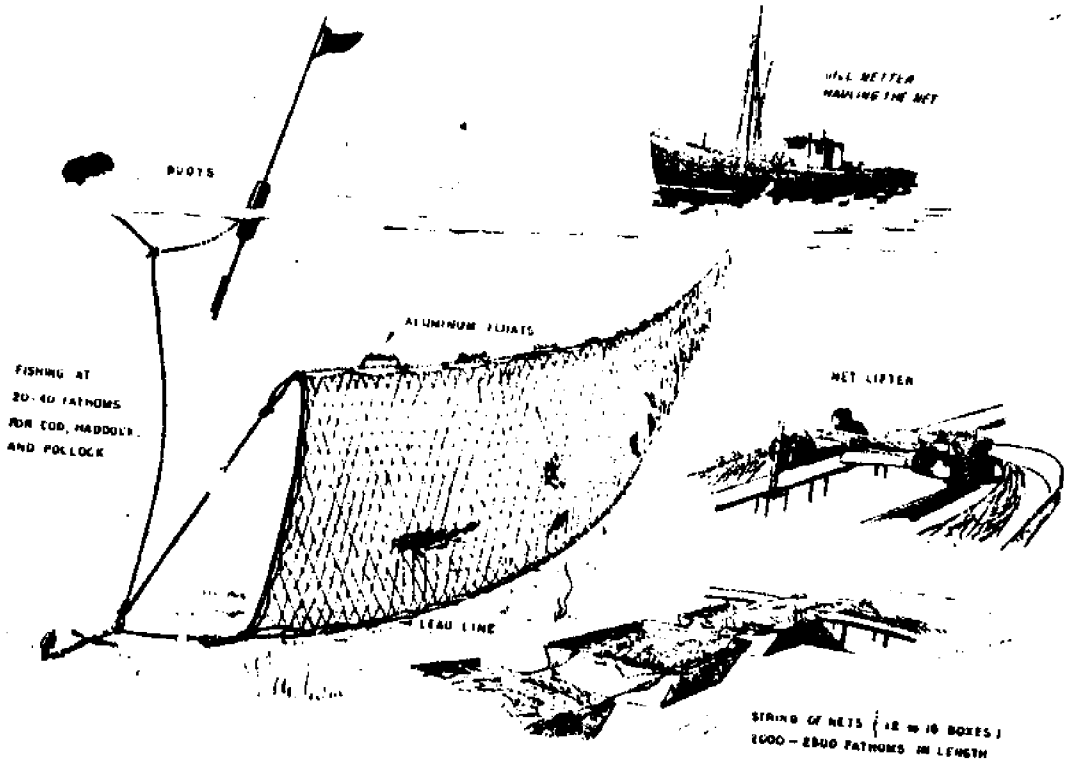
GILL NET CONSTRUCTION AND REPAIR WORKSHOP #1

January 27, 29, 1981

GILL NET CONSTRUCTION GUIDE

- terminology
- construction and repair techniques



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INTRODUCTION

The gill net, although one of the oldest types of fishing gear, remains one of the most versatile. It is this versatility that has enabled it to survive as a modern gear type. Today, the basic gill net design of an underwater barrier or fence has evolved into many distinct design types now used world-wide. Gill nets are selective, extremely portable, and can be rigged to fish in many different types of fisheries and fishing grounds. They are utilized by both large scale fishing operations equipped with hydraulic fishing equipment, and small scale operations with small rollers and chutes. Regardless of the size and scope of the gill net operation, they remain popular among U.S. fishermen desiring a fuel efficient and flexible fishing gear. Gill nets are well suited to the conditions prevalent along both coasts and inland waters of the United States. Continued widespread acceptance and design development assures their use in the future.

Design Characteristics

The gill net is designed to capture individual fish in a sheet of webbing, the purpose being to hold the fish in the web until it is hauled or checked. This webbing is usually secured to a top and bottom line enabling it to be set and hauled. Fishing is accomplished by selecting a certain stretched mesh that will gill a certain size fish allowing it easy entrance but not exit from the webbing. Thus, the name of the gear explains the technique. Several design changes have enabled the gill net to catch both bottom and surface species of fish.

Variations of the basic design have produced many special purpose gill nets such as trammels and tied down gill nets.

In most states, licenses are required for commercial gill net fishing. Restrictions may apply to season, area, size of mesh, gill net length and gill net type. In some states the use of gill nets is strictly forbidden.

