

Science, Service, Stewardship



Vertical Line Management Strategy Overview

April 6, 2011

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How Did We Get Here?

2000-2001

NMFS implemented:

- Gear modifications (weak links) to vertical line surface systems intended to reduce the risk of entanglement and/or the severity of an entanglement during surface feeding activity
- Seasonal and dynamic gear modifications

2002

ALWTRT acknowledged that further action was necessary to address entanglements from both ground line and vertical line and agreed to address ground line first

- 2003 ground line strategy initiated (scoping, draft EIS & comment, proposed rule & comment, final EIS, final rule)

2009

Sinking ground line rule implemented

ALWTRT reviewed schedule and strategy for further development of vertical line risk reduction rule

- 2013 proposed rule
- 2014 final rule



Defining the Vertical Line Entanglement Problem

- Vertical Line Entanglement **Risk** = Rate of occurrence X Impact (Severity) of the event
- Vertical Line Entanglement **Risk Reduction** = Reducing the Likelihood of an interaction or the Severity of an interaction should one occur (reducing likelihood of serious injury or mortality)
- Vertical Line Entanglement **Risk Management** = identification, assessment and prioritization of risks followed by the coordinated and economical application of resources to minimize, monitor and control the probability and/or impact of a vertical line entanglement



Vertical Line Data Limitations

What We Do Know

- Entanglements occur in vertical lines
- Gear type and/or location are only known for a very small subset of events
- Where whales occur (with limitations)
- Scarification rates

Where we have Limited data

- What specific fisheries entanglements occur in
- Where entanglements occur
- When entanglements occur
- How entanglements occur
- Influence of species, sex, age, behavior
- Frequency of entanglements



Vertical Line Entanglement Strategy Assumptions

Vertical Line Entanglement is influenced by the density of whales and the density of vertical lines (both may independently affect encounter rate)

Density of whales and density of lines contribute equally to risk (as the co-occurrence indicator is currently calculated)

Behavior of whale influences likelihood of interaction and severity of interaction (but cannot predict or manage that)



Building Blocks of the Strategy

Whales (SPUE)

- Right Whales
- Humpback Whales
- Fin Whales
- Combined (unweighted)
- Combined (weighted)

Vertical Lines

- Trap/Pot
- Gillnet

Co-Occurrence

- RW – VL
- Humpback – VL
- Fin – VL
- Combined (uw) – VL
- Combined (w) - VL

Spatial

Temporal

Choose WHERE to Manage

		Pros	Cons
Territorial Range		Recognizes uncertainty	One size fits all
Whale Species	Rights	Recognizes the uncertainty in the data on fishing effort and/or gear configuration	Only considers one component of the risk equation; uncertainty in whale data
	Humpbacks		
	Fins		
	Combined (w/nw)		
Vertical Lines		Recognizes uncertainty in whale data	Only considers one component of the risk equation; uncertainty in VL data
Co-occurrence	Rights	Uses all information available	Uncertainty in 2 layers and in how they should be combined
	Humpbacks		
	Fins		
	Combined (w/nw)		



Choose WHEN to Manage

Year Round		
Seasonal	Whales	Rights
		Humpbacks
		Fins
		Combined (w/nw)
	Lines	



Choose HOW to Manage

- Cannot change the density of whales
- Can change the number of lines spatially or temporally (from existing baseline)
 - Vertical Line Ceiling/Cap – implementation? control?
 - Trawl Up – 3, 5, 10-1, 10-2
 - Closures
 - Seasonally or year round
- Theoretically can change the risk posed by each line, but feasibility may be in question



Choose HOW to Manage

	Pros	Cons
Reduce the Number of Vertical Lines	Measurable	Baseline may change over time; implementation/ management may be challenging; do not know threshold
Reduce the likelihood that an entanglement with a vertical line will result in serious injury or mortality	May allow for broader implementation	Existing methods are not feasible for widespread implementation



Metrics – Measurable Objectives

- Reduce Vertical Line Risk
 - Cannot change density of whales
 - Can reduce number/density of vertical lines
 - Can reduce co-occurrence index
- Consider relative risk of each option
 - Example: Seasonal closure (with displacement) compared to year round trawling up



Caveats

- Baseline vertical line numbers are based on the best estimate of what is happening now
 - Latent effort could become activated in the future and partially or completely replace the planned line reduction
 - Could change based on distributional shifts in fishing effort based on shifts in target species
- Whale densities are based on survey effort to date and could change with additional survey effort or shifts in distribution of whale species (perhaps linked to shifts in prey distribution)

AREAS		TIMING	Management Measure
Territorial Range		Year Round	<p>Trap/Pot Vertical Line Reduction (%)</p> <ul style="list-style-type: none"> • 3 traps/trawl • 5 traps/trawl • 10 traps/trawl (1 end line) • 10 traps/trawl (2 end lines) • Closure <p>Gillnet Vertical Line Reduction</p>
		Seasonal	
Whale Species	Rights	Year Round	
		Seasonal	
	Humpbacks	Year Round	
		Seasonal	
	Fins	Year Round	
		Seasonal	
	Combined (weighted)	Year Round	
		Seasonal	
Combined (unweighted)	Year Round		
	Seasonal		
Vertical Lines		Year Round	
		Seasonal	
Co-Occurrence	Rights	Year Round	
		Seasonal	
	Humpbacks	Year Round	
		Seasonal	
	Fins	Year Round	
		Seasonal	
	Combined (weighted)	Year Round	
		Seasonal	
	Combined (unweighted)	Year Round	
		Seasonal	

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		Seasonal	
Whale Species	Rights	Year Round	
		Seasonal	
	Humpbacks	Year Round	
		Seasonal	
	Fins	Year Round	
		Seasonal	
	Combined (weighted)	Year Round	
		Seasonal	
Combined (unweighted)	Year Round		
	Seasonal		
Vertical Lines		Year Round	
		Seasonal	
Co-Occurrence	Rights	Year Round	
		Seasonal	
	Humpbacks	Year Round	
		Seasonal	
	Fins	Year Round	
		Seasonal	
	Combined (weighted)	Year Round	
		Seasonal	
Combined – Humpback & RW (unweighted)	Year Round		
	Seasonal		



NE Subgroup Next Steps

- Working Group will report back to the NE Subgroup
 - Decision on whether Co-occurrence Right Whales or Co-occurrence Right Whales & Humpbacks
 - NMFS will provide monthly plots
- NMFS will conduct scoping this summer
 - NMFS propose areas, times and measures as one alternative
 - NMFS will invite comments and conservation equivalent proposals
 - NMFS will solicit comments on gear marking, monitoring and reporting