

Gear Condition Codes

All Haul Logs

000 = Unknown.
990 = Other. COMMENT.

Bottom Trawl Haul Log

Pair And Single Mid-water Trawl Haul Log

Scallop Trawl Haul Log

Twin Trawl Haul Log

010 = No gear damage, or very few small, scattered holes.
020 = Wings twisted or torn, not exceeding 50% of meshes.
030 = Wings twisted or torn, exceeding 50% of meshes.
040 = Square and/or bosom torn, not exceeding 50% of meshes.
050 = Square and/or bosom torn, exceeding 50% of meshes.
060 = Belly torn, not exceeding 50% of meshes.
070 = Belly torn, exceeding 50% of meshes.
080 = Codend and/or extension piece torn, not exceeding 10% of meshes.
090 = Codend and/or extension piece torn, exceeding 10% of meshes.
100 = Hang-up, causing gear to be hauled back before scheduled time; minor damage.
110 = Parted legs, sweep or head rope.
120 = Tear up exceeding gear condition of code 02, but not total net destruction.
130 = Obstruction in the gear, such as a large amount of fixed gear, boulders, etc.
140 = Crossed doors.
150 = Open codend.
160 = Major hang-up or tear-up, or loss of gear.
170 = Grate clogged with fish or debris.

Scallop Dredge Haul Log

710 = No gear damage or insignificant gear damage.
711 = Hang-up, causing gear to be hauled back before scheduled time; minor damage.
712 = Chains (rock, tickler, sweep) detached.
713 = Twine top torn but was able to be repaired.
714 = Twine top torn completely and had to be replaced.
715 = One dredge fished on top of the other dredge (Rider on dredge).
716 = Hydraulic issue (e.g., hose leak or blown, winch broken).
717 = Obstruction in the gear, such as large amount of fixed gear, boulders, etc.
720 = Chain bag broken, partially detached or lost.
730 = Several rings destroyed.
740 = Club stick caught in twine top, chains or chain bag. Club stick detached from chain bag.
750 = One dredge turned over.
760 = Two dredges turned over.
770 = Dredges crossed.
780 = One dredge lost or totally damaged.
790 = Two dredges lost or totally damaged.

Purse Seine Haul Log

510 = No or insignificant gear damage.
520 = Minor wrap of wire around gear.
530 = Major wrap of wire around gear.
540 = Minor tear-ups of net, not exceeding total of 5% of the net.
550 = Tear-up exceeding code 54, but not total, net destruction.
580 = Total net destruction.

Longline Haul Log

610 = No gear damage, or only a few hooks missing.
620 = Less than 50% of gear fouled, e.g., weather/oceanic conditions caused the gear to become tangled, or otherwise lowered the fishability of the gear.
630 = Greater than 50% of gear fouled, e.g., weather/oceanic conditions caused the gear to become tangled, or otherwise lowered the fishability of the gear.
640 = Less than 50% of hooks missing.
650 = Greater than 50% of hooks missing.
660 = Parted off, no damage.
670 = Parted off, less than 50% of gear damaged.
680 = Gear completely damaged, or completely lost.

Clam/Quahog Dredge Haul Log

810 = No gear damage, or insignificant gear damage.
820 = Dredge turned over.
830 = Towline fouled around hose.
840 = Bag split.
850 = Bottom of dredge fractured.
860 = Bent knife frame.
870 = Broken knife frame.
880 = Broken knife/blade.
890 = Dredge lost.

Gillnet and Beach Seine Haul Log

210 = No gear damage, or very few small, scattered holes.
220 = Small number of torn meshes, not exceeding 25% of any one net, each net may be torn slightly.
230 = Less than 50% of the nets have less than 50% of the meshes torn.
240 = 50% or more of the nets have less than 50% of the meshes torn.
250 = Less than 50% of the nets are obstructed by a large object.
260 = 50% or more of the nets are obstructed by a large object.
270 = Less than 50% of the nets have 50% or more of the meshes torn.
280 = 50% or more of the nets have 50% or more of the meshes torn.

Gear Codes

353 Beam Trawl, Fish
350 Beam Trawl, Other/NK Species
352 Beam Trawl, Scallop
386 Dredge, Clam, Hydraulic
381 Dredge, Other/NK Species
132 Dredge, Scallop, Sea
320 Fyke Net, Other/NK Species
105 Gillnet, Anchored-floating, Fish
116 Gillnet, Drift-floating, Fish
115 Gillnet, Drift, Large Pelagic
117 Gillnet, Drift-sink, Fish
100 Gillnet, Fixed Or Anchored, Sink, Other/NK Species
102 Gillnet, Stake, Other
020 Handline (Rod & Reel)
021 Handline, Auto Jig
030 Harpoon, Other/NK Species
031 Harpoon, Swordfish
070 Haul Seine, Beach, Common
010 Longline, Bottom
040 Longline, Pelagic
200 Pot + Trap, Lobster Offshore, NK
301 Pot + Trap, Blue Crab
183 Pot + Trap, Conch
300 Pot + Trap, Crab Other
181 Pot + Trap, Fish
186 Pot + Trap, Hagfish
180 Pot + Trap, Other/NK Species
142 Pound Net, Fish
121 Purse Seine, Herring
122 Purse Seine, Mackerel
123 Purse Seine, Menhaden
120 Purse Seine, Other/NK Species
124 Purse Seine, Tuna
360 Scottish Seine
050 Trawl, Otter, Bottom, Fish
057 Trawl, Otter, Bottom, Haddock Separator
054 Trawl, Otter, Bottom, Ruble
052 Trawl, Otter, Bottom, Scallop
058 Trawl, Otter, Bottom, Shrimp
053 Trawl, Otter, Bottom, Twin
370 Trawl, Otter, Midwater
170 Trawl, Otter, Midwater Paired
060 Troll Line, Other

Bait Types

KIND

00 = Unknown.
01 = Mackerel.
02 = Herring.
03 = Squid.
04 = Artificial.
05 = Redfish.
06 = Sardine.
07 = Scad.
08 = Skate.
09 = Clams.
10 = Fish with binders/casings.
11 = Eel.
12 = Menhaden.
13 = Tuna.
97 = Mixed. COMMENT
99 = Other. COMMENT

TYPE

0 = Unknown.
1 = Whole.
2 = Cut.
3 = Live.
4 = Processed.
9 = Other. COMMENT

CONDITION

0 = Unknown.
1 = Previously frozen.
2 = Fresh.
3 = Salted.
6 = Frozen.
7 = Semi-frozen.
8 = Combination. COMMENT.
9 = Other. COMMENT.

Time Lost Reason Codes

Used on the Vessel and Trip Information Log.

- 00 = Unknown.
- 01 = Gear conflict with another vessel.
- 02 = Gear damage repair.
- 03 = Engine repair.
- 04 = Awaiting arrival of other vessel, e.g., pair trawling or offloading.
- 05 = Coast Guard boarding.
- 06 = Medical emergency, e.g., medical evacuation.
- 07 = Weather conditions.
- 08 = Marine mammal interaction.
- 09 = Gear loss. Include only time spent trying to retrieve the gear.
- 10 = Vessel leaves a dock at the start of the trip, steams to another dock(s) or port(s) to engage in an activity (e.g., refueling, buying ice, picking up crew, etc.) and then steams to the fishing grounds. Record the total amount of time spent steaming to, and docked at, the other dock(s).
- 11 = Vessel returns to a dock after reaching the location where it will begin fishing, but before deploying the gear, OR returns to the dock before reaching the location where it will begin fishing. Record the total amount of time spent steaming out, steaming back to the dock and at the dock.
- 12 = Vessel returns to a dock after completing fishing activities, but no fish are offloaded. Vessel engages in an activity (e.g., refueling, dropping off crew, etc.) and then steams to the dock where the captain intends to sell most of the catch. Record the total amount of time spent at the first dock, plus the time spent steaming to the offloading dock.
- 13 = Vessel returns to a dock after beginning fishing activities, but no fish are offloaded. Vessel then returns to the fishing grounds. Record the total amount of time spent steaming back to the dock, time spent at the dock and time spent steaming back to the grounds.
- 99 = Other. Please record the time lost reason in COMMENTS.

Compass Bearings

N	0	SE	135	W	270
NNE	23	SSE	158	WNW	293
NE	45	S	180	NW	315
E	90	SW	225		
ESE	113	WSW	248		

LORAN Station Codes

LORAN Station:	First digit will be:
W	1xxxx
X	2xxxx
Y	4xxxx
Z	6xxxx

Weather Codes

- 00 = Unknown.
- 01 = Clear.
- 02 = Partly cloudy.
- 03 = Continuous layers of clouds.
- 04 = Drizzle.
- 05 = Rain.
- 06 = Showers.
- 07 = Thunderstorms.
- 08 = Rain and fog.
- 09 = Fog or thick haze.
- 10 = Snow, or rain and snow mixed.
- 11 = Blowing snow.
- 99 = Other. Describe in COMMENTS.

Catch Disposition Codes

Market

- 001 = No market, reason not specified.
- 002 = No market, too small.
- 003 = No market, too large.
- 004 = No market, quota filled.
- 005 = No market, won't keep until trip end.
- 006 = No market, but retained by vessel for alternate program.
- 007 = No market, but retained by observer for science purposes.
- 008 = No market, brought onboard only for the purpose of observer sampling.

Regulations

- 011 = Regulations prohibit retention, reason not specified.
- 012 = Regulations prohibit retention, too small.
- 013 = Regulations prohibit retention, too large.
- 014 = Regulations prohibit retention, quota filled.
- 015 = Regulations prohibit retention, no quota in area (seasonal closure).
- 022 = Regulations prohibit retention, v-notched.
- 023 = Regulations prohibit retention, softshelled.
- 024 = Regulations prohibit retention, with eggs.
- 025 = Regulations prohibit any retention (including no permit).

Quality

- 031 = Poor quality, reason not specified.
- 032 = Poor quality, due to sandflea damage.
- 033 = Poor quality, due to seal damage.
- 034 = Poor quality, due to shark damage.
- 035 = Poor quality, due to cetacean damage.
- 036 = Poor quality, due to hagfish damage.
- 037 = Poor quality, due to shell disease.
- 038 = Poor quality, due to gear damage.
- 039 = Poor quality, previously discarded fish.

Not Brought Onboard

- 040 = Not brought onboard, operational discards
- 041 = Not brought onboard, reason not specified.
- 042 = Not brought onboard, gear damage prevented capture.
- 043 = Not brought onboard, fell out/off of gear.
- 044 = Not brought onboard, considered to have no market value.
- 045 = Not brought onboard, safety reason.
- 046 = Not brought onboard, mechanical failure.
- 047 = Not brought onboard, spiny dogfish clogging pump.
- 048 = Not brought onboard, vessel capacity filled.
- 049 = Not brought onboard, not enough fish to pump.
- 070 = Not brought onboard, quality of fish.
- 071 = Not brought onboard, clogged, other

Debris/Shells

- 053 = Debris.
- 054 = Empty shells.

NOTE: All single or disarticulated bones should be given a disposition code of 053.

Upgrading/Market Driven Selectivity

- 062 = Upgraded.
- 063 = Vessel retaining only certain size for best price due to trip quota in effect.

Kept

- 100 = Kept.
- 110 = Kept, transferred to another vessel.
- 170 = Kept, used for bait.
- 171 = Kept, consumed by captain/crew.
- 172 = Kept, regulations prohibit discards at sea.

General

- 000 = Discarded, reason unknown.
- 099 = Discarded other, record the discard reason in COMMENTS.
- 900 = Unknown

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Program Codes	Nautical Units	Metric Units																																													
<p>000 = Standard Sea Sampling Trip 010 = Training Trip NOTE: All other program codes except '000' supersede this program code, including ASM program codes. Be sure to record "Training Trip" in the COMMENTS section.</p> <p>020 = Alternative Platform 042 = Atlantic States Marine Fisheries Commission 043 = Herring, Closed Area I 101 = Pinger Tester Trips 130 = US/Canada Management Area 146 = Closed Area I Haddock Hook SAP 147 = Closed Area II Yellowtail Flounder/ Haddock SAP 150 = Regular B-DAS Program 170 = Small Mesh Redfish Exemption 171 = SNE Monkfish ASM Exemption 201 = Scallop Access Area, Nantucket Lightship Closed Area 202 = Scallop Access Area, Closed Area I 203 = Scallop Access Area, Closed Area II 204 = Scallop Access Area, Hudson Canyon 206 = Scallop Access Area, Elephant Trunk 207 = Scallop Access Area, Delmarva 230 = At-Sea Monitoring (ASM) 231 = ASM, US/Canada Management Area 232 = ASM, Regular B-DAS Program 233 = ASM, Closed Area I Haddock Hook SAP 234 = ASM, Closed Area II Yellowtail/ Haddock Hook SAP 235 = Small Mesh Redfish Exemption</p>	<p>1 fathom = 6 feet 1 fathom = 1.83 meters 1 nautical mile = 6076 feet 1 nautical mile = 1852 meters 1 nautical mile = 1.15 statute miles 1 knot = 1 nautical mile/hr</p>	<p>1 meter = 100 centimeters 1 kilogram = 1000 grams 1 liter = 1000 milliliters mega = 1,000,000 kilo = 1,000 deca = 10 deci = 0.1 (tenth) centi = 0.01 (hundredth) milli = 0.001 (thousandth)</p>																																													
	<p style="text-align: center;">Length</p> <p>1 inch = 2.54 centimeters 1 foot = 30.48 centimeters 1 foot = 0.30 meters 1 yard = 3 feet 1 meter = 3.28 feet 1 meter = 39.37 inches 1 statute mile = 5280 feet 1 statute mile = 1.61 kilometers 1 kilometer = 0.62 statute mile</p>	<p style="text-align: center;">24 Hour Clock</p> <p>12:00 Midnight = 0000 1:00 a.m. = 0100 2:00 a.m. = 0200 3:00 a.m. = 0300 4:00 a.m. = 0400 5:00 a.m. = 0500 6:00 a.m. = 0600 7:00 a.m. = 0700 8:00 a.m. = 0800 9:00 a.m. = 0900 10:00 a.m. = 1000 11:00 a.m. = 1100 12:00 noon = 1200 1:00 p.m. = 1300 2:00 p.m. = 1400 3:00 p.m. = 1500 4:00 p.m. = 1600 5:00 p.m. = 1700 6:00 p.m. = 1800 7:00 p.m. = 1900 8:00 p.m. = 2000 9:00 p.m. = 2100 10:00 p.m. = 2200 11:00 p.m. = 2300</p>																																													
	<p style="text-align: center;">Mass</p> <p>1 pound = 453.59 grams 1 pound = 0.45 kilograms 1 kilogram = 2.20 pounds 1 standard ton = 2000 pounds 1 metric ton = 2204.60 pounds 1 metric ton = 1000 kilograms</p>	<p style="text-align: center;">Seconds to Tenths of Minutes (or Minutes to Tenths)</p> <p>0-2 seconds = 0.0 minutes 3-8 seconds = 0.1 minutes 9-14 seconds = 0.2 minutes 15-20 seconds = 0.3 minutes 21-26 seconds = 0.4 minutes 27-32 seconds = 0.5 minutes 33-38 seconds = 0.6 minutes 39-44 seconds = 0.7 minutes 45-50 seconds = 0.8 minutes 51-56 seconds = 0.9 minutes 57-60 seconds = 1.0 minutes</p>																																													
<p style="text-align: center;">Twine Size Conversion Gillnet Monofilament</p>	<p style="text-align: center;">Volume</p> <p>1 liter = 1.05 quarts 1 liter = 0.26 gallons 1 gallon = 3.78 liters</p>																																														
<table border="1"> <thead> <tr> <th>Size</th> <th>Diameter (mm)</th> <th>Old Size</th> </tr> </thead> <tbody> <tr><td>3</td><td>0.28</td><td>69</td></tr> <tr><td>4</td><td>0.33</td><td>104</td></tr> <tr><td>6</td><td>0.40</td><td>139</td></tr> <tr><td>7</td><td>0.45</td><td>-</td></tr> <tr><td>8</td><td>0.47</td><td>177(208)</td></tr> <tr><td>10</td><td>0.52</td><td>208(208L)</td></tr> <tr><td>12</td><td>0.57</td><td>277</td></tr> <tr><td>14</td><td>0.62</td><td>-</td></tr> <tr><td>16</td><td>0.66</td><td>-</td></tr> <tr><td>18</td><td>0.70</td><td>-</td></tr> <tr><td>20</td><td>0.74</td><td>-</td></tr> <tr><td>24</td><td>0.81</td><td>-</td></tr> <tr><td>30</td><td>0.90</td><td>-</td></tr> <tr><td>40</td><td>1.05</td><td>-</td></tr> </tbody> </table>	Size	Diameter (mm)	Old Size	3	0.28	69	4	0.33	104	6	0.40	139	7	0.45	-	8	0.47	177(208)	10	0.52	208(208L)	12	0.57	277	14	0.62	-	16	0.66	-	18	0.70	-	20	0.74	-	24	0.81	-	30	0.90	-	40	1.05	-	<p style="text-align: center;">Circular Measure</p> <p>60 seconds = 1 minute 60 minutes = 1 degree 90 degrees = 1 quadrant</p>	
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	<p style="text-align: center;">Estimation Method Codes</p> <p>01 = Actual, spring scale. 02 = Volume-to-volume. 03 = Basket or tote count. 04 = Estimated by captain. 05 = Tally. 06 = Visually estimated by observer. 07 = Cumulative sum method. 10 = Catch Composition Log extrapolation. 11 = Actual, electronic (Marel) scale. 98 = Combination, describe in COMMENTS. 99 = Other, describe in COMMENTS.</p>																																														