Construction Characteristics

Gill nets are a passive gear type usually set or placed in productive fishing areas. A successful gill net has certain characteristic properties. The visibility of a gill net in the water should be low, especially for daylight fishing. Gill net webbing should be soft, yet strong enough to hold the size of fish desired, elastic enabling the gear to absorb the stresses of setting and hauling, but not to the point of stretching allowing gilled fish to escape, and finally the webbing should be resistent to rot and chafing. The webbing should be hung to the lead and float lines with the proper hanging ratio. Webbing that is hung tight will be prone to tears and vibrate in the water warning fish of the obstruction. Webbing that is hung very loose will snarl easily and increase resistance. Lastly, the floatline (corkline) and leadline should be properly constructed with the correct leads and floats.

TYPES OF GILL NETS

Trammel Nets

A gill net that consists of an inside wall of monofilament webbing and two outside walls of large multifilament webbing. The depth of the outside walling determines the depth of the gill net. Trammels commonly have 4 to 6 feet of extra inside monofilament webbing to the depth of the outside walling.

Flag Nets

A gill net constructed of limp, soft multifilament webbing without a weighted bottom line (leadline). These nets are designed for use in ponds and lakes where there is little current. Easy silent movement of the webbing makes this difference effective.

Coastal Nets

A gill net specially rigged for use in heavy current and tides. Heavier lead line and floatline are required. Extra floats and leads may also be used.

Tied Down Nets

A gill net that has drop lines at every float to the lead or appropriate hitch below it. Tied down gill nets have extra slack webbing at the bottom resembling a trammel gill net. A 10 foot gill net can be tied to a depth of 8 feet. An 8 foot gill net usually is tied to 6 feet.

Encircling Nets

A gill net that is set to circle a certain location or school of fish. Encircling gill nets are often hung full with extra gill net webbing and can be a one boat or two boat operation.

Staked Nets

A gill net that is set out along a series of stakes or poles driven into the bottom. The stakes provide a sturdy and straight foundation for setting gill nets in strong current and keeps the net set properly.

Anchored Nets

Gill nets that are set with anchors. The depth of the net in the water depends on the length of the bridles, the use of float or drop lines and the length of the anchor line. Anchored gill nets are usually set across tide and are subject to heavy tides, currents and fouling. Surface, bottom and midwater (off the bottom) gill nets can all be set with anchors.

Drift Nets

Drift gill nets are nets that are not fixed or set, but allowed to drift freely. Drift nets are used in currents and tides. Often one end of the gill net will be tied to the fishing vessel. A set might consist of the gill net drifting past a selected area or over a distance of good fishing ground.

Armoured Nets

A gill net similar to a trammel gill net only it has one wall of large outside webbing called armouring and a single sheet of small mesh webbing called the lint. The armouring is hung to the floatline and leadline as a regular trammel, but depending on the amount of surface fouling the lint is hung to the armouring. This net has the advantage of a double wall gill net but is effective in only one direction. The lint can be also adjusted to the correct depth from the floatline and produces less resistence in the water than a three wall trammel gill net.

Drop Line Nets

A gill net that is adjustable preventing bottom and surface fouling with dropper lines attached to the floatline. This prevents surface fouling from the jellyfish, seaweed and other floating debris while keeping the leadline from touching the bottom avoiding bottom fish and crabs that may become tangled near the leadline. The dropper lines are attached to the floatline with dropper fly hitches.

