



# 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.



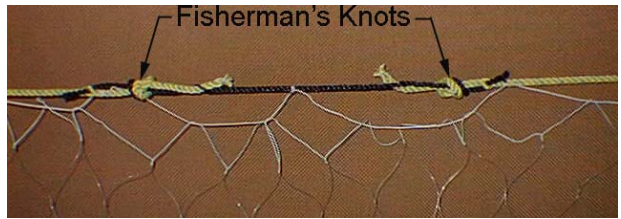
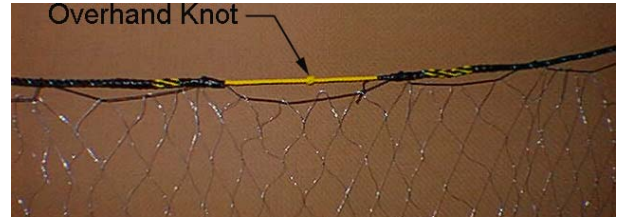
### Stapling to a Buoy Stick

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.



## 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. See the ALWTRP for information on appropriate color codes and placement of marks.



## 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.

