

Science, Service, Stewardship



Concept Paper

A discussion of the current gear marking requirements and consideration of more extensive gear marking schemes

April 6, 2011

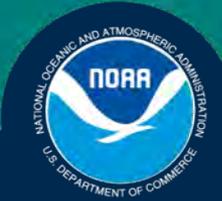
**NOAA
FISHERIES
SERVICE**

NOAA



Background

- At the April 2009 ALWTRT Northeast Subgroup meeting NMFS was requested to:
 - produce a document discussing the pros and cons of the current gear marking scheme; and
 - identify more extensive gear marking schemes for the ALWTRT to consider at its next meeting.



Guiding Questions

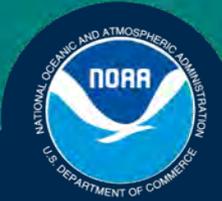
1. What is the goal or purpose of marking gear (i.e., what questions are we trying to answer)?
 - Management related questions:
 - In which fishery did the entanglement occur?
 - When do entanglements occur?
 - Where do entanglements occur?
 - How did the entanglement occur?
 - Do we mark gear coast-wide or just in areas with the highest co-occurrence?
 - Biological and/or behavioral related questions:
 - Where is the entangling point on the whale?
 - What did the whale do when it encountered the gear (i.e., pitch roll, etc)?
 - Can gear marking answer biological or behavioral questions?



Guiding Questions

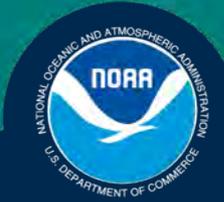
continued

- Enforcement related questions:
 - Was the gear involved in the entanglement compliant with the ALWTRP regulations?
 - Who owns the gear?
 - When and where was the gear set?
 - Do we want gear marked so that it is visible from the surface?
- Monitoring related questions:
 - How effective is the vertical line and/or groundline requirement itself?
 - How effective is the ALWTRP as a whole?



Guiding Questions *continued*

2. What is the most important information to obtain – gear component, fishery, location at which gear is set, etc.?
3. Do we want to mark vertical lines only or also groundlines?
4. Do we mark only a portion of the endline or groundline or entire length of gear?
5. At what cost do we want to pursue gear marking?
 - Are we willing to pay more for a higher quality marking scheme?
 - Are we focusing on the lowest cost marking scheme that provides the most information?



Current Gear Marking Scheme

Trap/Pot Buoy Line Marking:

- One 4-inch colored mark midway along the buoy line.
- Each color code must be permanently affixed on or along the line and each color code must be clearly visible when the gear is hauled or removed from the water.

Trap/Pot gear marking colors:

- Red
- Orange
- Black
 - *Note: See Concept Paper for corresponding areas for each color*



Current Gear Marking Scheme

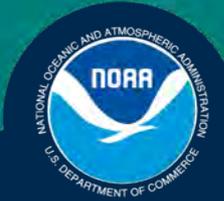
continued

Gillnet Buoy Line Marking:

- One 4-inch colored mark midway along the buoy line.
- Each color code must be permanently affixed on or along the line and each color code must be clearly visible when the gear is hauled or removed from the water.

Gillnet gear marking colors (excluding shark gillnet):

- Green
- Blue
- Yellow
- *Note: See Concept Paper for corresponding areas for each color*

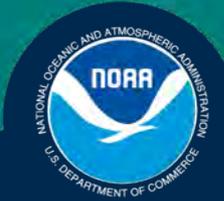


Current Gear Marking Scheme

continued

Shark Gillnet Buoy Line Marking:

- Shark gillnet gear with webbing of 5" or greater stretched mesh in the Southeast U.S. Restricted Area S, Southeast U.S. Monitoring Area, and Other Southeast Gillnet Waters must be marked with two, 4-inch color codes, one designating gear type (GREEN) and the other where the gear is set (BLUE).
- Each color of the two-color codes must be permanently marked on or along the line and must be clearly visible when the gear is hauled or removed from the water. The two color marks must be placed within 6" of each other. If the color of the rope is the same as or similar to a color code, a white mark may be substituted for that color code.
- All buoy lines greater than 4 feet long must be marked within 2 feet of the top of the buoy line (closest to the surface) and midway along the length of the buoy line.
- Each gillnet net panel must be marked along both the floatline and the leadline at least once every 100 yards, unless otherwise required.



