before the codend attachment. Codend 20m deep. (Used on seiju maru cr.881.)

Code	Gear Description
719	Japanese midwater trawl. 46.8M headrope, 46.8M footrope. 100.65M overall length, wings 22.1M, body & intermediate 65.55M, codend 13m. Mesh sizes: wings--0.6M, body & intermediate--0.6M-0.24M-0.18M-0.15M-0.12M, codend--0.09M. (Used on kaiyo maru cr.881 And cr.891.)
720	Japanese "flounder" bottom trawl with roller gear. 68.96M headrope, 83.0M footrope. Mesh sizes: wings--180mm-240mm, body--120mm-150mm, codend--100mm. Designed sampling dimensions: horizontal opening 35.0M, vertical opening 4.5M. Mean sampling dimensions measured by scanmar: 34.75M horizontal opening, 3.856 Vertical opening. (Used on tomi maru no.51 Cr.881.)
721	Japanese combination midwater/bottom trawl. 69M headrope, 84m footrope. Mesh sizes: wing--300mm-180mm, body and intermediate 165mm-120mm, codend--100mm. Horizontal opening 30.0M, vertical opening 12.0M. (Used on daian maru no.128 Cr.901.)
723	Japanese research longline, comprised of 160 hachi (sections of longline) tied together. Each hachi is 100m long with 45 hooks. (Used on the hatsue maru no.55 Cr.781.)
724	Description pending. Used on shoyo maru 911.
725	Description pending. Used on shoyo maru 911.
726	Japanese midwater trawl. 47.6 M headrope, 49.6 M footrope. Total net length 99.6 M, wings 21.0 M, body and intermediate 65.6 M, and codend 13.0 M. Mesh sizes: wings 600 mm, body and intermediate 600 mm, 240 mm, 180 mm, 150 mm, 120 mm; codend 75 mm. Average vertical opening 17 m, average horizontal opening 25 m. First used on kaiyo maru 901.
727	Description pending (used on kaiyo maru 931)

FOREIGN TRAWLS — CANADIAN & IPHC

Code	Gear Description
750	International pacific halibut commission surveys 400-mesh eastern trawl with 94' footrope and 71' headrope. 4" Mesh in wings, body, & intermediate, 3.5" Mesh in codend. 9 6" Diameter floats on headrope, 3"-4" rubber washers along entire footrope width. No codend liner. Sampling dimensions should be similar to code 20.
751	International pacific halibut commission surveys small-mesh pacific coast two-seam trawl with 57' footrope and 47' headrope. 2.5" Mesh in wings, body, and intermediate, 1.25" Mesh in codend. 3 6" Diameter floats on headrope. No data on specific sampling dimensions.
760	500-Mesh eastern trawl. 3" Mesh. 1.5" Mesh liner in intermediate and codend. 19" Rubber bobbins on groundline. 35Fm sweeplines, 1400lb brompton otterboards. (Used on frbc vessel g.B.Reed cr.701.)
761	70' Semi-balloon shrimp trawl. 1.5" Mesh nylon, 0.5" Mesh cotton codend liner. 3.5' X 8' plywood otterboards. (Used on frbc vessel g.B.Reed 1963-66.)
762	375-Mesh eastern trawl. 4.5" Mesh in wings & body, 3" mesh in intermediate and codend. 1.5" Mesh codend liner. Rubber bobbins on groundline. (Used on frbc vessel g.B.Reed 1963-66.)
763	Western trawl, gunlene, 4.5" Mesh. (Used on frbc vessel g.B.Reed 1963-66.)
764	400-Mesh eastern type trawl (drumfil 1). 4.5" Stretch mesh throughout. (Used on g.B.Reed.)
765	Same as 764 except 3" mesh in codend and intermediate.

FOREIGN RESEARCH TRAWLS — SOVIET

Code	Gear Description
771	Russian bottom trawl. 69 M headrope, 87 m footrope composed of a 500 kg chain and one 25 kg bobbin on each end. Opening 8-10 m vertical. Mesh 200-40 mm body, double 55 mm codend, 10 mm codend liner. 200 Mm spherical aluminum floats, 380 kg bouyancy. Doors oval steel, same as used with pelagic trawl number 772. Used on professor kaganovsky cruise 971.
772	Russian pelagic trawl. Rope trawl, total length 132 m. 76 M headrope with a 4 sq m kite. 76 M footrope with 1 400 kg weight on each end and a 300 kg chain. Average vertical opening 35 m, individual tow measurements taken. Mesh 3-6 m forward, 800-60 mm intermediate, double 55 mm codend, 10 mm codend liner. Doors oval steel, same as used with trawl number 771. Used on professor kaganovsky cruise 971.
773	Soviet bottom trawl. 69M headrope, 94m footrope. Opening: 8m vertical and 27m horizontal. Mesh: 200mm wings, 40mm belly, 30mm codend, 100mm square. 16 Each 200mm aluminum floats. 25M, 500 kg chain in place of bobbins. Doors: 1200 kg, 6m^2. 75M dandylines. Used on novodrutsk cruise 913.

