



New England Fishery Management Council

Summary of scallop dredge gear elements for Scallop AP Discussion and Review (November 2013)

Specific Questions for AP?

1. Review the definitions and descriptions for dredge gear elements summarized in the tables below. For the most part are the descriptions accurate? Suggested clarifications?
2. Provide specific input on “typical” gear specifications used, as well overall “industry ranges” for each gear element providing the high and the low for each gear element.
3. In your opinion are there elements of the gear that could be modified to improve fish escapement? What are they?
4. What would the estimated cost be for you to modify your gear to comply with the AM under consideration – specifically a reduced apron of 5 rows and hanging ratio of 2:1? How much does a twine top cost? Can existing twine tops be modified to comply with this potential restriction?
5. In addition to additional costs, what other impacts would this potential gear modification AM have on you? How much time would be needed to modify gear? If this AM were triggered and you planned to fish in the proposed AM area and season would you more likely decide to: 1) fish in a different area/season; or 2) make the gear modification and fish within the AM area?
6. Because hanging ratio may be difficult to put in regulations and enforce, do you have suggestions for how this regulation should be drafted? Currently the document reads:
A dredge would be in compliance if the ratio did not exceed 1.5 based on the total number meshes in the twine top (counted at the bottom where the twine top connects to the apron) divided by the total number of rings that the twine top is connected to in the apron. For example, an apron that is 40 meshes wide (not including any ring in the side pieces) would only be able to use a twine top with 60 or fewer meshes so that the overall ratio of meshes to rings did not exceed 1.5 (60 meshes/40 rings = 1.5). The regulation would not be based on the number of meshes across the top of the twine top connected to the skirt of the dredge, because some vessels connect the twine top to the frame with chain instead of rings.

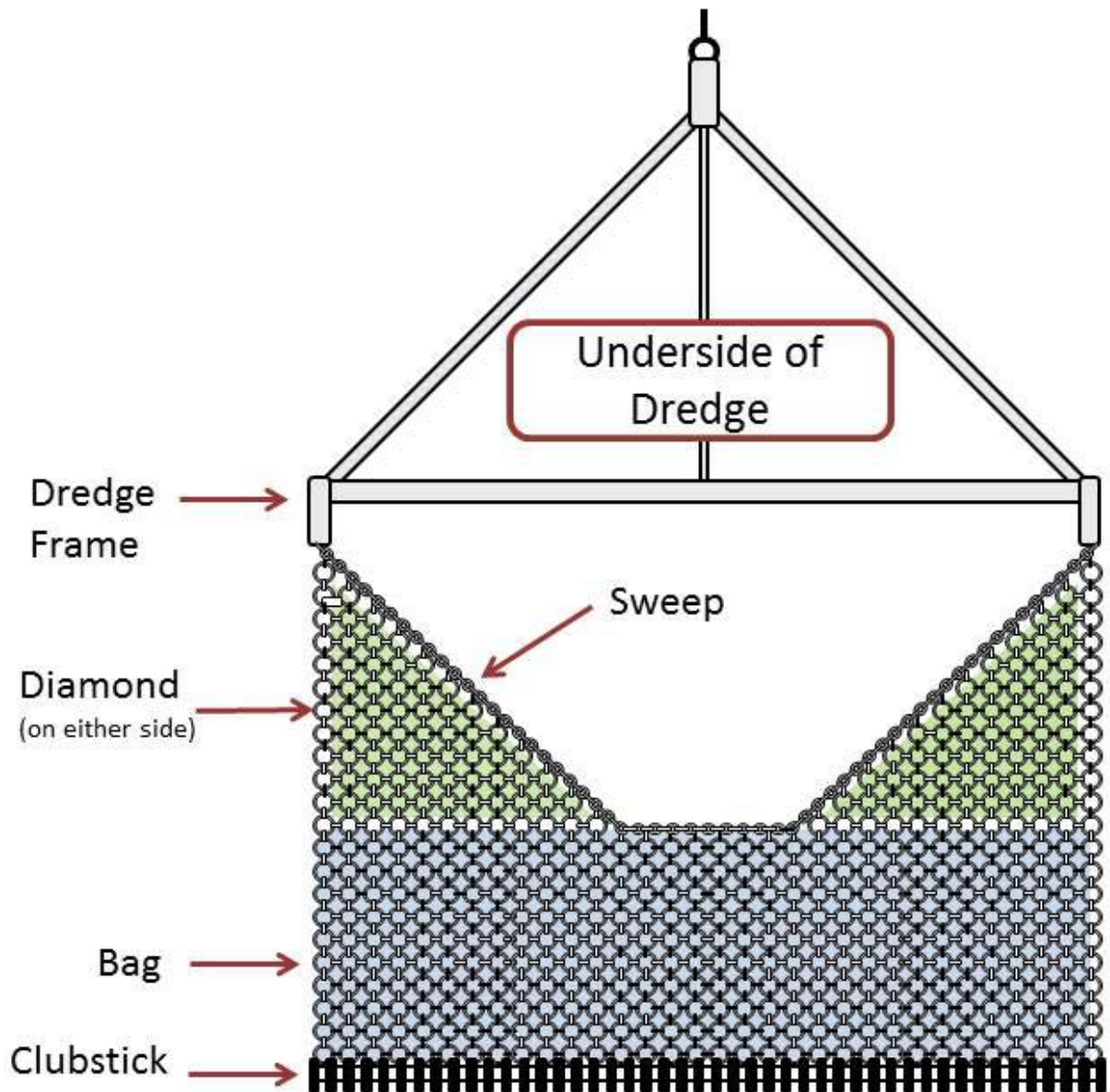
Is this sufficient? Do you see any loopholes or problems with how this would be enforced?

