

Species	Right Whale	Whale ID	Eg #2701
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Date first observed entangled (date seen prior without gear)		19 Jan 2000 (12 Sep 1999)			
Sex	Female	Birth year	1997	Age at entanglement	3

Case study ID	PCCS	NMFS	GEAR ID
		E2-00	
Gear sample collected?	No	Gear type	

No drawing available
No images available

Reproductive prior to entanglement detection?		No			
Reproductive after entanglement detection?		No			
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Unknown	Unknown	Unknown	High	Unknown
Duration of time carrying gear		Minimum 1 day, maximum 128 days			
Disentangled?		No			
Status		Dead			
Number of prior entanglement interactions		1			

Entanglement configuration	Several lines wrapped around body of floating carcass.
Anchoring point(s)	Body
Gear configuration confidence	Low
Remaining questions	Uncertain of all anchoring points, amount of trailing line.
Comments	Only video of carcass which made a careful assessment difficult. Carcass was unable to be retrieved.

Species	Right Whale	Whale ID	Eg #1130
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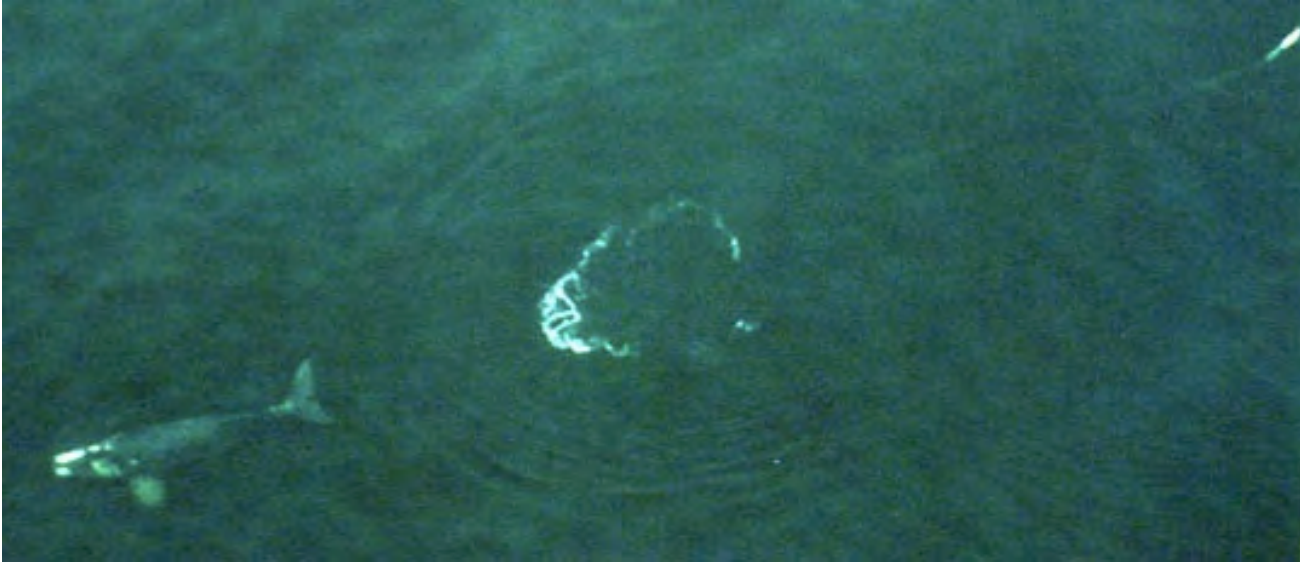
Date first observed entangled (date seen prior without gear)		01 Mar 2000 (19 Aug 1999)			
Sex	Male	Birth year	Unknown	Age at entanglement	21+

Case study ID	PCCS	NMFS	GEAR ID
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
	Unknown	None	High	None	Medium
Duration of time carrying gear		Minimum 1 day, maximum 194 days			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2000			
Number of prior entanglement interactions		1			

Entanglement configuration	Several body lengths of line trailing left flipper. White in color so believe gear was tightly wrapped on left flipper.
Anchoring point(s)	Flipper
Gear configuration confidence	Low
Remaining questions	Trailing line between whale and buoy was deep and may have been weighted down by gear.
Comments	No drawing done because configuration of gear is uncertain.



01 Mar 2000 PCCS



01 Mar 2000 PCCS

Species	Right Whale	Whale ID	Eg #1167
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Date first observed entangled (date seen prior without gear)		27 Mar 2000 (20 Aug 1999)			
Sex	Male	Birth year	Unknown	Age at entanglement	20+

Case study ID	PCCS	NMFS	GEAR ID
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	None	High	None	Medium
Duration of time carrying gear		Minimum 932 days, maximum 1132 days			
Disentangled?		No			
Status		Presumed dead - Last seen in 2015			
Number of prior entanglement interactions		3			

Entanglement configuration	Single line with buoy attached trailing ~ 50 feet behind flukes. Line was tightly wrapped around left flipper
Anchoring point(s)	Flipper
Gear configuration confidence	Low
Remaining questions	Image of left flipper with line tightly wrapped around it was obtained 2.5 years after the first sighting. It was difficult to determine from the image if any line was trailing.
Comments	Gear was eventually shed.



08 May 2000 NMFS



24 Sep 2000 NEA



26 Sep 2002 NEA



01 Aug 2000 NEA

Species	Right Whale	Whale ID	Eg #1720
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Date first observed entangled (date seen prior without gear)	31 May 2000 (13 Sep 1990)		
Sex	Male	Birth year	Unknown
		Age at entanglement	14+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2000-09		
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		Minor			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	None	Unknown	None	Low
Duration of time carrying gear		Minimum 20 days, maximum 2087 days			
Disentangled?		No			
Status		Alive - Last sighted in 2022			
Number of prior entanglement interactions		1			

Entanglement configuration	Single rope exiting right side of mouth and trailing about 80-90 feet behind flukes. Bitter end seen exiting about 2 feet out of left side of mouth.
Anchoring point(s)	Mouth
Gear configuration confidence	High
Remaining questions	None
Comments	Gear eventually shed