Northeast Fisheries Observer Program List of Available Freezers

July 2012

State	Freezer Location	Hours	Size	Issues	Contacts	Status
MA	Gloucester, MA MRAG Bunkhouse 4 Kent Circle Gloucester, MA	24 hours a day	Medium Chest Freezer	Can store small whole animals	Danielle Kane (206) 661-7438	OK to freeze – call first
MA	Bergies Seafood Inc 8 Hassey St. New Bedford, MA	Flexible hours	Loads of space	Any samples OK	Mark Bergeron (508) 999-4447	OK to freeze – call first
MA	Whaling City Display Auction 62 Hassey St. New Bedford, MA	Flexible hours	Loads of space Cooler only	Any samples OK	Peter Medeiros 24 hour line: (508) 990-0799 (508) 328-7673	OK to store briefly – call first
ME	University of New England Marine Animal Rehab Facility 11 Hills Beach Road Biddeford, ME	24 hours a day	Large freezer	Can store small to medium whole animals	Keith Matassa Kristin Patchett 24 hour line (800) 532-9551	Ok to freeze – call first
RI	Univ. of Rhode Island East Farm/Building 83 Rt. 108 Kingston, RI	8-5:30 M-F	Small Chest Freezer	Small samples	Barbara Somers (401) 874-2012	OK to freeze – call first
RI	NMFS Port Office 83 State St. Point Judith, RI (Next to RI Engine Co.)	8-4:30 M-F	Medium chest about 4.5 ft wide x 2.5 ft deep	New building, must be dry and clean NO whole animals	Walter Anoushian Port Agent (401) 783-7797	OK to freeze small samples – call first
NC	UNC Wilmington 601 South College Road Willmington, NC	Flexible hours	Small chest	NO whole animals	Bill McLellan (910) 962-7266	OK to freeze – call first
NC	NMFS Beaufort Lab 101 Pivers Island Beaufort, NC	9-5 M-F	Large walk-in	Whole animals OK	Alita Hohn (252) 728-8797	OK to freeze – call first
NJ	NMFS Port Office 1382 Lafayette St. Cape May, NJ (next to Century 21 building)	8:30-4:30 M-F	Small freezer 5 x 2.5 ft	Small samples	Ingo Fleming Sara Wilson (609) 884-2113	OK to freeze – call first
NJ	Jenkinson's Aquarium 300 Ocean Ave Point Pleasant NJ	Winter 9:30-5 M-F 10-5 Sat-Sun Summer 10-10 all week	Small Chest freezer	Whole animals and samples ok Small seals and turtles only	Cindy Claus or Linelle Smith (732) 892-0600	Ok to Freeze – call first ALWAYS
NY	Riverhead Foundation 428 E. Main St. Riverhead, NY	Flexible after hours	12 ft x 12 ft freezer	Large whole animals OK	Rob DiGiovanni / Kim Durham (631) 369-9840 ext. 23	OK to freeze – call first
VA	NMFS Port Office 1026F Settlers Landing Road Hampton, VA (Across from Hampton Univ.)	8-5 M-F	Medium chest about 3-4 ft wide x 2.5 ft deep	Small samples NO whole animals	Steve Ellis Port agent (757) 723-3369	OK to freeze – call first
VA	VIMS Eastern Shore Lab 10 Atlantic Avenue Wachapreague, VA	Flexible Hours	Small chest 2x3x4 ft	No whole animals	Lynda Ward (757) 787-5816 Rich Brill (757) 787-5563	OK to freeze – call first
VA	Virginia Aquarium & Marine Science Center 717 General Booth Blvd. Virginia Beach, VA	Flexible hours	Large freezers	whole animals OK	Maggie Lynott Office- (757) 385-7575 After Hours (757) 385-7576	OK to freeze – call first

Codes and Conversions

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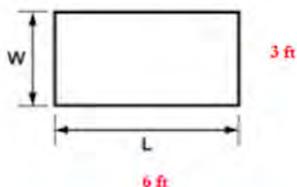
NEFOP

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AREA CALCULATION EXAMPLES

Area of a Rectangle or Square

$$\text{Area} = L \times W$$



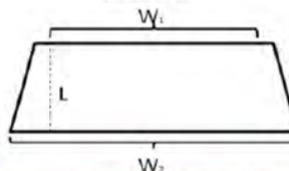
Example: $L = 6 \text{ ft}$ $W = 3 \text{ ft}$

$$\text{Area} = 6 \text{ ft} \times 3 \text{ ft} = 18 \text{ ft}^2$$

Area of a Trapezoid

$$\text{Area} = [(W_1 + W_2) \div 2] \times L$$

Note: For a trapezoid the short and long widths are the parallel sides



Example: W_1 (short width) = 3 ft
 W_2 (long width) = 4 ft
 $L = 7.5 \text{ ft}$

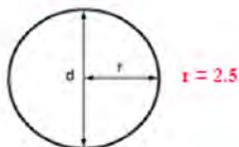
$$\text{Area} = [(3 \text{ ft} + 4 \text{ ft}) \div 2] \times 7.5 \text{ ft} = [7 \text{ ft} \div 2] \times 7.5 \text{ ft} = 26.25 \text{ ft}^2$$

Area of a Circle

$$\text{Area} = \pi r^2 \text{ or } 3.14 \times r \times r$$

(Remember: $r = d \div 2$)

$$d = 5 \text{ ft}$$



Example: d (diameter) = 5 ft.
 $r = 5 \text{ ft} \div 2 = 2.5 \text{ ft}$

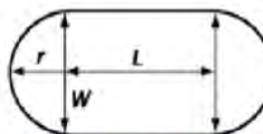
$$\text{Area} = 3.14 \times 2.5 \text{ ft} \times 2.5 \text{ ft} = 19.63 \text{ ft}^2$$

Area of an Oblong- Shaped Oval

$$\text{Area} = (L \times W) + (\pi r^2)$$

or

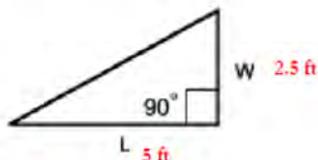
$$(L \times W) + (3.14 \times r \times r)$$



Example: $L = 5 \text{ ft}$ $W = 4 \text{ ft}$ $r = 2 \text{ ft}$
 $\text{Area} = (5 \text{ ft} \times 4 \text{ ft}) + (3.14 \times 2 \text{ ft} \times 2 \text{ ft}) = 20 \text{ ft} + 12.56 \text{ ft} = 32.56 \text{ ft}^2$

Area of a Triangle

$$\text{Area} = [L \times W] \div 2$$



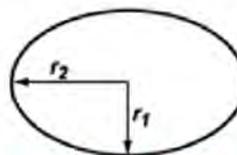
Example: $L = 5 \text{ ft}$ $W = 2.5 \text{ ft}$

Area of an Ellipse (Oval)

$$\text{Area} = r_1 \times r_2 \times \pi$$

or

$$= r_1 \times r_2 \times 3.14$$



Example: r_1 (short radius) = 4 ft
 r_2 (long radius) = 6 ft

Converting inches to decimal form & feet to inches

For example: $6'' \div 12 = .5 \text{ ft}$ or

$$\frac{60 \text{ inches}}{1} \times \frac{1 \text{ foot}}{12 \text{ inches}} = \frac{60}{12} \text{ ft} = 5 \text{ ft}$$

Standard volumes of containers flush to the top with a subsample:

orange bushel basket = 1.47 ft^3
 fish tote = 2.65 ft^3

VOLUME CALCULATION EXAMPLES

Volume of a Standard Orange Bushel Basket

$$V = \pi [R^2 + Rr + r^2] H/3$$

R = Top radius
r = Bottom radius



(Remember to convert inches into feet)

Volume = $3.14 [0.71^2 + (0.71)(0.56) + 0.56^2] 1.17/3$
 = $3.14 [0.5 + 0.39 + 0.31] 1.17/3$
 = $3.14 [1.2] 1.17/3$
 = $[3.77] 1.17/3$
 1.4695 ft³ = 1.47 ft³ = **NEFOP Standard**

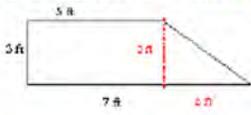
Volume of a Standard Trapezoidal Fish Tote

$$V = [(W_1 + W_2) \div 2] \times L \times D$$


Volume = $(15.75 \text{ in} + 16.75 \text{ in}) \div 2 \times 26 \text{ in} \times 11 \text{ in}$
 = $(1.31 \text{ ft} + 1.39 \text{ ft}) \div 2 \times 2.16 \text{ ft} \times 0.91 \text{ ft}$
 = $2.70 \text{ ft} \div 2 \times 2.16 \text{ ft} \times 0.91 \text{ ft}$
 = $1.35 \text{ ft} \times 2.16 \text{ ft} \times 0.91 \text{ ft}$
 = 2.65 ft^3 = **NEFOP Standard**

Volume of Irregular Shapes

Example 1
Irregular shaped fish bin (2 ft deep)



Rectangle
L = 5 ft W = 3 ft D = 2 ft
V = L x W x D (5 x 3 x 2) = 30 ft³

Triangle
A = [L x W] ÷ 2
3 ft x 2 ft ÷ 2 = 3 ft²

V = A x D
3 ft² x 2 ft = 6 ft³

Total volume of irregular shape
30 ft³ + 6 ft³ = 36 ft³

Volume of Irregular Shapes
(i.e., Fish not dumped into a bin)

Find the highest point of the catch (sometimes the center). Take a depth lengthwise every foot from the highest point in either direction.



First, obtain an average catch depth

$$\frac{\text{depth}_1 + \text{depth}_2 + \text{depth}_3 + \dots + \text{depth}_n}{n + 1}$$

n = number of depth measurements taken

Add feet and inches

$$\frac{2' + 2' 8'' + 3' + 2' 8'' + 2' 3'' + 8''}{6 + 1}$$

11' 27'' = 13' 3''

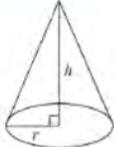
NOTE!
Convert feet into a decimal by dividing the inches by 12

$$\frac{13.25 \text{ ft}}{7} = 1.89 \text{ ft} = \text{average catch depth}$$

Applicable when catch not dumped in fish bin or uneven depths occur

Second, determine the catch shape (angular, circular, ellipsoidal...) and calculate the area.
Next, multiply the area by the average catch depth to calculate the total catch volume
Area (ft²) x Depth (ft) = Volume (ft³)

Volume of a Circular Cone

$$V = \frac{1}{3} \pi r^2 h$$


Applicable in the pot & trap fisheries but not limited to

Volume of a barrel



Applicable in the pot & trap fisheries but not limited to

Barrel
V = 0.26 h (d² + 2D²)

h = height
d = top width / diameter
D = middle width / diameter



Subsampling Guide

Problem	Possible Solutions
Measuring checker pen area	Be prepared - calculate area on steam out, before fishing activity "Keep it simple" - stick to shapes listed on catch estimation worksheet Measure all dimensions to the tenths place
Obtaining depths	Visualize a grid (tic-tac-toe) and take a depth from each section Change the angle of depth stick entry Measure down from the top of the checker pen boards, if easier
Conveyor belts, Deckloading, Fast-working crew	Communicate with crew before fishing starts Review sampling strategies Have a plan, and back-up plan Get subsample as soon and as quickly as possible
Collecting subsample	Plan ahead - estimate volume of checker pen and determine how many baskets/totes will be needed (See table on back) Visualize a grid (tic-tac-toe) overlaid on the pile and collect samples from each section
Storing subsample	Communicate with crew about sampling area Use totes instead of baskets Store sample in an unused checker or pen
Sorting subsample	Communicate with captain/crew Sort by species, then ask crew to sort by kept/discard Account for all species
Catch estimation worksheet Calculations/Documentation	Closely read formulas (trapezoids, ovals) Follow decimal place guides on worksheet Double-check calculations Compare to captain/visual estimates, comment when significantly different Avoid excessive species name abbreviations Include disposition codes when needed



Subsampling Guide

Approximate Size	Est. Catch Vol.	# Baskets OR # Totes needed for 10-20% subsample	
5' x 5' x 1' or 5' x 10' x 0.5'	25ft ³	2 - 3	1 - 2
5' x 5' x 2' or 5' x 10' x 1'	50ft ³	3 - 7	2 - 4
5' x 10' x 1.5' or 10' x 10' x 0.8'	75ft ³	5 - 10	3 - 6
5' x 10' x 2' or 10' x 10' x 1'	100ft ³	7 - 14	4 - 8
5' x 10' x 2.5' or 10' x 10' x 1.3'	125ft ³	9 - 17	5 - 9
10' x 10' x 1.5' or 10' x 15' x 1'	150ft ³	10 - 20	6 - 11

Example: 5.6' x 11.2' x 0.8' is approximately 5' x 10' x 1', so you should aim for 3-7 baskets or 2-4 totes.



