

HOW TO TAPER WEB SECTIONS

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INTRODUCTION

In the assembly of trawl nets, it is first necessary to cut out individual net sections from a sheet of manufactured webbing. These trawl net sections are cut to exact dimensions. Often this procedure is accomplished by using “taper”₁ cuts. The taper is an angle cut made in the sheet of webbing determined both by the depth and widths of a particular trawl section. The belly’s, squares, and wings are all tapered net sections. After all the sections are properly cut out and tapered, they are assembled to form the trawl net.

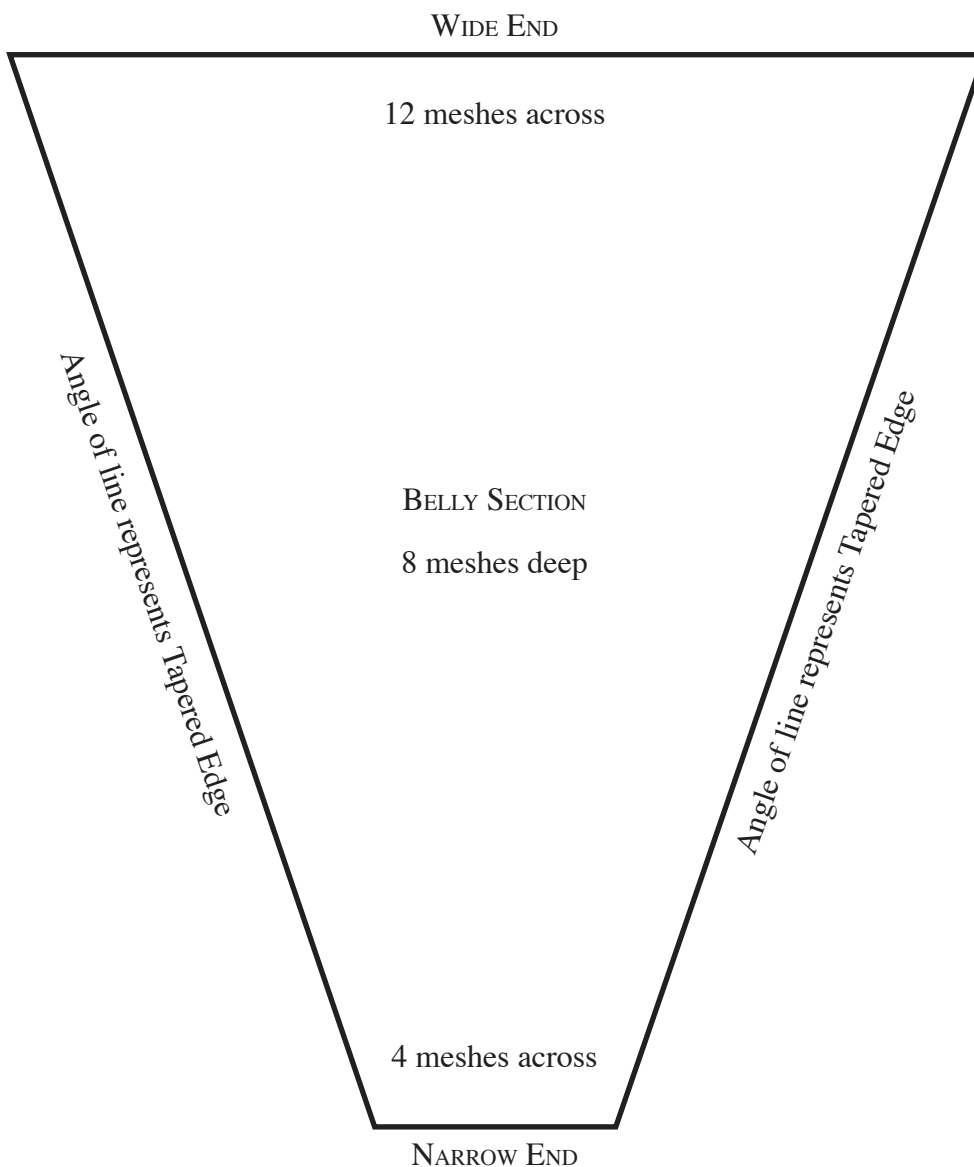
Before a trawl can be constructed, information concerning the shape of each section is required. Usually, the trawl section dimensions are given in a net plan or pattern. A net plan diagram shows the widths of all narrow and wide ends with the proper depths for each section.₂ The net section dimensions are given in the number of meshes across the number of meshes deep. (See diagram 1) These dimensions can be converted to feet and inches by multiplying the number of meshes by the stretched mesh measure. Occasionally, the tapers of net sections are specified on the trawl net plan along with the section dimensions. Most often tapers are not given and they must be calculated.