20 Jun 2000 NMFS



20 Jun 2000 NMFS

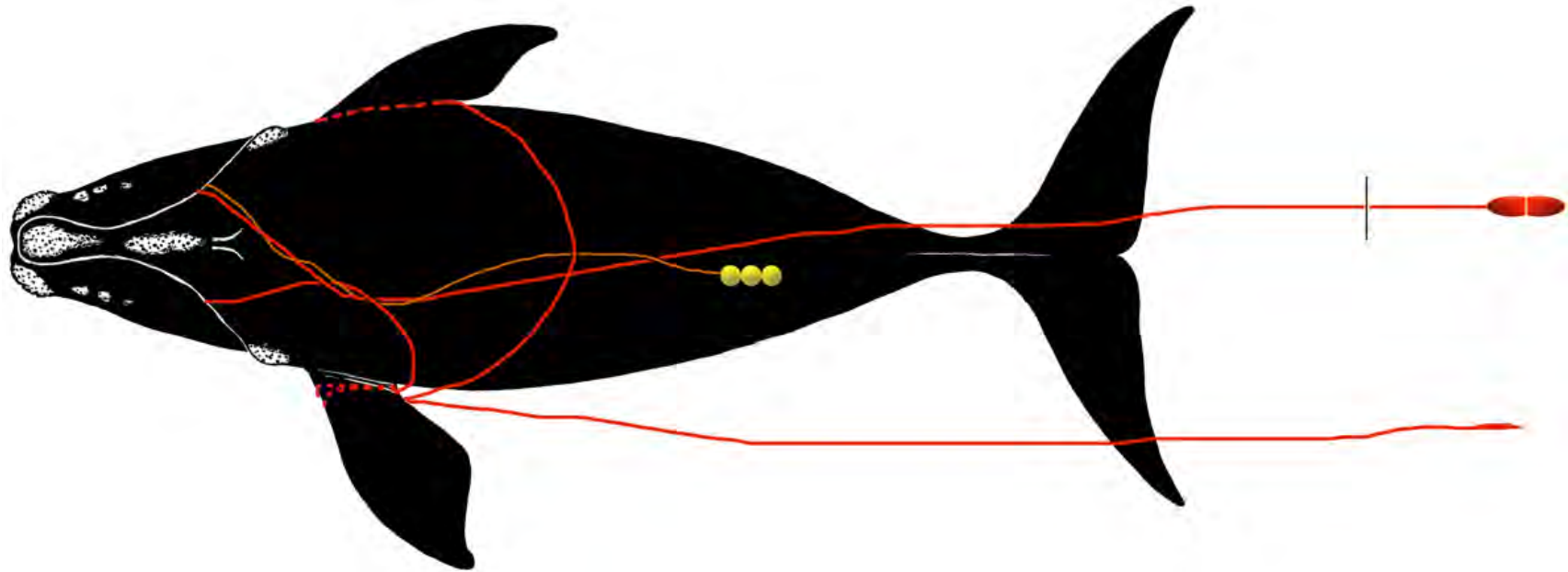


20 Jun 2000 NMFS

Species	Right Whale	Whale ID	Eg #2746
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Date first observed entangled (date seen prior without gear)		12 Jul 2000 (14 Sep 1999)	
Sex	Female	Birth year	1997
		Age at entanglement	3

Case study ID	PCCS	NMFS	GEAR ID
	WR-2000-12	E18-00	
Gear sample collected?	Yes	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	None	Low	Low	Low
Duration of time carrying gear		Minimum 3 days, maximum 308			
Disentangled?		Yes - 15 Jul 2000			
Status		Presumed dead - last sighted in 2017			
Number of prior entanglement interactions		1			

Entanglement configuration	Line exits both sides of the mouthline and twists together behind head; lines from this area lead to: two, joined bullet buoys trailing ~120 feet aft of the flukes; a series of three hard buoys aft of mid-body; a body wrap anchored between the flippers with a bitter end trailing ~20 feet aft of flukes
Anchoring point(s)	Mouthline and likely flipper(s)
Gear configuration confidence	High
Remaining questions	Wraps presumed at left flipper; unclear if line on left side wraps left flipper and/or enters left mouthline.
Comments	Gear was removed in stages over two weeks; remaining gear was shed soon after. Gear sent to DFO for analysis, no rope testing possible.



15 Jul 2000 NEA



15 Jul 2000 NEA



15 Jul 2000 NEA

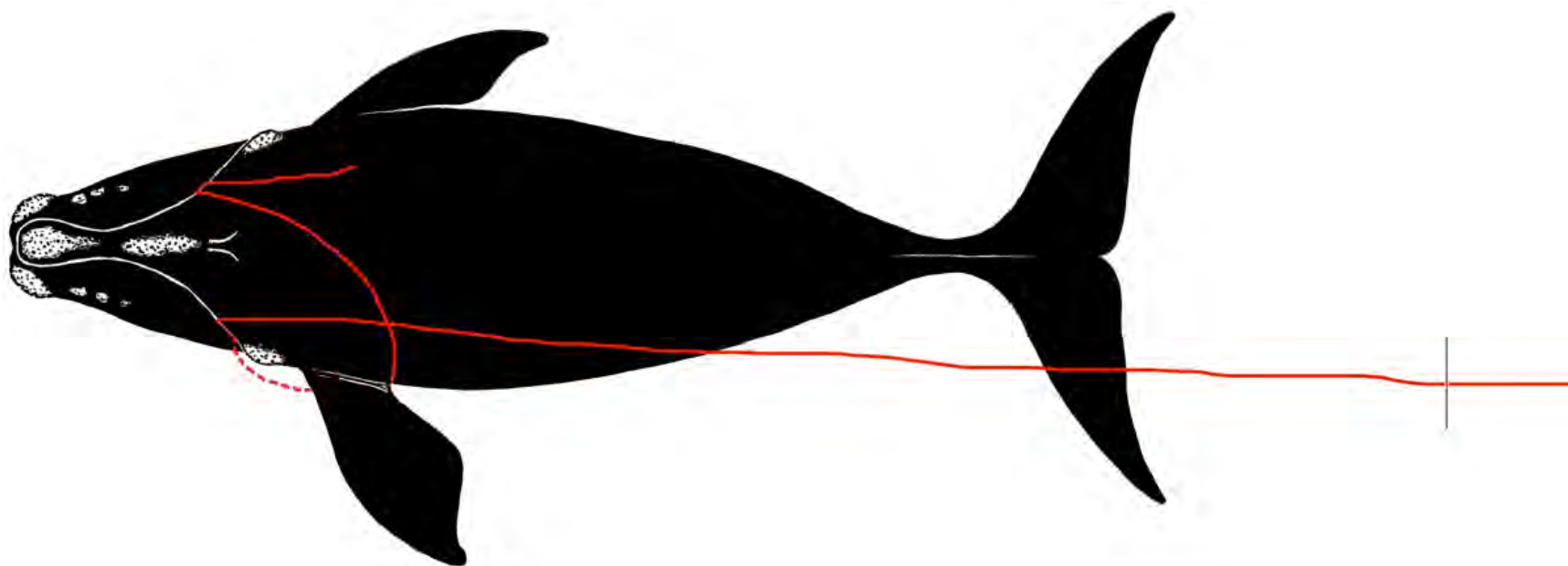


12 Jul 2000 NEA

Species	Right Whale	Whale ID	Eg #2223
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Date first observed entangled (date seen prior without gear)		25 Jul 2000 (07 Apr 2000)	
Sex	Female	Birth year	1992
		Age at entanglement	8

Case study ID	PCCS	NMFS	GEAR ID
	WR-2000-16	E24-00	J081800
Gear sample collected?	Yes	Gear type	



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	None	Low	Medium
Duration of time carrying gear		Minimum 280 days, maximum 425 days			
Disentangled?		Yes			
Status		Alive - Last sighted in 2022			
Number of prior entanglement interactions		5			

Entanglement configuration	One continuous piece of line entered and exited right mouthline, leading over body to left flipper; line then lead into and out of left mouthline, trailing to ~200feet aft of the flukes.
Anchoring point(s)	Mouthline
Gear configuration confidence	Low
Remaining questions	Unclear if flippers were wrapped at time of first sighting.
Comments	

Polymer type	Polysteel	
Gear component	Vertical line	
Rope diameter (inches)	1/2	
Breaking strength (lbs)	Tested	4 838
	New	5 000



02 Feb 2001 PCCS



04 Feb 2001 PCCS



04 Feb 2001 PCCS

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J081800

NMFS NO.