Code	Gear Description
774	Soviet bottom trawl. 35M headrope, 17m footrope with one 300kg roller bobbin on each end. Mesh sizes: wings--100mm, square--70mm, belly--50mm, codend--30mm. 100 20Cm spherical aluminum floats. Horizontal opening 17-20m, vertical opening 4-6m. Scanmar gear mensuration equipment readings available for some tows - see craig rose. (Used on novokotovsk cr.901.)
775	Soviet otter trawl, 27.1M long. 28M headrope, 45.8M footrope. 3.5M-5.0M vertical opening and 16m-17m horizontal opening. (Used on ekvator cr.801.)
776	Same as 775 with 10mm mesh liner and unspecified but higher vertical opening. (Used on ekvator cr.801.)
777	Soviet bottom trawl. 31M headrope, 36m footrope. 12 400Mm and 5 500mm floats. Mesh sizes: 90mm forward, 30mm in codend. 6M vertical opening, 20m horizontal opening. (Used on shantar cr.811.)
778	Soviet pelagic trawl. 77.4M headrope, 77.4M footrope. Mesh sizes: 800mm forward, 30mm in codend. 20M vertical opening, 30m horizontal opening. (Used on shantar cr.811.)
779	Soviet bottom trawl. 31M headrope, 47m footrope. Mesh sizes: wings--90mm, square--35mm, belly--40mm, codend--30mm. 17 600Mm metal bobbins, 100 200mm diameter floats. 6.5M vertical opening. (Used on mys. Dalniy cr.821.)
780	Soviet bottom trawl. 75M long including 18m codend. 43M headrope, 59m footrope. Mesh sizes: wings--100mm, square--50mm, belly--50mm x 30mm, codend--30mm. 17 600Mm metal bobbins, 100 200mm diameter floats. 12M vertical opening, 29.5M horizontal opening. (Used on mys.Dalniy cr.821.)
781	Soviet bottom trawl. 28M headrope, 41m footrope. Mesh sizes: wing--120mm, square--100mm, belly--50mm, codend--30mm. 17 400Mm-600mm metal bobbins, 100 200mm diameter floats. 6M vertical opening. (Used on mys.Dalniy cr.821.)
782	Soviet pelagic trawl. Total length 182m. 77.4M headrope, 77.4M footrope. Mesh sizes: wing--600mm, intermediate/body--400mm-200mm-100mm-50mm, codend--30mm-50mm. 400Kg chain footrope with 500kg tom weight at each end. 25M vertical opening, 30m horizontal opening. (Used on mys.Dalniy cr.821.)
783	Soviet pelagic trawl. Total net length 132m. 77.4M headrope, 77.4M footrope, 73m breastline. Stretched mesh sizes: wings--800mm, throat--600mm, body--350mm, intermediate--70mm, codend--30mm. 250Kg chain footrope, with 650kg tom weight forward of each end. (Used on poseydon cr.851.)
784	Soviet bottom trawl. 32.9M headrope and footrope. Mesh sizes: wing--70mm, square--50mm, belly--20mm, codend--20mm. No bobbins. 80 200Mm diameter floats. 7.5M vertical opening, 16m horizontal opening. (Used on srtm-8459 cr.821.)
785	Soviet bottom trawl. 27.1M headrope, 27.4M footrope. 9.0M vertical opening, 14.0M horizontal opening. Otherwise same as 784. (Used on srtm-8459 cr.821.)
786	Soviet bottom trawl. 43M headrope, 60.8M footrope. Mesh sizes: wing--100mm, mouth--90mm, belly--60mm, codend--30mm. 100 200M diameter spherical aluminum floats, 40 300mm cylindrical cast-iron bobbins. 6M vertical opening, 29.5M horizontal opening. (Used on milogradova cr.831.)
787	Soviet bottom trawl. 30.6M headrope, 43.8M footrope. Mesh sizes: wing--100mm, throat--100mm, midbody--70mm, codend--55mm. Riblines in lower 16m of net from codend to throat, 17.5Mm diameter, spaced 1m apart. Remaining 6m of net has no riblines. 130 200Mm diam. Floats, 200 50mm diam. Rubber spacers. Soviet estimate 6m vertical opening, 29.5 Horizontal opening. (Used on shantar cr.842.)
788	Soviet bottom trawl. 31M headrope. (Used on novodrusk cr.841.)
789	Soviet pelagic trawl. 60M headrope. (Used on novodrusk cr.841.)
790	Soviet bottom trawl. 31M headrope, 45m footrope. Mesh sizes: wing--100mm, square--80mm, belly--55mm-30mm, codend--55mm-30mm. 120 120Mm diam. Spherical metal floats, 17 500mm diam. Metal bobbins. 6M vertical opening, 18m horizontal opening. (Used on poseydon cr.841.)
791	Soviet bottom trawl. 30.6M headrope, 36.4M footrope (includes 6.3M mud sweep each side). Mesh sizes: wing & square--100mm, belly--90mm-80mm-70mm-60mm-55mm, codend--50mm with 30mm liner. 20 400Mm diam. Spherical steel bobbins, 140 200mm diam. Spherical aluminum floats. 6M vertical opening, 29.5M horizontal opening. (Used on mys. Babushkina cr.851.)
792	Soviet pelagic trawl, rt/tm 118. 20M codend length, 30mm codend mesh size. 60M vertical opening. (Used on gissar cr.861.)
793	Soviet bottom trawl. 9M vertical opening. (Used on gissar cr.861.)
794	Soviet bottom trawl. 43M headrope, 60.8M footrope. 100 20Cm floats on headrope. (Used on babaevsk cr.871.)