Standard Conveyor Estimation

Observing vessels fishing in the Otter Trawl Fishery that use a conveyor system can add additional challenges; especially in the small mesh fishery. The purpose of this cheat sheet is to aid observers in choosing, and completing a sampling strategy for vessels using conveyors in the Otter Trawl fishery.

Before Haul

(For all volume to volume sub sampling strategies)

- During steam out observer should take extra care obtaining and documenting dimensions of vessel's checker pen. Measurements should be taken in inches and converted into feet before calculating volume. Converted feet should be rounded to the nearest hundredth. Measurements should include depth of pen.
- A diagram of the vessel's checker pen and its dimensions should be drawn on the first haul's Catch Estimation Worksheet.
- Observer should evaluate the conveyor setup and communicate with the captain/crew prior to hauling operation regarding the vessel's operation and establish their sampling strategy.
- Depending on what sampling strategy will work best on the vessel, observers should establish areas where discarded species can be collected either from the discard chute, or at the end of the conveyor.
- Observer should calculate volumes of containers used to store kept species if they are not typical known ones
- Communication with the captain/crew is essential before haulback focusing on the need to obtain samples of the discards, and importance of getting an average depth of the checker pen before it is flooded. Observer should explain the sampling techniques and importance of accurate catch estimation.

After Catch is Dumped

(For all volume to volume sub sampling strategies)

- Large discarded species (i.e. Dogfish, or Bluefish) should be picked out and weighed according to priority. If there are many, a subsample of fish should be set aside for an average weight and observer should take a tally.
- An average depth of checker pen should be obtained before catch is flooded. At least ten depths should be taken for uneven piles and recorded on the CEW; depths should be taken in a grid. Checker pen board depths can be used for catches with an even grade

Ideal Situation: Catch is composed of mainly target species with little discards.

Crew will be removing discarded species from conveyor and kept species will be running off end of conveyor in to containers, or directly into hold.

- Observer should place baskets near crew and direct them to place all discards in them.
- Observer should try to obtain actual weights when possible, discards can be subsampled if necessary.
- Kept catch estimates should be made via basket/tote counts, or captains estimates if catch is dropping directly into hold.

Sampling Strategy 1: Collecting, tallying and sub sampling baskets of discards at end of chute.

When to use: When kept species are being removed from conveyor and all discards can be collected, and tallied in baskets at the end of conveyor.

Why: 1 An accurate and complete volume of total discards is obtained for the volume to volume method; 2 kept catch is not included in the volume, so percent sampled is greater; 3 observer does not have to determine kept and discarded species which do not have a minimum size; 4 this method eliminates inaccuracies with checker pen volume calculations.

• Observer should fill baskets flush to the top with discarded species from discard chute or at the end of conveyor after it has been culled by crew.

• The baskets periodically should be put aside as subsamples during the beginning, middle, and end of sorting process; additional flush baskets should be counted and discarded, thus the volume of all discards is accounted for.

At the end of the sorting process, observer should obtain weights for kept species by actually weighing and/or using basket counts.

Calculations for Sampling Strategy 1:

Total volume of discarded catch = (#of baskets of discard) * (1.47 ft³)

Complete the Volume to Volume section of Catch Estimation Worksheet using only discarded volume, and volume of subsampled discards.



Sampling Strategy 2: Estimating the volume of discards by subtracting the known volume of kept catch, from a calculated volume of the total catch.

When to use: When crew are picking kept catch from conveyor and it is not possible to collect and tally all discarded catch due to conveyor setup or high volume of discarded catch, and samples of discards can still be obtained after crew has culled the catch.

Why: 1 Volume to Volume subsamples are only applying to discarded volume, so percent sampled will be greater; 2 observer does not have to determine species that are both kept and discarded which do not have minimum size regulations; 3 observer does not have to constantly fill and tally baskets of discarded catch.

*Observer should fill baskets flush to the top with discarded species from discard chute or at the end of conveyor after it has passed by all crew culling catch.

*Observer should immediately begin to separate discarded species keeping an eye on the progress of sorting to ensure that at a minimum, subsampled baskets are collected at the beginning, middle, and end of sorting operations.

*Kept catch estimations should be obtained from basket/tote counts, or actual weights when possible. Basket /tote counts are also important for determining volume of kept catch; observer should pay attention to filled containers and accounting for overfilled and under filled containers to the nearest quarter (1/4, 1/2, 3/4, full)

Calculations for Sampling Strategy 2

The total volume of catch should first be determined using area of checker pen and multiplying it by the average of ten obtained depths.

The total volume of all species of kept catch can be obtained by multiplying the number of containers of kept catch by their corresponding volumes.

The volume of discarded catch is calculated by subtracting the volume of kept catch from the total volume.

$$(\text{Total Volume in ft}^3) - (\text{Kept Volume in ft}^3) = (\text{Discarded Volume in ft}^3)$$

Catch Estimation Worksheet should be completed using the estimated volume of discarded catch; volume of subsampled discarded catch; and discarded species.

Sampling Strategy 3: Estimating volume of total catch (both kept and discard) and taking subsamples directly from checker pen.

When to use: When volume of kept catch can not be determined (e.g. Kept species go directly into hold), or it is not possible to sample discards from end of conveyor due to safety or setup (e.g. winches near end of conveyor).

Why: Only option for sampling catch under these circumstances.

*Observer should collect subsamples directly from checker pen containing both kept and discarded species; observer should take subsamples from different areas and depths of checker pen to ensure a mixed and representative subsample. Observer should obtain a minimum 20% subsample.

*Species without a minimum size regulation (i.e. butterfish and Loligo squid) should not be separated by kept and discards, keep and weigh all specific species as one unit.

Volume to Volume section of the Catch Estimation Worksheet should be completed.

*Kept catch estimates should be obtained by actual weights or basket counts, but include Kept weights generated by volume to volume in comment section for in-house comparison.

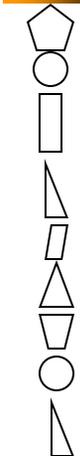
*Discarded species should be obtained by subtracting the kept estimate, from the total estimate generated from the volume to volume methodology.

Calculations for Sampling Strategy 3

Volume to Volume section of Catch Estimation Worksheet should be completed using total volume and subsamples of the total volume.

Kept species weights should be subtracted from Volume to Volume total weights to get an estimate of discard weights.

$$(\text{Total Butterfish lbs (from Volume to Volume)}) - (\text{Kept Butterfish lbs (from actual or basket count)}) = \text{Discarded Butterfish lbs.}$$





Gear Modification Techniques for Complying with the Atlantic Large Whale Take Reduction Plan (ALWTRP)

(**Effective April 5, 2008**)

WEAK LINKS FOR BUOY, FLotation OR WEIGHTED DEVICES

The intent of the weak link requirement is to allow the release of the buoy, flotation or weighted device from the line in a way that when they release, the remaining line (that was connected to these devices) will not have a knot on its end. An eye left on the line made by splicing, tucking or hog rings is acceptable. Splices are not considered to be knots. Note: Weak links must be placed as close as operationally feasible to each individual buoy, flotation or weighted device.

Hog Rings

Hog rings can be used to form an eye in the end of a line that will function as a weak link. Up to 7 may be used to create a 600 pound weak link and up to 5 for a 500 pound weak link. No significant variation was noted between wet and dry tests. Also, the length over which the hog rings were distributed (from 6" to 12") did not significantly affect the strength.



A variation of this technique, shown at the right, is to fashion a weak link from a short length of line. The line is formed into a loop with its ends overlapped and hog ringed to each other. Five hog rings form a suitable 600 pound link while 4 are sufficient for a 500 pound weak link. **For this weak link to function properly, the loop must move freely where it attaches to both the buoy, flotation, or weighted device and the line.**



A line may also be passed through a plastic swivel two times, **not forming a knot**, and hog ringed back on itself with up to 3 hog rings.



Off the Shelf Weak Links

Off the shelf weak links are available in a variety of styles and configurations to meet different strength requirements. The strong end of the weak link goes toward the buoy, flotation, or weighted device.



Modified Swivels

Some swivels can be modified to conform to the weak link requirement by compromising their strength where the line attaches. However, they must be tested by the NMFS Gear Research Team to ensure that they will release in the proper fashion and within the required limits. Lukian swivels with a 9/32" diameter hole and SeaSide swivels with a 3/16" diameter hole satisfy the 600 pound requirement.



Rope of Appropriate Breaking Strength

Another weak link technique utilizes Rope Of Appropriate Breaking Strength (ROABS). A jumper is selected based on breaking strength data from the manufacturer. A length of rope or jumper of appropriate breaking strength may be tied into the buoy, flotation, or weighted device, thus creating a weak link, as long as the failure results in a knotless bitter end on the line. Testing by the NMFS Gear Research Team can make this determination.



Stapling to a Buoy Stick

Another type of weak link can be created by stapling a rope to a wooden buoy stick to form an eye for the buoy line attachment. However, these must be tested by the NMFS Gear Research Team to ensure that they will release in the proper fashion and within the required limits. When using this method, the buoy line can only be attached by passing the end of it through the eye on the buoy stick once and bringing it back and splicing, tucking or hog ringing to form an eye.



Please note that this is not a substitute for the regulations. For more information, including a supplemental document with specific examples of the weak link techniques and the ALWTRP regulations, contact the NMFS Gear Research Team: John Higgins 207-677-2316, John Kenney 401-294-0443, or Glenn Salvador 757-414-0128 or go to <http://www.nero.noaa.gov/whaletrp/>.

WEAK LINKS FOR GILLNET FLOATLINE

Shown at the right are several methods of incorporating weak links into a gillnet floatline. The first two methods create a weak link by utilizing Rope of Appropriate Breaking Strength (ROABS). The top picture shows a weak link jumper spliced into the floatline. The overhand knot in the jumper reduces its strength to about 60% of its original strength. For example, putting an overhand knot in a piece of 5/16" polypropylene that has an original tensile strength of 1710 pounds will make the rope fail with a load of about 1025 pounds. The second picture shows a weak link (ROABS) tied into the float rope with the fisherman's knots. These knots also reduce the strength of the rope to about 60% of its original strength. Another alternative, illustrated in the bottom picture, shows an off the shelf weak link rigged into the floatline.



TECHNIQUES FOR MARKING LINES

The 4" colored mark required by the ALWTRP can be accomplished in a variety of ways. Shown are three simple methods that were tested and found to work satisfactorily under normal conditions. At the top, colored twine is seized around the line and woven between the strands. In the center, the line was spray-painted; this method requires that the rope be dry. At the bottom, colored electrical tape was wrapped in one direction and then back over itself to form two layers.



GILLNET ANCHORING TECHNIQUES

At the right is an example of a burying anchor (designed to hold to the ocean bottom through the use of a fluke, spade, plow or pick) that meets the requirement of the holding power of a 22-pound Danforth-style anchor. Note, **dead weights do not meet the requirements for burying anchors.**



REQUIREMENTS FOR MARKING SURFACE BUOYS

When marking is not already required by state or federal regulations as described in the ALWTRP, surface buoys should be marked to identify the vessel or fishery with one of the following: the owner's motorboat registration number, or U.S. vessel documentation number, the federal commercial fishing permit number, or whatever positive identification marking is required by the vessel's home-port state. The letters and numbers used to mark the gear must be at least 1 inch (2.5cm) in height, block letters or Arabic numbers, and in a color that contrasts with the color of the buoy.



Please note that this is not a substitute for the regulations. For more information, including a supplemental document with specific examples of the weak link techniques and the ALWTRP regulations, contact the NMFS Gear Research Team: John Higgins 207-677-2316, John Kenney 401-294-0443, or Glenn Salvador 757-414-0128 or go to <http://www.nero.noaa.gov/whaetrp/>.





