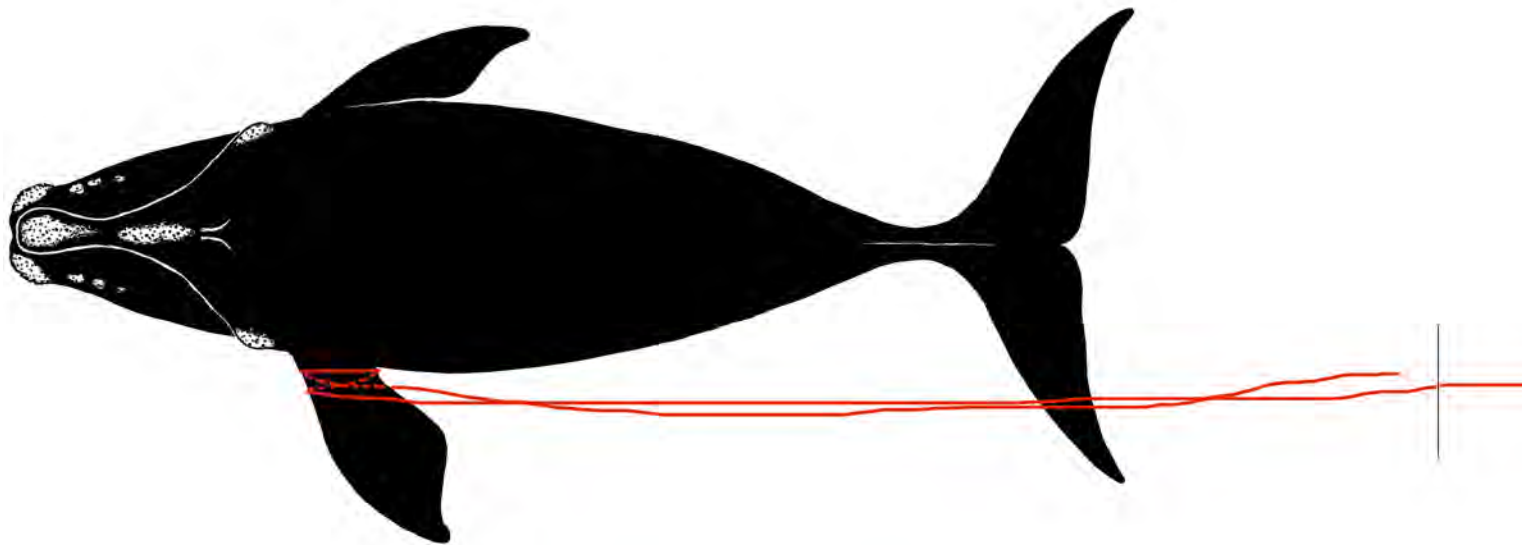


<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #1167</b>
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Date first observed entangled (date seen prior without gear)		08 Jun 2005 (27 Sep 2004)			
Sex	Male	Birth year	Unknown	Age at entanglement	25+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2005-4	E07-05	
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Unknown	None	High	None	Low
Duration of time carrying gear		Minimum 1 day, maximum 267 days			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2015			
Number of prior entanglement interactions		4			

Entanglement configuration	Line appears to wrap left flipper and tail ~ 200 feet aft of flukes.
Anchoring point(s)	Flipper
Gear configuration confidence	Low
Remaining questions	Attachment point cannot be verified.
Comments	The whale eventually shed the gear on it's own; based on scarring post-entanglement it seems plausible that at some point during the entanglement line was in the mouthline leading to the wraps at the left flipper.  Severe wound on left flipper remains unhealed in 2011.



08 Jun 2005 NEA



19 Sep 2011 NEA

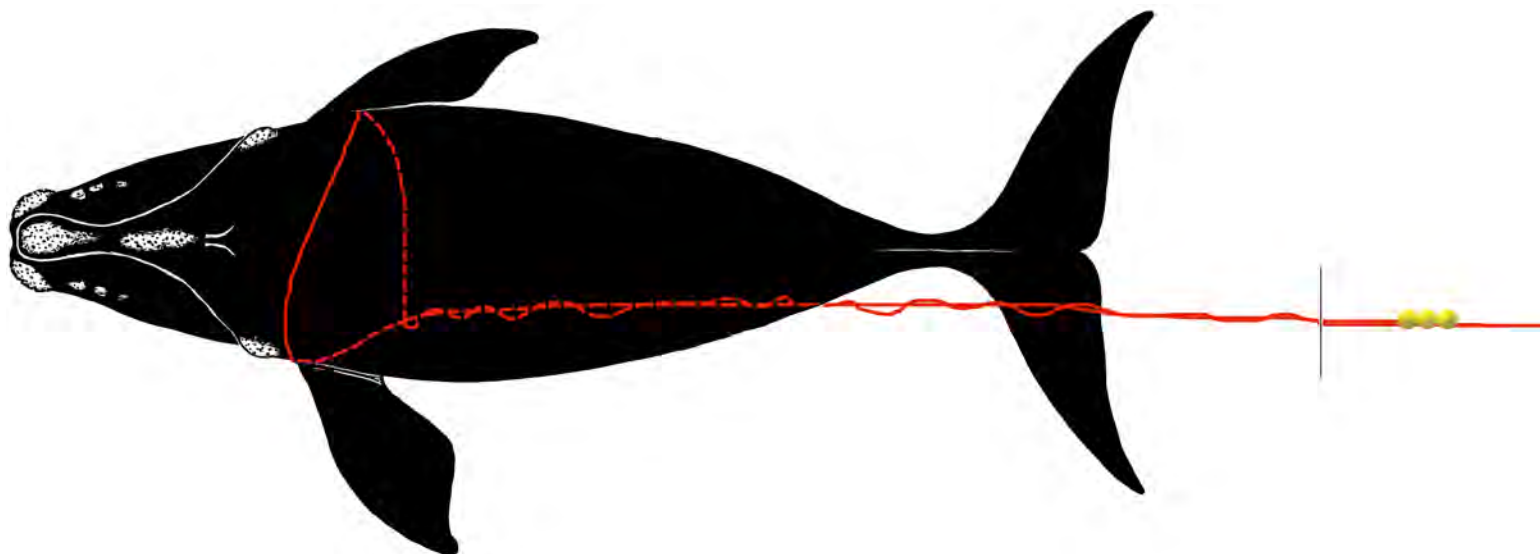


19 Sep 2011 NEA

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3445</b>
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Date first observed entangled (date seen prior without gear)		03 Dec 2005 (19 Aug 2005)	
Sex	Female	Birth year	2004
		Age at entanglement	2

Case study ID	PCCS	NMFS	GEAR ID
	WR-2005-18	E25-05	J120305
Gear sample collected?	Yes	Gear type	Unknown



Reproductive prior to/after entanglement detection?		No/ No			
Entanglement injury severity		Moderate			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	None	None	Medium	Medium	Low
Duration of time carrying gear		Minimum 9 days, maximum 296 days			
Disentangled?		Yes - Partial, 12 Dec 2005			
Status		Presumed dead - last sighted in 2006			
Number of prior entanglement interactions		2			

Entanglement configuration	Line wrapping body at area of flippers; line twisted beneath leading to line trailing 400ft aft of the flukes; three hard buoys on trailing line.		
Anchoring point(s)	Body		
Gear configuration confidence	Moderate		
Remaining questions	Could not verify that flippers were not wrapped though this seems unlikely.		
Comments	Whale was disentangled and two gear samples collected; one of which was likely caught by original entanglement for a short amount of time.		

Polymer type		Polysteel	Polysteel	PP
Gear component		Vertical	Vertical	Vertical
Rope diameter (inches)		7/16 (0.433)	5/16 (0.339)	3/8 (0.362)
Breaking strength (lbs)	Tested	3 234	2 000	1 383
	New	4 100	2 500	2 430



03 Dec 2005 WT



12 Dec 2005 NOAA

## DATA SHEET

### FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

**SPECIMEN ID NO.**

**J120305**

**NMFS NO.**

**E25-05**

**Gear Description:**

It appears that this was part of a fixed fishery gear set. It consisted of several pieces of different types of line spliced together. The photo shows part of the gear. Three lines were analyzed, the others were too short.



Rope description:

J120305-a This is a  $\frac{7}{16}$  inch 3-strand polysteel line, light blue and with moderate surface wear.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
3,234 lbs (T)	4,100 lbs	Good



J120305-b This is a  $\frac{5}{16}$  inch 3-strand polysteel line, light blue and with moderate surface wear.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,000 lbs (T)	2,500 lbs	Good



J120305-c This is a  $\frac{3}{8}$  inch 3-strand black mono PP line, with severe wear.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,383 lbs (T)	2,430 lbs	Poor



<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #1403</b>
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Date first observed entangled (date seen prior without gear)		17 Sep 2006 (24 May 2006)			
Sex	Male	Birth year	1984	Age at entanglement	22

Case study ID	PCCS	NMFS	GEAR ID
	WR-2006-26		
Gear sample collected?	No	Gear type	

Photographs inadequate to determine complete entanglement configuration - no drawing available

Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	None	High	Low	None	High
Duration of time carrying gear		Minimum 1 day, maximum 316 days			
Disentangled?		No			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		1			

Entanglement configuration	Line tightly wrapped over aft part of rostrum.
Anchoring point(s)	Mouth
Gear configuration confidence	Low
Remaining questions	Uncertain if there was any trailing line.
Comments	Photos not acquired of the rope on head but was reported by a researcher. Fluke photos at that sighting were later linked to this animal and a major wound from rope was evident on head. Gear has been shed.





17 Sep 2006 NEA



03 May 2007 PCCS

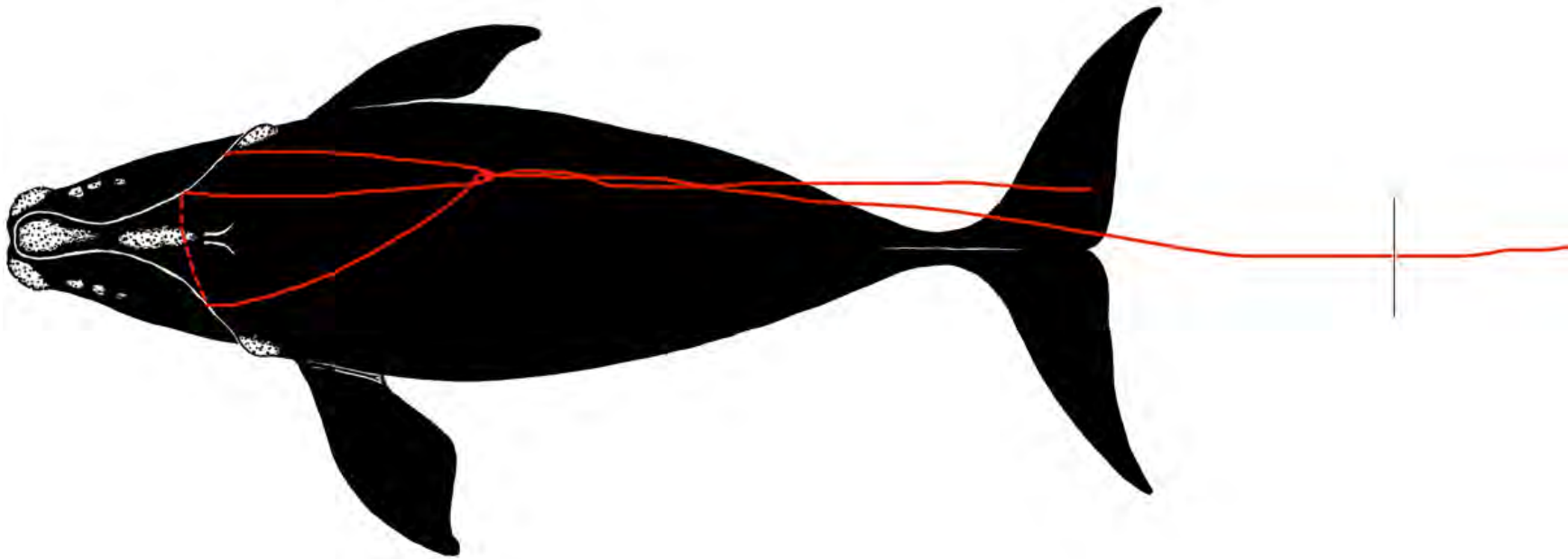


03 May 2007 PCCS

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3610</b>
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Date first observed entangled (date seen prior without gear)		27 Sep 2006 (15 Feb 2006)			
Sex	Male	Birth year	Unknown	Age at entanglement	1+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2006-28	E32-06	J092706
Gear sample collected?	Yes	Gear type	Longline