E24-08

Gear Description:

Long length of line - probably end line for trap gear.

Similar construction and surface wear pattern to J082500 except that was $\frac{9}{16}$ inch diameter. Note recovery dates are only separated by 5 days.



Rope description:

$\frac{1}{2}$ inch diameter 3-strand pale blue Polysteel fribulated filament with 12 rope yarns per strand.

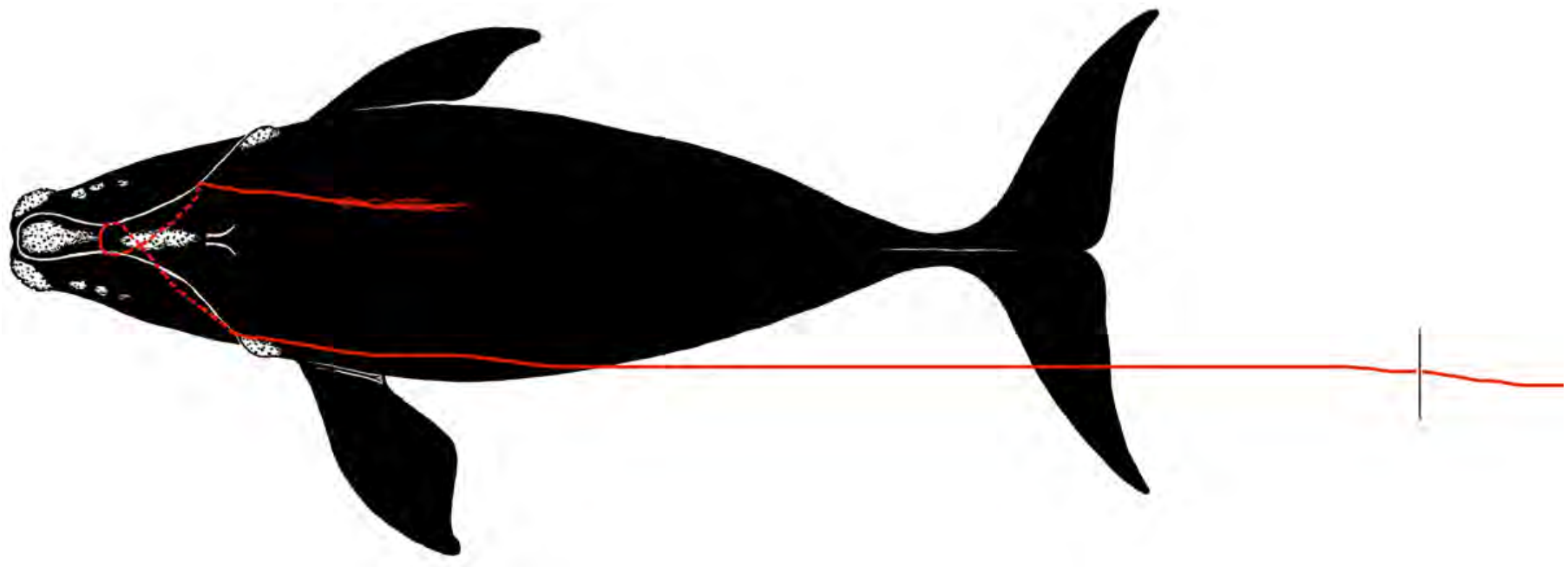
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
4,838 lbs (T)	5,000 lbs	Good



Species	Right Whale	Whale ID	Eg #1102
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Date first observed entangled (date seen prior without gear)		08 Jun 2001 (06 Aug 1998)			
Sex	Male	Birth year	Unknown	Age at entanglement	22+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2001-03	E06-01	J060801
Gear sample collected?	Yes	Gear type	Unknown



Reproductive prior to/after entanglement detection?		Yes/No			
Entanglement injury severity		Severe			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	High	Unknown	Low	Medium
Duration of time carrying gear		Minimum 100 days, maximum 1 136 days			
Disentangled?		No			
Status		Dead 16 Sep 2001			
Number of prior entanglement interactions		1			

Entanglement configuration	Single rostrum wrap with lines exiting right and left mouthline to 35 feet aft of the flukes and mid-back.
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	None
Comments	Addition of drag from a telemetry buoy to the left line shortened the right line but this was hindered by knots near the bitter end.

Polymer type		PP/Lead
Gear component		
Rope diameter (inches)		3/4 (0.7848)
Breaking strength (lbs)	Tested	7 639
	New	7 650

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). 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 Jun 2001 PCCS



09 Jun 2001 PCCS



10 Jul 2001 PCCS



30 Aug 2001 PCCS



06 Aug 2001 NMFS



30 Aug 2001 PCCS

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J060801

NMFS NO.

E6-01

Gear Description:

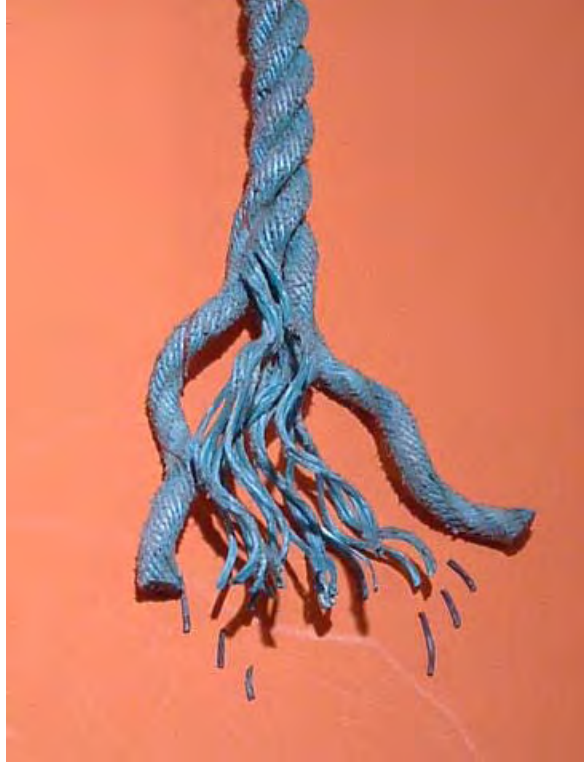
Polypro line with lead making it sinking, 36 ft long as seen in photo.