Code	Gear Description
795	Soviet bottom trawl. 50.8M headrope, 67.8M footrope. (Used on babaevsk cr.871.)
796	Soviet pelagic trawl. Net length 212.2M. 77.4M headrope and footrope, 38.9M wing rope lines. Mesh sizes: 800mm-600mm-400mm-200mm-100mm-60mm, codend--55mm-30mm, 10mm liner. 20-25M vertical opening, 40m average horizontal opening. (Used on darvin cr.871.)
797	Soviet pelagic trawl. 108M headrope and footrope. 116M wing rope lines. Mesh sizes: 1200mm-800mm-400mm-200mm, codend--100mm-60mm, 10mm liner. 48-55M vertical opening, 65m average horizontal opening. (Used on darvin cr.871.)
798	Soviet bottom trawl. 69M headrope, 85m footrope. Mesh sizes: wing--200mm, square--100-80mm, belly--60mm, codend--40mm, liner 10mm stretch mesh. 5M vertical opening, 29m horizontal opening. Used on darvin cr.881.)
799	Soviet trawl used both bottom and pelagic. 35M headrope. Mesh sizes: wing--80mm, square--50mm, belly--30mm, codend--10mm. 160 200Mm diameter floats, bobbins removed. 12M vertical opening, 22m horizontal opening. (Used on mys babushkina cr.891 And 892.)

FOREIGN RESEARCH TRAWLS — KOREAN

800	Korean bottom trawl. 72.5M long, 50m headrope, 63m footrope. 14-Bobbin roller gear. 130Mm mesh in codend. (Used on oh-dae-san cr.801, Pusan cr.851.)
801	Korean bottom trawl. 50.8M headrope, 63.0M footrope. Mesh sizes: wing--180mm, square--135mm, belly--120mm, codend--130mm. 15-Bobbin roller gear. 5.18M vertical opening. (Used on oh-dae-san cr.811.)
802	Korean "jumbo" net. Large commercial bottom trawl compared with standard korean survey trawl (code 800(and used to sample 8 standard survey stations after standard trawl became unusable. (Used on pusan cr.851.)

FOREIGN RESEARCH TRAWLS — KOREAN

825	Professor siedlecki bottom trawl with roller gear. 18M horizontal opening, 4-6m vertical opening.
826	Professor siedlecki midwater trawl. 40M horizontal opening, 21m vertical opening.

GENERIC GEAR TYPES

(Unspecified Dimensions & Parameters)

900	Bottom trawl

Code	Gear Description
901	Sablefish trap or pot (conical or rectangular)
902	Longline
903	Handline
904	Purse seine
905	Gill net
906	Troll
907	Jig
908	Sport
909	Shrimp pot
910	Shrimp trawl
911	Salmon trap
912	Crab pot
913	Midwater trawl
914	Japan - u.S. Longline survey standard sampling gear composed of 100 m hachi or skates containing 45 j-shaped hooks attached to 120 cm gangions and spaced 2 m apart.
915	Afsc longline survey standard sampling gear composed of 100 m skates containing 45 mustad 13/0 circle hooks attatched to 38 cm gangions secured to beckets that are tied into the main line.
916	Rov bottom
917	Rov midwater
918	Camera sled bottom
919	Camera sled midwater
920	Submersible
921	Canadian trawl (cantrawl ltd.) midwater trawl. 400' headrope and side length of 601'. footrope of 265lb chain. polyform floats on headrope center and wingtips. 5 meter fixed bail 1150 lb. norestern trawl alloy doors with 200 lb. added to shoe (1350 lbs total). Large hexagonal forward meshes with 3/4" mesh net liner in codend. Main warp length of 160-200 fathoms. Tow speed of 4.0-4.5 knots. Headrope, center and footrope wingtips on each side. Bridal setback of 0' on headrope, 5' on center, and 10' on footrope.

Gear Codes

Code	Gear Description
NOTE: GEAR AND ACCESSORIES CODES WERE RECODED IN 1981. CONTACT THE RACE DATABASE MANAGER FOR A LISTING OF OLD CODES AND CORRESPONDING NEW CODES.	
01	6'X 9' steel v-doors, two 15fm bridles from each wing joined to a single 30fm bridle, 18" extension on lower wing. 1.25" Mesh codend liner.
02	6'X 9' steel v-doors, 25fm dandylines branching to 15fm bridle. 1.25" Codend liner, no chains. (Bering sea 1981.)
03	6'X 9' steel v-doors, 25fm dandylines (15fm single and 10fm double), approx. 18"X 8" floats on headrope, 200-400lb chain on footrope, 1.25" Mesh codend liner.
04	6'X 9' steel v-doors, two 25fm bridles.
05	Same as 04 except 30fm double dandylines. 1.25" Codend liner.
06	6'X 9' aluminum v-doors, 30fm bridles, 1.25" Codend liner.
07	6'X 9' aluminum v-doors, 20fm bridles.
08	Same as 07 with 1.25" Mesh codend liner.
09	Same as 07 with roller gear.
10	5'X 7' steel v-doors, 2 20fm bridles each wing.
11	5'X 7' steel v-doors, 3 30fm bridles each wing.
12	Same as 10 with 1.25" Mesh codend liner.
13	Same as 11 with 1.25" Mesh codend liner.
14	Same as 11 with 1/8" mesh codend liner.
15	6'X 9' steel v-doors (standardized to 1800 lbs after 1988),double 30 fm 5/8" dandylines, 1.28" Mesh codend liner, 24" chain extension between lower dandyline and footrope.
16	6'X 9' steel v-doors, double 30fm dandylines, 1.25" Mesh liner, roller gear.
17	Same as 15, except length of chain between lower dandyline and footrope is 11'.
18	14' X 6.5' Suberkrub doors (3218lbs) with 82fm double dandylines, 1.8" Liner. (Used on miller freeman cr.782).
19	Same as 14, but doors are 6' x 9'. (Used on alaska cr.873).
20	5'X 7' steel vdoors, two 30fm bridles from each wing. 1.25" Codliner.
21	5'X 7' steel vdoors with two 15fm wires connected to a 25fm single dandyline (per side).