Reproductive prior to/after entanglement detection?					
Entanglement injury severity		Moderate			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Medium	Medium	Low
Duration of time carrying gear		Minimum 119 days, maximum 433 days			
Disentangled?		Yes - 24 Jan 2007			
Status		Presumed dead - Last sighted in 2012			
Number of prior entanglement interactions		1			

Entanglement configuration	Thin line with hooks through mouth and loosely twisted into loop over right shoulder; line trailing ~100 feet aft of flukes
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	None
Comments	Gear was later shed

Polymer type	PP	
Gear component	Vertical	
Rope diameter (inches)	5/16 (0.327)	
Breaking strength (lbs)	Tested	1 292
	New	1 700

This case study was developed under NOAA Award # NA09NMF4520413 to the Consortium for Wildlife Bycatch Reduction, administered at the New England Aquarium, Boston, MA, USA (available at [www.bycatch.org](http://www.bycatch.org)). See: Knowlton, A.R., J. Robbins, S. Landry, H.A. McKenna, S.D. Kraus, T. B. Werner. 2015. Effects of fishing rope strength on the severity of large whale entanglements. Conservation Biology DOI: 10.1111/cobi.12590



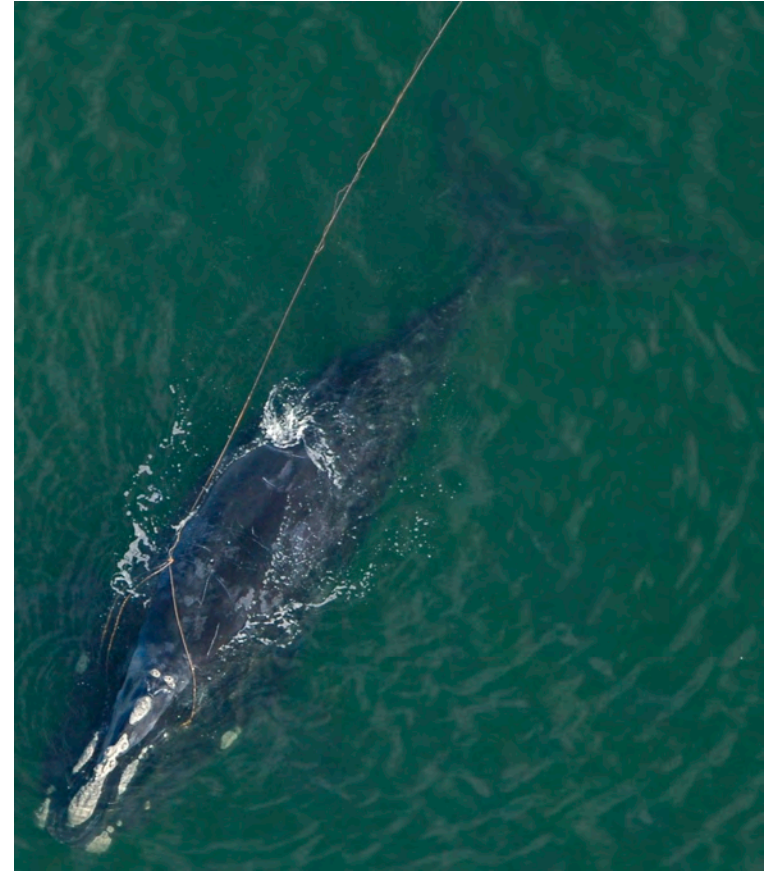
27 Sep 2006 NEA



28 Sep 2006 NEA



28 Sep 2006 NEA



15 Jan 2007 NEA

## DATA SHEET

### FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

**SPECIMEN ID NO.**

**J092706**

**NMFS NO.**

**E32-06**

**Gear Description:**

Appears to have been used as longline, branch lines confirm this. See second photo.

The two floating lines were spliced together.

No specimen taken of the blue-green line.

**Rope description:**

$\frac{5}{16}$  inch 3-Strand PP for both, one red, one green. There are 11 rope yarns per strand. Line is very hard and shows considerable surface wear; all crowns are rubbed away.

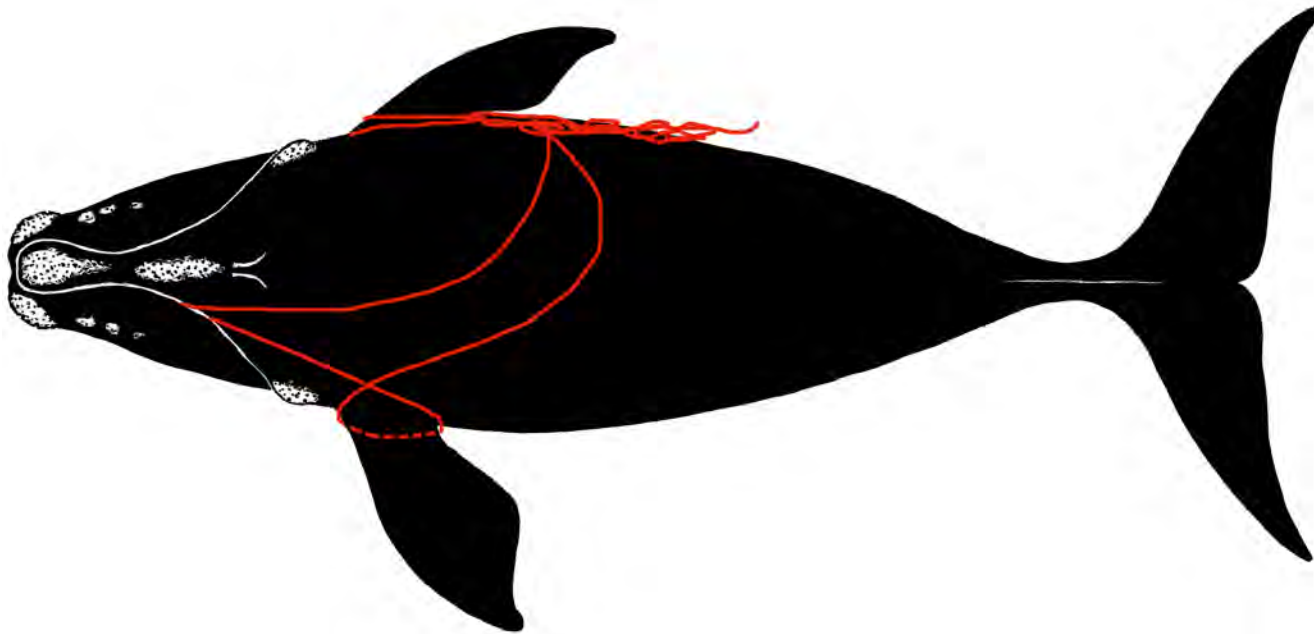
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,292 lbs (T)	1,700 lbs	Good



<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg # 2029</b>
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Date first observed entangled (date seen prior without gear)		09 Mar 2007 (28 Sep 2006)	
Sex	Female	Birth year	1990
		Age at entanglement	17

Case study ID	PCCS	NMFS	GEAR ID
	WR-2007-02		
Gear sample collected?	No	Gear type	

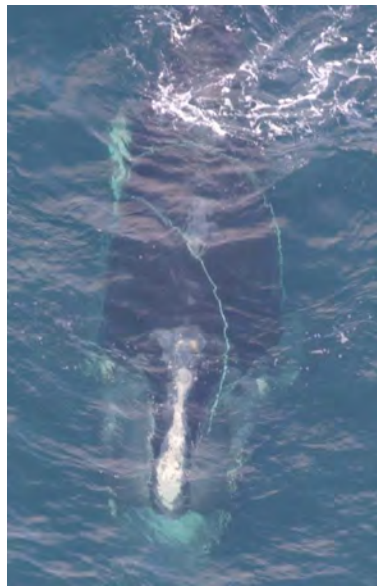


Reproductive prior to entanglement detection?		Yes/Yes			
Reproductive after entanglement detection?		Yes			
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	High	Low	Medium
Duration of time carrying gear		Minimum 193 days, maximum 610 days			
Disentangled?		Yes - 18 Sep 2007			
Status		Alive - Last sighted in 2020			
Number of prior entanglement interactions		5			

Entanglement configuration	Line likely wrapping both flippers over the back with line also caught in baleen at left mouth, leading to tangle of line along right flank.
Anchoring point(s)	Mouthline, flippers
Gear configuration confidence	Reasonable
Remaining questions	Nature of wraps at flippers difficult to discern
Comments	Cut was made to one of lines over back, remaining gear was later shed.



9 Mar 2007 NEFSC



9 Mar 2007 NEFSC



21 Mar 2007 PCCS



21 Mar 2007 PCCS



9 Mar 2007 NEFSC



18 Sept 2007 NEA

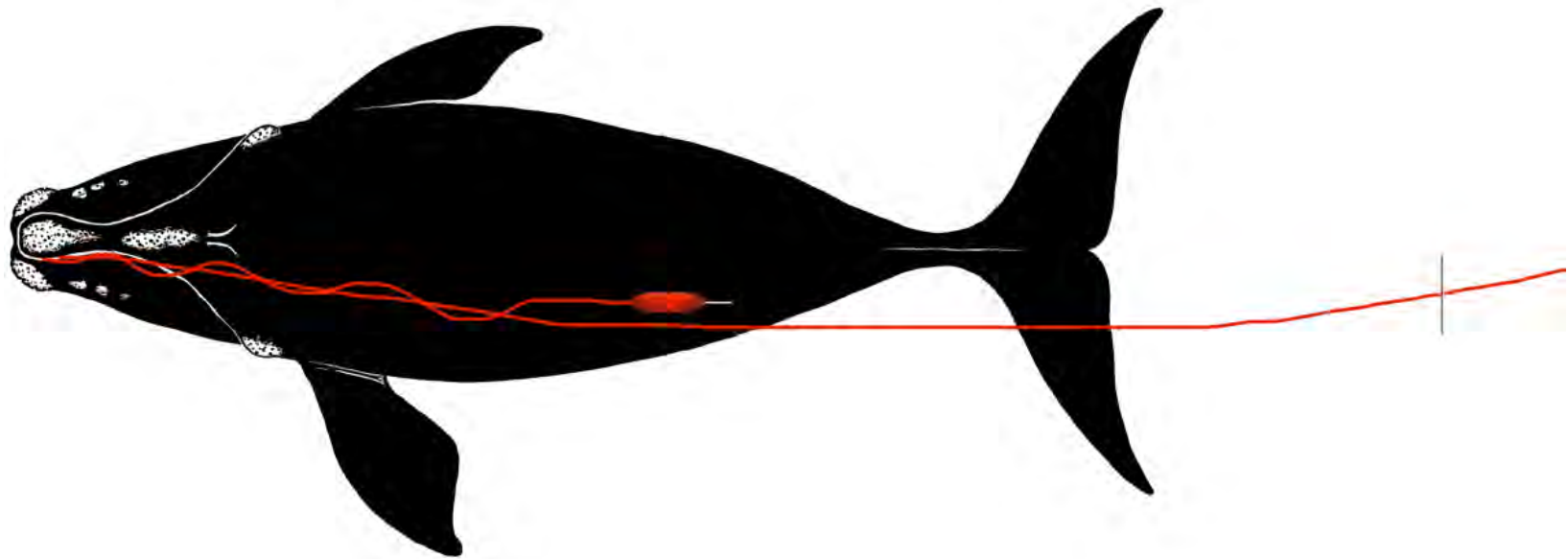


02 Feb 2011 FWRI

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3260</b>
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Date first observed entangled (date seen prior without gear)		08 May 2007 (11 Apr 2007)			
Sex	Female	Birth year	Unknown	Age at entanglement	6+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2007-05		
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?		No / Yes			
Reproductive after entanglement detection?		Yes			
Entanglement severity		Minor			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	None	None	None
Duration of time carrying gear		Minimum 48 days, maximum 192 days			
Disentangled?		No			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		1			