UNDERSIDE OF SCALLOP DREDGE

Gear Element	Typical	Industry range	Definition and Description
Bag	10 x 40	8-10 28-40	<p>The term bag is used two ways. First, it often refers to all the gear components attached to the frame. More specifically, it is also the terms used to describe the back panel of the dredge on the underside attached to the clubstick.</p> <p>The bag is measured in terms of the number of rings from the clubstick to the sweep by the number of rings across the full width of the clubstick.</p> <p>Wider dredges require a larger bag with more rings (i.e. 40 rings is typical for a 15 ft. dredge and 28 rings for a 10.5 ft. dredge).</p>
Sweep	121		<p>Sweep is a piece of chain that is attached to each end of the dredge frame and arcs back along the underside of the dredge. At the center of the arch it is attached to the bag of the dredge. The sweep is the portion of the gear that opens and fishes near the ocean bottom when pulled through the water.</p> <p>The sweep is measured in terms of the number and style of links used to connect one end of dredge frame to the other.</p> <p>Wider dredges require longer sweeps. Different styles of sweep chain are used with different size links. For example, the most typical sweep chain used is ???</p>
Diamond	14	11-15	<p>There are two diamond panels on either side of the sweep chain on the underside of the dredge. Each diamond has three sides: one edge along the sweep, one edge along the bag, and one along the side piece of the dredge.</p> <p>The diamond is measured in terms of the number of rings on the edge that connects to the side piece (between dredge frame and bag).</p>
Clubstick			<p>The clubstick is at the very back of the dredge. Its purpose is to ???. It is generally made of ???. Some vessels attach “cookies” when fishing in harder bottoms.</p> <p>The clubstick is measured in terms of ???</p>
Dredge frame	15		<p>The dredge frame is ???. It has several important features that help keep the dredge bag open and reduce bycatch during fishing, i.e. struts and pressure plate.</p> <p>The dredge frame is measured in terms of the distance from one end of the frame to the other. The combined maximum dredge width in the scallop fishery is 31 feet.</p>

Figure 1 – Underside of typical scallop dredge gear

Source: Goff, K. D. 2002. Ring diameter and closed area scallop fisheries. Masters thesis, Virginia Institute of Marine Science, College of William and Mary. (Note: labels and colors added to original figure)