1. Taper = To create by subtraction (cutting away webbing) from a Wide End gradually decreasing to form a Narrow End out of a square piece of webbing.
2. For more detailed explanations of net plans and cutting out trawl sections see HOW TO PLAN AND CUT NETS by Professor A. J. Hillier, Department of Fisheries & Marine Technology, University of Rhode Island.

To find the taper needed for bellies, squares, and wings, a tapering formula is used.³ To calculate the taper (angle of cut) of a net section, you first subtract the narrow End from the Wide End and divide that number by two if both edges are to be tapered [(W.E. – N.E. /2 = CUT)]. This number is called the “cut”⁴. By using the U.R. I. Tapering formula, a taper for a net section can be determined.

Diagram #1

An example of a net plan diagram for a belly section.



3. University of Rhode Island tapering formula $*2 \times C / D - C$
*Where C – Cut and D = Depth of net section.
4. CUT – The difference between the Wide End and Narrow End expressed as a number of meshed lost from tapering.

Diagram #2

A sheet of net webbing 12 pickups (meshes) across (1 to 12) and 8 siders (meshes deep (1 to 8)). It is important that “pickups” are found along the web top and bottom edges and that “siders” are on both side edges. This block of webbing is sufficient to make just 1 Belly.

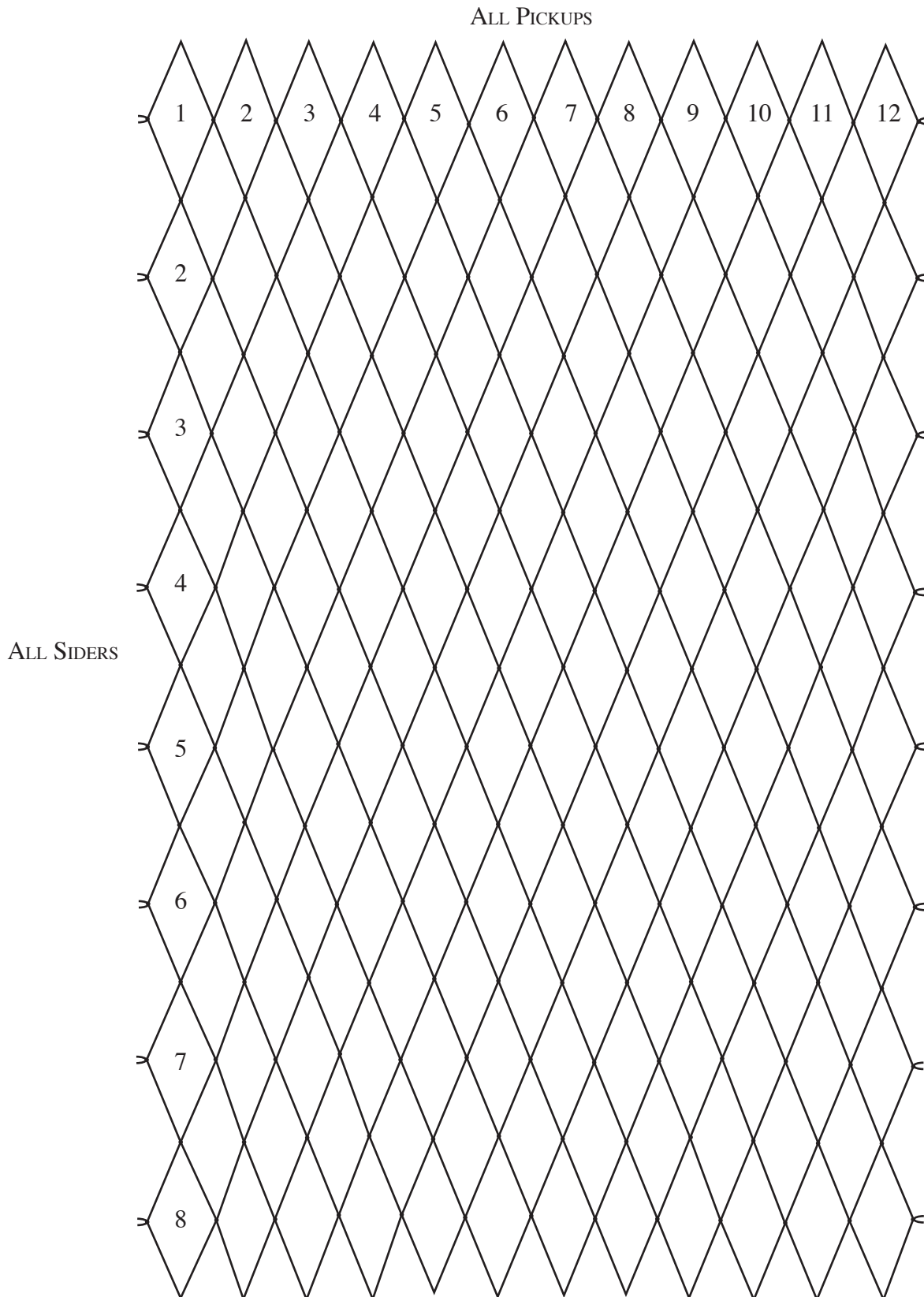


Diagram #3

A sheet of net webbing with the belly section outlines showing the Cut and Taper before the belly is cut from the webbing.