Gear Accessories Codes

Code	Accessories Description
22	5'X 7' steel vdoors, one single 0.5" Diameter 15fm line joined to two 15fm legs of 0.5" Diameter wire.
23	5'X 7' steel v-doors, 750lbs each, two single dandylines, 40fm each.
24	6'X 9' steel v-doors, 1300-2200lbs each. 30Fm 5/8" triple dandylines with 9", 18" and 24" extensions for headrope, side, and bottom wing attachments respectively. 1.25" Mesh codend liner. 80' Long roller gear on footrope.
25	Same as 15 with 1.25" Mesh codend liner. Used on miller freeman cruises 911 and 912.
28	2.65M x 4.10M rectangular steel doors, 4200kg each. 6.4Mm mesh codend liner.
29	4.0M x 2.6M otter doors. Weight: in air=5,012.9Kg; in water=3,500kg. (Used on tomi maru no.51 Cr.881.)
30	6'X 9' steel vdoors with norwegian trawl bridles, 1.25" Liner.
31	Same as 30 but with 1.25" Mesh liner in codend.
32	7'X 10' steel vdoors with 25fm single and 15fm double dandylines, 1.25" Mesh liner in codend.
33	5'X 7' steel vdoors, 30fm triple dandylines, 1.25" Mesh liner in codend, 102' long roller gear on footrope.
34	5'X 7' steel vdoors, 25fm dandylines (15fm single, 10fm double), 18" x 8" floats on headrope, 1.25" Mesh liner in codend, no weight on footrope.
35	Same as 32 but with roller gear.
36	Same as 35 but with 30fm triple dandylines.
37	Same as 33 but with dropper chains replacing the roller gear.
38	6'X 9' steel vdoors, 40fm dandylines (25fm single, 15fm double), 1.25" Liner, roller gear.
39	6'X 9' steel vdoors, 30fm double dandyline, no liner.
40	6'X 9' steel vdoors, 30fm triple dandylines (18" extension on top dandyline), 1.25" Mesh liner in codend. 102' Long roller gear on footrope.
41	Same as 39 but with 1.25" Liner.
42	5'X 7' steel vdoors, 10fm dandylines (3/8").
43	Demersal trawl doors (used on siedlecki cr.772).

Code	Accessories Description
44	5'X 7' steel vdoors, 10fm 3/8" double dandylines, 28" x 8" floats on headrope, 80lbs anchor chain on each end of footrope, 0.5" Codend liner.
45	Pelagic trawl doors (used on siedlecki cr.772).
46	5'X 10' 10" pelagic trawl doors.
47	6'X 9' steel vdoors, 40fm dandylines (25fm single, 15fm double), 1.25" Liner, no roller gear.
48	7'X 10' steel vdoors with double 30fm dandylines.
49	Same as 48 but with 1.25" Liner in codend.
50	5'8" X 8'8" astoria v-doors.
51	5'8" X 8'8" astoria vdoors with 25fm dandylines, 0.75" Stretch mesh in codend.
52	6'X 9' steel vdoors, triple 30fm dandylines with 18" extensions on upper dandyline. 1.25" Liner.
53	5.5' X 8.5' Astoria vdoors, 20fm dandylines, 1.25" Liner.
54	5'X 7' steel vdoors, 25fm single and 15fm double dandylines, 1.25" Liner in codend.
55	5'X 7' steel vdoors, 10fm dandylines, 3/8" knotless shrunken web for codend liner.
56	6'X 9' steel vdoors, 30fm triple dandylines (18" extension on top dandyline), 1.25" Mesh liner in codend. Roller gear (102' long) mounted on 5/8" cable. Solid 14" rollers on central portion of roller gear. (Used on miller freeman cr.834 & 841.)
57	6'X 9' steel vdoors, 2200lbs each. Three 30fm, 5/8" galvanized bridles from each side. West coast slope survey modified roller gear (8" diameter solid rubber disks, strung from wing to wing on 5/8" high tensile chain for added weight) and 1/2" long link chain fishing line.
58	6'X 9' steel vdoors, 2200lbs each. 180' Dandylines, 1.25" Mesh liner and polypropylene chafing gear. Roller gear consists of 14" bobbins and smaller spacers threaded onto 80' of 3/4" cable. Additional 20' of 3/4" cable with attached bobbin is connected to each end of the roller gear.
59	Same as 55, with 1/8" knotless web for codend liner.
60	Same as 57, but doors are 5' x 7'.
61	Same as 56, with tickler of 5/8" chain (used on miller freeman cr.834.)
62	Same as 40, with tickler of 5/8" chain (used on miller freeman cr.834.)