Rope description:

$\frac{3}{4}$ inch blue-green PP with tiny orange marker and 1.8mm dia. lead wire core. Specific gravity of 1.15 makes this a rope that sinks readily even though the fiber is buoyant. The lead core has broken into small segments, probably due to rope usage over haulers and/or sheaves.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
7,639 lbs (T)	7,500 lbs	Moderate

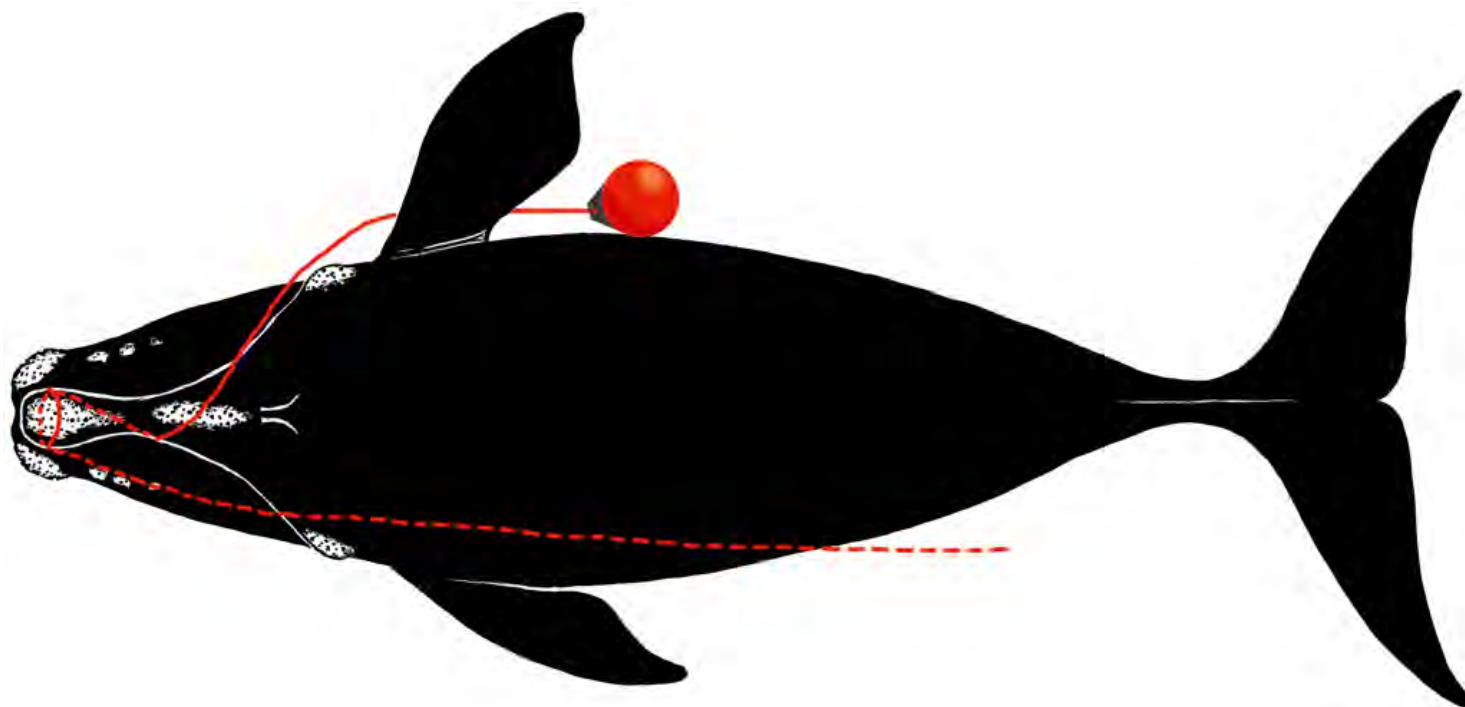


3-strand rope with 19 yarn ends per strand and lead core in center of each strand. Broken core segments seen in photo.

Species	Right Whale	Whale ID	Eg #2427
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Date first observed entangled (date seen prior without gear)		20 Jul 2001 (17 Mar 2001)			
Sex	Male	Birth year	1994	Age at entanglement	7

Case study ID	PCCS	NMFS	GEAR ID
	WR-2001-06	E09-01	J072001 a-b
Gear sample collected?	Yes	Gear type	Lobster offshore



Reproductive prior to/after entanglement detection?					
Entanglement injury severity		Severe			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Medium	High	Unknown	None	Medium
Duration of time carrying gear		Minimum 1 day, maximum 211 days			
Disentangled?		Yes - 20 Jul 2001			
Status		Presumed dead - last sighted in 2017			
Number of prior entanglement interactions		4			

Entanglement configuration	Single rostrum wrap with line exiting left mouthline, over rostrum and leading to a balloon float at right flipper. Line did not appear to wrap flipper; line exiting left mouthline was not documented.
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	Nature of bitter end (dashed line)
Comments	Baleen pulled from mouth

Polymer Type		PP/PET	Polysteel
Gear Component		Surface system	Surface system
Rope Diameter (inches)		9/16 (0.575)	5/8 (0.685)
Breaking Strength (lbs)	Tested	2 029	4 339
	New	5 000	9 000



28 Jul 2001 CCS



20 Jul 2001 CCS



28 Jul 2001 CCS



20 Jul 2001 CCS



20 Jul 2001 PCCS

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J072001

NMFS NO.

E9-01

Gear Description:

Part of mooring gear for a high flyer marker buoy system. The smaller line was PP/PET combo rope and the larger was 3-strand polysteel. Because of its short length no specimen was taken for the polysteel line.