Entanglement configuration	Line and bullet buoy caught in baleen far forward along mouthline. Gear trailing to ~ 60 feet behind flukes.
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	
Comments	Gear shed



08 May 2007 NEFSC



29 May 2007 NEFSC



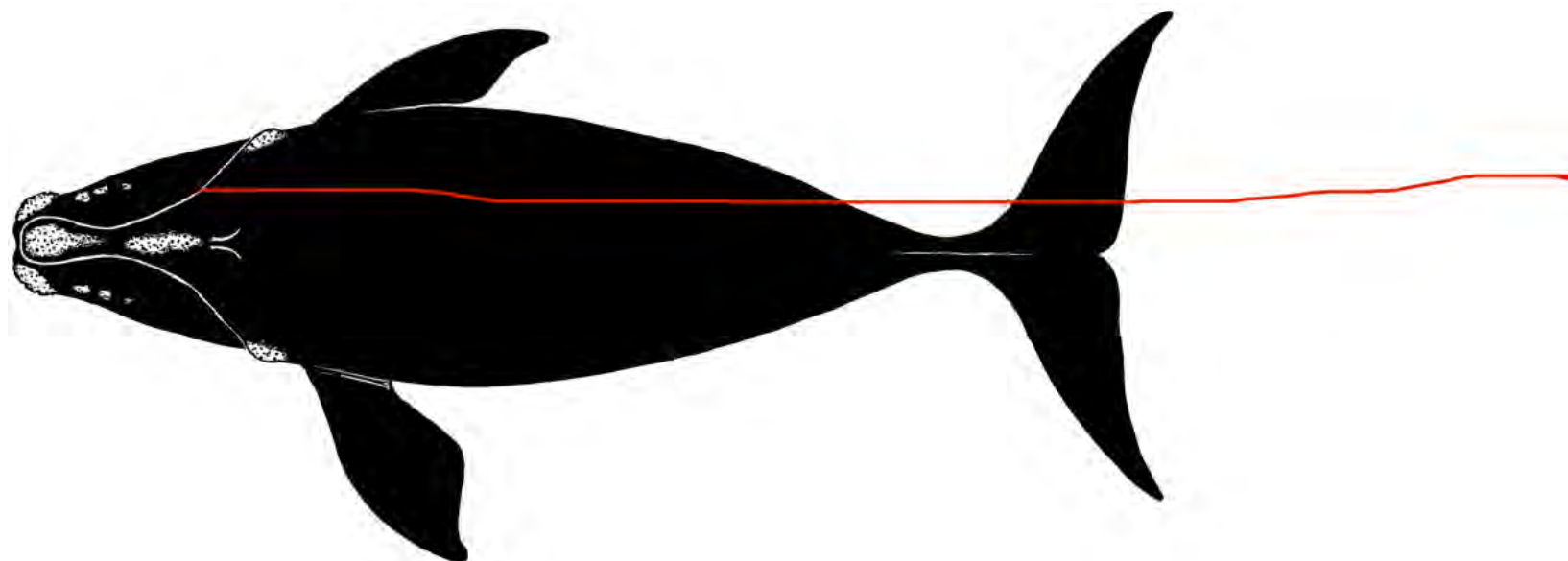
25 June 2007 NEFSC



<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #2645</b>
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Date first observed entangled (date seen prior without gear)		12 Jan 2008 (17 Sep 2007)	
Sex	Female	Birth year	1996
		Age at entanglement	12

Case study ID	PCCS	NMFS	GEAR ID
	WR-2008-02		
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?		Yes/Yes			
Reproductive after entanglement detection?		Yes			
Entanglement severity		Low			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	None	None	Low
Duration of time carrying gear		Minimum 139 days, maximum 421 days			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2015			
Number of prior entanglement interactions		3			

Entanglement configuration	Single line exiting right side of mouth and trailing less than one body length behind flukes.
Anchoring point(s)	Mouth
Gear configuration confidence	High
Remaining questions	Nature of rope inside mouth
Comments	



12 Jan 2008 PCCS



11 Mar 2008 PCCS



11 Mar 2008 PCCS

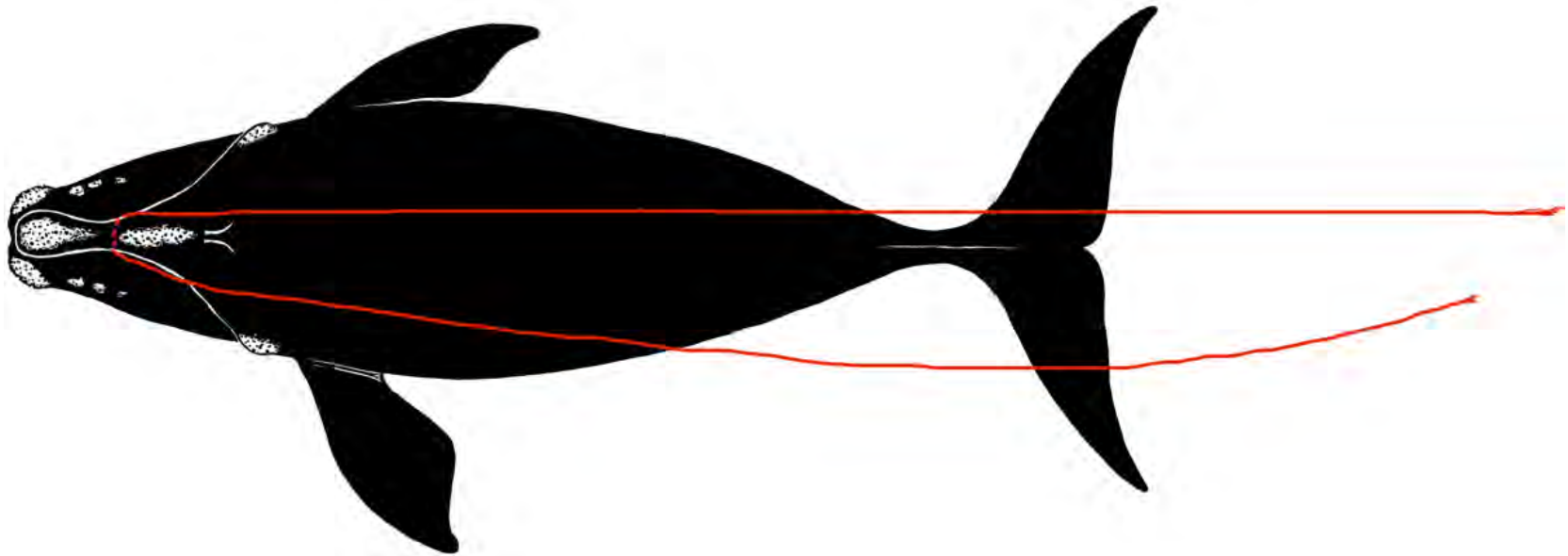


11 Mar 2008 PCCS

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3333</b>
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Date first observed entangled (date seen prior without gear)		29 Jan 2008 (14 Sep 2007)	
Sex	Male	Birth year	2003
		Age at entanglement	5

Case study ID	PCCS	NMFS	GEAR ID
	WR-2008-04		
Gear sample collected?	No	Gear type	

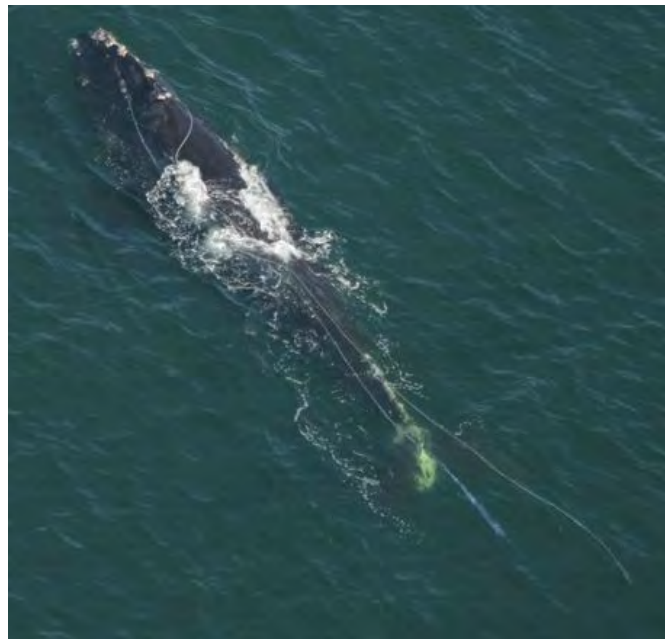


Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Moderate			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Unknown	None	Medium
Duration of time carrying gear		Minimum 4 days, maximum 234 days			
Disentangled?		No			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		1			

Entanglement configuration	Continuous line through mouth and trailing on either side to just aft of flukes
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	None
Comments	Gear was later shed.



29 Jan 2008 NEA



29 Jan 2008 FWRI

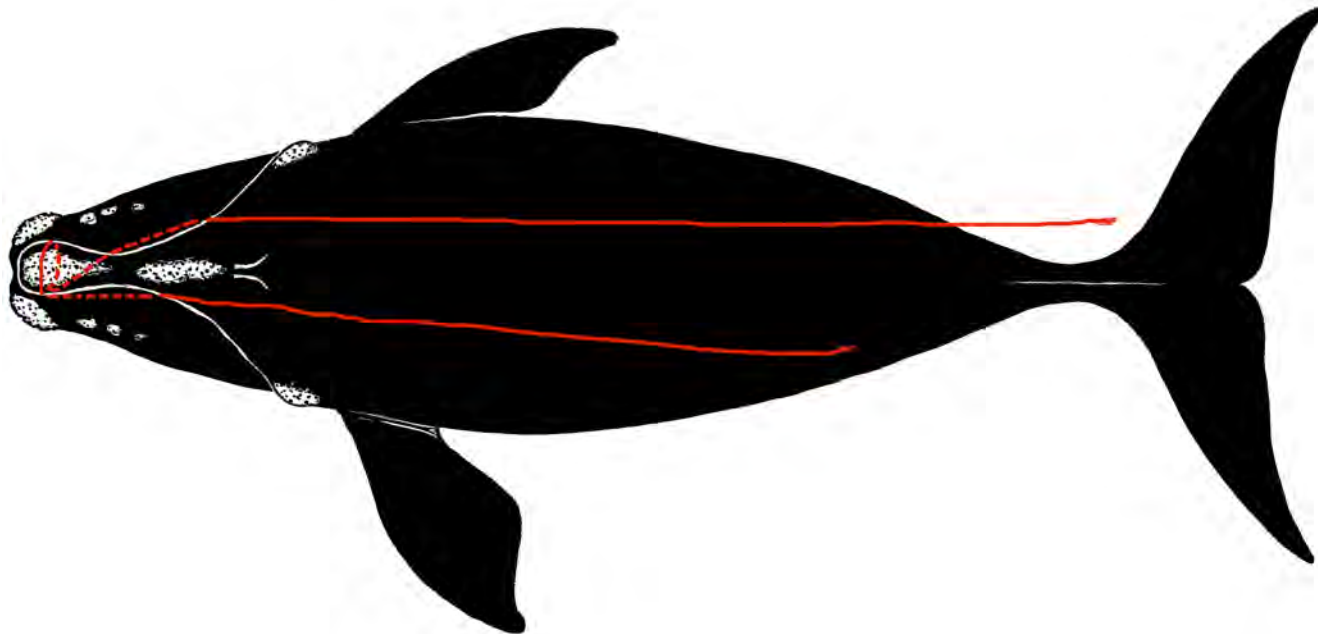


10 Feb 2010 GDNR

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #1980</b>
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Date first observed entangled (date seen prior without gear)		03 Feb 2008 (07 Jun 2007)			
Sex	Male	Birth year	Unknown	Age at entanglement	20+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2008-05		
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	High	Low	None	Medium
Duration of time carrying gear		Minimum 73 days, maximum 313 days			
Disentangled?		No			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		1			

Entanglement configuration	Continuous line entering mouth and knotted in a wrap around the rostrum; line trailing from mouth to flanks
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	None
Comments	Whale sighted gear free in 2011