TERMS

Sider knot	-	A knot made on a sider consisting of one half hitch below the sider followed by a half hitch above the knot.
Pick Up knot	-	A pick up knot is a single sheet bend. A pick up will not unravel unless cut and are in the direction of pull.
Up and Down Line	-	The line that is found at the ends of a gill net connecting the float line to the lead line.
Wing End Line	-	Same as up and down line.
Side Line	-	Same as up and down line and wing end line.
3 Legger	-	When a four sided mesh is torn or ripped, 3 legged mesh is created. A 3 legger is very important in mending net sections and joining net sections together. A 3 legger signifies that a knot only has 3 strands of twine attached to it instead of four. When mending webbing or joining web sections, you <u>start</u> on a 3 legger and <u>finish</u> on a 3 legger.
Halver	-	Same as 3 legger.
Sider	-	The knot at the side of a mesh, a sider will unravel if the two adjoining bars are cut too close.
Cut Mesh	-	Same as Sider.
Side Mesh	-	Same as Sider.
Side Knot	-	Same as Sider.
Float Line	-	The line that floats and webbing are attached to, forming the top of a gill net.
Cork Line	-	Originally corks were used to keep the top of the gill net buoyant. Synthetic floats have replaced corks in gill net construction. The float line is still sometimes referred as the cork line.
Lead Line	-	The line that lead weights and webbing are attached forming the bottom of a gill net.
Floats	-	Buoyancy is needed for gill nets to work effectively regardless of where they are set in the water column. Floats can be molded or cut and usually made from expanded foam or hard plastic. Gill net floats have various inside hollow diameters (holes) according to the size of the floatline used. (Remember for the floats to slide on the floatline, the float hole should be larger than the floatline diameter).

Leads - The bottom of a gill net should sink in order for the net to fish properly. Usually leads are used for this purpose. Leads can be either a molded sinker type with various holes or cut lead tubing. (Remember for the leads to slide on the leadline, the lead hole should be larger than the leadline diameter).

Lead Core Line - Lead core line is a synthetic braided line with a core of lead or braided lead filaments. Lead core will eliminate the need for molded or cut leads on the floatline and reduces the risk of fouling the webbing but is more costly.

Foam Core Line - Foam core line is a synthetic braided line with a core of buoyant foam. Foam core line eliminates the need for floats but is subject to stretch especially in strong currents. (May be necessary to use a small line of the proper length seized to the foam floatline to prevent stretch). Limitations also occur on maximum floatation load.

Cross Twine When webbing is made on a machine or by hand, it has a characteristic "run of the twine" that is the sheet bend knots are made in the direction of pull. (As tension is applied the knots will tighten and not loosen). Pulling the webbing from the siders instead of the pickups will result in a distortion known as "cross twine" which is wrong. The sider knots are knots at the side of a mesh, the pickups are at the top and bottom of a mesh.

Selvage - Making a pickup knot but including the outside bar and the half mesh just formed resulting in a reinforced straight edged net (webbing).

Selvedge - When webbing is machine made the first row of pickups will be of double twine (two strands). This is very common with gill net webbing. *Note some manufacturers will call this "The Selvage".

Creasing(Increasing) - Adding a mesh within a piece of webbing. (Making two pickups instead of one). European method - done in the middle of the webbing. Western method - usually done at the edge of the webbing.

Bating (Abating) - Subtracting a mesh within a piece of webbing. (Taking two pickups instead of one). European - done in the middle. Western - usually at the edge.

Hanging Ratio - The hanging ratio refers to the length of stretch webbing as to the length of leadline or floatline.

Pick Up - The part of the mesh that will not unravel and lies in the direction of pull.

Sidering	- A process that starts at a 3 legged mesh and then proceeds to alternate siders and finishes at a 3 legger.
Sewing	- A process that starts at a 3 legged mesh and then proceeds to alternate pickups and finishes at a 3 legger.
Bar	- The length of one side on a four sided mesh. (A mesh will have four bars).
Square Measure	- The length of one bar.
Stretch Measure	- The length of two bars when the mesh is held taut. *Note some manufacturers will include one knot in the stretch measurement.
Sheet Bend	- The knot used in the construction of webbing also called the pickup knot.
Weavers Knot	- Usually the same as the sheetbend or pickup knot.
Double Mesh	- Gill net webbing with the first two rows of pickups (1 mesh) will be of double twine (two strands). This is common when reinforced gill net webbing is required.
Hanks	- A method of shipping webbing usually the hanks are tied in five pound units with pickups at the ends.
Multifilament Webbing	- Gill net webbing constructed from spun nylon twine. It is usually very limp and flexible - the color is white but is readily dyed.
Monofilament Webbing	- Gill net webbing constructed from a single strand of clear twine. Monofilament webbing is very effective because of its transparency in water. It is not as limp or flexible as multifilament webbing.
Monoply webbing	- Gill net webbing constructed from strands of monofilament twine spun into a multi-monofilament webbing. It is 11% lighter but 16% stronger and more transparent than monofilament or multifilament webbing.
Double knotted	- Webbing built with a double sheetbend or a sheet bend and a half instead of a single sheetbend or pickup knot. Gill net webbing is often double knotted due to its small diameter and tendency to slip.
Monfilament knot	- A knot consisting of a sheetbend and a half, used with monofilament gill net webbing to prevent slipping meshes.
Japanese knot	- Same as monofilament knot.