Code	Accessories Description
63	Same as 41 with 1.25" Mesh bag covering entire trawl from point of attachment 10' behind the footrope. (Used on the miller freeman cr.834.)
64	Net rigging consists of triple 180' (54.9 M), 5/8" (1.6 Cm) diameter galvanized wire rope dandylines. Dandylines are rigged with 18" and 9" chain extensions to the headrope and side panel attachments respectively. Steel v-doors, 6' x 9' (1.83 X 2.74 M), weighing from 1,300 to 2,200 lbs each are standard. The roller gear is 79' 6" (24.2 M) long and constructed of 3/4" (1.91 Cm) 6 x 9 galvinized wire rope, 14" (36 cm) rubber bobbins separated by a solid string of 4" (10 cm) rubber disks. In addition, 19' 6" (5.9 M) wire rope extensions with 4" (10 cm) and 8" (20 cm) rubber disks were used to span each lower flying wing section. Ploypropylene chafing gear: 10" (25.3 Cm) mesh of 3/8" (1 cm) poly rope hog ringed or interwoven, 46 mesh circum. By 21.5 Mesh deep, laced to outer bag. Used on: lets-go cr. 871, Nore-dick cr. 871, Pelagos cr. 891, Green hope cr. 901 And 911, pat san marie cr. 901 And ocean hope i cr. 911.
65	6'X 9' steel v-doors, 1480-1700lbs. Three 30fm 5/8" galvanized bridles (dandylines) from each wing. West coast slope survey modified "mud-sweep" roller gear (see code 57). (Used on miller freeman cr.889.)
66	4'6" X 7'6" astoria v-doors, 10fm dandylines (3/8" cable).
67	5'6" X 9' astoria v-doors, 10fm dandylines (3/8" cable).
68	2.2M x 3.4M doors, 98m dandylines.
69	6 Floats along top of intermediate and codend meshes of 500-mesh eastern trawl.
70	Rubber bobbins on groundline (used on the g.B. Reed).
71	Rubber bobbins and chain beckets, 1.5" Liner.
72	Chain beckets on groundline, 1.5" Liner in codend.
73	2.2M x 3.4M doors, 108m dandylines.
74	2.2M x 3.4M doors, 138m dandylines.
75	150M dandylines, 2 per side. (Used on miller freeman cr.803).
76	75M dandylines, 2 per side. (Used on miller freeman cr.803).
77	6M square waco doors with 75m dandylines (2 per side).
78	2.2M x 3.4M steel doors, 2.3 Metric tons. Two 50m dandylines (one cable on chain) per wing. Additional 35m cable dandyline to door for an 85m total length from door to wing. (Used on the hatsue maru no.55 Cr.781).

Code	Accessories Description
79	Rubber bobbins on groundline, 1.5" Liner.
80	V-bridles. 30' Legs of 1/2" cable
81	6M square waco doors with 90fm dandylines (2 per side).
82	6M square waco doors with 45fm dandylines (2 per side).
83	6M square waco doors with 30fm dandylines (2 per side) and 1.25" Liner in codend.
85	Small hydroflow doors, 0.25" Liner. (Used with oregon state university 23' trawl).
86	1.25" Stretch mesh liner attached to sweepchain, no rockchains. (Used on oregon state university scallop dredge.)
87	Same as 86 except with rockchains.
88	Same as 87 except liner attached to cutting bar.
89	5 Square meter doors. 45Fm bridles, 2 per side. 1 1/4" Mesh codend liner. 600Lb tom weights, 1 chain per side. 17' Door extension. (Used on miller freeman cr.881.)
90	Same as 89, but 1200lb tom weights used, door extension removed. (Used on miller freeman cr.881 & 882.)
91	Same as 89 with 17' door extension removed. (Used on miller freeman cr.882 And pelagos cr.881.)
92	Same as 89 except no bridles and 1000lb tom weights. (Used on miller freeman cr.891.)
93	2.35M x 3.55M doors. Codend liner secured (used on seiju maru cr.881.)
94	Same as 93 except codend liner not tied (used on seiju maru cr.881.)
95	3.2M x 2.1M rectangular steel doors, 2500kg. Sixty 30cm headrope floats tested to 2000m depth. No codend liner. (Used on kaiyo maru cr.881, 891.)
96	5 Square meter doors. 10Fm bridles. 1/8" Codend liner. (Used on pelagos cr.881.)
97	5'X 7' steel v-doors, 1250 lbs. 2 Top bridles, 30fm long of 1/2" wire. 2 Bottom bridles, 32fm long of 1/2" wire. (Used on miller freeman cr.909.)
98	6' X 9' steel v-doors, 2200 lbs each. 1.25" Mesh codend liner, 500 lb each tom weights, first used on miller freeman 91-1.
99	1.8 M x 2.7 M (6' x 9') v-doors, 1,000 kg (2200 lbs) each, 0.3 Cm (.125") Mesh codend liner, 18.3 M (60') bridles, first used on miller freeman 91-1.
100	Description pending. Used on shoyo maru 911.

Code	Accessories Description
101	Description pending. Used on shoyo maru 911.
102	Description pending. Used on shoyo maru 911.
103	Same as 89 except no bridles and 500 lb per side tom weights used. Miller freeman 90-1.
104	5 Square meter doors, two 30 fm dandylines (5/8" galv cables), 370 lb per side tom weights and 1.25" Liner in codend.
105	Same as 98 except 750 lb. Tom weights per side.
106	6.0 Sq meter doors (1.8 Tons each). 20 Mm mesh codend liner.
107	6'X 9'steel v-doors, 2200 lbs each. 30 Fm triple dandy lines. 1.25" Mesh liner in codend. 102' Long roller gear on footrope.
108	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 454.5 Kg (1,000 lb) tom weights on each side.
109	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner, 82.4 M (270') of 3.2 Cm (1.25") 8X19 nonrotational dandylines, 454.5 Kg (1,000 lb) tom weights on each side.
110	1.8 M x 2.7M (6 x 9')steel v-doors 1000 kg (2,200 lb) each, 3.2 Cm (1.25") Mesh codend liner, 82.4 M (270') of 3.2 Cm (1.25") 8X19 nonrotational dandylines, 454.5 Kg (1,000 lb) tom weights on each side.
111	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner, triple 54.8 M (179.8') Dandylines and footrope equipped with 36 cm (14.3") Roller gear, no tom weights.
112	1.8 X 2.7 M (6 x 9') steel v-doors 1000 kg (2,200 lb) each, 3.2 Cm (1.25") Mesh codend liner. 27.2 M (89.2') Headrope help 21 30 cm (11.8") Floats. 24.7 M chain fishling line attached to the 24.9 M (81') footrope which was 1 cm (.4") 6X19 wire rope wrapped with polypropylene rope. Ground gear was 91 cm (35.8") Split tires in the bosom and fitted with 45.7Cm (18") rockhopper discs and 45.7 Cm (18") steel bobbins along the wings.
113	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner. 27.2 M (89.2') Headrope help 21 30 cm (11.8") Floats. 24.7 M chain fishling line attached to the 24.9 M (81') footrope which was 1 cm (.4") 6X19 wire rope wrapped with polypropylene rope. Ground gear was 91 cm (35.8") Split tires in the bosom and fitted with 45.7Cm (18") rockhopper discs and 45.7 Cm (18") steel bobbins along the wings.