16 Apr 2008 PCCS



16 Apr 2008 PCCS



16 Apr 2008 PCCS



16 Apr 2008 PCCS



16 Apr 2008 PCCS

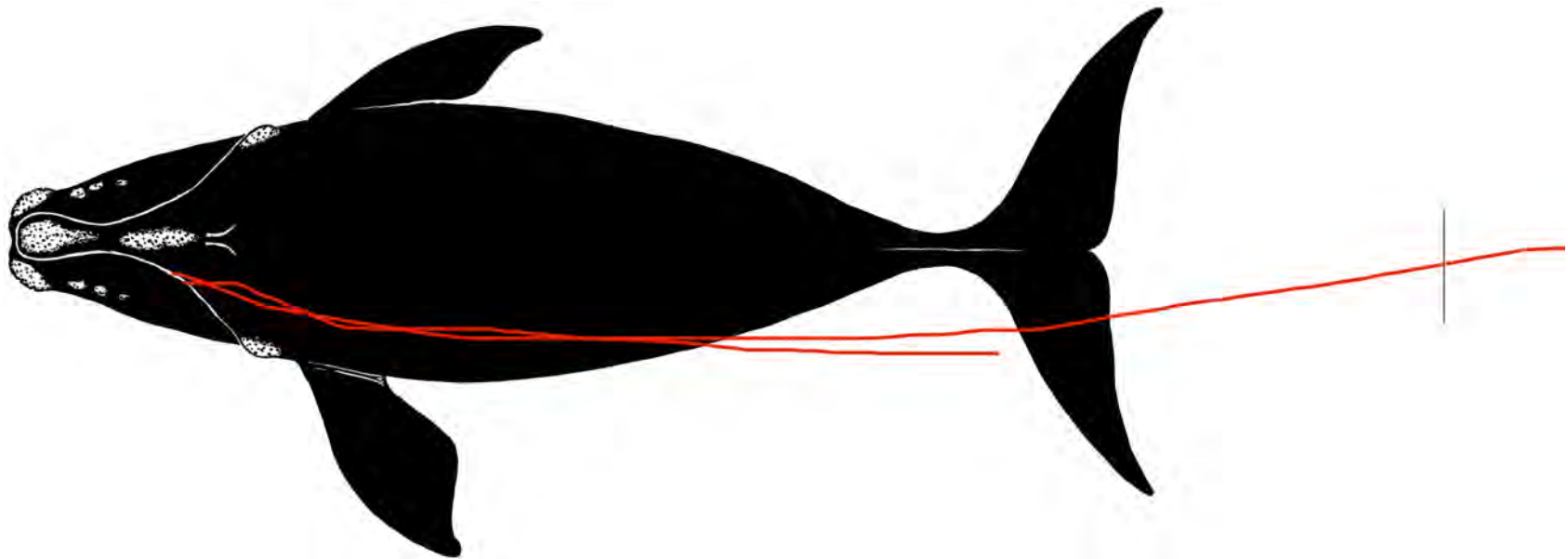


16 Apr 2008 PCCS

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #1140</b>
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Date first observed entangled (date seen prior without gear)		06 Mar 2008 (08 May 2007)			
Sex	Female	Birth year	Unknown	Age at entanglement	28+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2008-06	E07-08	J030608
Gear sample collected?	Yes	Gear type	



Reproductive prior to entanglement detection?		Yes / Yes			
Reproductive after entanglement detection?		No			
Entanglement severity		Moderate			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Unknown	None	Medium
Duration of time carrying gear		Minimum 786 days, maximum 1090 days			
Disentangled?		Yes - 02 May 2010			
Status		Presumed dead - Last sighted in 2014			
Number of prior entanglement interactions		1			

Entanglement configuration	Long length of line caught in baleen of left mouthline and trailing to ~50 feet.
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	
Comments	The entanglement configuration of this whale changed substantially between 2008 and 2010 with the long length of line coming unlaidd with one strand forming a complete wrap of the upper jaw. This new configuration was considered lethal and the whale was disentangled.

Polymer type	Rope not yet analyzed.
Gear component	
Rope diameter (inches)	
Breaking strength (lbs)	
Tested	



11 Mar 2008 PCCS



01 May 2010 PCCS



01 May 2010 PCCS



01 May 2010 PCCS



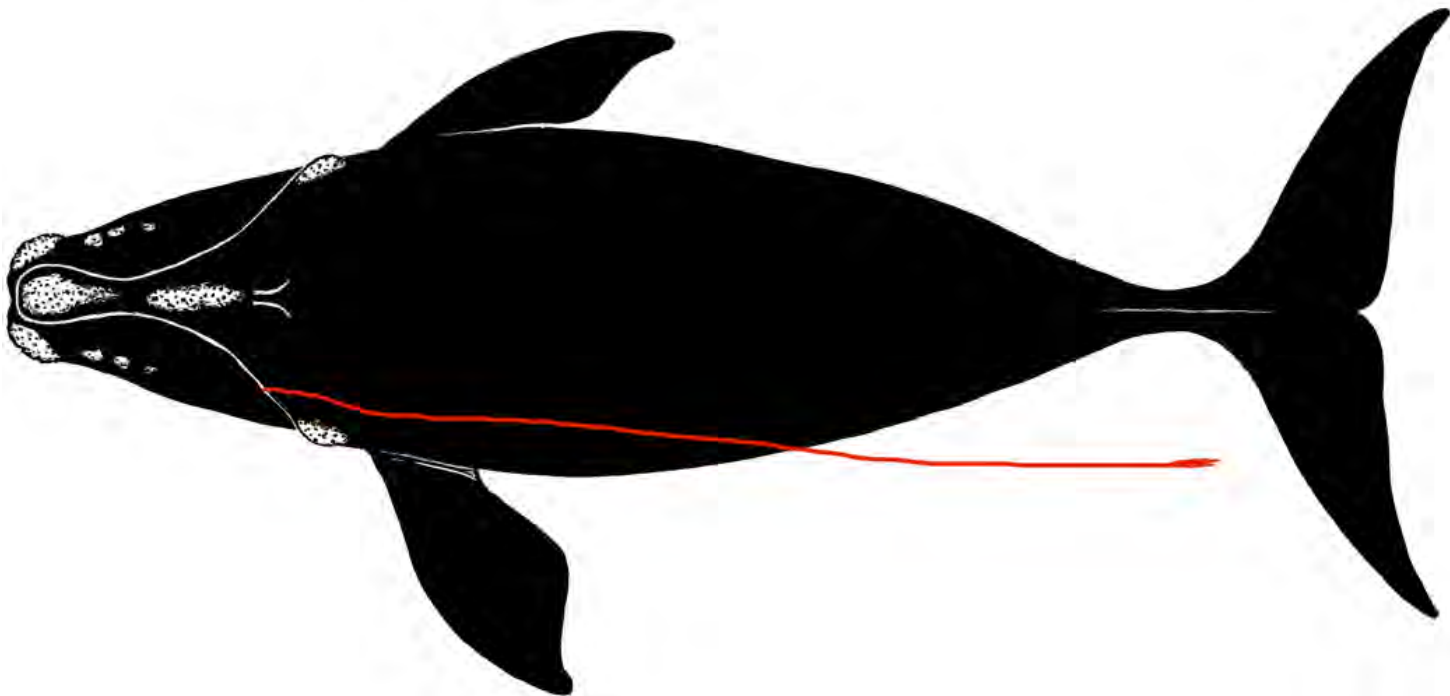
01 May 2010 PCCS



<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #1249</b>
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Date first observed entangled (date seen prior without gear)		07 May 2008 (21 Apr 2008)	
Sex	Male	Birth year	1982
		Age at entanglement	26

Case study ID	PCCS	NMFS	GEAR ID
	WR-2008-09		
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Minor			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Unknown	None	None
Duration of time carrying gear		Minimum 1 day, maximum 181 days			
Disentangled?		No			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		1			

Entanglement configuration	Line exiting left mouthline, trailing to flank
Anchoring point(s)	Mouthline
Gear configuration confidence	Low
Remaining questions	Unclear if the line exists on the other side of mouth or is just trapped in baleen on left side.
Comments	Gear was later shed.

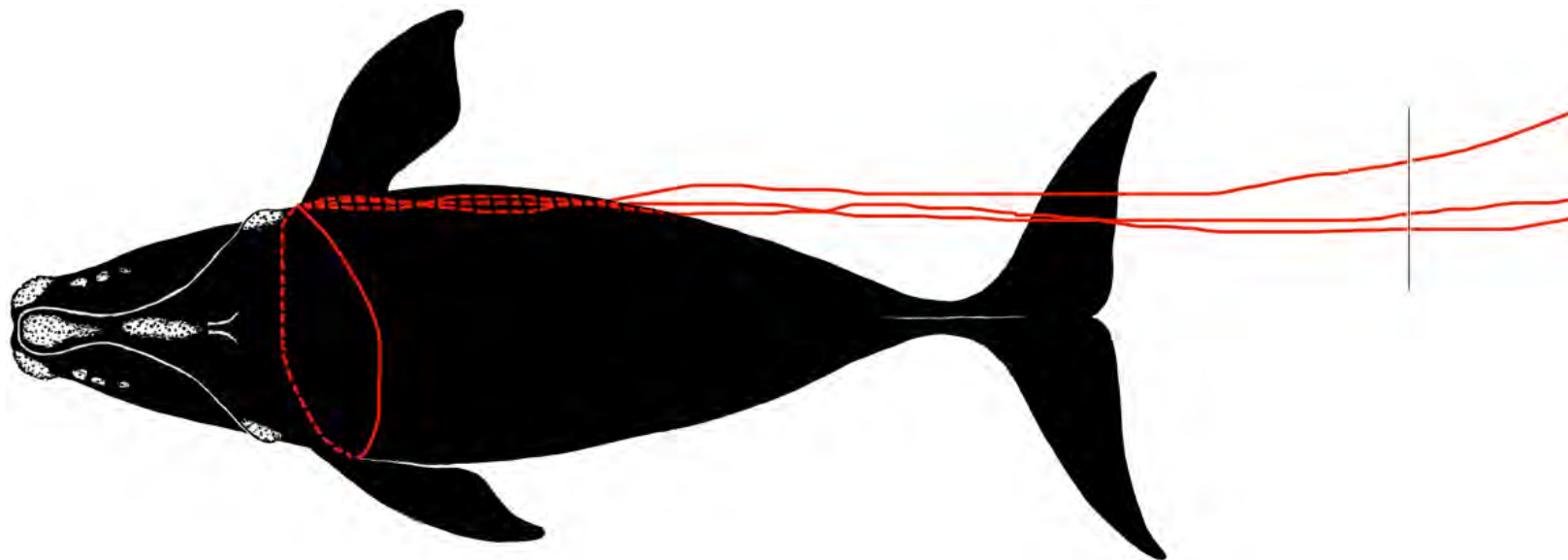


07 May 2008 NEFSC

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3294</b>
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Date first observed entangled (date seen prior without gear)		08 Dec 2008 (14 Apr 2008)			
Sex	Female	Birth year	Unknown	Age at entanglement	7+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2008-33	E39-08	J120808
Gear sample collected?	Yes	Gear type	Trap/pot



Reproductive prior to/after entanglement detection?		No/ Yes			
Entanglement injury severity		Moderate			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Medium	Medium	Unknown	Medium	Medium
Duration of time carrying gear		Minimum 10 days, maximum 291 days			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2014			
Number of prior entanglement interactions		2			

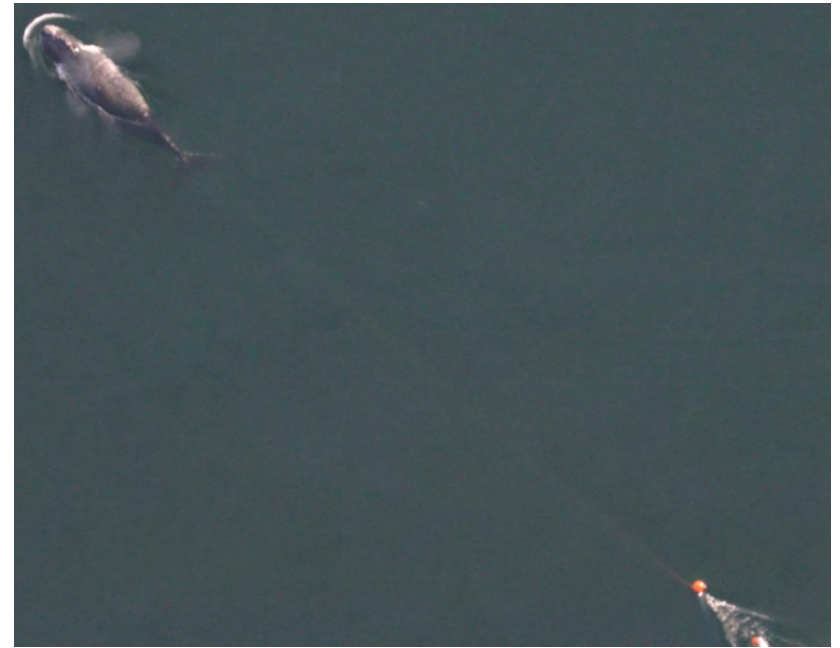
Entanglement configuration	Body wrap at level of flippers with three lines trailing aft of flukes to ~300feet.
Anchoring point(s)	Body
Gear configuration confidence	Low
Remaining questions	Some question remains if there was also a tight rostrum wrap (based on no evidence of line exiting mouth this seems unlikely); unclear if either flipper was wrapped.
Comments	Whale was telemetry-tagged and gear was later shed.