Rope description:

J072001-a $\frac{9}{16}$ inch 3-strand PP/PET combo rope. Line relatively small but closer to $\frac{9}{16}$ than $\frac{1}{2}$ inch.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,029 lbs (T)	5,000 lbs	Fair

J072001-b $\frac{5}{8}$ inch Polysteel 3-strand rope. Line relatively large but closer to $\frac{5}{8}$ than $\frac{3}{4}$ inch.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
4,339 lbs (T)	9,000 lbs	Fair

Species	Right Whale	Whale ID	Eg #3040
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Date first observed entangled (date seen prior without gear)	13 Sep 2001 (24 Jul 2000)		
Sex	Male	Birth year	Unknown
		Age at entanglement	6+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2001-11	E20-01	
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	Low				
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Unknown	None	Low
Duration of time carrying gear	Minimum 280 days, maximum 695				
Disentangled?	No				
Status	Alive - last sighted in 2022				
Number of prior entanglement interactions	0				

Entanglement configuration	Short length of rope seen under left flipper and along left body. May have originated from right side of mouth.
Anchoring point(s)	Mouth
Gear configuration confidence	Moderate
Remaining questions	Not certain if rope also exited left mouth
Comments	

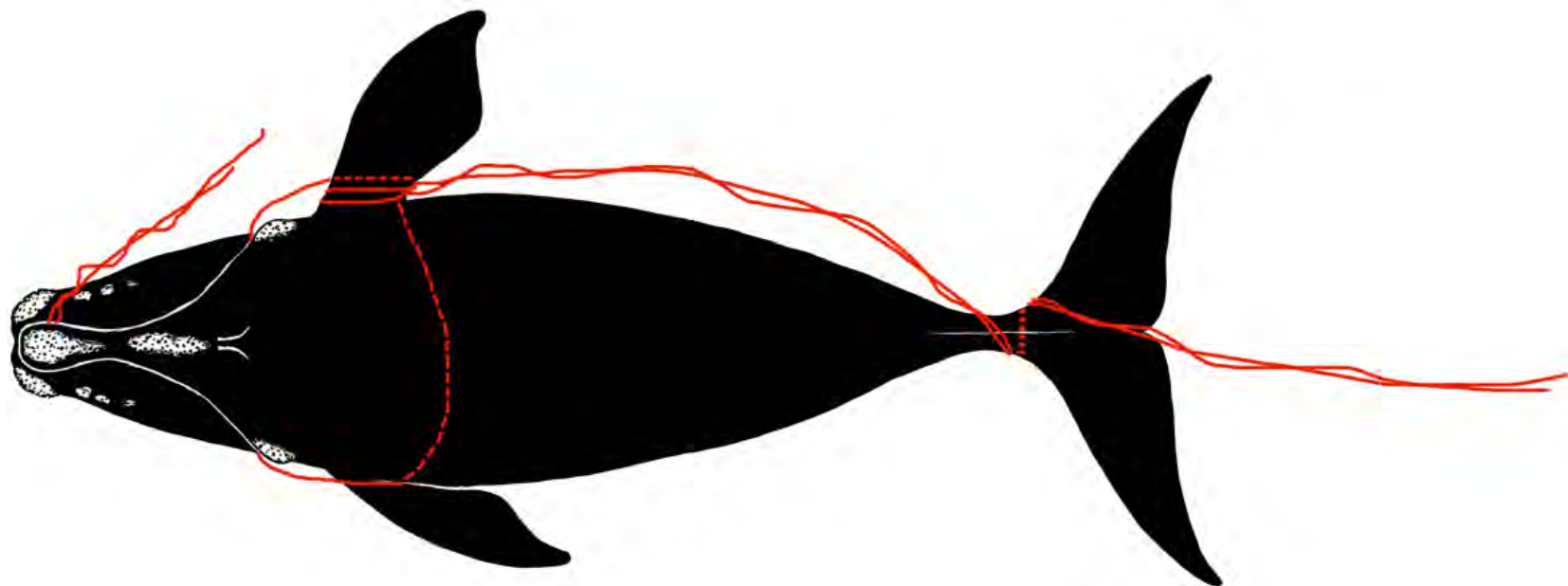


13 Sep 2001 NEA

Species	Right Whale	Whale ID	Eg #1238
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Date first observed entangled (date seen prior without gear)	25 Oct 2001 (25 Jun 2001)		
Sex	Male	Birth year	Unknown
Age at entanglement	20+		

Case study ID	PCCS	NMFS	GEAR ID
		E25-01	J102501 a-b
Gear sample collected?	Yes	Gear type	Canada, Danish Seine



Reproductive prior to/after entanglement detection?	Yes/No				
Entanglement injury severity	Severe				
Entanglement configuration risk	High				
Wound severity	Mouth	Head/Rostrum	Flippers	Body	Flukes
	Low	None	High	Medium	Medium
Duration of time carrying gear	Minimum 1 day, maximum 121 days				
Disentangled?	No				
Status	Dead 25 Oct 2001				
Number of prior entanglement interactions	2				

Entanglement configuration	Twisted line(s) entered the mouth and exited both sides at the gape; on the left side line passed over the flipper and under the chest to the right flipper; line exiting the right mouthline wrapped the flipper multiple times and lead to wraps at the peduncle.	
Anchoring point(s)	Mouthline, flipper, peduncle	
Gear configuration confidence	Moderate	
Remaining questions	Unclear what was going on inside the mouth.	
Comments	The assessment was based on observations at necropsy. By that time some gear may have been moved or removed. Animal may have drowned in gear.	

Polymer type	Polysteel/Lead	Polysteel
Gear component		
Rope diameter (inches)	3/4 (0.787)	3/4 (0.768)
Breaking strength (lbs)	Tested	8 776
	New	11 500
		8 392
		11 500



11 Nov 2001 DFO



11 Nov 2001 DFO



11 Nov 2001 DFO



11 Nov 2001 DFO

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J102501

NMFS NO.

E25-01

Gear Description:

Typical of Danish seine gear used in Gulf of St. Lawrence where gear was recovered. The lines included polysteel float rope and polysteel with lead that had negative buoyancy. A short length of unwound polysteel strand was with the gear but not analyzed.





Rope description:

J102501-a $\frac{3}{4}$ inch 3-strand polysteel with small lead core in each strand making it sinking with a specific gravity of 1.120. Moderate surface wear.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
8,776 lbs (T)	11,500 lbs	Good



J102501-b $\frac{3}{4}$ inch 3-strand polysteel with extensive surface wear.