Summary of Gear Markings Recovered or Identified *(buoy lines and buoys)*

Lengths of ropes recovered during disentanglement efforts for the years 1997 through 2003

- 56 entanglement events
- Average: 182'
- Minimum: 5'
- Maximum 1200'

During the period from 1997 through 2007 there were 320 large whale entanglement events.

- Some amount of gear was recovered and provided to NMFS in 28% of the (90/320).
- Of these 90 cases, gear type was Identified for 76% of these events (69/90) or 21% of the total reported events (69/320).
 - Marking information present on surface buoys led to owner interviews for 28% (26 of 90) of these events.
 - Buoy line markings were only recovered in 2 events (which also had surface system markings)



Current Gear Marking Scheme Pros and Cons

Pros

- Scheme is implemented
- Broad coverage for fisheries and regions

Cons

- Exempted in some areas so all areas not covered
- Only one or two marks makes for unlikely visual identification while on whale
- Extremely low proportion of entangling gear recovered has vertical line marks



Higher Resolution Status Quo Marking Scheme

Improve visibility of status quo marking

- more marks, different physical location of marks, colored line instead of marks, etc.

Pros

- Basic marking scheme will not change
- Color and regional scheme has already been devised by ALWTRT and NMFS
- Increased recovered entangling gear identification

Cons

- Increased time and cost for fisheries
- If gear recovered has no markings, a scheme will need to be developed outside of marked areas
- Unique markings could be adopted outside of intended use



Higher Resolution Fishery Marking Scheme

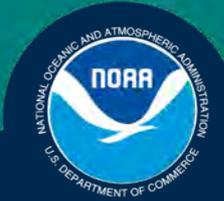
Expand fishery marking schemes so all fisheries have unique identifier.

Pros

- Fisheries may prove they are no threat to large whales
- Future modifications may be limited to specific fisheries

Cons

- If gear recovered has no markings, a scheme will need to be developed outside of marked fisheries
- May unfairly target a fishery
- Fisheries are already labeled according to their threat level
- Unique markings could be adopted outside of their intended fishery
- Increased time and cost for fisheries



Higher Resolution Regional Marking Scheme

Expand regional marking schemes such as high whale co-occurrence areas and/or exempted areas

Pros

- Uses the best large whale habitat information
- May show co-occurrence areas that need more or less management
- Future modifications may be limited to specific areas

Cons

- If gear recovered has no markings, a scheme will need to be developed outside of marked regions
- Unique markings could be adopted outside of their intended region
- Increased time and cost for fisheries
- Large whale habitat designation is still focusing on a portion of the population



Summary of Gear Marking Research

Method	Description	Ease of Application	Cost Per Mark	Information Provided	Implementation Ready?	Physical Recovery Needed For ID?	Portability (fishery change, area, owner)	Pros	Cons
Color Mark	Tape	Not difficult on dry line	Pennies	-Fishery -Area fished -Part of gear	Yes	Yes	May require replacement	-Inexpensive -Easy installation -Durable -Visible	-Not traceable to individual fisherman
	Paint	Not difficult on dry line							
	Twine	Not difficult on dry or wet line							
Marking manufactured into the rope in the form of colored tracers	Rope manufactured with specific colored tracers	None necessary	Low	-Fishery -Area fished -Part of gear	No	Yes	Poor	-Inexpensive -No installation -Durable -Visible	-Not traceable to individual fisherman -Potential production and inventory issues
Manufactured colored specific line	Rope manufactured with a specific color	None necessary	Low	-Fishery -Area fished -Part of gear	No	No – growth and fading issues however	Poor	-Inexpensive -No installation -Durable -Visible	-Not traceable to individual fisherman -Potential production and inventory issues
Super Smart Tape	Colored tape that contains readable chip (RFID)	Unknown. Goal is for easy installation	Unk.	-Fishery -Area fished -Part of gear -Owner ID	No	Yes	Poor	-Provides any necessary info. -Easy installation -Visible	-Potential cost -Requires database -Durability questions
Readable Chip (RFID)	Radio frequency tag deployed in lay of line	Spiral type is easy to install on new line	Unk.	-Fishery -Area fished -Part of gear -Owner ID	Under research	Yes	Transfer in database	-Provides any necessary info. -Easy installation	-Potential cost -Requires database -Durability questions
Coded Wire Tags (CWTs)	Stainless steel wire (1.1mm long X 0.25mm dia.) with ID	Presents challenges	.25 - .50 each	-Fishery -Area fished -Part of gear -Owner ID	Under research	Yes	Transfer in database	-Provides any necessary info. -Visible depending on installation	-Requires microscope to read -Requires database