Polymer type		PP	PP
Gear component			
Rope diameter (inches)		5/16 (0.312)	5/16 (0.312)
Breaking strength (lbs)	Tested	1 560	1 670
	New	1 700	1 700

This case study was developed under NOAA Award # NA09NMF4520413 to the Consortium for Wildlife Bycatch Reduction, administered at the New England Aquarium, Boston, MA, USA (available at [www.bycatch.org](http://www.bycatch.org)). See: Knowlton, A.R., J. Robbins, S. Landry, H.A. McKenna, S.D. Kraus, T. B. Werner. 2015. Effects of fishing rope strength on the severity of large whale entanglements. Conservation Biology DOI: 10.1111/cobi.12590



18 Dec 2008 GDNR



18 Dec 2008 WT/GA



18 Dec 2008 GDNR



18 Dec 2008 GDNR



18 Dec 2008 WT/GA

## DATA SHEET

### FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

**SPECIMEN ID NO.**

**J120808rw**

**NMFS NO.**

**E39-08**

**Gear Description:**

Several long sections of  $\frac{5}{16}$  inch polypropylene orange rope. One coil included a length of  $\frac{5}{16}$  inch polypropylene pale green rope about 100 feet long and spliced into a section of orange line. One swivel appeared in an orange line and one in the green indicating an endline. Gangions were apparent at some locations in the orange line indicating trap connections. The apparent use was for fixed trap gear.





Connecting orange to green and swivel halves.

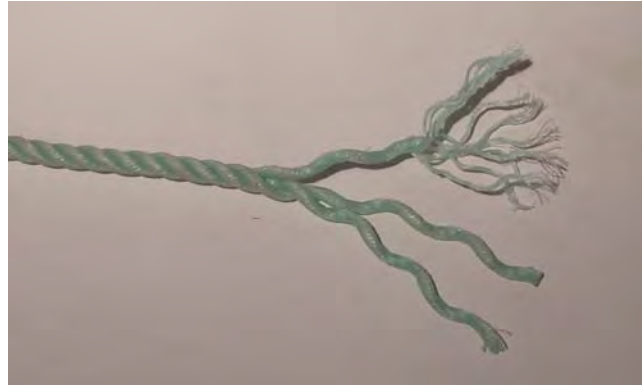


Gangion connection.

Rope description

J120808-1 : This is a  $\frac{5}{16}$  inch pale green polypropylene rope. It has a very hard lay. Condition is very good. The line has 10 yarns per strand and 3 center yarns.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,560 lbs (T)	1,700 lbs	Very good



J120808-2 : This is a  $\frac{5}{16}$  inch orange polypropylene rope. It has a hard lay. Condition is very good. The line has 6 yarns per strand and 1 center yarn.

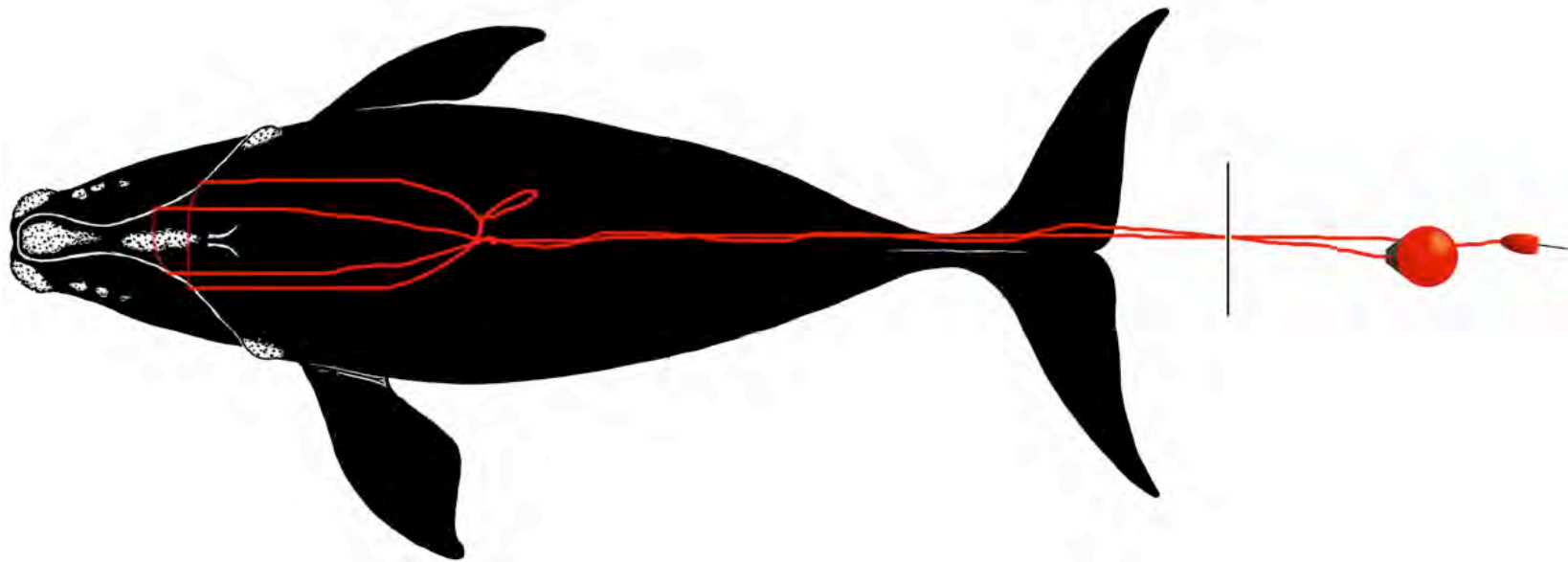
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,670 lbs (T)	1,700 lbs	Very good



<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3701</b>
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Date first observed entangled (date seen prior without gear)	26 Dec 2008 (25 Sep 2008)				
Sex	Male	Birth year	2007	Age at entanglement	1

Case study ID	PCCS	NMFS	GEAR ID
	WR-2008-35		
Gear sample collected?	Yes	Gear type	Canada lobster



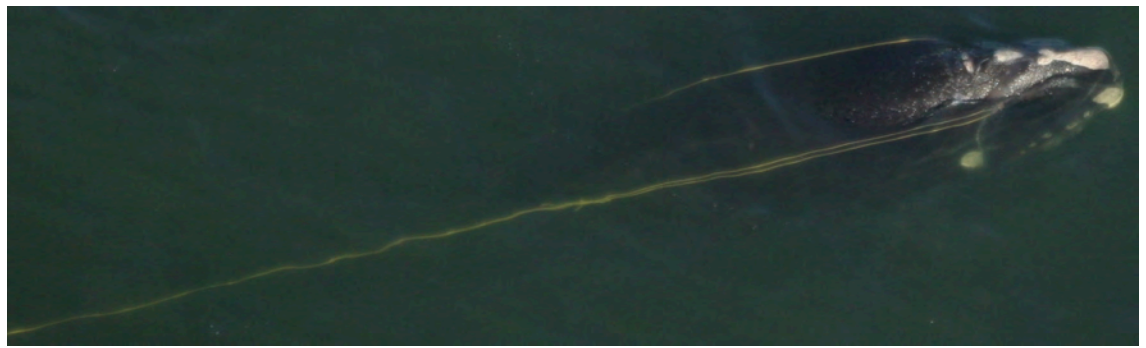
Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Minor			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	None	Low	Medium
Duration of time carrying gear		Minimum 2 days, maximum 99 days			
Disentangled?		Yes - 27 Dec 2008			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		0			

Entanglement configuration	Two loops of line through mouth, going over back and leading to buoys trailing ~ 300 ft aft of flukes. Gear from Bay of Fundy
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	Not all bitter ends can be accounted for and may be inside mouth/baleen
Comments	Rope not analyzed yet.





26 Dec 2008 FWRI



27 Dec 2008 FWRI



28 Dec 2008 FWRI



26 Dec 2008 FWRI

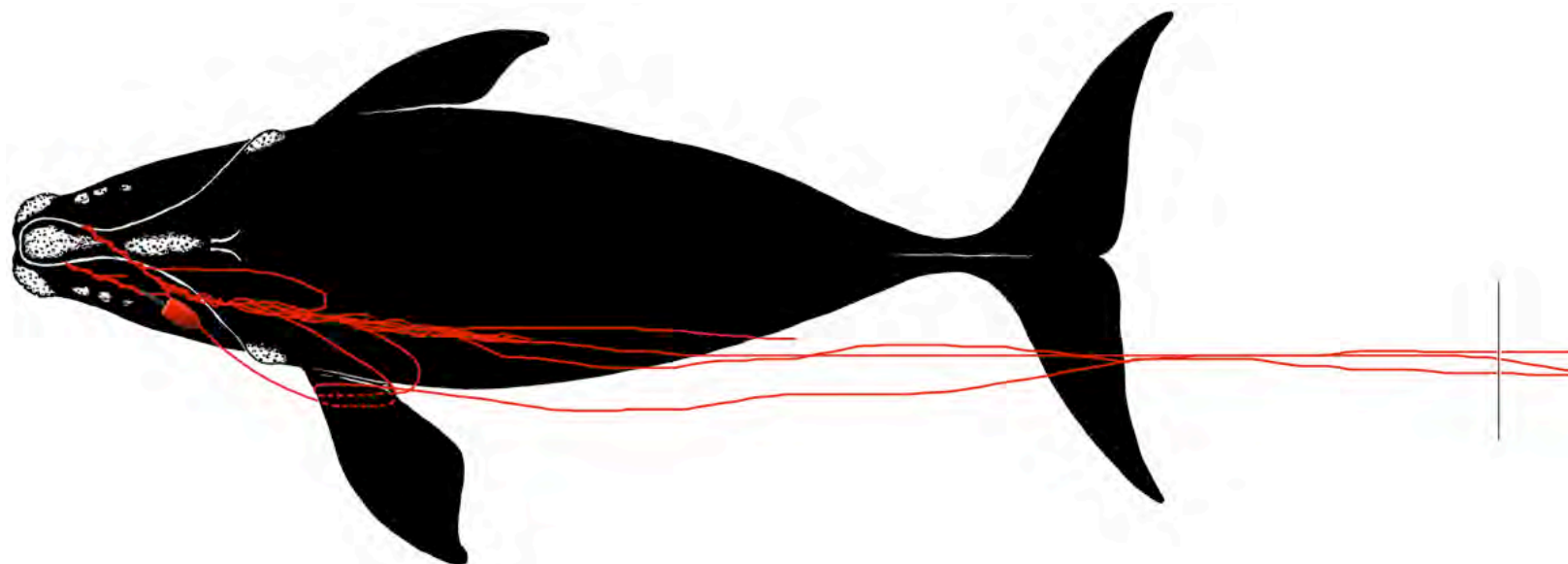


26 Dec 2008 FWRI

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3311</b>
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Date first observed entangled (date seen prior without gear)		14 Jan 2009 (21 Apr 2008)	
Sex	Male	Birth year	2003
		Age at entanglement	6

Case study ID	CCS	NMFS	GEAR ID
	WR-2009-01	E01-09	J011409
Gear sample collected?	Yes	Gear type	Trap/pot gear



Reproductive prior to/after entanglement detection?					
Entanglement injury severity			Severe		
Entanglement configuration risk			High		
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	High	High	Medium	None	Medium
Duration of time carrying gear		Minimum 51 days, maximum 318			
Disentangled?		Yes - Partial 06 Mar 2009			
Status		Presumed dead, last sighted in 2009 in poor condition			
Number of prior entanglement interactions		2			

Entanglement configuration	Loop of twisted lines caught around upper jaw and leading to heavy tangle of lines and bullet buoy along left flank; some of the tangle also wrapped the left flipper; lines trailing to ~300feet aft of the flukes.	
Anchoring point(s)	Mouthline, flipper	
Gear configuration confidence	Reasonable	
Remaining questions	Unclear if any line wrapped under the body and unclear if any other lines entered the mouth.	
Comments	Large tangle of line made exact assessment difficult.	