Danforth

**DANFORTH
-STYLE**



Railroad Track



Mushroom

**DEAD
WEIGHT**



Kedge



Grapnel

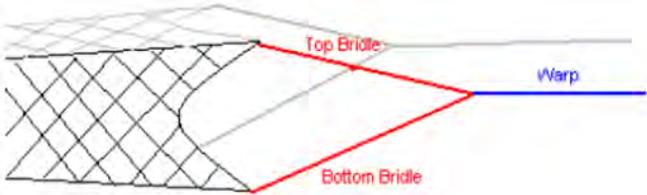
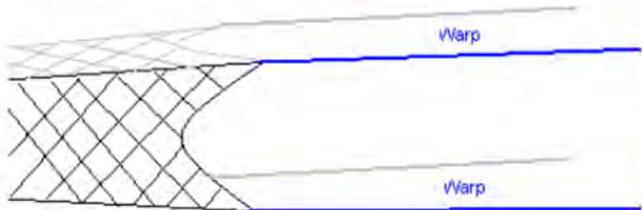
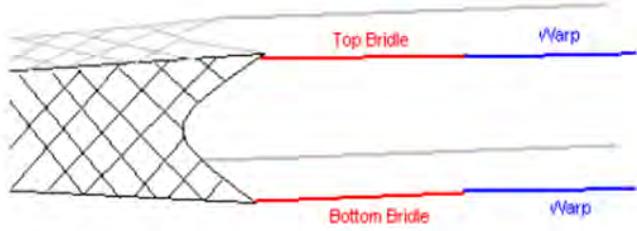
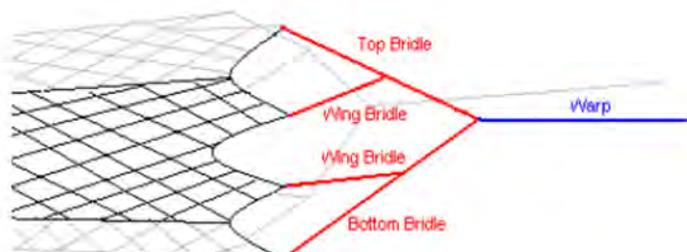
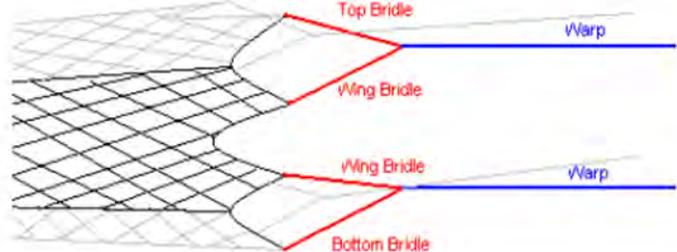
OTHER

NET TYPE	COMMENTS	NET TYPE	COMMENTS
Flynet	A high profile trawl used to primarily harvest weakfish and croaker. Spot and bluefish are also occasionally targeted. Net is typically fished just off the bottom. Headrope length is typically 80-120 ft across with a wing mesh size of 18-84 inches that will slowly taper to smaller mesh sizes in the body extension and codend. Headrope will also be slightly larger than the footrope. Codend mesh size is about 3.5-3.75 inches. Tow speeds are often between 3-4 knots with tow duration from 10 minutes to several hours. High volume catches in a short amount of time are not uncommon. Uses a large number of floats to keep the net slightly off the bottom. Typically use bottom otter trawl gear (negear = 050).	Shuman Trawl	A trawl net used mainly by squid fishermen from RI. Typically fished as a semi-pelagic net (slightly off-bottom) for targeting squids and butterfish. Contains very large meshes in the mouth and has a high-opening net that may have canvas kites on headline to keep the mouth open.
Haddock Separator Trawl	A groundfish trawl with 2 extensions arranged one over the other. Codend is attached only to the upper extension, and the bottom extension is left open with no codend attached. In addition, a horizontal separating panel constructed with a minimum of 8.0 inch diamond mesh must be installed laterally between the selvages joining the upper and lower panels, extending forward from the front of the trouser junction to the aft edge of the first belly behind the fishing circle. On the log, <u>Separator Device Used</u> = Yes, <u>Separator Panel</u> , <u>Escape Outlet Used</u> = Yes, <u>Escape Outlet Length</u> = count the number of meshes in the semi-circle from one side to the other. <u>Escape Outlet Width</u> = count the number of meshes that run along the straight axis of the semi-circle or measure the width across. <u>Escape Outlet Shape</u> = Semi-Circle. <u>Escape Outlet Location</u> = Bottom. As a note, if the codend is sewn shut, <u>Escape Outlet</u> = No.	4-Seam Millionaire Trawl	Typically a squid trawl (e.g. used by many Cape May squid fishermen). Always a 4-seam. Some made by Denmark and Dantrawl. Very large openings in mouth and large mesh in the wings. Both Shortfin and Longfin can be targeted using this net. Also called 40-footers.
Separator Trawl	A 2-Seam trawl net that has either a horizontal or vertical separator panel that runs from trouser junction to the aft edge of the first belly behind the fishing circle.	Shrimp Trawl	Small mesh, used to target shrimp.
2-Seam Flatfish Trawl	A low-rise constructed bottom trawl. The trawl, depending on the location and time of year, <u>may</u> (in compliance with 50 C.F.R. 684.80(a)(4)) contain a section of mesh at least 10 feet long and stretching from selvedge to selvedge (which joins the upper and lower panels of the trawl), composed of at least 12-inch mesh that is inserted no farther than 4.5 meshes behind the headrope. If this is the case, the logs should read: <u>Separator Device Used</u> = No, <u>Escape Outlet Used</u> = Yes, <u>Escape Outlet Length</u> = measurement from the front to the back of the net, i.e., counting the number of meshes of the top panel from the front to the back of the net (should be 12 inch mesh or at least 10 meshes long = 120 inches). <u>Escape Outlet Width</u> = measurement of escape outlet from side to side of the net, i.e. by counting the number of meshes of the top panel from side to side of the net (should be 12-inch mesh from selvedge to selvedge). <u>Escape Outlet Shape</u> = typically rectangular, but may be square or triangular.	Raised Footrope Trawl	Small mesh trawl required in some whiting management areas (e.g. Gulf of Maine). If this trawl is "sweepless" it is a separate net type (see description below). Typically fished 1-2 feet off the bottom. This net exploits differences in habitat preferences and swimming behaviors between target and non target species. It can also reduce flatfish catch without reducing whiting catch.
2-Seam Trawl	Made of two panels and mesh, a top and a bottom, which are laced along the two sides which is known as the gore line or selvedge. Most common. Will maintain geometric shape. Less material to make therefore less expensive.	Pelagic Pair Trawl	Pair trawl that typically does not use doors and targets herring and mackerel.
4-Seam Trawl	Made of four panels of twine (top, bottom and two sides) that are laced together to form four gore lines. Less common. Maintains an advantageous geometric shape, however the panels can be somewhat confusing to fishermen on deck. Generally has a high vertical lift.	2-Seam Balloon Trawl	Used for Rockfish in California in the 1950's. Has a high mouth, and lighter net material and has floats attached to the corkline so that the headline floats just above the rocky bottom.
4-Seam Box Trawl	Used to target squid and silver hake and is always a 4-seam trawl. Typically a high rise net in the shape of a box.	Groundfish Trawl	A trawl that can really use any of the above designs. For example, can use a flatfish trawl to target Groundfish.
Sweepless Trawl	Identical to the raised footrope trawl except there is no chain sweep and the dropper chains are heavier. Proven to have lower susceptibility of entanglement. Required to target whiting in some management areas and may also be used to fish for Haddock when using "B" days at sea.	Scallop Trawl	Trawl where the headrope and footrope may be very similar in length. This allows the gear to be flipped. Target will be scallop.
Monkfish Trawl	Typically uses a flatfish trawl, however, since Monkfish are not a herding species, large wing extensions are used which increases the area swept by the gear.		*Do not confuse headrope transducer bags as kites

Trawl Reference



Net Configuration

	Bridles/Warp	Bridles/Side	Warp/Boat
	2	2	1
	0	0	2
	1	2	2
	2	4	1
	2	4	2



Net Name

01	TROUSER TRAWL
02	BEAM TRAWL
03	TWIN TRAWL
04	BOTTOM TRAWL
05	SEMI-PELAGIC TRAWL
06	PELAGIC TRAWL
99	OTHER (COMMENTS)
00	UNKNOWN

Net Type

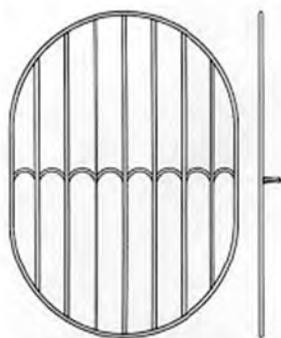
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01	2-SEAM FLYNET	60	SCALLOP TRAWL
02	4-SEAM FLYNET	61	2-SEAM SCALLOP TRAWL
03	2-SEAM HADDOCK SEPARATOR TRAWL	62	4-SEAM SCALLOP TRAWL
04	4-SEAM HADDOCK SEPARATOR TRAWL	65	MONKFISH TRAWL
05	SEPARATOR TRAWL	66	2-SEAM MONKFISH TRAWL
06	2-SEAM SEPARATOR TRAWL	67	4-SEAM MONKFISH TRAWL
07	4-SEAM SEPARATOR TRAWL	70	SWEEPLESS TRAWL
08	FLYNET	71	2-SEAM SWEEPLESS TRAWL
09	HADDOCK SEPARATOR TRAWL	72	4-SEAM SWEEPLESS TRAWL
10	FLATFISH TRAWL	75	PELAGIC PAIR TRAWL
11	2-SEAM FLATFISH TRAWL	76	2-SEAM PELAGIC PAIR TRAWL
12	4-SEAM FLATFISH TRAWL	77	4-SEAM PELAGIC PAIR TRAWL
13	2-SEAM FLOUNDER TRAWL	80	SHUMAN TRAWL
15	4-SEAM RUHLE TRAWL	81	2-SEAM SHUMAN TRAWL
16	4-SEAM ROPE SEPARATOR TRAWL	82	4-SEAM SHUMAN TRAWL
18	4-SEAM MILLIONAIRE TRAWL	85	GROUND FISH TRAWL
20	RAISED FOOTROPE TRAWL	86	2-SEAM GROUND FISH TRAWL
21	2-SEAM RAISED FOOTROPE TRAWL	87	4-SEAM GROUND FISH TRAWL
22	4-SEAM RAISED FOOTROPE TRAWL	88	BALLOON TRAWL
24	4-SEAM BOX TRAWL	89	2-SEAM BALLOON TRAWL
25	SHRIMP TRAWL	90	4-SEAM BALLOON TRAWL
26	2-SEAM SHRIMP TRAWL	91	2-SEAM TRAWL
27	4-SEAM SHRIMP TRAWL	92	4-SEAM TRAWL
30	4-SEAM ELIMINATOR TRAWL	99	OTHER (COMMENT)
31	2-SEAM ELIMINATOR TRAWL		

Net Builder

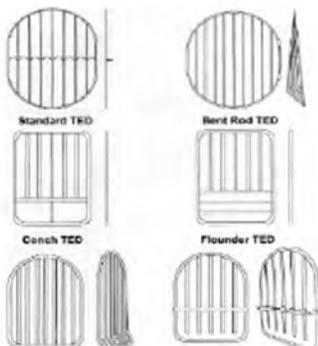
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02	LE DREZEN	12	REIDAR'S MANUFACTURING INC
03	LEVINE MARINE SUPPLY	13	CHRISTIANSEN'S NETS
04	N'EASTERN TRAWL SYSTEMS LTD	14	JEFF FLAGG
05	SMART NET SYSTEMS LTD	15	SHUMANN
06	SWAN NET GUNDRY	16	YANKEE
07	WANCHESE TRAWL SUPPLY	19	GEARWORK
08	WILCOX TRAWLS	99	OTHER (COMMENT)
09	SUPERIOR TRAWL	21	JAMESTOWN TRAWL



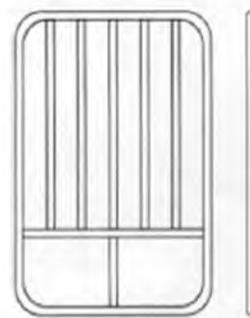
TURTLE EXCLUDER GRID TYPES



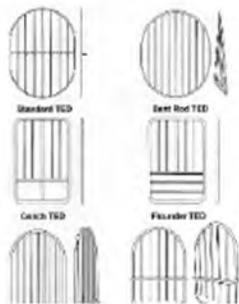
STANDARD TED



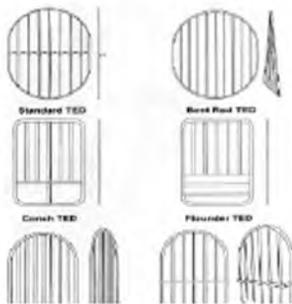
BENT ROD TED



CONCH TED



FLOUNDER TED



FLAT BOTTOM TED



WEEDLESS TED



WHELK TED



FLEXIBLE TED



PARKER SOFT TED



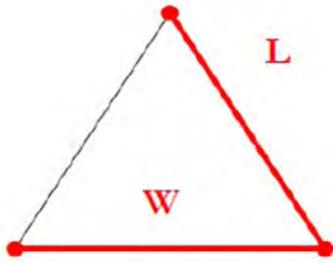
FIXED ANGLE TED



HOOPED TED



BYCATCH REDUCTION DEVICES & FISH OUTLET SHAPE MEASUREMENTS



Triangular Fish Outlet Measurements

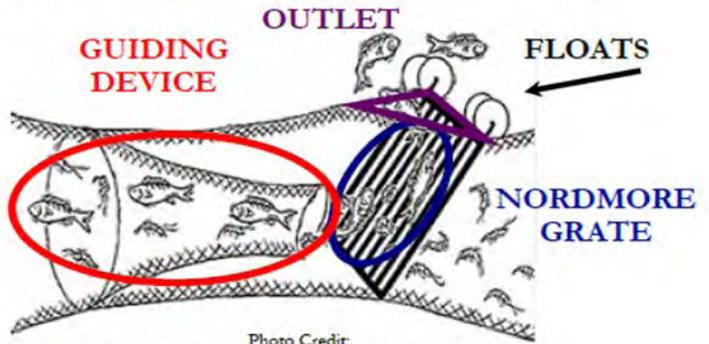


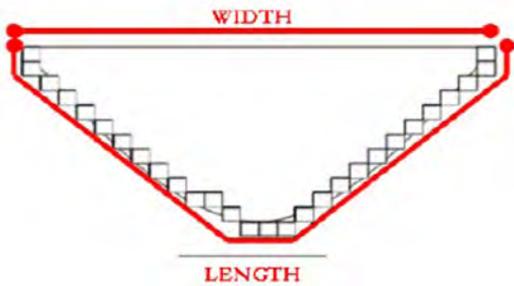
Photo Credit: http://www.ecocontribution.com/images/Nordmore_Image_S.jpg



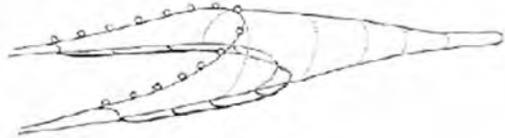
Trapezoidal Fish Outlet Measurements



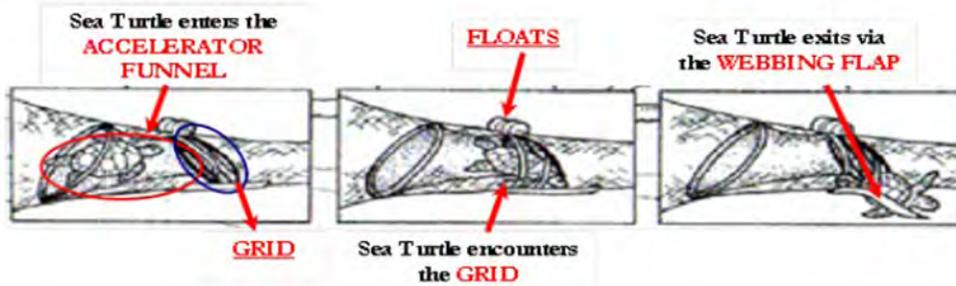
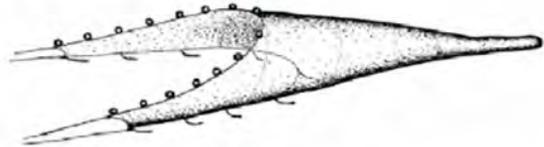
Standard Raised Footrope Trawl



Semicircular Fish Outlet Measurements



Sweepless Raised Footrope Trawl



Groundfish Fishing Year 2013 Special Management Programs

APPROVED TRAWL GEAR

The following is a list of approved trawl gears for each SMP area: These regulations are subject to change and certain sectors may have additional exemptions. Other trawl gear, as well as other fishing gear may be seen. Please confirm trawl gear with captain.