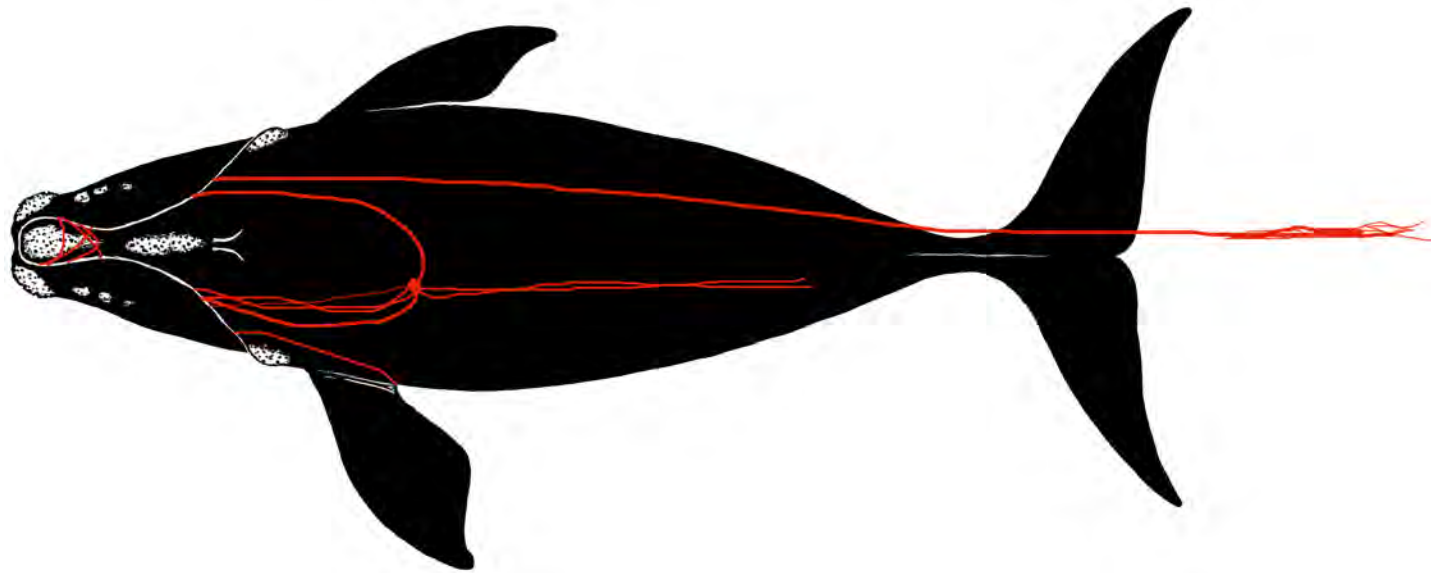
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
8,392 lbs (T)	11,500 lbs	Fair



Species	Right Whale	Whale ID	Eg #1424
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Date first observed entangled (date seen prior without gear)		12 Feb 2002 (17 Sep 2001)	
Sex	Male	Birth year	1980
		Age at entanglement	22

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-01	E02-02	
Gear sample collected?	No	Gear type	

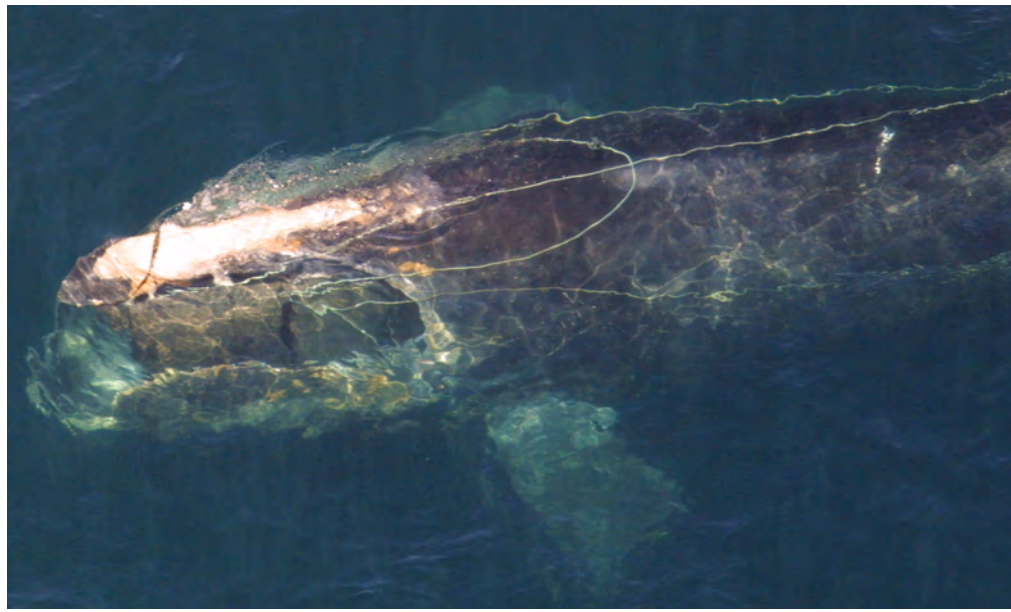


Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	High	Medium	None	Medium
Duration of time carrying gear		Minimum			
Disentangled?		No			
Status		Dead - 25 Mar 2007			
Number of prior entanglement interactions		1			

Entanglement configuration	Multiple lines (or unlaidd line) wrapping upper jaw four times, exiting mouth to loop of line(s) on back; bitter end exiting right mouth trailed to just aft of flukes.
Anchoring point(s)	Mouthline
Gear configuration confidence	Low
Remaining questions	Line exiting lower lip leads to unknown area (may wrap under chest to right mouth or wrap left flipper and re-enter left mouth); considering amount of line entering mouth, internal configuration remained unknown but presumed complex.
Comments	This entanglement persisted for five years with significant shedding of line including all but one wrap at jaw. The carcass of this whale, with its entanglement remaining, was discovered on 3/25/2007, cause of death could not be determined.