Shad rings - Metal rings attached to the bottom line with very light twine. Rings act to sink the net and prevent loss by tearing away if the net hangs on the bottom.

Anchor bridle - Two lines (one line from float line and one line from the leadline) that combine to form a single anchor line. Anchor bridles are used to set gill nets.

Walling - Large mesh gill net webbing usually multifalment and commonly found in trammel gill nets.

Phase length - The distance between two hitches on either the floatline or lead line of a gill net.

Tie length - Same as phase length.

Gill net hitch - A hitch used to hang gill nets. This hitch will not slip on the leadline or floatline but is hard to remove.

Clove hitch - A hitch that is used to hang gill nets. Clove hitches will slip slightly but are easily removed.

Copy line - A line that has been marked with the phase length needed to hang a certain gill net.

Drop lines - Lines used to tie down a gill net.

End Buoys - Buoys that mark the ends of a gill net. (Some gill nets may have buoys marking the center also).

Sinking Gill Nets - A gill net will sink when set. Few floats and a well weighted leadline are found in this type of gill nets.

Floating Gill Nets - A gill net that will float when set. This type of gill net requires more floats and the leads are only placed below each float.

Bottom Gill Nets - Gill nets that are set on the bottom or near the bottom.

Surface Gill Nets - Gill nets that are fished on the surface.

Midwater Gill Nets - Gill nets that are set using floats and float lines positioned with anchors to fish at a desired depth.

GILL NET CONSTRUCTION METHODS

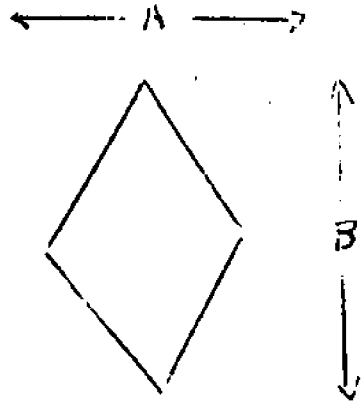
Old Method	Construction Definition	New Method
Tie Length	Distance between hitches on either floatline or leadline.	Phase Length.
Meshes Per Tie	Number of meshes hung on lines between two hitches on floatline or leadline.	Meshes per phase.
Hung on a fraction basis of stretched webbing to one foot.	How the meshes are attached to the leadline or floatline.	Hung on a ratio of stretched webbing to line length.
Clove Hitch	Knot or hitch used to attach webbing to the leadline or floatline.	Gill net hitch.
Ruler to measure lines on paper	Determination of the distance between two hitches on the leadline or floatline.	Formula

Hanging Fractions	Hanging Rates	Hanging Ratios
One Quarter (1/4) basis 16 inches of web to one foot of line length.	Will equal	1.33 to 1 or 1.33 inches of web to every inch of line length.
One Third (1/3) basis 18 inches to one foot	Will equal	1.5 to 1
Two Fifths (2/5) basis 20 inches to one foot	Will equal	1.66 to 1
Three Sevenths (3/7) basis 21 inches to one foot	Will equal	1.75 to 1
One Half (1/2) basis 24 inches to one foot	Will equal	2.0 to 1
Five Ninths (5/9) basis 27 inches to one foot	Will equal	2.25 to 1
Three Fifths (3/5) basis 30 inches to one foot	Will equal	2.5 to 1

HANGING TERMINOLOGY FOR GILL NETS

Hanging Fraction	Hanging Ratio	Hanging Coefficient (A & B)	
0	1 to 1	1	0
One Quarter (¼) basis	1.33 to 1	.8	.6
One Third (1/3) basis	1.5 to 1	.66	.75
Two Fifths (2/5) basis	1.66 to 1	.6	.8
Three Sevenths (3/7) basis	1.75 to 1	.58	.82
One Half (½) basis	2 to 1	.5	.87
Five Ninths (5/9) basis	2.25 to 1	.45	.89
Three Fifths (3/5) basis	2.5 to 1	.4	.92
1	10 to 1	0	1

HANGING COEFFICIENTS (A, B)



To calculate the opening or width of a mesh multiply the A coefficient by the mesh size.