Polymer type	Polysteel	Polysteel
Gear component	Groundline	
Rope diameter (inches)	9/16 (0.562)	9/16 (0.562)
Breaking strength (lbs)	Tested	6 280
	New	7 000
		6 810
		7 000



18 Jan 2009 FWRI



06 Mar 2009 FWRI



06 Mar 2009 FWRI



23 Jan 2009 FWRI



06 Mar 2009 FWRI

## DATA SHEET

### FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

**SPECIMEN ID NO.**

**J011409rw**

**NMFS NO.**

**E01-09**

**Gear Description:**

The attached "Fishery Interaction Gear Analysis and sketch provide the best description of the gear.

Two specimens were taken from different parts of the gear.

This appeared to be fixed trap gear.



Gear laid out showing scale of the lines.



Gear as stored

Rope description:

J011409-1 Polysteel,  $\frac{9}{16}$  pale green float line. Apparently a ground line as gangion attached. Very good condition. There are 6 yarns per strand with a center yarn.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
6,280 lbs (T)	7,000 lbs	Very good

J011409-2 Polysteel,  $\frac{9}{16}$  pale green float line. Uncertain as to use in the gear. Very good condition. There are 6 yarns per strand with a center yarn.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
6,810 lbs (T)	7,000	Very good



J011409-1 and J011409-2 are identical

J011409-3 Polysteel,  $7/16$  orange float line. Used as gangion to a trap.

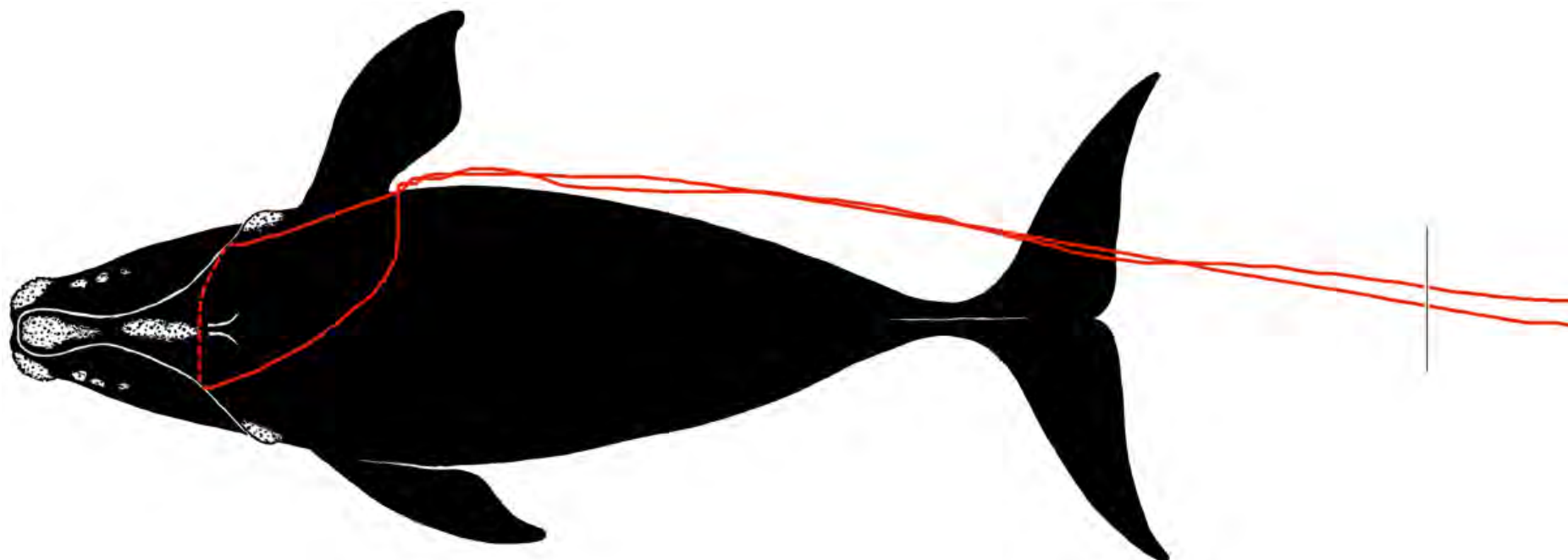


Connection of gangion. No specimen taken for gangion as it was so short.

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3420</b>
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Date first observed entangled (date seen prior without gear)		31 Jan 2009 (13 Sep 2008)			
Sex	Female	Birth year	2004	Age at entanglement	5

Case study ID	CCS	NMFS	GEAR ID
	WR-2009-02	E02-09	J013109-1
Gear sample collected?	Yes	Gear type	



Reproductive prior to/after entanglement detection?		No/ Yes			
Entanglement injury severity		Moderate			
Entanglement configuration risk		Low			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Medium	Low	Medium
Duration of time carrying gear		Minimum 12 days, maximum 347 days			
Disentangled?		No			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		1			

Entanglement configuration	Line through mouth and twisted together to form a loop on the right shoulder with both lengths of line trailing aft of the flukes by ~40 feet.
Anchoring point(s)	Mouthline
Gear configuration confidence	Low
Remaining questions	Unclear if the line wrapped the right flipper
Comments	Whale was telemetry-tagged and gear was later shed.

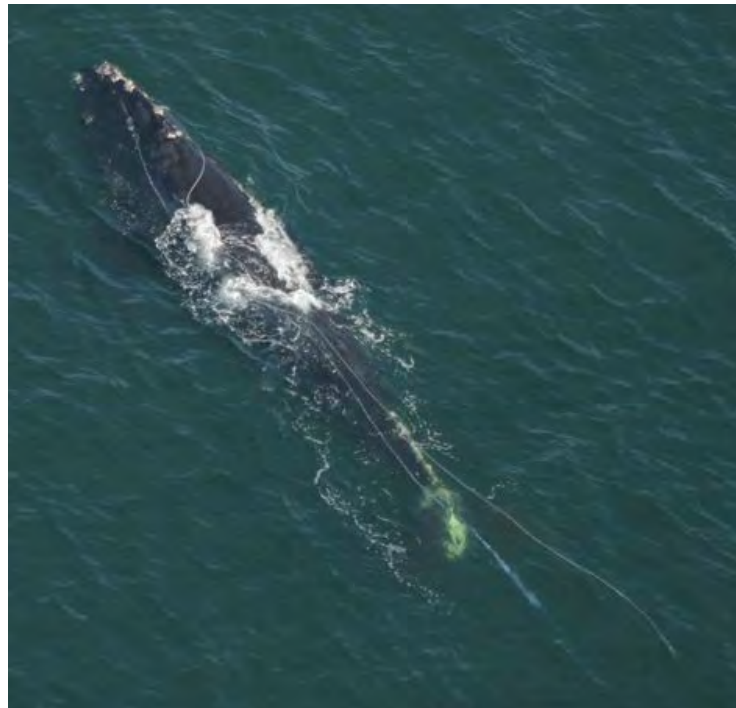
Polymer type		Polysteel
Gear component		
Rope diameter (inches)		7/16 (0.437)
Breaking strength (lbs)	Tested	3 200
	New	4 100



31 Jan 2009 NEA



31 Jan 2009 NEA



Need to get info for this image. It was not on the list I made up, but it was in the image folder on FTP site.



## DATA SHEET

### FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

**SPECIMEN ID NO.**

**J013109rw**

**NMFS NO.**

**E02-09**

**Gear Description:**

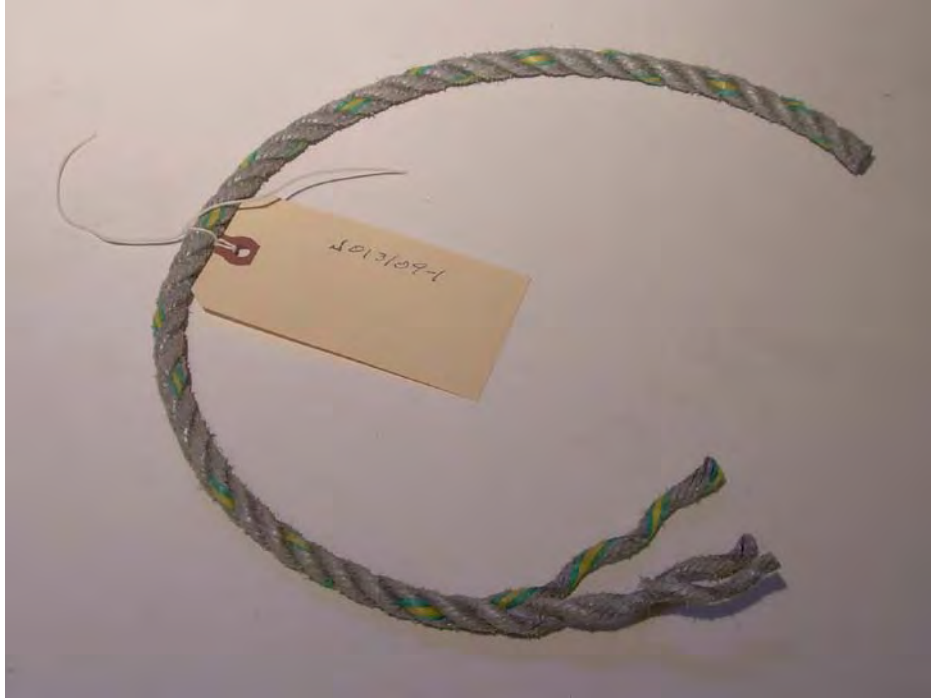
This limited specimen did not allow determination as to use. The unraveled green line (J0101309-2) is spliced into the grey line (J013109-1) and may have been a gangion for a trap. If so, the line could be a ground line. A small section of the grey line was also recovered and showed considerable damage.