12 May 2002 NEFSC



18 Jun 2002 NEFSC



15 Sep 2004 NEA



15 Sep 2004 NEA

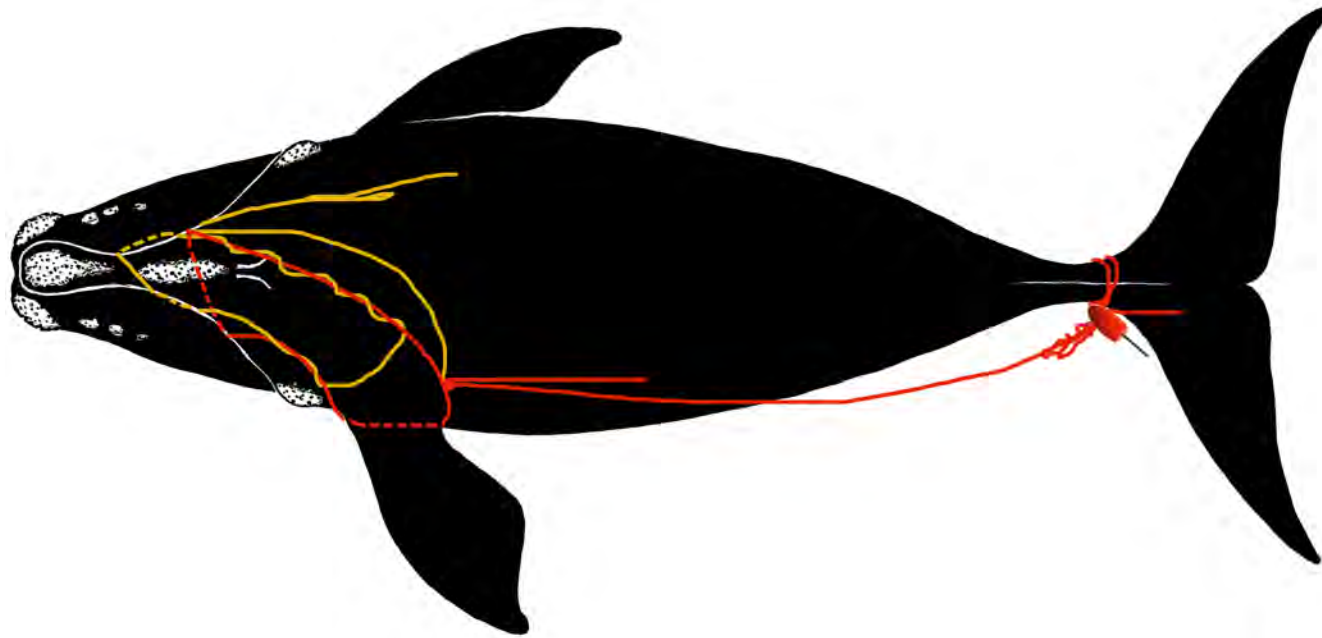


23 Mar 2007 DFO

Species	Right Whale	Whale ID	Eg #3120
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Date first observed entangled (date seen prior without gear)		07 Apr 2002 (23 Sep 2001)			
Sex	Male	Birth year	2001	Age at entanglement	1

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-04	E07-02	J040702 a-c
Gear sample collected?	Yes	Gear type	US northeast lobster insh



Reproductive prior to/after entanglement detection?					
Entanglement injury severity		Moderate			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/Rostrum	Flippers	Body	Flukes
	Medium	Medium	Unknown	Low	Medium
Duration of time carrying gear		Minimum 433 days, maximum 808 days			
Disentangled?		Yes, partially - 24 Aug 2002			
Status		Alive - Last sighted in 2022			
Number of prior entanglement interactions		1			

Entanglement configuration	Very complex and changed substantially over time; at worst whale had tight rostrum wrap and tight wrap behind head anchored by the right mouthline and left flipper; line trailed along flank to wraps and buoy at peduncle. Gear traced to Maine state waters.
Anchoring point(s)	Rostrum, mouthline, flipper, peduncle
Gear configuration confidence	Moderate
Remaining questions	Unclear if either flipper was truly wrapped.
Comments	Peduncle wrap was removed during disentanglement and remaining gear was shed by the whale over time.

Polymer type		PP	PP	Polypro/PET
Gear component				
Rope diameter (inches)		5/16 (0.323)	3/8 (0.402)	3/8 (0.390)
Breaking strength (lbs)	Tested	1 726	1 811	1 580
	New	1 700	2 430	2 600

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). 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



07 Apr 2002 PT



21 Aug 2002 NEA



21 Aug 2002 NEA



21 Aug 2002 NEA

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J070402

NMFS NO.

E7-02

Gear Description:

Lobster gear as seen in photo. There are 3 lines attached to a lobster buoy. A small, loosely laid, 3-strand PP mono line was knotted in line (c).





Sinking line (c) is connected to the buoy and then knotted to line (b). Line (a) is joined to (b) by a knot. Line (c) displays a tensile break (lower center of photo).

Rope description:

J070402 –a: $\frac{5}{16}$ inch 3-strand green PP mono knotted to line (c). End displayed a tensile failure and length leading up to this end displayed extensive surface abrasion. 3 rope yarns per strand.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,726 lbs (T)	1,700 lbs	Fair



070402 –b: $\frac{3}{8}$ inch 3-strand PP mono, purple, blue and orange. One end showed a tensile break

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,811 lbs (T)	2,430 lbs	Good



070402 –c: This is a $\frac{3}{8}$ inch PP/PET combo sinking line. PET is wrapped around blue mono poly in each rope yarn.

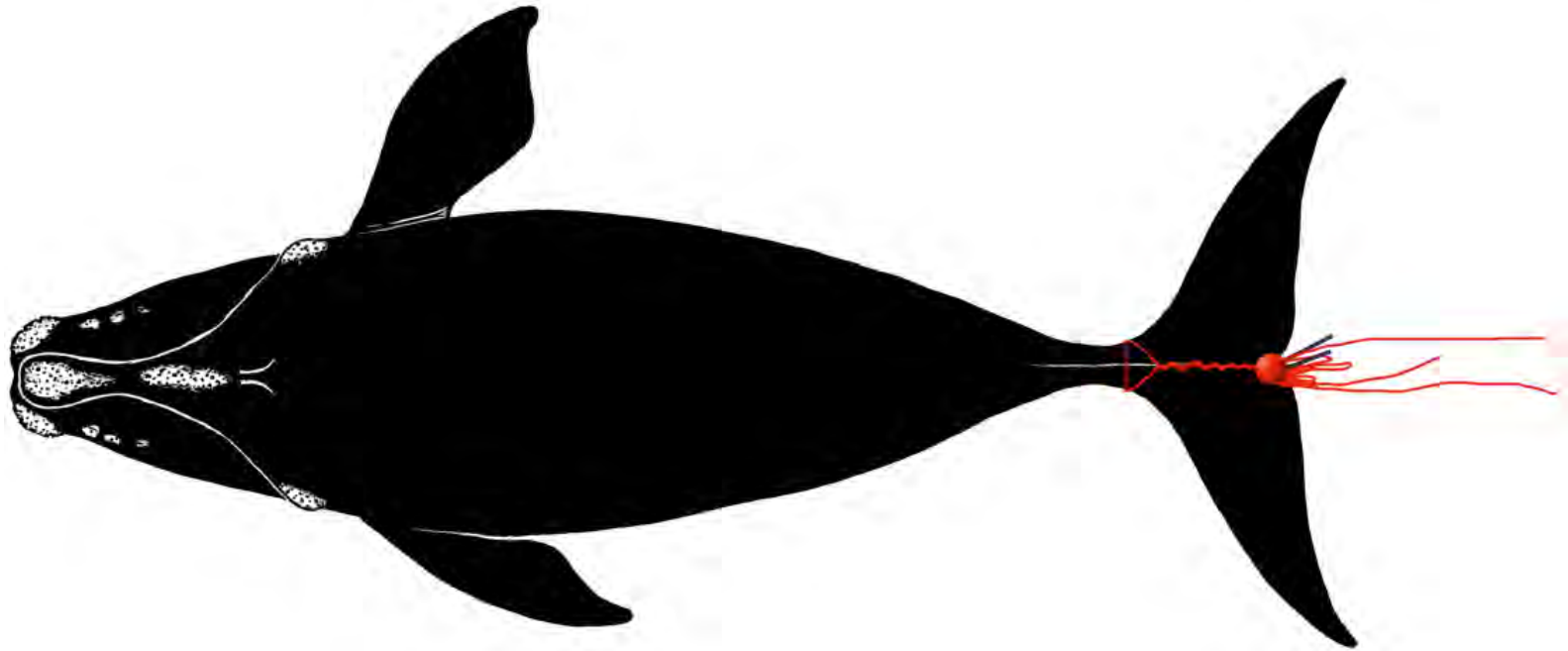
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,580 lbs (T)	2,600 lbs	Poor