Western U.S./ Canada: Opens May 1st for sector and common pool vessels. Any groundfish approved trawl gear can be used.

Eastern U.S./Canada: Opens May 1st for sector and common pool trawl vessels. Some sectors and common pool are required to use regulated gear types:

- Haddock Separator Trawl
- Ruhle Trawl
- Flounder Trawl

Eastern U.S./Canada Haddock SAP: Opens Aug 1st – Dec 31st for all trawl vessels. Sectors may use any gear approved for the Eastern US/CAN area, common pool required to use regulated gear types:

- Haddock Separator Trawl
- Ruhle Trawl

Closed Area II Yellowtail Flounder/Haddock SAP: Opens Aug 1st-Jan 31st for all trawl vessels. Following trawl gears are approved for all vessels:

- Haddock Separator Trawl
- Ruhle Trawl

Regular B-DAS Program: Opens May 1st. Only applicable to common pool. Following trawl gears are required:

- Haddock Separator Trawl
- Ruhle Trawl

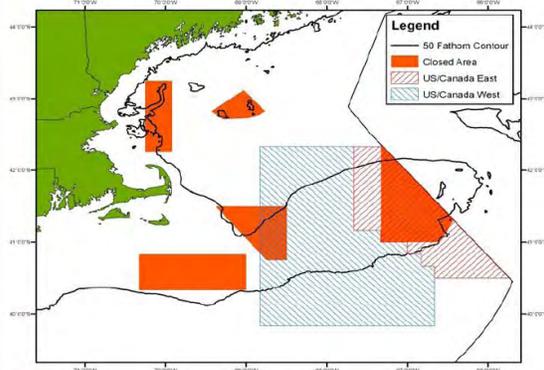
NEFOP Program Codes:

- 130 NEFOP, US/CAN Management Area
- 150 NEFOP, Regular B-DAS Program
- 146 NEFOP, CAI HGH SAP
- 147 NEFOP, CAII YT FLD/Haddock SAP

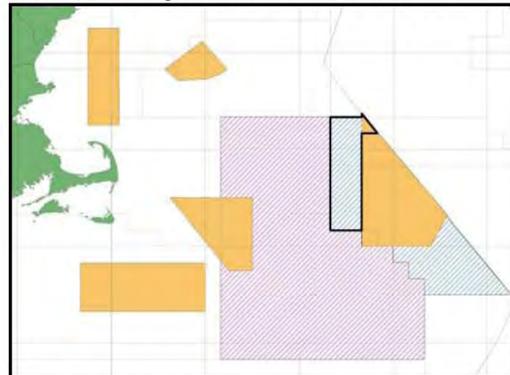
ASM Program Codes:

- 231 ASM, US/CAN Management Area
- 232 ASM, Regular B-DAS Program
- 233 ASM, CAI HGH SAP
- 234 ASM, CAII YT FLD/Haddock SAP

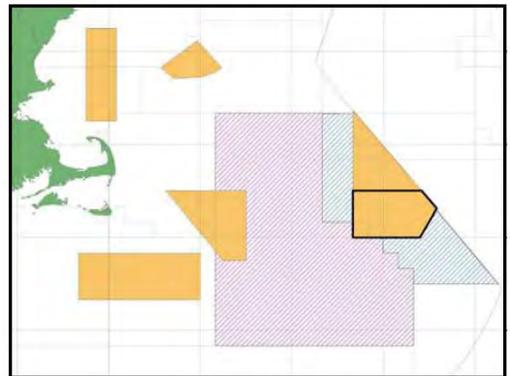
US/Canada Areas



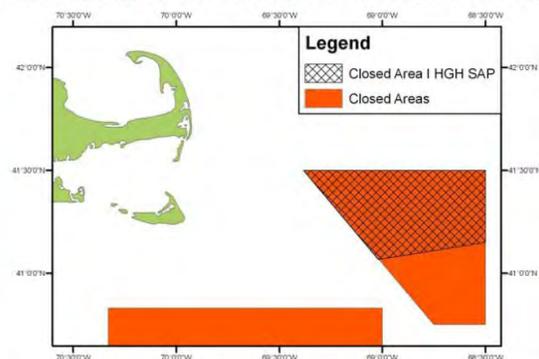
Eastern US/Canada Haddock



Closed Area II YT FLD/Haddock SAP



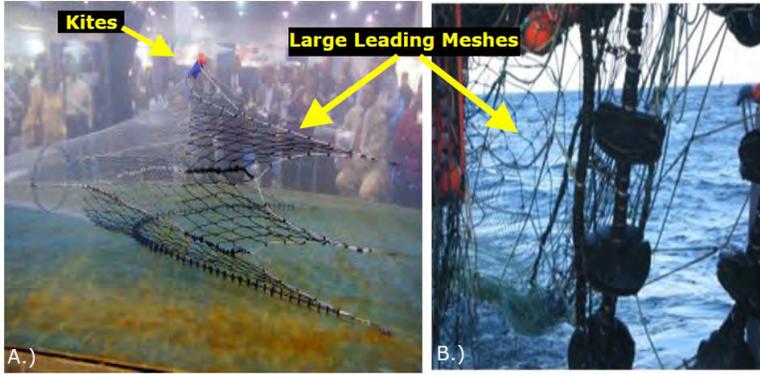
Closed Area I Hook Gear Haddock



Please Note: These regulations are meant for observer reference and not as fishermen's guidelines. They are subject to change. Use your Program Manual, this cheat sheet, and NEFOP memos 10-009, 08-015, and 06-003 to work with the captain in order to complete your gear characteristics log. Contact your editor with questions before sending in your trip.

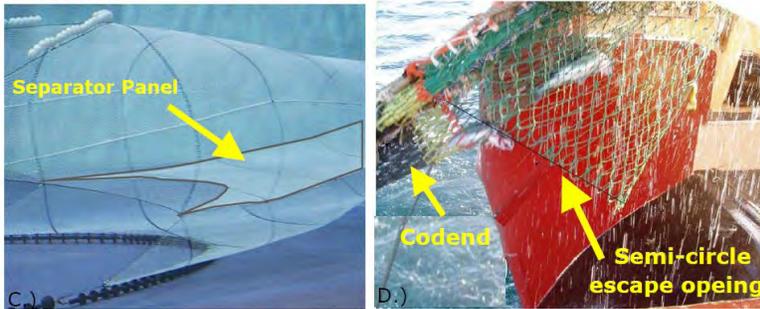
Net Type Definitions

Ruhle Trawl



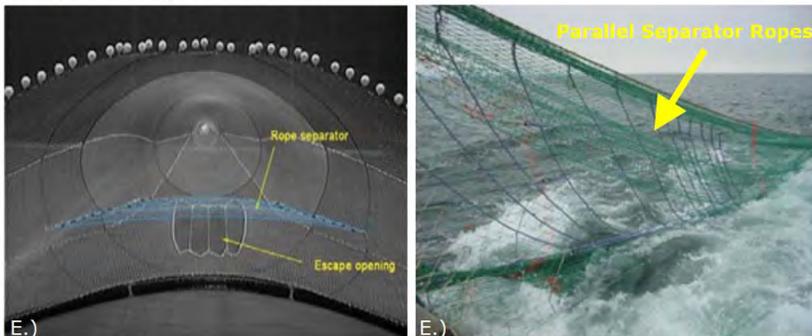
Designed to reduce by-catch of cod and other groundfish while retaining haddock, this is a four-seam bottom groundfish trawl with large meshes (~8ft) in the forward panels that reduce in size toward the codend. This trawl has single or multiple kite panels with a total surface area of 19.3sq.ft wings.

Haddock Separator Trawl



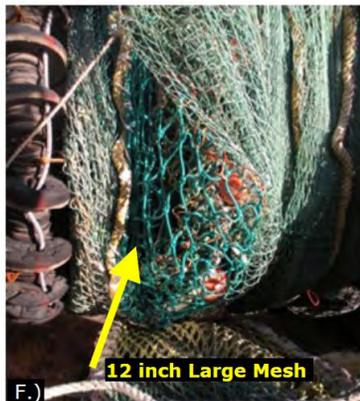
Designed to reduce by-catch of cod and flatfish while retaining haddock. This two or four-seam bottom groundfish trawl may have a trouser trawl configuration with the bottom codend open, or a semicircle escape opening. A separator panel made of 6 inch mesh herds haddock into the closed codend above the panel, and other species out the escape opening below the panel.

Rope Separator Trawl



Designed to reduce by-catch of cod and flatfish while retaining haddock, this is a four-seam bottom groundfish trawl that has a horizontal separator panel made of a series of parallel ropes spaced 1-2ft apart. Non-desired species are released through an escape opening in the bottom panel of the net. Escape outlet is at least 18 meshes in both length and width. Longitudinal lines may be used to maintain the shape of the escape outlet. Meshes in the bottom belly of the net must be 13 inch diamond mesh.

Flounder Trawl



A two-seam low-rise bottom trawl made of either 6in diamond or 6.5in square mesh. Two configurations satisfy the regulatory requirements: The first requires the headrope to be at least 30% longer than the footrope, where the footrope is no greater than 105ft long. The second design has a 10ft long panel of 12in mesh that stretches from gore to gore and is inserted 4.5meshes behind the headrope on the top panel of the net.

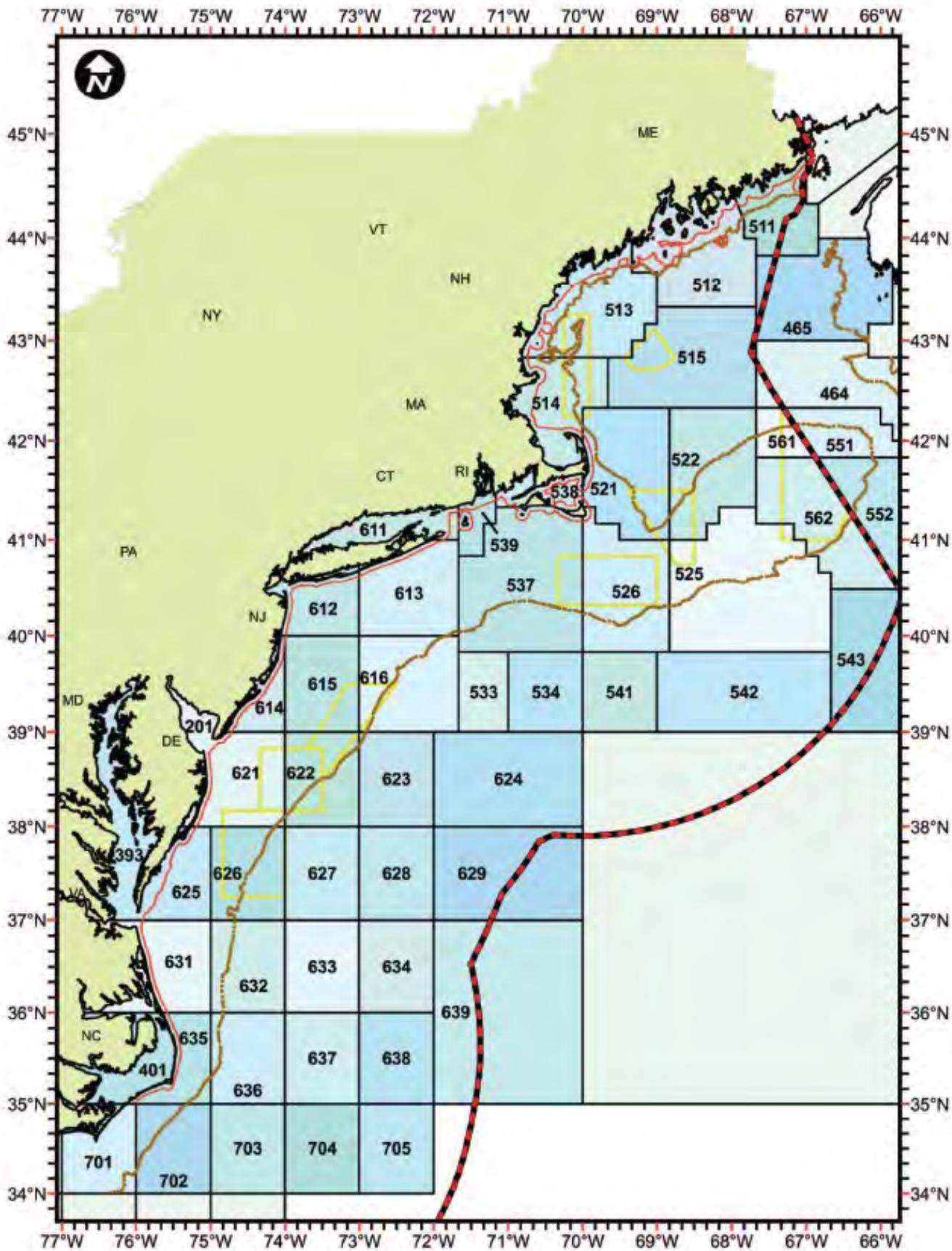
Photo Credits:

- A.) Ruben W. Perez, The Providence Journal
- B.) David Beutel, URI Sea Grant
- C.) <http://www.crimond.com/selectivity.htm>
- D.) David Martins, UMASS Dartmouth
- E.) http://seagrant.gso.uri.edu/fisheries/extension/pdfs/oct06/he_Coop_Res_gear.pdf
- F.) Amanda Tong, NEFOP