To calculate the closure or height of a mesh, multiply the B coefficient by the mesh size.

GILL NET CONSTRUCTION REFERENCE TABLE

Hanging Ration

	1.0	1.5	2.0	2.5	3.0	3.5	
Mesh Size Stretch in Inches	Number of Meshes Per Phase						Phase Length in Inches
1.0	2	3	4	5	6	7	2.0
1.25	2	3	4	5	6	7	2.5
1.5	2	3	4	5	6	7	3.0
1.75	2	3	4	5	6	7	3.5
2.0	2	3	4	5	6	7	4.0
2.25	2	3	4	5	6	7	4.5
2.5	2	3	4	5	6	7	5.0
2.75	2	3	4	5	6	7	5.5
3.0	2	3	4	5	6	7	6.0
3.25	2	3	4	5	6	7	6.5
3.5	2	3	4	5	6	7	7.0
3.75	2	3	4	5	6	7	7.5
4.0	2	3	4	5	6	7	8.0
4.25	2	3	4	5	6	7	8.5
4.5	2	3	4	5	6	7	9.0
4.75	2	3	4	5	6	7	9.5
5.0	2	3	4	5	6	7	10.0
5.25	2	3	4	5	6	7	10.5
5.5	2	3	4	5	6	7	11.0
5.75	2	3	4	5	6	7	11.5
6.0	2	3	4	5	6	7	12.0
6.25	2	3	4	5	6	7	12.5
6.5	2	3	4	5	6	7	13.0
6.75	2	3	4	5	6	7	13.5
7.0	2	3	4	5	6	7	14.0

Designations of Twines

The Denier System

This designation refers to the weight in grams per 9,000 meters of a single twine filament or yarn formed by the twisting of many natural or synthetic fibers. 1 Denier equals 1 gram per 9,000 meters. One of the most common Denier classification is 210 Denier. (i.e. 9,000 meters of this twine filament would weight 210 grams). 210 Denier is used worldwide as a basis for many types of twine classification.

Total Denier refers to the product of the filament (yarn) weight multiplied by the number of filaments (yarns) per strand and the number of strands that forms the twine. A total Denier of 1890 is the product of the yarn weight multiplied by the yarns per strand and finally multiplied by the number of strands in the twine or 210 x 3 x 3.

The Tex System

This designation refers to the weight in grams or 1,000 meters of a single twine filament or yarn formed by the twisting of many natural or synthetic fibers. 1 Tex equals 1 gram per 1,000 meters. The Tex System is the accepted system worldwide and is the recommended system of the International Organization for Standard (I.S.O.).

Total Tex refers to the product of the filament (yarn) weight multiplied by the number of filaments (yarns) per strand and the number of strands that forms the twine. A Total Tex of 207 is the product of the yarn weight multiplied by the yarns per strand and finally multiplied by the number of strands in the twine or 23 x 3 x 3.

American Thread Count

This designation now only used in the United States refers to the final diameter of the finished twine. The larger the diameter of the twine, the larger the thread count. The twine "type" may be specified according to composition and function.

MULTIFILAMENT GILL NETTING DESIGNATIONS

Manufacturer (Catalog #)	Denier	Total Denier	Tex.	Tex. Total	Thread Count (American Sys.)	Diameter mm.	Diameter inches
- -	210 x 2	240	23 x 2	46	-	-	-
# 69	210 x 3	630	23 x 3	69	-	.30	.012
# 104	210 x (4) x 3	840	23 x 4.5	103.5	-	.38	.016
# 139	210 x 2 x 3	1260	23 x 2 x 3	138	#3	.43	.017
# 208	210 x 3 x 3	1890	23 x 3 x 3	207	#4	.55	.022
# 277	210 x 4 x 3	2520	23 x 4 x 3	276	#5	.68	.027
# 346	210 x 5 x 3	3150	23 x 5 x 3	345	#6	.76	.031
# 415	210 x 6 x 3	3780	23 x 6 x 3	414	#7	.86	.035
# 9	210 x 8 x 3	5040	23 x 8 x 3	552	#9	1.03	.042
			NYLON WEBBING				
# 12	210 x 10 x 3	6300	23 x 10 x 3	690	#12	1.13	.046
# 15	210 x 12 x 3	7560	23 x 12 x 3	828	#15	1.25	.051
# 18	210 x 16 x 3	10080	23 x 16 x 3	1104	#18	1.42	.058
# 21	210 x 20 x 3	12600	23 x 20 x 3	1380	#21	1.6	.065
# 30	210 x 24 x 3	15120	23 x 24 x 3	1656	#30	1.91	.078
# 36	210 x 32 x 3	20160	23 x 32 x 3	2208	#36	2.10	.085
# 42	210 x 36 x 3	22680	23 x 36 x 3	2484	#42	2.30	.093
# 48	210 x 42 x 3	27720	23 x 48 x 3	3036	#48	2.50	.103
# 54	210 x 48 x 3	30240	23 x 54 x 3	3312	#54	2.70	.109
# 96	210 x 92 x 3	57960	23 x 96 x 3	6348	#96	3.90	.158