**Rope description:**

J013109-1 A  $\frac{7}{16}$  inch polysteel float line. Size was reported as  $\frac{3}{8}$  inch but it is closer to  $\frac{7}{16}$  inch. One strand contains a yellow yarn and two green tracers parallel to the yellow yarn. There are 7 total yarns per strand plus a center yarn.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
3,320 lbs (A)	4,100 lbs	Fair

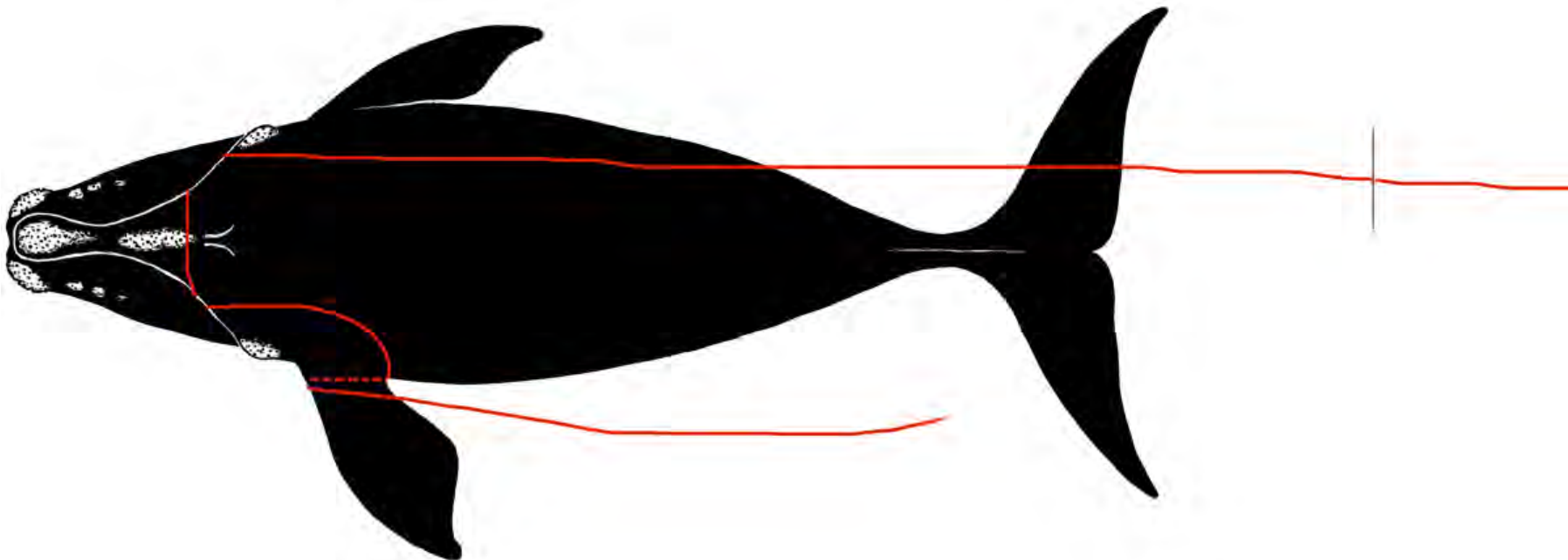


J013109-1

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3714</b>
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Date first observed entangled (date seen prior without gear)		07 Feb 2009 (05 Jan 2009)	
Sex	Male	Birth year	2007
		Age at entanglement	2

Case study ID	PCCS	NMFS	GEAR ID
	WR-2009-03	E03-09	J020709-1
Gear sample collected?	Yes	Gear type	US southeast unknown

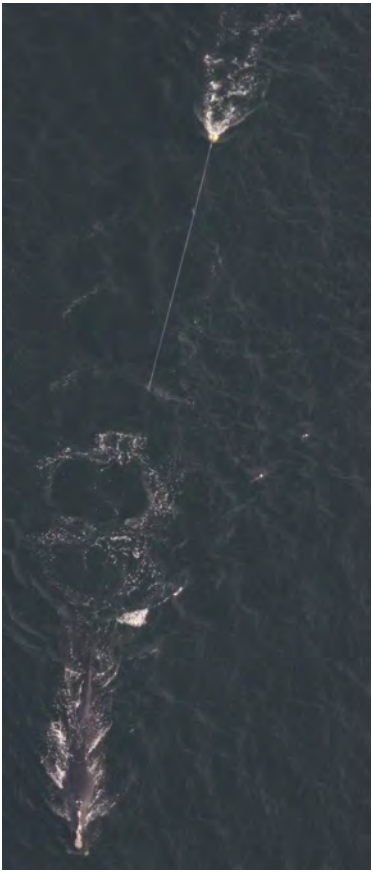


Reproductive prior to/after entanglement detection?					
Entanglement injury severity			Minor		
Entanglement configuration risk			High		
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Low	None	None
Duration of time carrying gear		Minimum 5 days, maximum 62 days			
Disentangled?		Yes, 12 Feb 2009			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		1			

Entanglement configuration	Thin line over rostrum and into mouth; on the right, this line exited low through the mouthline trailing aft of the flukes by ~30feet; on the left, line exited the mouth line and lead to a wrap(s) of the left flipper and trailed to tailstock.
Anchoring point(s)	Mouthline, flipper
Gear configuration confidence	High
Remaining questions	Due to the dark color of the line the nature of the flipper wrap(s) could not be determined.
Comments	The thin, dark nature of the line made detection and assessment difficult.

Polymer type	PP	
Gear component		
Rope diameter (inches)	7/16 (0.437)	
Breaking strength (lbs)	Tested	2 560
	New	3 150

This case study was developed under NOAA Award # NA09NMF4520413 to the Consortium for Wildlife Bycatch Reduction, administered at the New England Aquarium, Boston, MA, USA (available at [www.bycatch.org](http://www.bycatch.org)). See: Knowlton, A.R., J. Robbins, S. Landry, H.A. McKenna, S.D. Kraus, T. B. Werner. 2015. Effects of fishing rope strength on the severity of large whale entanglements. Conservation Biology DOI: 10.1111/cobi.12590



09 Feb 2009 WT/GA



09 Feb 2009 GDNR



09 Feb 2009 GDNR



09 Feb 2009 GDNR



09 Feb 2009 GDNR

## DATA SHEET

### FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

**SPECIMEN ID NO.**

**J020709rw**

**NMFS NO.**

**E03-09**

**Gear Description:**

The recovered gear consisted of one long and one short section of line as seen below. The application could not be determined.



**Rope description:**

J020709-1 The line was  $\frac{7}{16}$  inch black polypropylene with one white yarn in one strand. The line was reported to be  $\frac{3}{8}$  inch but is closer to  $\frac{7}{16}$  inch. There are 9 yarns/strand with a single white yarn in one strand. This is a soft rope. The condition showed moderate wear. The frayed end may indicate a tensile break. See photo below.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,560 lbs (T)	3,150 lbs	Good



Frayed end may indicate tensile break

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #1019</b>
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Date first observed entangled (date seen prior without gear)	18 Jul 2009 (10 Mar 2009)		
Sex	Male	Birth year	Unknown
		Age at entanglement	30+

Case study ID	CCS	NMFS	GEAR ID
	WR-2009-16		
Gear sample collected?	No	Gear type	

Photographs inadequate to determine complete entanglement configuration - no drawing available

Reproductive prior to entanglement detection?	Yes				
Reproductive after entanglement detection?					
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Unknown	Unknown	Unknown	None	High
Duration of time carrying gear	Minimum 1 day, maximum 124 days				
Disentangled?	No				
Status	Presumed dead - Last sighted in 2009				
Number of prior entanglement interactions	2				

Entanglement configuration	Approximately 70-100 feet of trailing line with a ~20 inch yellow ball buoy. High severity scarring on the flukes.
Anchoring point(s)	Unknown
Gear configuration confidence	Low
Remaining questions	Anchoring point(s)
Comments	Animal not showing full flukes on dives. No sightings since the initial entanglement sighting - prognosis uncertain.



18 Jun 2009 CKC



18 Jun 2009 CKC



18 Jun 2009 CKC



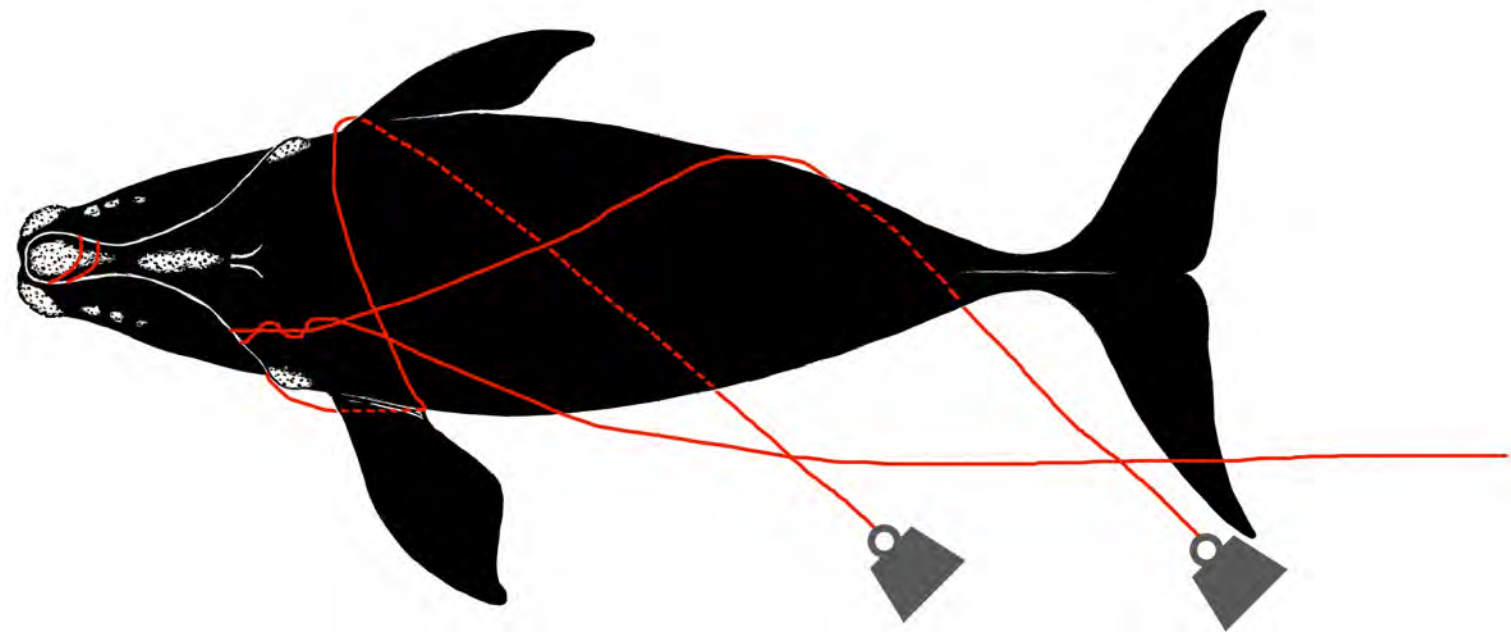
18 Jun 2009 CKC



<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #1151</b>
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Date first observed entangled (date seen prior without gear)		03 Sep 2009 (28 Aug 2009)			
Sex	Female	Birth year	Unknown	Age at entanglement	30+

Case study ID	CCS	NMFS	GEAR ID
	WR-2009-25	E22-09	
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?		Yes			
Reproductive after entanglement detection?		Unknown			
Entanglement severity		Moderate			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Medium	Medium	Unknown	Medium	Medium
Duration of time carrying gear		Minimum 2 days, maximum 7 days			
Disentangled?		Yes - 04 Sep 2009			
Status		Presumed dead - last sighted in 2012			
Number of prior entanglement interactions		2			

Entanglement configuration	Line wrapping rostrum twice, exiting mouth to left flipper then over body to weighted gear at depth; other line exiting mouth went to short bitter end as well as over the body to weighted gear at depth.
Anchoring point(s)	Mouthline, body
Gear configuration confidence	High
Remaining questions	
Comments	One of the few right whale entanglement cases in which whale was anchored by gear; all gear removed but not retained. Known mother, calf resighted after event.