Code	Accessories Description
114	1.5 X 2.1 M (5 x 7') steel doors, double 54.9 M (180.1') Bridles, .5 (.19") Cm codend liner.
115	Same as 57 except 3/8" alloy drop chains attaching roller gear to 1/2" long link chain fishing line reduced to 2 links. 4 Point door bridle of 1/2" long link chain with 33 links forward top and bottom and 22 links aft top and bottom (used on miller freeman cruise 9512).
117	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 454.5 Kg (1,000 lb) tom weights on each side. 2 Small mesh fuzz nets 6.1 M (20') long, .5 Cm (.19") Mesh, 3.3 M x 3.3 M (10.8' X 10.8') Opening, attached outside of main trawl mesh.
118	5 X 7' astoria v-doors (750 lb/each) with 25 fathom dandyline setup (10 fm, 5/8" single connected to 15 fm, 1/2" double). Used by adf&g for annual crab surveys in the gulf of alaska, 1990-1995 aboard the r/v resolution.
119	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 227.3 Kg (500 lb) tom weights on each side.
120	Used with 83-112, fishbuster doors, 30 fathom double dandylines, 1.25" Mesh cod end.
121	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, .3 Cm (0.125") Mesh codend liner, no tom weights. 15.2 M (50') long, 2.5 Cm (1") diameter spectra restrictor line connected between ends of two 45 fathom long, 0.75-Inch diameter 6x19 wire ropes aft of doors. A pair of 0.5-Inch wire ropes lead aft from each restictor conection point to the head and foot ropes. 140 Pounds of weight chain are seized to footrope on each bottom wing
122	A tickler chain, hula, and 1.5" Liner covering the entire bottom body, both bottom wings and complete coverage top and bottom of the intermediate and cod end (with 30 mesh overlap with standard 1.25" Liner extending 65 meshes up from the terminus of the cod end.
123	Same as 64 except added a tricodend bagtrawl designed to fit under the nor'eastern and 53 kg (4 links) of anchor chain weights. The bagtrawl was designed by seattle marine & fishing supply co. It has a separate 92' long footrope comprised of 1/2" chain link covered by 5" rubber disks which attaches to the nor'eastern at the delta plate which connects the roller gear to the wing extension. The 81.5' Long headrope attaches to the nor'eastern's fishing line. The bagtrawl is constructed of 4 to 6 mm polyethylene twine and has 4" stretch mesh throughout. Each of the three codends had 1 1/4" liners.
124	Same as 123 except used 26.5 Kg chain weights.

Code	Accessories Description
125	Same as 123 except 53 kg chain weights removed.
126	Same as 15 except dandylines are 15 fm long.
127	New description pending. See eric brown.
128	Same as 125 except 5'x7' v-doors were used.
129	Goa benthic bag
132	Type 7 tiburon doors, 2,200kg each, 3.1M by 2.8M. Triple bridles 54.9M long and 2.9Cm diameter 6x19 wire core cable. Single 27.4M sweeps of wire cable forward of each side of bridle. Sweeps connected to doors by pair of 13.7M backstrape cables. No codend liner.
133	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 113.6 Kg (250 lb) tom weights on each side.
134	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 3.2 Cm (1.25") Mesh codend liner, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 340.9 Kg (750 lb) tom weights on each side
135	6' X 9' steel vdoors, 2200 lb each, with 4point bridle attachment. 180' Dandylines, 1.25" Mesh liner, and polypropylene chafing gear. Rockhopper groundgear comprised of center section (30'), flanked by two wing ends (24'9" each), and two wing extensions (17' each) (total length 113.5'). Rockhopper gear consists of 18" rockhopper discs, spaced approximately every 12" (spacing increases to 24" on wing extensions), separated by solid sections of 10" discs strung on 5/8" long link alloy chain. Rockhopper chain is 1/2" long link alloy chain.
136	Same as 123 except 7' x 10' v-doors weighing 1200 kg apiece. Chain weight was added to both the rollergear and the cookie disk footrope of the bagtrawl.
137	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 1.2 Cm (.47") Mesh liner attached to 1.25 Inch liner attached to codend, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 226.8 Kg (500 lb) tom weights on each side.
138	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 1.2 Cm (.47") Mesh liner attached to 1.25 Inch liner attached to codend, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 113.4 Kg (250 lb) tom weights on each side.
139	5 Sq m fishbuster doors 1250 kg (2,750 lb) each, 1.2 Cm (.47") Mesh liner attached to 1.25 Inch liner attached to codend, 82.4 M (270') of 1.9 Cm (.75") 8X19 nonrotational dandylines, 340.2 Kg (750 lb) tom weights on each side.