MONOFILAMENT GILL NETTING DESIGNATIONS

Manufacturer (Size)	Manufacturer Catalog	Denier	Tex.	Diameter mm.	Diameter Inches
110 x 3		-	44	.20	.008
210 x 2	#46	-	55	.23	.009
3	#69	660	73	.28	.011
4	#104	880	98	.33	.013
6	#139	1320	147	.40	.016
8	#208	1760	195	.47	.019
10	-	2200	244	.52	.021
12	#277	2640	293	.57	.023
16	#346	3520	391	.66	.027
18 or #7	#415	3960	440	.70	.029

*Note - Larger monofilament is sometimes available for trammel walling.

Size	Diameter in millimeters
#9	.81
#12	.90
#15	1.05

APPROXIMATE BREAKING STRENGTHS FOR MONOFILAMENT & MULTIFILAMENT GILL NETTING

Monofilament

Size Manufacturer #	Breaking Strength (lbs.) Twine Wet	Twine Dry	Webbing Wet	Webbing Dry
110 x 3 or #37	-	4	-	-
210 x 2 or #46	-	5	-	-
3 or #69	7	8	5	5
4 or #104	9	10	6	6
6 or #139	13	15	9	10
8 or #208	18	20	13	14
10 -	22	25	14	16
12 or #277	27	30	17	19
16 or #346	34	38	21	23
18 or #414 or #7	36	40	24	26
- #9	-	49	-	-
- #12	-	68	-	-
- #15	-	95	-	-

Note - #7 thread to #15 usually gill net walling.

Multifilament

Size Manufacturer #	Breaking Strength (lbs.) Twine Wet	Twine Dry	Webbing Wet	Webbing Dry
210 x 2 or #46	-	5	-	-
210 x 3 or #69	9	10	6	6
210 x (4) or #104	12	13	7	8
210 x 2 x 3 or #139	19	20	11	12
210 x 3 x 3 or #208	27	28	16	18
210 x 4 x 3 or #277	40	42	22	24
210 x 5 x 3 or #396	-	58	-	-
210 x 6 x 3 or #415	-	64	-	-
210 x 8 x 3 or #9	-	84	-	-
210 x 10 x 3 or #12	-	106	-	-
210 x 12 x 3 or #15	-	126	-	-
210 x 16 x 3 or #18	-	170	-	-
210 x 20 x 3 or #21	-	210	-	-

Note - #9 thread to #21 usually gill net walling.

DETERMINING THE DEPTH OF GILL NETS

The depth of a gill net is both a function of the hanging ratio and the depth of the gillnetting (meshes deep).

To find the depth of a gill net multiply the B coefficient of your hanging ratio by the mesh size and the depth of the gillnetting (meshes deep).

To find the depth of gillnetting (meshes deep) for a desired depth divide the depth wanted by the B coefficient of your hanging ratio multiplied by the mesh size.

Example: (When the depth of the gillnetting is known).

Hanging ratio - 2 to 1

Hanging coefficient - .87

Mesh Size - 4 inch stretch

Depth of gillnetting - 20 meshes

Depth (inches) - B coefficient x mesh size x number of meshes deep.

Depth of this gill net when hung - .87 x 4" x 20 meshes deep equals 70 inches or approximately 6 feet deep.

Example: (When the depth of the gillnetting is unknown).

Hanging ratio - 2 to 1

Hanging coefficient - .87

Mesh Size - 4 inch stretch

Depth of gillnetting - ?