39°N
38°N
37°N
36°N
35°N

Chart 1. Overview of the Northeast Statistical Areas

Do not use for navigation



Special Programs and Charts

39°N
38°N
37°N
36°N
35°N

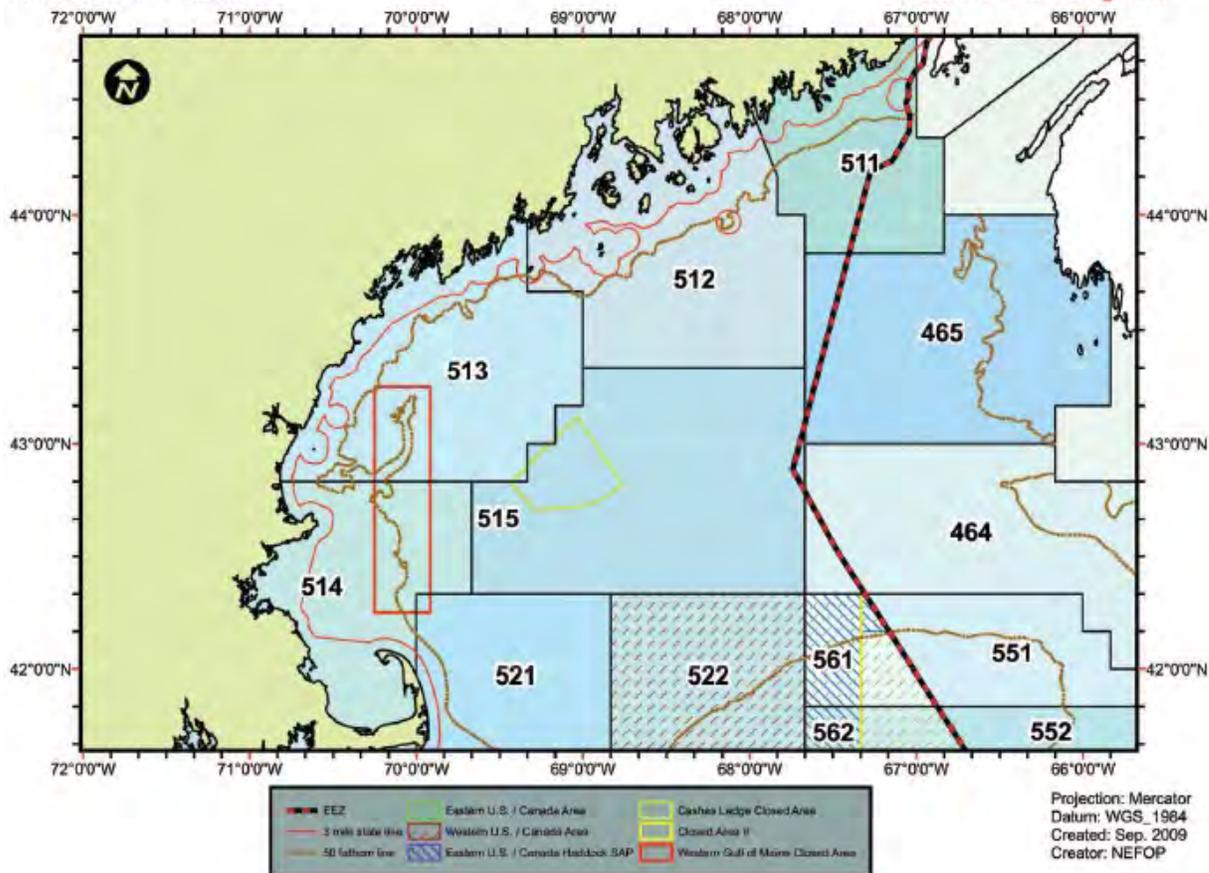
NEFOP | ASM | IFS



Appendix N1: Chart Area of the Gulf of Maine

Chart 2a. Gulf of Maine

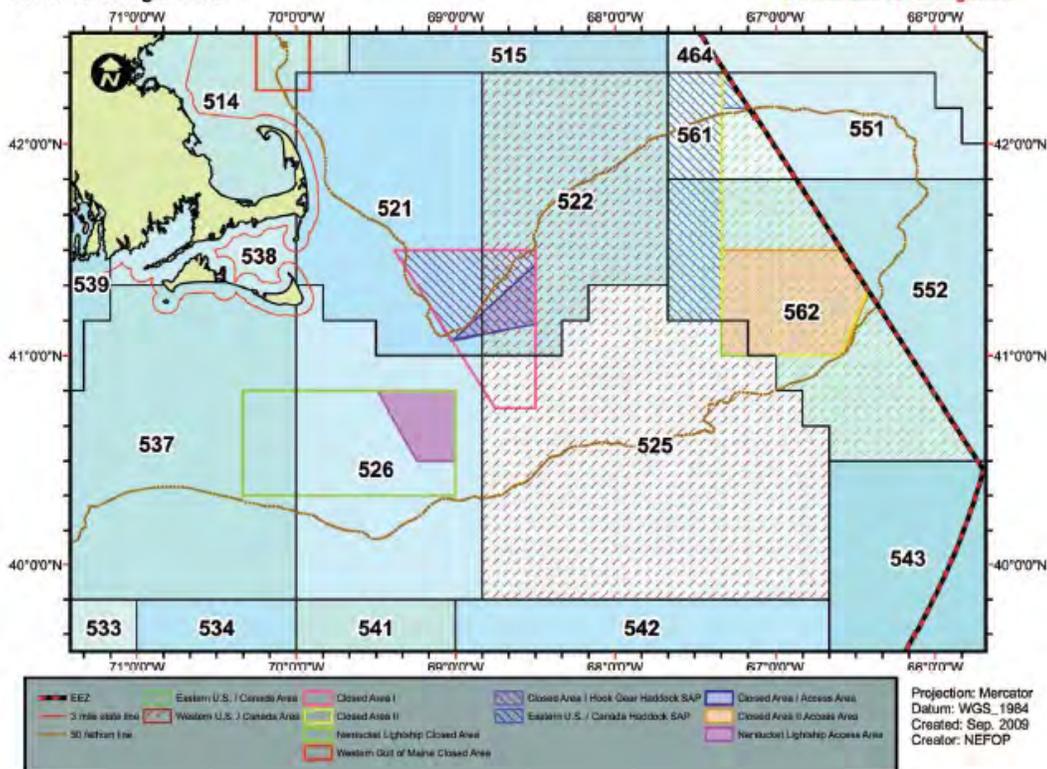
Do not use for navigation



Appendix N2: Chart Area of Georges Bank

Chart 3a. Georges Bank

Do not use for navigation



Special Programs and Charts





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

Nov. 01, 2011

Memorandum For: NEFOP observers
Subject: Species Identification Verification Program

It is extremely important for data quality to ensure observers are correctly identifying fish. The Northeast Fisheries Observer Program (NEFOP) requires all observers to comply with this verification process so that we can ensure data accuracy and maintain the integrity of the program.

To complete your obligations, please follow these steps:

1. Check the species list table below.
2. If the species listed has not yet been sent in for verification, send it at the first available time.
3. Store the specimen in a Ziploc bag accompanied with a waterproof tag. The tag should have your observer ID, trip number and extension, as well as the haul number and species name.
4. Record the species on your Haul Log as fish disposition code 007 (“No market, but retained by observer for science purposes”).
5. Freeze the samples solid prior to shipping. Ship samples as a priority in a cooler, with coldpack, at the same time as your trip data (don’t send on Friday or over the weekend).

Please send in the actual fish or photographs listed below. All Fish nk’s should be photographed and sent in if possible.

The first time you encounter a species listed in the table below, you should either be saving a specimen to send in or taking pictures if appropriate. We may also notify you that you have been selected to contribute fish on certain trips.

Observers are required to send in the species listed below every 3 months. Please notice that there is a shorter list for those who are only At Sea Monitors. This is a program requirement. Failure to satisfy this requirement will result in additional testing and possible probationary status.

Observers will be required to send in the following species on **all** herring trips: Atlantic Herring, Blueback Herring, Alewife, Hickory shad, and American shad.

Confirmation of species sent in will be emailed to you bi-weekly, indicating both correct and incorrect identifications. Notifications of incorrectly identified species will be sent out immediately and observers should resend fish the next time they encounter them. We appreciate your cooperation with the Species Identification Verification Program. There are many species you will come across, some may be extremely rare and we will make full use of the samples to train observers during certification classes and refresher debriefings. We understand how much work you have to do, however the program considers this an integral part of your job. **If you have any questions about the program, please don’t hesitate to call Giovanni Gianesin at 508-495-2157, or email Giovanni.gianesin@noaa.gov , or Loren Kellog at 508-495-2159, or Loren.Kellog@noaa.gov.**

Please send in actual specimens or photographs of the following species.

	Photo 1	Photo 2	Photo 3
Misc.			
Scup	3295	whole animal (side shot)	
Longfin Squid	8010	whole animal (side shot)	
Shortfin Squid	8020	whole animal (side shot)	
Redfish	2400	whole animal (side shot)	inside of mouth
Ocean Pout	2500	whole animal (side shot)	
Atlantic Mackerel	2120	whole animal (side shot)	
Gadids			
Cod	0818	whole animal (side shot)	
Haddock	1477	whole animal (side shot)	
Pollock	2685	whole animal (side shot)	
Red Hake	1520	whole animal (side shot)	pelvic and dorsal filiments rakers above the flexion point
White Hake	1593	whole animal (side shot)	pelvic and dorsal filiments rakers above the flexion point
Silver Hake	5090	whole animal (side shot)	rakers on first gill arch
Offshore Hake	5080	whole animal (side shot)	rakers on first gill arch
Skates			
Barndoor	3680	whole animal (Top of disk)	whole animal (bottom of disk)
Clearnose	3720	whole animal (Top of disk)	
Little	3660	whole animal (Top of disk)	closeup of rough/smooth patch or claspers
Smooth	3690	whole animal (Top of disk)	
Thorny	3700	whole animal (Top of disk)	
Winter	3670	whole animal (Top of disk)	closeup of rough/smooth patch or claspers
Flounders			
Am. Plaice	1240	whole animal (eyed side)	
Windowpane	1250	whole animal (eyed side)	
Summer	1219	whole animal (eyed side)	
Winter	1200	whole animal (eyed side)	close-up of lateral line
Witch	1220	whole animal (eyed side)	whole animal (blind side)
Yellowtail	1230	whole animal (eyed side)	close-up of lateral line
Herrings			
Alewife	0010	whole animal (side shot)	gut lining
Blueback	1120	whole animal (side shot)	gut lining
Am. Shad	3474	whole animal (side shot)	rakers on first gill arch
Hickory Shad	1730	whole animal (side shot)	rakers on first gill arch
Atl. Herring	1685	whole animal (side shot)	
Atlantic Menhaden	2210	whole animal (side shot)	

The yellow highlighted herring species must be sent in for every trip targeting herring.

The blue highlighted species are NOT required for At Sea Monitors.

***** Bag, tag, and send in all Fish NK's along with photographs of the specimen.*****



LITTLE SKATE



- Maximum size \approx 60cm
- Brown with black spots
- May or may not have ocelli

- Rounded snout
- Tail has 5+ rows of thorns
- Sexually mature at 35cm

WINTER SKATE



- Maximum size \approx 110cm
- Brown with black spots
- Tail with 5+ rows of thorns

- Rounded snout
- May or may not have ocelli
- Sexually mature at 70cm



Skate Identification

WINTER/LITTLE SKATE
FEMALE 35cm-60cm

Direction to rub = tail to nose



Little Skates will be rough
Winter Skates will be smooth

Little/Winter MALE 35cm-60cm



WINTER



LITTLE

NEFOP

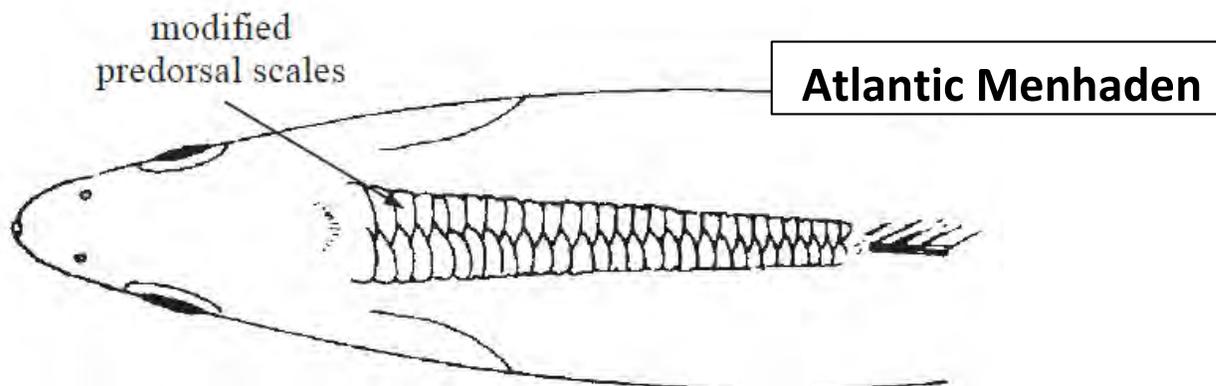
ASM

IFS



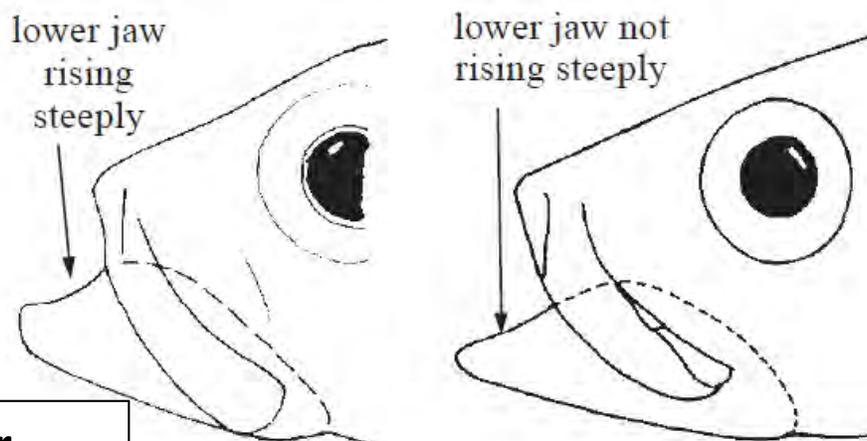
ROUGH BELLY HERRING ID

If you rule out Atlantic Herring by feeling sharp belly scutes, use the following succession of characteristics to ID the river herrings: Look at the scales between the top of the head and the dorsal fin. If they form an overlapping line of scales (like a zipper), it is an **Atlantic Menhaden**.



Shads & River Herrings

If the above scales are absent, you must then look at the jaw. Pull the lower jaw open and look at the slope of it as it enters the mouth. If it is sharply rising, it's an Alewife or a Blueback Herring. If it's gradually rising, it's a shad. Spots are seen on both shad and true river herrings, so be careful.