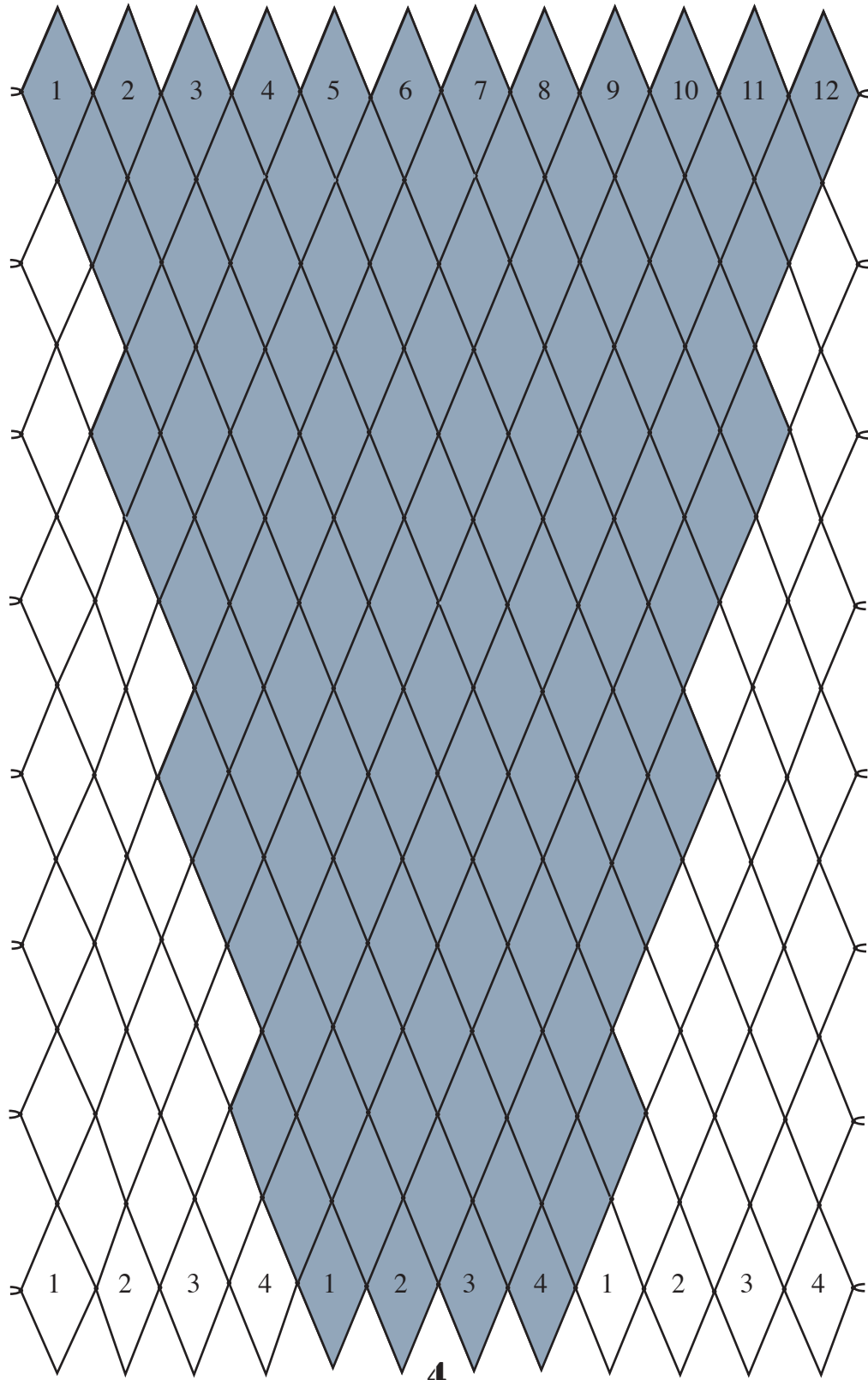
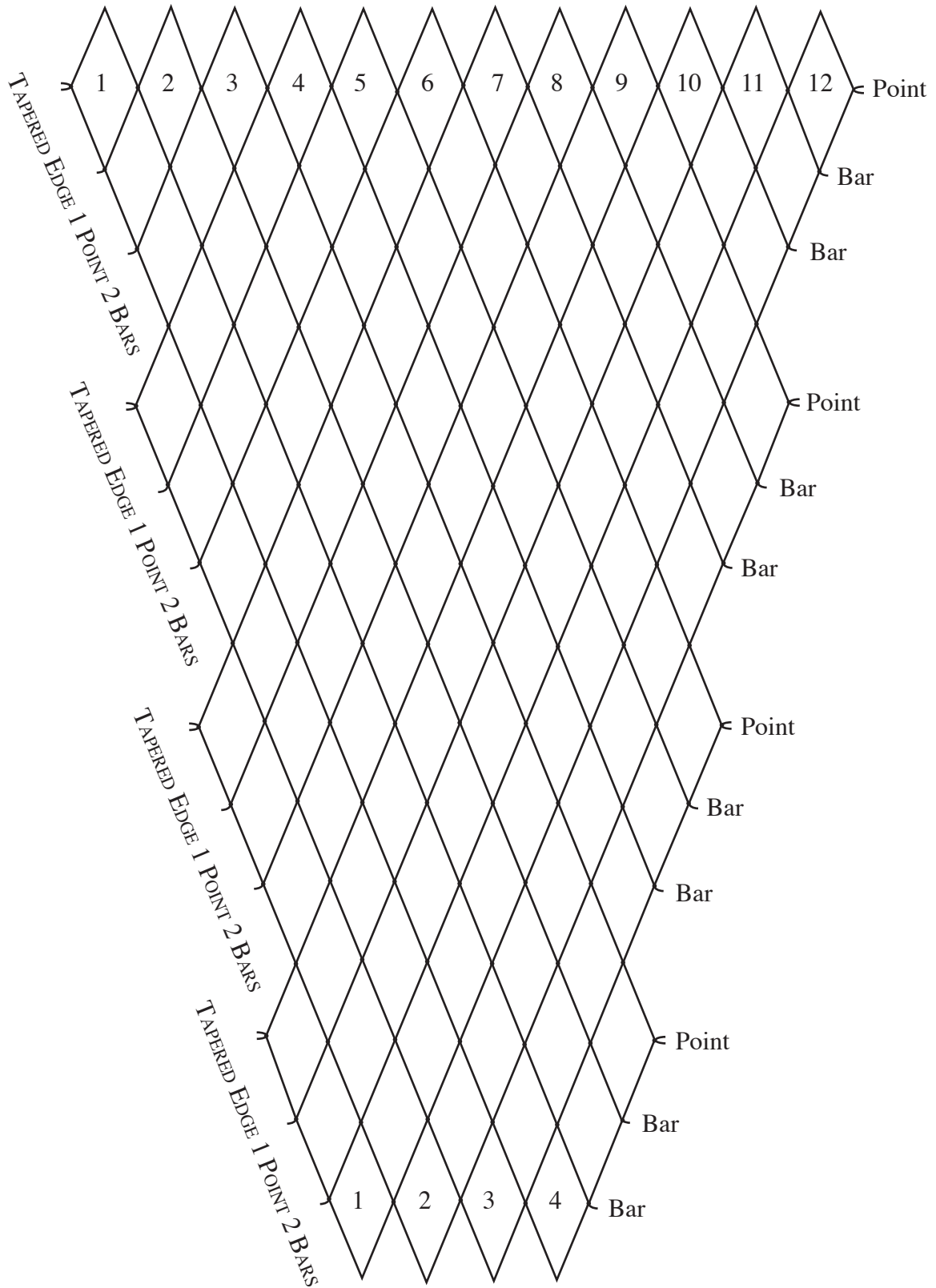


Diagram #4

The finished Belly section. Notice the location of “points” and “Bars”



Calculating the Taper

Problem #1

What is the “Cut” for the Belly?

Wide End = 12 Narrow End = 4

Cut = W.E. – N.E. / 2 (Cut Formula)

Cut = 12 - 4 / 2

Cut = 4

Problem #2

What is the “Taper” for the Belly?

Cut = 4 (from problem #1) Depth = 8 (from Net Plan)

Taper = 2 x C / D-C (Tapering formula)

Taper = 2 x 4 / 8-4

Taper = 8 / 4

Taper = 8 Bars*

4 Points*

Taper = 2 Bars

(reduced to series)

1 Points

The taper for this belly is a series of 2 Bars and 1 Point. A taper cut is made by cutting one point and two bar strands (see diagram #4). This sequence is followed from the Wide End until the Narrow End is reached. The result is one piece of tapered webbing with identical taper cuts on both edges. This method of cutting out a belly section produces two waste pieces of webbing. It is best to cut net sections in pairs as this waste webbing is eliminated.

* Bar – A bar is a term used when a strand is cut next to a point (sider) creating a knot with 3 strands radiating from it. (a 3 legger)

* Point – A point is a term used to signify a sider when tapering.