Code	Accessories Description
140	Beam trawl. 3” Pipe frame with semicircle 3” flat strap end runners. 7 Ft.Wide overall x 2 ft high. 1 1/4 Inch nylon net with 118 inch footrope. 5/16 Proof coil chain weight sewn on footrope. Net 22 ft overall with 1/2 inch knotless cod end. (Used on arcturus cruise 199801 towed behind 83/112 trawl with an underbag)
141	5 X 7’ nets v-doors (air weight 800 lb/each; water weight 720 lb/each) with 25 fathom dandylines setup (10 fm, 1/2” single connected to a double consisting of 15 fm 1/2” and 15 fm 7/16”). Used by adf&g for annual crab surveys on the R/V Pandalus in the Cook Inlet and pws, 1990-present.
142	Same as 113 but with a 1.2 Cm (0.47”) Mesh codend liner.
143	Multi opening cod end (MACE)
144	Same as 15 with the addition of a 107.5 Foot long tickler chain (1/2” proof-coil). The tickler chain consisted of 4 sections: two 48.5 Foot long sections (one per side), that attached to the wing tip aft of the chain wing extension with a 5/8” hammerlock and two 5.25 Foot long center sections connected in the middle with a 3/8” shackle (weak link). Hammerlocks (5/8”) joined each side section to each center section a to 28.5” Dropper chains (1/2” proof-coil) that extended out, at the wing seams, from each corner of the footrope.
145	No tom weights.
146	Awt, kmocc, 500 lb weights
147	Awt, fb doors, no tom weights, 1.25 Liner
148	Awt, fb doors, no tom weights, 1.2Cm (.47”) Mesh liner attached to 1.25 Inch liner attached to codend.
149	Awt, kmocc, 250 lb tom weights
150	5 Sq m fishbuster doors 1250 kg (2750 lb) each. 1.2 Cm (.47”) Mesh liner attached directly to codend, 82.4 M (270’) of 1.9 Cm 8x19 nonrotational dandylines, 250 lb tom weights each side.
151	5 Sq m fishbuster doors 1250 kg (2750 lb) each. 1.2 Cm (.47”) Mesh liner attached directly to codend, 82.4 M (270’) of 1.9 Cm 8x19 nonrotational dandylines, 500 lb tom weights each side.
312	Suberkrub doors, weights on wingtips, double bridles (used on ocean leader cr.821.)
313	6M square suberkrub doors, 50fm bridles with 17’ extensions on each side, 1.25” Codend liner.
314	6M square metal oval doors (1400kgs) and triple 50m dandylines. (Used on the Mys.Dalniy cr.821.)
315	6M square metal doors (1400kgs) and double 100m dandylines. (Used on the Mys.Dalniy cr.821.)
316	6M x 6m oval metal doors (1750kg) with 60m single dandylines each side. (Used on Poseydon cr.841.)
317	6M x 6m oval steel doors (1150kg), with 75m quadruple dandylines each side, reduced to 2 dandylines attached to each door. (Used on the Mys Babushkina cr.851.)
318	6M x 6m oval steel doors (1764kg), 75m paired dandylines. (Used on Mys Babushkina cr.891.)
400	4’ X 8’ doors, 10fm dandylines, 9 11 8” floats.
401	Same as 400 except 1.5” Mesh liner in codend.
402	Same as 400 except 20fm dandylines.
403	Same as 402 except 1.5” Mesh liner in codend.
404	Same as 400 except 20fm dandylines, 9 15 8” floats.
410	Same as 400 except 31 phillips floats on headrope.
420	2.5’ X 5’ gulf of mexico type doors (160lbs), single cable attached to 25fm bridle.
421	3.5’ X 8’ gulf of mexico type doors (385lbs), 7’ extensions to dog ears plus 5’ chains to make a total of 12’ between doors and net.
428	5.5’ X 8.5’ Astoria vdoors, 10fm 25fm dandylines, 9 24 8” floats, 59’ tickler chain.
429	Same as 428 except 25 30 floats, 94’ tickler chain.
430	3’8” X 7’4” luketa vdoors (450lbs), 15fm dandylines, 9 15 8” floats.
431	Same as 430 except 5fm dandylines.
435	4’ X 8’ doors, 20fm dandylines. (Used on J.N.Cobb.)
440	3’ X 5’ wooden shrimp doors with 5fm dandylines.
441	Same as 440 except 25fm dandylines.
450	4.5’ X 7’ astoria vdoors (800lbs), 1025fm dandylines, 924 8” floats.
451	4.5’ X 7’ astoria vdoors (800lbs), 12 25fm dandylines, 31 52 8” floats, roller gear.
460	3.5’ X 7’ trawl doors with 30fm dandylines and a snag cable between them. (Used on IPHC cruises.)