04 Sep 2009 PCCS



04 Sep 2009 PCCS



04 Sep 2009 PCCS



04 Sep 2009 PCCS



04 Sep 2009 PCCS

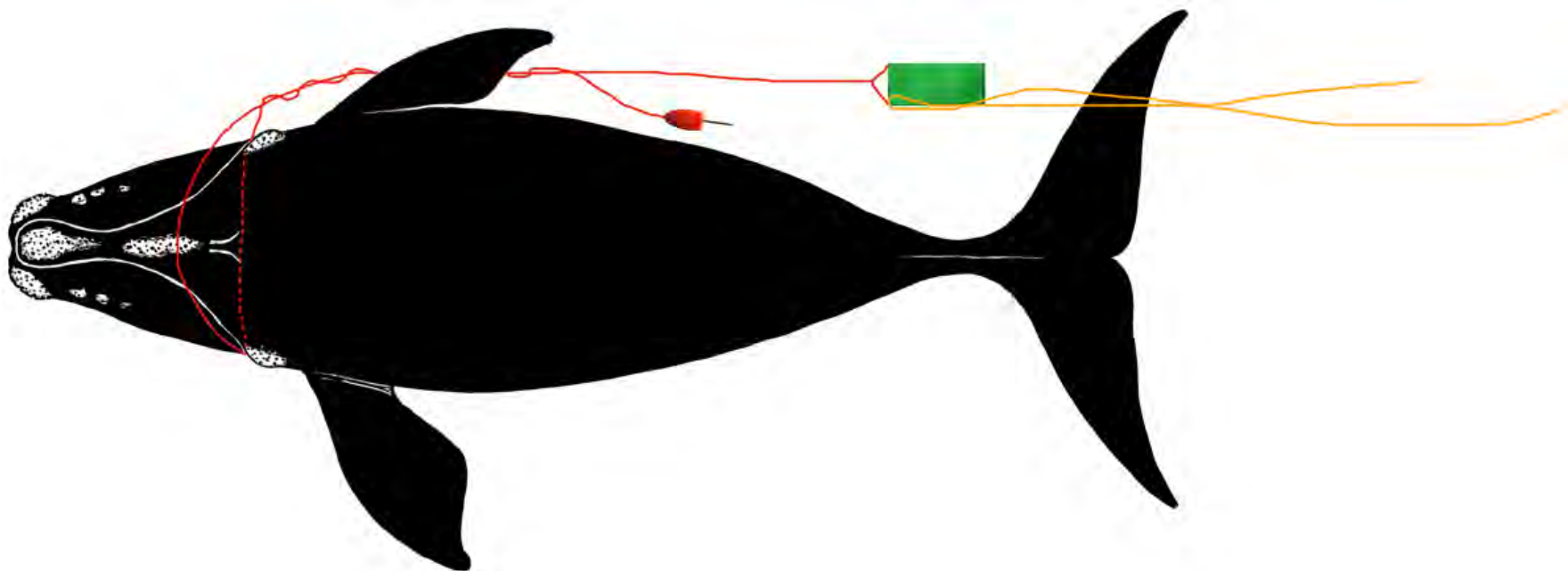


04 Sep 2009 PCCS

<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3821</b>
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Date first observed entangled (date seen prior without gear)		26 Sep 2009 (10 Jul 2009)	
Sex	Unknown	Birth year	2008
		Age at entanglement	1

Case study ID	CCS	NMFS	GEAR ID
	WR-2009-29	E25-09	J092609-1
Gear sample collected?	Yes	Gear type	US northeast lobster



Reproductive prior to/after entanglement detection?					
Entanglement injury severity		Minor			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	None	None	None
Duration of time carrying gear		Minimum 1 day, maximum 76 days			
Disentangled?		Yes - 26 Sep 2009			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		None			

Entanglement configuration	Single trap and buoy line caught in the gape of mouth and wrapped over upper jaw. Gear from Cape Cod Bay
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	
Comments	Original entanglement picked up other gear as whale traveled.

Polymer type	PP/PET	
Gear component	Vertical line	
Rope diameter (inches)	3/8 (0.375)	
Breaking strength (lbs)	Tested	2 140
	New	2 600



26 Sep 2009 PCCS



26 Sep 2009 PCCS

## DATA SHEET

### FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

**SPECIMEN ID NO.**  
**J092609rw**

**NMFS NO.**  
**E25-09**

**Gear Description:**

This is a complete single lobster trap gear set. The end line attached to the buoy was in two pieces of sink line,  $\frac{5}{16}$  inch and  $\frac{3}{8}$  inch, joined by a splice. A second line of two pieces, seen to the right, did not appear to be part of this gear set.

The bridle connecting the trap to the end line was  $\frac{5}{16}$  inch black mono polypropylene. No specimen was taken.

The third photo shows the extraneous lines and their assembly. The frayed end appears to be a tensile break but it is marked as a cut.





A weak link was placed below the buoy and connected by dipping spliced eyes together.

Bungee cord was inserted into the end line to control ascent of the float seen in the middle photo. A second bungee cord near the buoy was used as a gear marker.

Rope description:

J092609-1a This is a  $\frac{3}{8}$  inch combo sink rope with polyester over polypropylene fiber. This was one segment of the end line. Purple marker yarn in one strand.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,140 lbs (T)	2,600 lbs	Good

J092609-1b This is a  $\frac{5}{16}$  inch combo sink rope with polyester over polypropylene fiber. This was the second segment of the end line. There are 3 yarns/strand plus purple yarn in one strand. Not tested

J092609-2 This is a  $\frac{5}{16}$  inch combo sink rope with polyester over Polysteel fiber. There are 3 yarns/strand plus red tracer. This was a segment of the line deemed not part of the set.

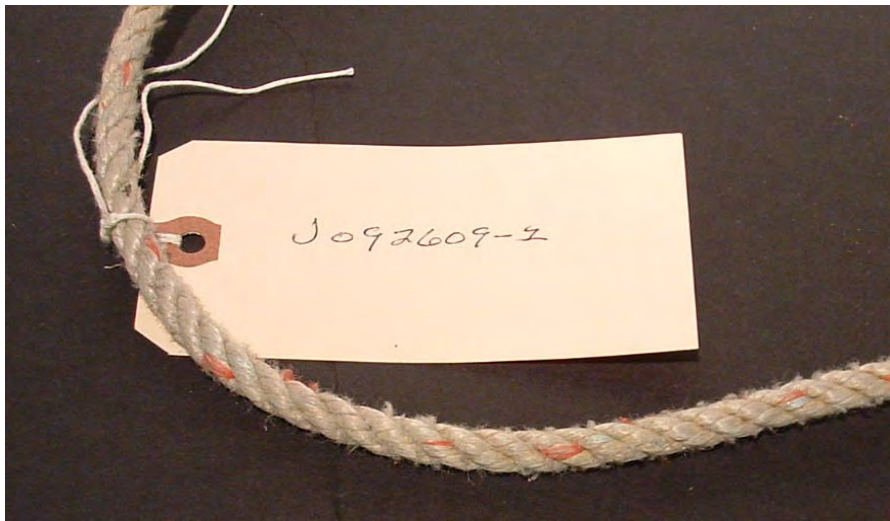
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,850 lbs (T)	2400 lbs	Good

J092609-3 This is a  $\frac{3}{8}$  inch polypropylene fiber float rope, black with a green marker yarn in one strand. This was the second segment of the line deemed not part of the set. There are 3 yarns/strand plus one green yarns in one strand.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,790 lbs (T)	2,430 lbs	Fair



J092609-1a and J092609-1b Lines identical except for size



J092609-2



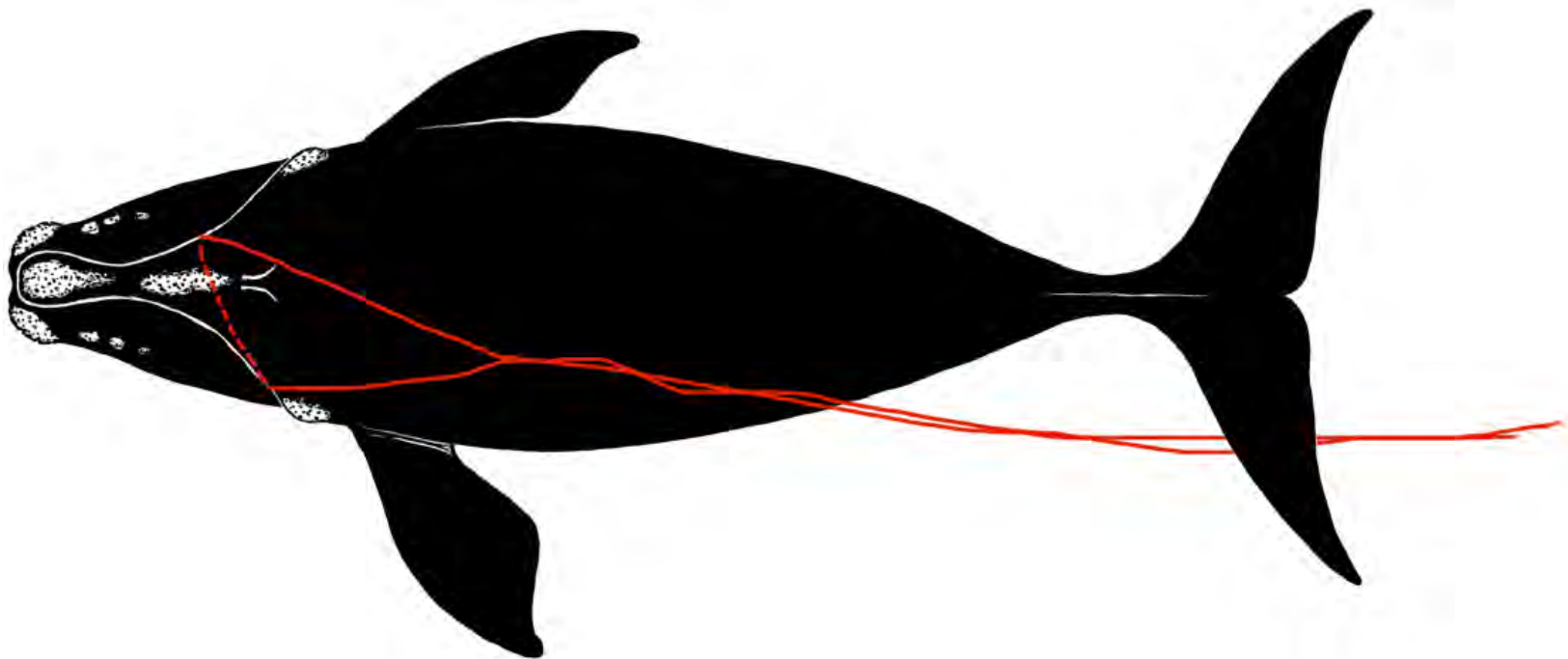
J092609-3



<b>Species</b>	<b>Right Whale</b>	<b>Whale ID</b>	<b>Eg #3850</b>
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Date first observed entangled (date seen prior without gear)		26 Nov 2009 ( 18 Feb 2009)	
Sex	Unknown	Birth year	2008
		Age at entanglement	1

Case study ID	CCS	NMFS	GEAR ID
	WR-2009-34		
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Moderate			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Medium	Unknown	Medium	Medium
Duration of time carrying gear		Minimum 1 day, maximum 327 days.			
Disentangled?		No			
Status		Alive - Last sighted in 2021			
Number of prior entanglement interactions		0			

Entanglement configuration	Line through mouth twisted together forming loop on left shoulder; unknown distance of trailing line.
Anchoring point(s)	Mouthline
Gear configuration confidence	Low
Remaining questions	Unknown if flippers were involved.
Comments	Poorly documented case; some interpretation based on scarring seen on whale after it had shed gear.



26 Nov 2009 HDD



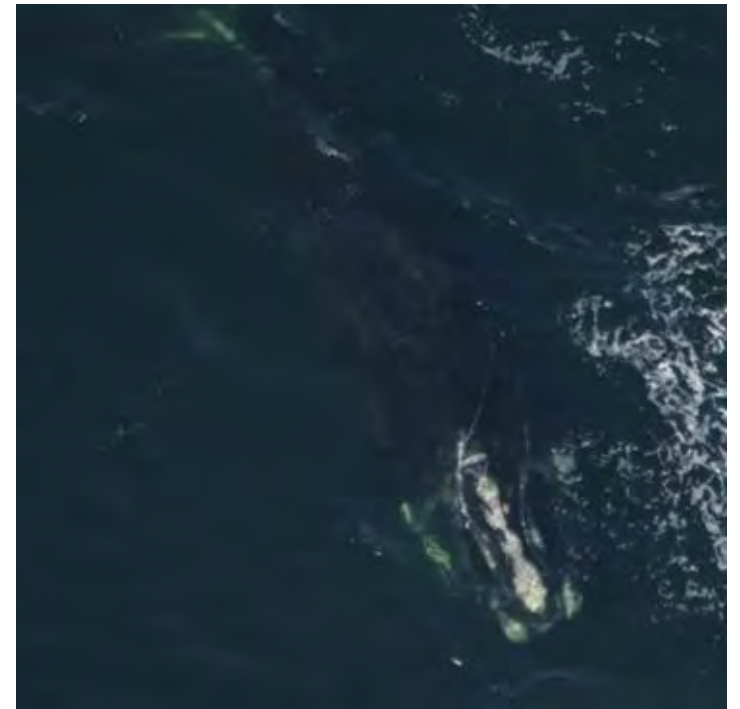
26 Nov 2009 HDD



26 Nov 2009 HDD



19 Jan 2010 GDNR



13 Jan 2010 FWRI



19 Jan 2010 GDNR