**Alewife or
Blueback Herring**

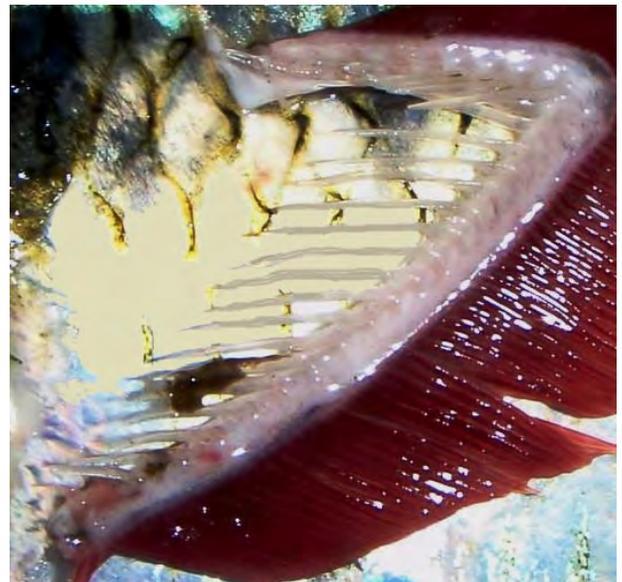
**American or
Hickory Shad**



If you have a steeply rising jaw, you must crack the fish and check the gut cavity lining color.



If you have a gradually rising jaw, you must check the gill rakers on the lower limb of the first arch.



Right-Eyed Flounders



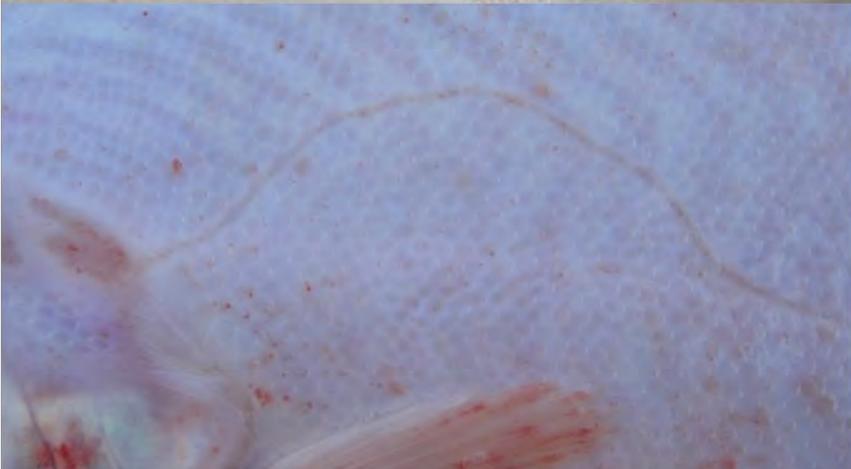
Witch Flounder (Grey Sole)

- Body brown/grey in color
- **Dusky underside**
- Small mouth
- Black pectoral fin
- Straight lateral line
- Mucus pits on blind side of head
- Max size 63cm



Yellowtail Flounder

- Brown body with rust colored spots on body
- **High arching lateral line**
- Small mouth
- Notch in head at eye
- Yellow saddles at underside of tail (other flounders may also have this)
- Max size 64cm



Right-Eyed Flounders



Winter Flounder (Blackback, Lemon Sole)

- Small mouth
- White underside
- Low arching lateral line
- Wide caudal peduncle
- Thick body
- Max size 64cm



American Plaice Flounder (Dab, Sea Dab)

- Solid brown body color
- White underside
- **Large mouth**
- Low arching lateral line
- Max size 82cm



Left-Eyed Flounders



Summer Flounder (Fluke)

- Many ocelli on body, with a 2-1-2 pattern in posterior half of fish
- Bright white underside
- Large teeth
- Max size 94cm



Sand Dab Flounder (Windowpane)

- Spade or diamond shaped body
- Light brown body color
- White & black spots on body that extend into all fins
- Max size 45cm



Fourspot Flounder

- 4 ocelli on body: 2 mid-body, 2 @ caudal peduncle
- Large teeth
- Max size 41cm

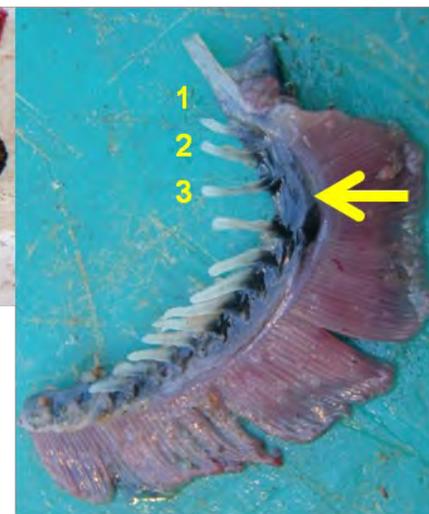


Hake Identification



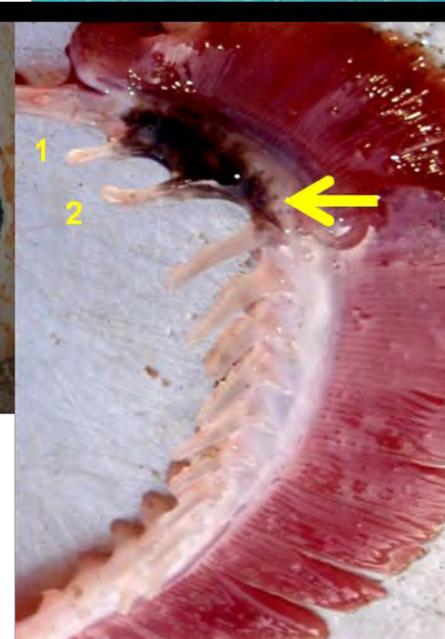
Red Hake

- Dorsal filament long & black (unless torn off)
- Pelvic filaments usually reach past vent
- 3 Gill rakers above flexion point on 1st gill arch**
- Usually not larger than 50cm, but can reach 90cm



White Hake

- Dorsal filament short with white tip
- Pelvic filaments usually short of vent
- 2 Gill rakers above flexion point on 1st gill arch**
- Routinely seen larger than 50cm, up to 120cm



Silver Hake

- 15-21 rakers on 1st gill arch**

Offshore Hake

- 8-11 rakers on 1st gill arch**

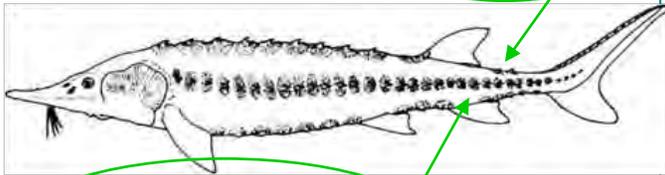


Atlantic Sturgeon

Width inside lips < 60% interorbital width

Max Length: over 9'

Post-dorsal fin plates above lateral plates



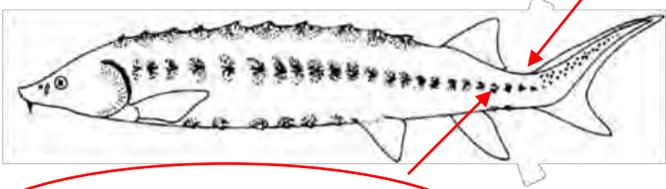
Bony plates present between base of anal fin and lateral bony plate row

Shortnose Sturgeon

Width inside lips > 60% interorbital width

Max Length: 4'

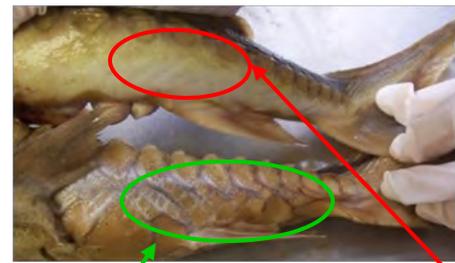
No post-dorsal fin plates above lateral plates



Bony plates not present between base of anal fin and lateral row of bony plates



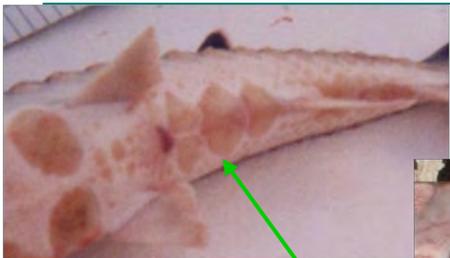
Atlantic- Rows of bony plates post dorsal fin above lateral plates on each side



Shortnose- No Bony plates between base of anal fin and lateral row of plates



Atlantic- 2-6 Rows of bony plates between base of anal fin and lateral row of plates



Atlantic- more complex/paired post anal scutes

Shortnose- simple patterned post anal scutes



Atlantic- "soft spot" on the head between dermal plates (raised) on skull



Shortnose- more contiguous with no "soft-spot"



What to do if you encounter a sturgeon:

1. **Photos** – Be sure to take the required photos of each individual sturgeon. Required photos: whole fish in profile, the underside of the head (mouth), top of head, post-dorsal fin lateral view, post-dorsal fin (dorsal view) and post-anal scutes (ventral view). Include photo slate in the photos for scale.
2. **IAL** – For all sturgeon obtain a measured fork length and actual weight, if possible. **BE SURE TO PROVIDE ID CHARACTERISTICS IN THE COMMENTS SECTION.**

Photograph these areas for ID characteristics:

- Profile head (1)
- Full length profile (2)
- Mouth (3)
- Anus to tail (4)
- Dorsal fin to tail- dorsal view (5)
- Posterior lateral/ventral view (6)

Additional Species Identification

Interorbital width vs. Inside lip width measurement

↔ Interorbital width (IO)
↔ Inside lip width (IL)

Atlantic Sturgeon: IL < 60% IO
Shortnose Sturgeon: IL > 60% IO

Juvenile Atlantic Juvenile Shortnose

Atlantic (left), photo courtesy of Eric Hilton, Virginia Institute of Marine Science
 Shortnose (right), photo courtesy of John Weinsten, Field Museum of Natural History



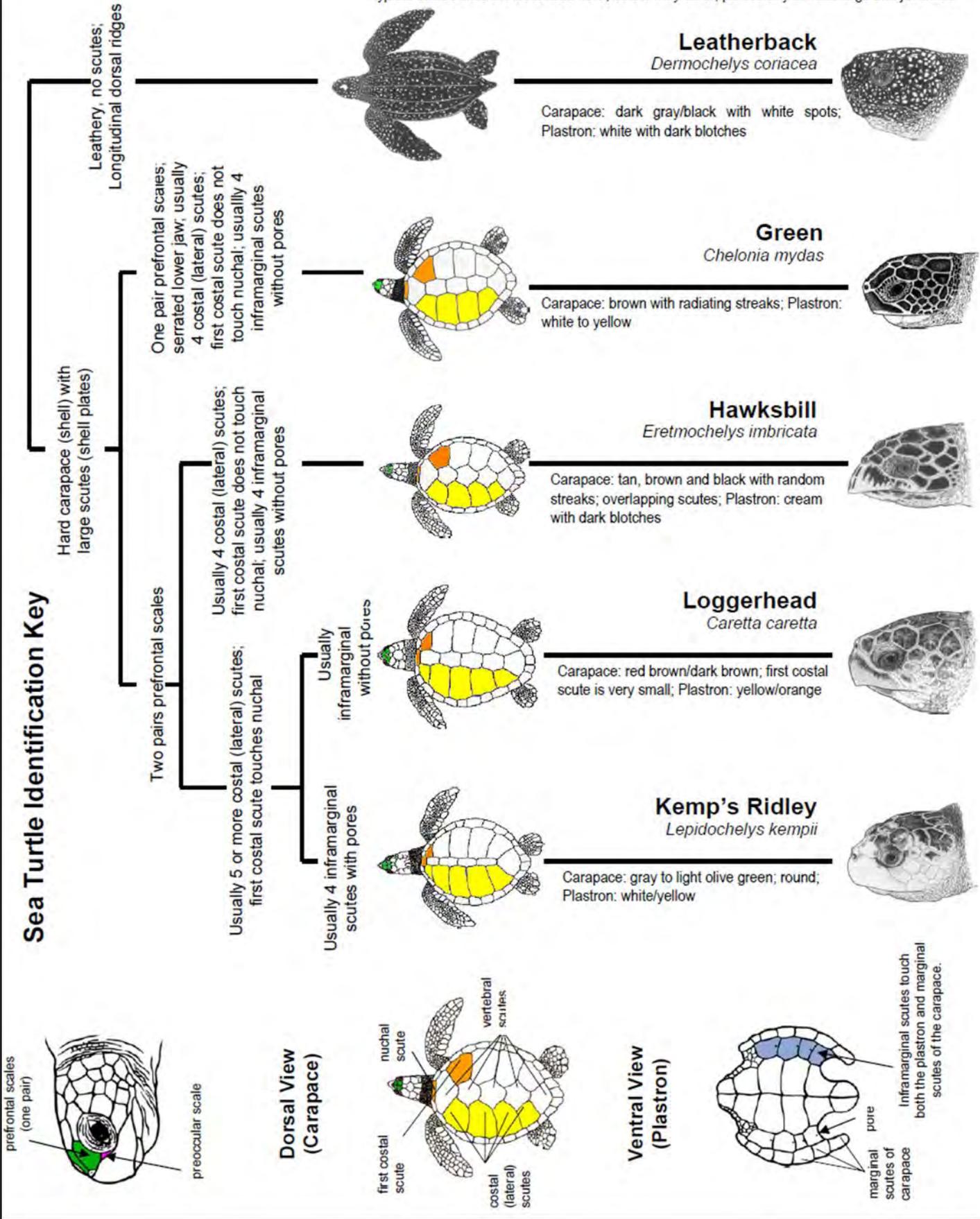
Shape of Snout & Head:
 These characteristics can be very misleading and *should not be used as the definitive characteristic.* Atlantic sturgeon snouts become relatively more rounded and the head profile relatively more convex as the size of the animal increases.

EXAMPLE: Atlantic sturgeon head/snout variation



Sea Turtle Identification Key

Typical adult colors are described here; colors may differ, particularly in hatchlings and juveniles



Sea Bird Identification Key for most commonly encountered species

Nasal Tubes

Long slender bill with strongly hooked tip;
Slender body with long narrow wings;
Blackish upperparts

White rump; Underparts white
with dark belly smudge;
Bill length: 43-50 mm

Dark plumage overall;
Silver-white underwing
Bill length: 38-46mm

Greater Shearwater

Sooty Shearwater

Northern Fulmar

Stout, pale bill; Gray
mantle; Pale feet
Light morph: white head,
underwing, underparts
Dark morph: gray/brownish
allover
Bill length: 31-39mm

Great Black Back Gull

No Nasal Tubes

Smooth hooked bill; plump
body; long wings

Adult: large yellow bill with red spot;
white head; blackish mantle; pale
pink feet

Juvenile: dark/dark-tipped bill;
mottled gray/brown mantle; white
rump; dark tipped tail

Adult: large yellow bill with red
spot;
white head; gray mantle; black
wing tips; pale pink feet

Juvenile: dark/dark-tipped bill;
mottled gray/brown mantle;
dark tipped tail

Herring Gull

Thin-Billed (Common) Murre

Slender, straight black bill;
Black Upperparts and head;
White underparts; Football-
shaped body; 'penguin-like'

****Do not hesitate to consult your "Beached Birds" guide in the event that your specimen does not appear to fall into any of these categories**



Northeast Fisheries Sector Monitoring Program
HARBOR SEAL *Phoca vitulina concolor*

Light to dark gray, tan or reddish brown; paler on ventral side of body.
 Light and dark speckles with ring-like patterns or halos.
 Dog-like head, short snout with slightly upturned nose, V-shaped nostrils.
 Distance from ear to eye and eye to end of snout nearly equal.
 Post-canines are multi-cusped & overlapping like roof shingles.