Code	Accessories Description
501	5' X 7' steel "v" doors (1150lbs 1250lbs). 10Fm bridle and 5fm single to doors. Eleven 8" floats on headrope. 71' X 5/16" tickler chain. (Used on Commando cr.715, 724, 735, 749, 754).
507	4.5' X 6' steel "v" doors (1200lbs), 25fm dandylines (2 per side).
536	40Fm dandylines (2 per side).
537	5M x 5m karm midwater doors, 50fm bridles (2 per side.)
538	7' X 10' steel "v" doors, 30fm dandylines (2 per side) with 1.25" Mesh liner.
539	7' X 9' steel vdoors, 25fm dandylines, 1.25" Liner.
580	2.2M x 3.4M doors (2300kg). 96M wire attached to double 57m dandylines with 2 deltar plates per side and tail chains (double 13m and single 2m). 71 Floats (21 360mm, 50 300mm) on headrope and 6 360mm on codend.
581	2.2M x 3.4M doors (2300kg), 96m dandyline, 15 360mm and 24 300mm floats.
582	2.25M x 3.45M otterboards, 2.4T in the water. Double tail chains, top 12m long, bottom 10.25M long, extend from the door to a 2m single tail chain. 40M single plus 40m double dandylines. 54M long roller gear hung to the footrope by chains, consists of 35cm and 53cm gum/steel bobbins with 30cm gum discs between bobbins.
585	1.3M x 2.8M doors (354kg), 110m single connected to double 6m dandylines.
586	2.2M x 3.4M doors (2,200kg), 108m dandyline.
700	Rough bottom roller gear composed of 87 m steel chain, 18 300 mm long steel cylindrical spacers, 9 500 mm diameter steel spherical bobbins. Total weight in air 1000 kg.
701	Polyethylene nor'eastern bottom trawl with roller gear.
702	Reinforced polyethylene nor'eastern bottom trawl with automobile tire roller gear.
710	2.2M x 3.4M otterboards, 2.9 Tons. Double 12m tail chain extends from door to 2m single chain. 60M single plus 60m double dandyline. 57M long roller gear hung to footrope with chain, center section (13.5M) consists of auto tires chained together. (Used on Pusan cr.851.)
711	2.2M x 3.4M doors, 2,600kg, 140m dandyline.

Code	Accessories Description
712	2.25M x 3.5M otterboards, 2.9 Tons each. Double 12m tail chains extend from doors to single 2m chain. 50M single plus 50m double dandylines. 54M long roller gear hung to footrope with chain, consists of 53cm steel bobbins with 30cm and 41cm gum discs between, center 22m is auto tires chained together.
713	2.55M x 3.80M steel rectangular doors, dry weight = 5199.2Kg, weight in water = 3000kg. 155M dandylines, 2 on each side.
783	3M x 3m oval steel doors weighing 1750kg each. 90M dandylines, 200 20cm diameter round aluminum alloy floats on headrope. (Used on the poseydon cr.851.)
784	3.3M round metal doors, 50m dandylines, 70cm chain extention from footrope to leadline. (Used on the SRTM8459 cr.821).
785	Same as 784 except no extension used. (Used on the SRTM8459 cr.821.)
786	2.76M semispherical steel doors (1764kg), 50m dandylines (2 per side).
787	Oval doors 5.5M in area, 60m double dandylines, main cable 27.5Mm diameter. Roller gear attached to trawl with 70cm long chain, 15 rollers 500mm diameter, 200 rubber spacers, 50mm diameter.
788	3.5M oval metal doors (used on bmrt R/V gissar cr.861.)
790	3M x 3m oval steel doors weighing 1750kg each. 60M dandylines. Roller gear with 17 bobbins of 500mm diameter. (Used on the Poseydon cr.851.)
791	2.76M diameter oval steel doors weighing approximately 1,630kg each, double 100m dandylines connected to 15m tail chain. Roller gear is of 12 50cm steel bobbins spaced 1 meter apart. (Used on Babaevsk cr.871.)
792	Same as 791, except 50m double dandyline connected to 50m single section. (Used on babaevsk cr.871.)
793	2.55M x 3.85M steel otter doors, 3,200kg each. Dandyline arrangement consists of otter pendant (14m), joining wire (2m), single dandyline (70m), and double dandyline (70m) for a total length of 156m. Roller gear constructed of 530mm bobbins and 600mm automobile tires. (Used on Taisei Maru cr.871.)
794	Round capron doors, 6 square meters in area, weighing 1200kg each. 100M double dandylines. 500Kg weights near each end of footrope. 350Kg chain on footrope. 180 Aluminum spherical floats, each 200mm diameter. (Used on Darvin cr.871.)

Code	Accessories Description
795	Same as 794, except has 150m dandylines, and float is a rectangular deflector, or “hydrodynamic board”, 12m x 0.4M, made of rubber with capron. (Used on Darvin cr.871.)
796	2.76M diameter conical steel doors. 50M dandylines. 160 20Cm spherical aluminum floats. Unknown number of 20cm rubber disks for rollers. (Used on Darvin cr.881.)
797	Round doors, 6 square meters in area, 1750kg each. 75M dandylines. (Used on Novokotovsk cr.901.)
798	Same as 797 but 1200 kg (used on Novodrutsk cr.913.)
799	Description pending (used on Kaiyo Maru 931)
802	Same as 57, but the doors had a 4 point bridle attachment and a long scope was used.
803	Same as 57, but a short scope was used.
804	Same as 57, but a 4 point bridle and short scope were used.
805	Same as 57, but lighter ground gear and long scope were used. Lighter ground gear consisted of 3/4” cable running through the 8” disks instead of 1/2” long link chain, drop chains were attached directley to footrope without 7 pound toggles, and no 1/2” long link chain fishing line was attached.
806	Same as 57, but 4 point bridle, light ground gear and long scope were used.
807	Same as 57, but light ground gear and short scope were used.
808	Same as 57, but light ground gear, 4 point bridle and short scope were used.

In Memory of

Ron Payne

U.S. Secretary of Commerce
Gina M. Raimondo

Under Secretary of Commerce
for Oceans and Atmosphere
Richard W. Spinrad

Assistant Administrator for Fisheries
Janet Coit

AUGUST 2021

www.fisheries.noaa.gov

OFFICIAL BUSINESS

National Marine
Fisheries Service
Alaska Fisheries Science Center
7600 Sand Point Way N.E.
Seattle, WA 98115-6349