Desired depth - 120 inches (10 feet)

Depth (in meshes) - $\frac{\text{Desired depth (in inches)}}{\text{B coefficient x Mesh Size}}$

Depth (in meshes) - $\frac{120 \text{ Inches}}{.87 \times 4"}$ equals $\frac{120}{3.48}$ or 34.5 or 35 meshes.

Depth of gillnetting desired for this depth equals 35 meshes.

APPROXIMATE GILL NET MESH SIZES AND TWINE SIZES FOR CERTAIN FISHERIES

WEIGHT OF FISH IN POUNDS

	1 lb.	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	15 lbs.
SHAD	Five and five eighth inches - Connecticut State Law. Multifilament - Connecticut State Law.						
MENHADEN	2 7/8" 104 tex	3¼"-3½" 139 tex					
COD FISH			4"-4.5" 208 tex	5.0" 277 tex	5.25" 346 tex	5.5"-6.0" #6 mult.	6.0"-7" #7-#9 mult.
BLUE FISH		3¼" 139 tex	3½" 208 tex	4.0" 277 tex	4.5" 346 tex	5-5.5" #6 mult.	6.0"-7" #7-#9 mult.
WEAK FISH			3½" 139 tex	4.0" 208 tex	4.5" 208 tex	5.0" 208 tex	
MACKEREL	2 7/8" 139 tex	3-3¼" 139 tex	3½" 139 tex				

STRIPED BASS - The Use of Gill Nets for Striped Bass is Illegal in Connecticut.

* Consult Local and State Laws Concerning Gill Nets Before Construction.

SUMMARY OF GILL NET CONSTRUCTION FORMULAS AND CONVERSIONS

Twine Designations:

Denier - Weight of 9,000 meters of a netting yarn or filament.

Total Denier - The product of the yarn or filament weight multiplied by the number of yarns per strand and the number of strands in the twine.

Tex - Weight of 1,000 meters of a netting yarn or filament.

Total Tex - The product of the yarn or filament weight multiplied by the number of yarns per strand and the number of strands in the twine.

Thread Count - Refers to the diameter of the finished twine.

Conversions:

Denier to Tex - .111 multiplied by the Denier or Denier divided by 9.

Tex to Denier - 9 multiplied by the Tex or Denier divided by .111.

Thread Count - None (Table Only).

Hanging Methods:

Hanging Fraction or basis - Refers to a length of stretched webbing (netting) hung in one foot.

Hanging Ratio - Refers to inches of stretched webbing (netting) hung to one inch of line length.

Hanging Coefficient - Refers to the width or height of a mesh when hung to a certain hanging ratio.

Conversions:

A coefficient - 1 divided by the hanging ratio.

B coefficient - the square root of 1 minus A squared.

Hanging Fraction or basis - 12 multiplied by the hanging ratio.

Hanging Ratio - Length of stretched webbing hung in one foot (inches) divided by a foot (12 inches).

PHASE LENGTHS AND NUMBER OF MESHES PER PHASE

Number of meshes per phase equals the inches of stretched web per phase divided by the mesh size.

Hanging Ratio equals the mesh size divided by the phase length per mesh.

Mesh Size equals the hanging ratio multiplied by the phase length per mesh.

Phase Length per mesh equals the mesh size divided by the hanging ratio or the number of meshes divided by the phase length.

Inches of Stretched Web Per Phase equals the mesh size multiplied by the number of meshes per phase.

Mesh Size equals inches of web per phase divided by the number of meshes per phas

General Hanging Formulas

Mesh Size multiplied by the Hanging Ratio equals the inches of stretched webbing to be hung in one mesh size or phase length.

Hanging Ratio multiplied by 2 equals the number of meshes per phase.
Mesh Size multiplied by 2 equals the phase length.

Mesh Size divided by the Hanging Ratio equals the phase length per mesh.

Checking for Hanging Problems

The number of meshes per phase x the mesh size = the Phase Length and Hanging Ratio.

Twine Diameters

1 centimeter equals .3937 inches or 100 millimeters.

1 meter equals 39.37 inches or 100 centimeters.

1 meter equals 1.094 yards or 39.38 inches.

To convert millimeters to inches divide by 24.5 (24.5 millimeters to 1 inch).

To convert inches to millimeters multiply by 24.5 (24.5 millimeters/inch).

Calculating the Depth of Gill Nets

To find the depth of a gill net multiply the B coefficient of your hanging ratio by the mesh size and the depth of the gillnetting (meshes deep).