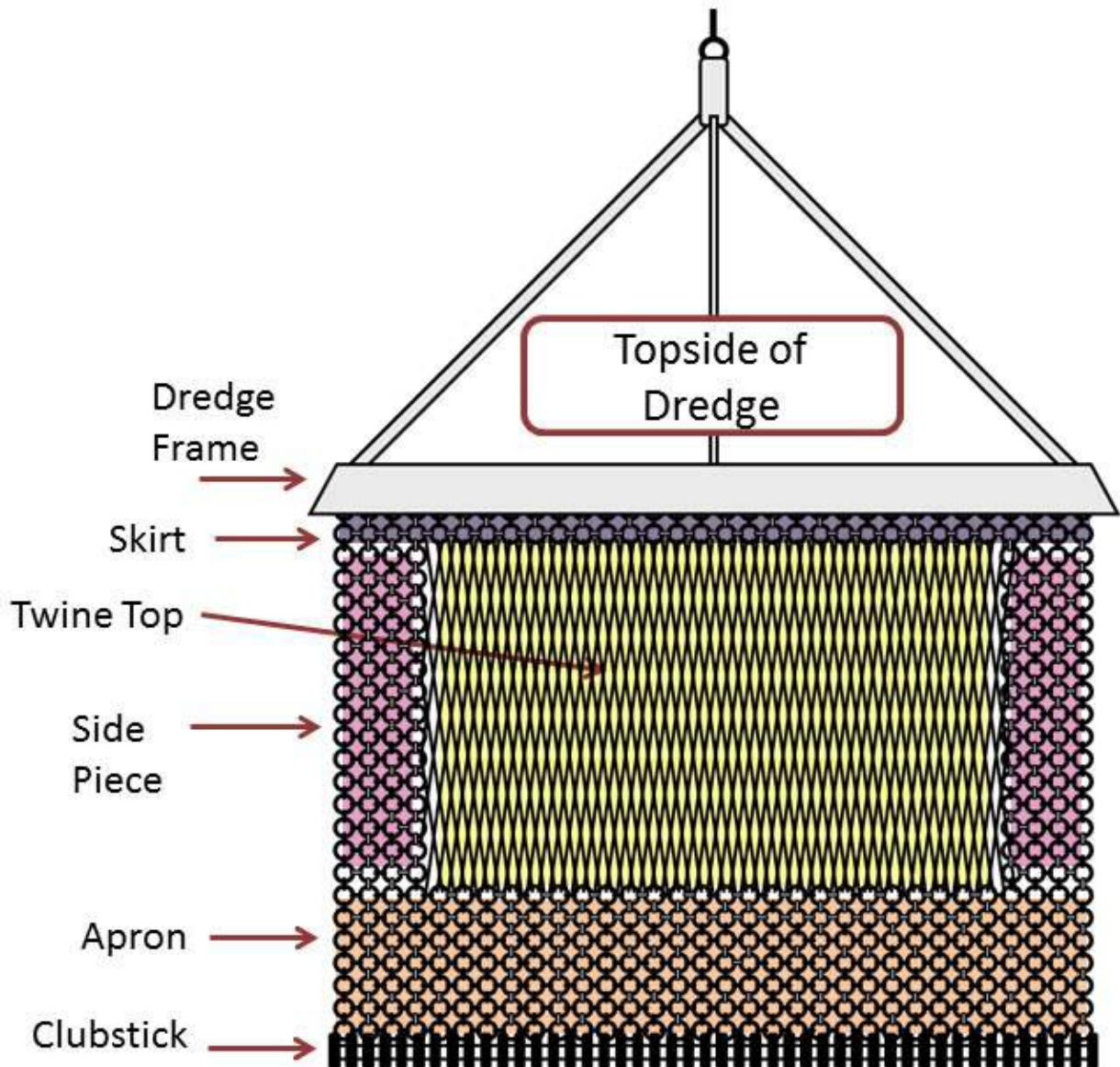


TOPSIDE OF SCALLOP DREDGE

Gear Element	Typical	Industry range	Definition and Description
Apron	8 x 40	8-13 28-40	<p>Apron is the term used to describe the back panel of the dredge that is attached to the clubstick on the topside of the gear. The other side of the panel is connected to the twine top.</p> <p>The apron is measured in terms of the number of rings from the clubstick to the twine top by the number of rings across the full width of the clubstick.</p> <p>Wider dredges require a larger apron with more rings (i.e. 40 rings is typical for a 15 ft. dredge and 28 rings for a 10.5 ft. dredge).</p>
Skirt	3 x 38	0-3	<p>Skirt is the term used for the element of the gear that connects the twine top to the dredge frame.</p> <p>The twine top is either hung using a series of rings or chains. Therefore, the skirt is measured in terms of the number of rings from the dredge frame to the twine top, usually 1-3 rings. If the twine top is hung with chains the value is 0. The other measurement of the skirt is the number of rings across the dredge frame between the two side pieces.</p>
Twine Top	8.5 x 60		<p>Twine top is the panel of mesh on the topside of the dredge. It runs between the skirt and the apron of the dredge, as well as the side pieces on either side.</p> <p>The twine top is measured in the number of meshes. The first value is the number of meshes from the apron to skirt (or dredge frame if hung with chain), and the second value is the number of meshes across the dredge frame between the side pieces of the dredge. Current regulations require a minimum of 10-inch mesh (square or diamond).</p> <p>The ratio of the number of meshes connected to each ring on the dredge frame is called the hanging ratio (i.e. 2:1, 1.5:1, 1:1, etc). As the ratio approaches 1:1 the potential for fish and scallop escapement increases. Most dredges in the fleet today use a 3:1 or 2:1 hanging ratio.</p>
Side Piece	6 x 17	6-7	<p>Side piece is the section of the dredge that connects the diamond on the underside of the dredge and wraps around to the top of the dredge connected to the twine top on the topside of the dredge.</p> <p>The first value is the number of rings needed to connect the diamond on the underside of the dredge to the edge of the twine top panel on the topside of the dredge, which is usually six rings. The second value is the number of rings from the dredge frame to the top of the bag. The side piece runs the length of the twine top along the edge of the dredge.</p>