GRAY SEAL *Halichoerus grypus*

Dark reddish brown, black to silvery gray. Males: Brown to black with light spots. Females: gray, yellowish tan with dark spots.
 Horse-like head with flattened snout, W-shaped nostrils.
 Distance from ear to eye much shorter than eye to end of snout.
 Post-canines are canine-like with small cusps on each side.



HARP SEAL *Pagophilus groenlandica*

Pups have white-coats, juveniles (most often seen) have dark "ink-blotches" randomly scattered on coat.
 Adults are gray with black head and black harp pattern on back.
 Post-canines are multi-cusped with spaces between each tooth.



HOODED SEAL
Cystophora cristina

Takes in Gulf of Maine, pups only.
 Bluish gray back with sharply contrasting white belly.
 Post-canines are round multi-cusped.



Seal Identification

HARBOR SEAL

Dorsal side of coat has speckled halo pattern.
Ventral side usually uniform and tan in color.



Harbor Seal

Dog-like concave snout

Harbor Seal
V-Shaped nostrils

Gray Seal

Horse-like flattened snout



Gray Seal

W-Shaped nostrils



GRAY SEAL

Mottled coat pattern continuing from dorsal to ventral side.

Varies from very dark brown/black to light grayish white.



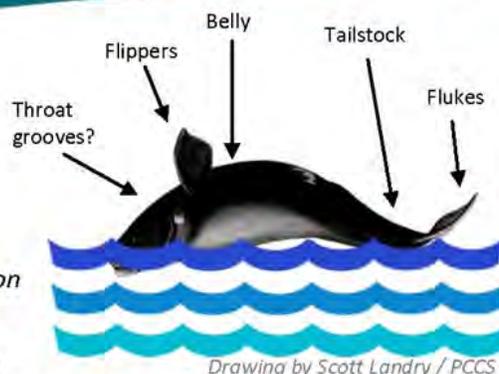
Science, Service, Stewardship



NOAA
FISHERIES
SERVICE

Report a Dead Whale

Please help NOAA collect vital information by documenting and reporting these critical sightings. Dead whales typically float belly up and can be very difficult to identify. Closely examine the carcass for signs of injury. Video or photos are extremely valuable, especially close-ups of tailstock, flukes, flippers, and injuries.



What Information Should You Report?

1. Your name, vessel name, and contact information
2. Date, time, and location of sighting (latitude and longitude if possible)
3. A detailed description of the whale:
 - How many feet long is the whale (use size of boat for comparison)?
 - Can you tell whether the whale has a dorsal fin or a smooth back?
 - What color is the whale? What color, shape, and length are flippers?
 - What color and shape are the tail flukes? Are the edges ragged-looking or smooth? Are there barnacles attached?
 - Does it have bumps on its head? If so, what color are they?
 - Do you see throat grooves (under the mouth extending to the belly)?
 - Are there signs of injury?
 - Are there lines or pieces of gear? If so, give specific information (buoys and line colors, buoy numbers, etc.). Do not attempt to remove gear!
 - Give specific info on key body parts (both flippers, tail, and mouth)

Long white flippers



NOAA / Northeast Fisheries Science Center

Paddle-shaped flippers

No throat grooves



New England Aquarium

Throat grooves

Line

NMFS permit 932-1489
Provincetown Center for Coastal Studies



Extremely Decomposed



Fisheries and Oceans Canada

Buoy

Who Should You Call?

US Coast Guard Ch. 16

or

866-755-NOAA (VA – ME)

877-WHALE-HELP (FL – NC)

Updated September 2012

National Oceanic and Atmospheric Administration

National Marine Fisheries Service

Whale Identification



NEFOP

ASM

IFS



Science, Service, Stewardship



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Tim Cole / NOAA



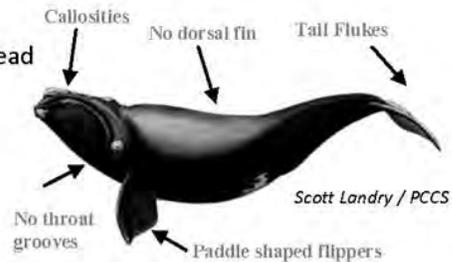
Lisa Conger / NOAA

Report a Right Whale Sighting

Please help us collect this vital information. Less than 500 right whales remain and their survival is threatened by ship strike and entanglement in fishing gear. Reporting sightings helps to save this endangered species by alerting mariners to their presence.

Is it a North Atlantic Right Whale?

- White patches (callosities) on head
- Distinctive v-shaped blow
- Smooth edges on tail flukes
- Paddle shaped black flippers
- No dorsal fin
- Black robust body



What Information Should You Report?



Eric Matzen / NOAA

- Your name and contact information
- Date and time of the sighting
- Where were you (i.e., vessel, land)
- Location (latitude and longitude if possible)
- Number of whales sighted
- Any behavior observed
- Are you sure it was a right whale?
- Describe what you saw in detail

Is the Whale Dead, Injured, or Entangled in Fishing Gear?

If possible, keep a dead or injured whale in sight and report immediately. Do not attempt to remove gear! There is a team of experts who disentangle whales. Take photos or video if possible, and report this additional information:

- Do you see a visible spout during exhale?
- Do the flukes come out of the water on a deep dive?
- Does it have a dorsal fin? What color and shape are the flippers?
- Does it have bumps on its head and what color are they?
- How long is the whale (how many feet? Compared to size of boat?)
- Do you see throat grooves (under the mouth extending to the belly)?
- If entangled, is the whale free swimming or anchored?
- Give specific info on key body parts (both flippers, tail, and mouth) and any gear observed (buoys and line colors, buoy numbers, etc.)

Federal regulations prohibit approaching right whales within 500 yards (1500 feet).

Who Should You Call?

U.S. Coast Guard VHF Ch. 16

or

Virginia to Maine:

866-755-NOAA

Florida to North Carolina:

877-WHALE-HELP

Updated September 2012

National Oceanic and Atmospheric Administration

National Marine Fisheries Service



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NEFOP ASMFC Biological Sampling Priorities Cheat Sheet

Program code 042

Gear: Bottom otter trawl, 050

Mesh Size <5.5"

Species	State(s) sailed	Stat Areas*	Max structures per trip	Sample Type	Comments
Black Sea Bass	RI, VA, MD, NY	530-539; 600-699	25	Otoliths	If otoliths cannot be taken, scales are the second preference.
Bluefish	RI, VA, MD, NJ, NY	Any	25	Otoliths	Only collect otoliths from species > 45 cm. Heads can be taken in lieu of otoliths
Atlantic Croaker	RI, VA, MD, NJ, NY	Any	25	Otoliths	
Atlantic Herring	NJ, RI	500-599; 600-699	50	Otoliths	
River Herring	RI, VA, MD, NJ, NY	Any	20	Scales	Species include Alewife and Blueback Herring. Freeze samples when possible.
Scup	NJ, RI, NY	520-529; 530-539; 560-569; 600-699	25	Scales	Large market class fish are priority
Summer Flounder	RI, VA, MD, NJ, NY	520-529; 530-539; 560-569; 600-699	25	Otoliths	
Weakfish	MD, NJ, RI, NY	Any		Otoliths	Freeze samples when possible.
Winter Flounder	NJ, RI, NY	521, 522, 525, 526, 530-539, 560-569, 630-639	25	Otoliths	

*This list supercedes traditional NEFOP priorities listed in the Biological Sampling Manual for program code 042 trips.

ASMFC Biological Sampling



REMINDERS

- Use issued scale for all trips.
- When using the Marel scale, write “Marel Scale Used” in the comment section of the **Vessel & Trip Log**.
- Record Fit Value on the **Catch Estimation Worksheet**.
- Round and record weights to the tenths place. (i.e. 12.45 lbs. → 12.5 lbs.)
- Submit a Marel Scale Log with every associated trip.

UPKEEP AND MAINTENANCE

- *Before use and storing:* Perform a visual inspection of scale. Check for damage; remove any foreign objects that may interfere with load cells; inspect cables; ensure display screen is operational; identify location of rust.
- *During Trip:* Between hauls, put scale to sleep (press ‘Menu’ and ‘Down’ buttons simultaneously). Rinse down with water, removing all slime and debris.
- *Conclusion of the trip:* Remove weigh pan and rinse all components (weigh pan, scale and pelican case) with fresh water. Remove and store batteries. Allow pelican case to dry before repacking.
- Perform a 1 day calibration once every observed day.
- Stow scale while underway; find a secure sampling station; store in a secure location in between trips.

ERROR CODES

- E-01** AD converter failure - Restart the scale.
- E-03** ADC over range - Reduce the weight on the platform.
- E-04** ADC under range - Increase the weight on the platform.
- E-05** Unstable weight (initial zero) - Stabilize scale.
- E-06** Weight outside range (initial zero) - Make sure platform is empty.
- E-08** Operation in progress (initial zero) - Wait until completed.
- E-11** Invalid initial zero - Remove or reduce the weight on the platform.
- E-13** Program failure - Contact FSB staff.
- E-14** ADC not responding - Contact FSB staff.
- E-15** W&M setup checksum failure - Contact FSB staff.
- E-23** 24 V power voltage too high - Contact FSB staff.
- E-25** Low voltage to load cells - Contact FSB staff.
- E-50** Parameter protection test failed - Restart the scale.
- E-81** Fit value too high - Repeat calibration.
- E-82** Calibration weight not detected - Repeat calibration.
- E-84** Marine static calibration not allowed - Scale requires motion.
- E-91** Invalid marine calibration. Fit value too high - Repeat calibration.
- E-92** Invalid marine calibration. Calibration weight not detected - Repeat calibration.
- E-93** Invalid initial zero - Make sure the platform is empty.

Note: If the error persists, contact Fisheries Sampling Branch (Technology Park) staff for assistance.

FSB STAFF CONTACTS

Jenna Rockwell (508) 495-2189
Cathy Brothers (508) 495-2002
Charles Dunlap (508) 495-2035

CALIBRATE**Perform before each haul:**

- Press any button to turn scale on, then the ‘Up’ button.
- When the weight display reads 0.00 the scale is ready.
- Press ‘Zero’ and ‘Menu’ buttons simultaneously.
- Wait for the readout to display ‘Put 5’.
- Place 5 kg weight on scale.
- Press the ‘Print’ button.
- Acceptable Fit Values - Calm weather (≤ 25)
Rough weather (≤ 70)
- Record Fit Value on Catch Estimation Worksheet.

1-DAY TEST**Perform once per observed day:**

- Calibrate scale (see above).
- Record Fit Value on Marel Scale Log.
- Lift up calibration weight until display reads 0.00.
- Place the same weight back on scale, record weight on Marel scale Log
- Acceptable calibration weight range: 11.00-11.05 lbs.

QUICK FIXES

Below are a few simple tricks you can do to help resolve common error and weight readings, and high Fit values:

- Change out batteries.
- Make sure scale is level.
- Check that scale is not resting against anything.
- Protect scale from the wind.
- To exit out of an error press ‘Menu’ button.
- To reset scale press ‘Menu’, ‘Up’ and ‘Zero’ buttons simultaneously.

Note: If the error persists, contact Fisheries Sampling Branch (Technology Park) staff for assistance.



Marell Scale



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Chain Mat Modified Dredge Gear

Sea Turtle Regulations for the Atlantic Sea Scallop Dredge Fishery

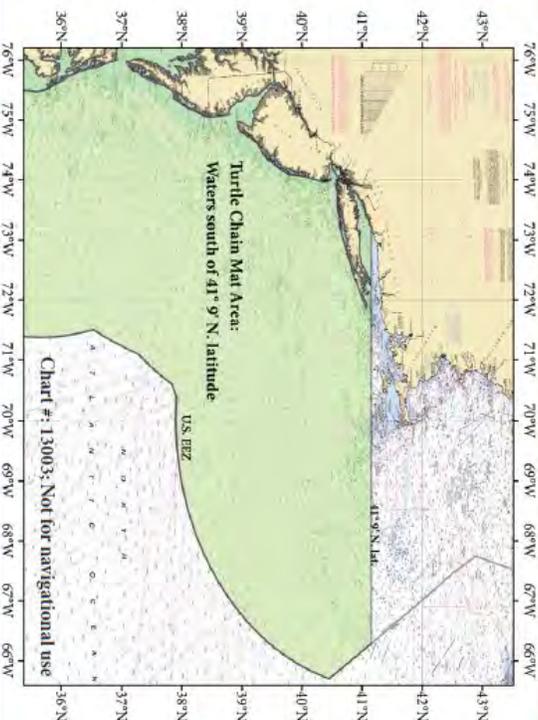


Chain Mat Requirements

Requirement: Vessels must use chain mats on all dredges for the duration of the trip
Applies to: Vessels required to have a Federal Atlantic sea scallop permit
Where: U.S. Atlantic waters south of 41° 9' N. latitude
When: May 1 through November 30 each year
Transiting Provision: Vessels transiting these waters are exempt from the requirements provided the dredge gear is stowed, and there are no scallops on-board

Chain Mat Configuration

- A chain mat is composed of horizontal and vertical chains configured such that:
- (1) The openings formed by the intersecting chains have no more than 4 sides
 - (2) The chains cover the opening of the dredge bag with the vertical chains extending from the back of the cutting bar to the sweep
 - (3) The horizontal chains intersect with the vertical chains
 - (4) The length of each side of the openings formed by the intersecting chains is less than or equal to 14", with the exception of the side of any individual opening created by the sweep
 - (5) The chains are connected with a shackle or link at each intersection point
 - (6) Measurements are taken along the chain, with the chain held taut, and include one shackle/link at the intersection point and all links up to, but excluding the shackle/link at the other intersection point



This summary provides a broad overview of the requirements, and is not a substitute for the regulations. You are encouraged to read the regulations in conjunction with this information card. For more information, please see 50 CFR 223.206(d), call NOAA's National Marine Fisheries Service Northeast Region Protected Resources Division at 978-281-9328, or visit our website at http://www.nmfs.gov/protected_resources/seaturtles/regs.html.

June 2012

Standard Dredge Frame

Scallop Reference



Turtle Deflector Dredge (TDD)