Figure 2 – Topside of typical scallop dredge gear

Source: Goff, K. D. 2002. Ring diameter and closed area scallop fisheries. Masters thesis, Virginia Institute of Marine Science, College of William and Mary. (Note: labels and colors added to original figure)



Hanging Ratio – Summary of observed dredges (2008-2013)

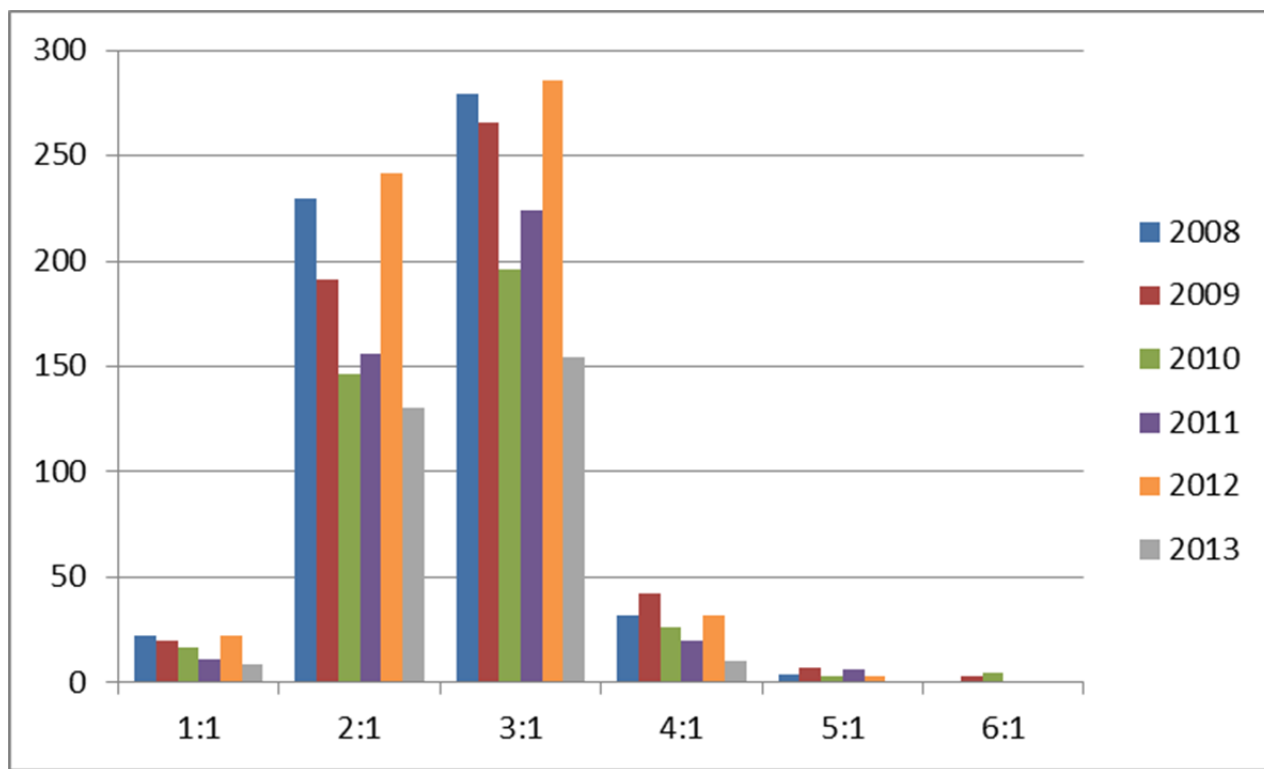
Note these data are only for dredges observed – not a complete reflection of the fishery

The observer database includes useful information about how gear is being fished on observed trips. For example, an at-sea observer records the hanging ratio used on one of the dredges during a scallop trip. The tables and figures below summarize the range of hanging ratios on all observed dredges from 2008-2013. Overall, most twine tops are hung using a 2:1 or 3:1 hanging ratio. The number of dredges observed with higher ratios (i.e. 4:1, 5:1, and even 6:1) has decreased over time. These results assume that the observed dredges are reflective of the industry range.

Would you agree that these data are representative? Yes or no?

Limited Access

Hanging Ratio	2008	2009	2010	2011	2012	2013
1:1	22	20	17	11	22	9
2:1	230	191	146	156	242	130
3:1	279	266	196	224	286	154
4:1	32	42	26	20	32	10
5:1	4	7	3	6	3	
6:1		3	5			
Grand Total	567	529	393	417	585	303



General Category

Hanging Ratio	2008	2009	2010	2011	2012	2013
1:1	8	11	1		2	
2:1	52	55	18	35	12	17
3:1	135	132	39	58	20	32
4:1	52	31	22	16	9	12
5:1	17	1	8	7	4	6
6:1	8		3			
Grand Total	272	230	91	116	47	67