Species	Right Whale	Whale ID	Eg #3107
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Date first observed entangled (date seen prior without gear)		06 Jul 2002 (08 Dec 2001)			
Sex	Female	Birth year	2001	Age at entanglement	1

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-12	E15-02	J070602
Gear sample collected?	Yes	Gear type	Lobster inshore



Reproductive prior to/after entanglement detection?		No/ No			
Entanglement injury severity		Severe			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Unknown	None	None	None	High
Duration of time carrying gear		Minimum 57 days, maximum 266 days			
Disentangled?		Yes - 01 Sep 2002			
Status		Dead - 13 Oct 2002			
Number of prior entanglement interactions		1			

Entanglement configuration	Single line wraps once around tailstock, tightly twisted back on self, leading to small, hard buoy, two buoy sticks and a tangle of line; little gear trailing
Anchoring point(s)	Tailstock
Gear configuration confidence	High
Remaining questions	None
Comments	Line was relatively thin and deeply embedded within tailstock. All gear was removed but whale found dead a month and a half later. Animal seen once in very poor condition after disentanglement and before found dead.

Polymer Type	Polysteel/PET	
Gear Component	Vertical	
Rope Diameter (inches)	3/8 (0.370)	
Breaking Strength (lbs)	Tested	2 254
	New	3 400



06 Jul 2002 BIWSC



01 Aug 2002 NEA



06 Jul 2002 BIWSC



01 Aug 2002 NEA



30 Aug 2002 NOAA

August 30, 2002 Courtesy of NOAA



13 Oct 2002 WHOI

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J070602

NMFS NO.

E15-02

Gear Description:

Long length of $\frac{3}{8}$ inch 3-strand PP/PET combo rope. Identified as inshore lobster gear.



Rope description:

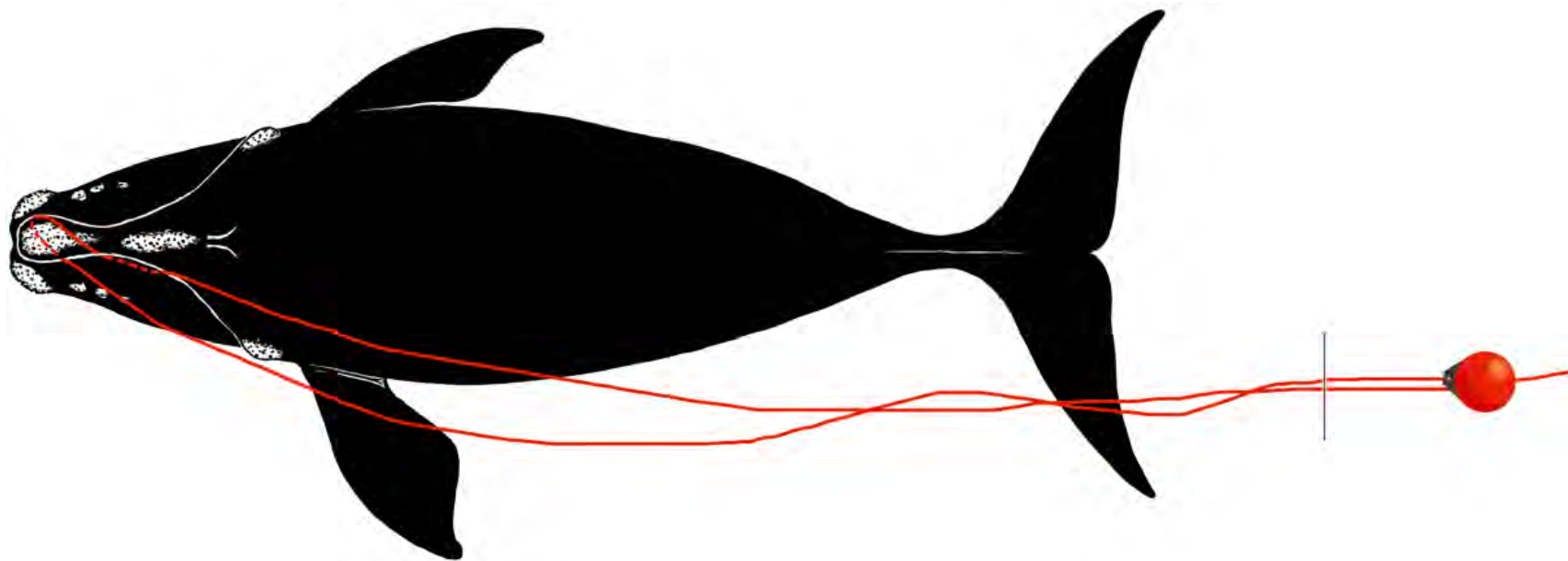
J070602: $\frac{3}{8}$ inch 3-strand Polysteel/PET combo rope with small red marker strand. PET wrapped around pale blue Polysteel. Some localized surface abrasion and kinks set into the line but generally in good condition. Hard lay with 4 rope yarns per strand.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,254 lbs (T)	3,400 lbs	Good

Species	Right Whale	Whale ID	Eg #1427
----------------	--------------------	-----------------	-----------------

Date first observed entangled (date seen prior without gear)		12 Jul 2002 (08 May 2002)			
Sex	Male	Birth year	1984	Age at entanglement	18

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-14	E17-02	J071202
Gear sample collected?	Yes	Gear type	Unknown



Reproductive prior to/after entanglement detection?					
Entanglement injury severity		Moderate			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Medium	Medium	Unknown	Low	Medium
Duration of time carrying gear		Minimum 9 days, maximum 485 days			
Disentangled?		No -Gear shed			
Status		Presumed dead - last sighted in 2017			
Number of prior entanglement interactions		4			

Entanglement configuration	Line caught in mouthline, far forward on the head and leading to ~150ft of trailing line and balloon buoy.
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	Flippers do not appear to have been involved but not possible to verify.
Comments	Whale was tagged for possible disentanglement but this was removed by recreational boater; whale seen months later gear-free.

Polymer type	Polysteel	
Gear component	Vertical line	
Rope diameter (inches)	5/8 (0.630)	
Breaking strength (lbs)	Tested	7 241
	New	9 000



12 Jul 2002 PCCS



15 Jul 2002 PCCS



16 Jul 2002 NMFS

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FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J071202

NMFS NO.

E17-02

Gear Description:

3 coils of $\frac{5}{8}$ inch polysteel 3-strand: coils of 50, 100 and 118 feet.

No photo

No information on origin.

Rope description:

$\frac{5}{8}$ inch pale blue Polysteel 3-strand.

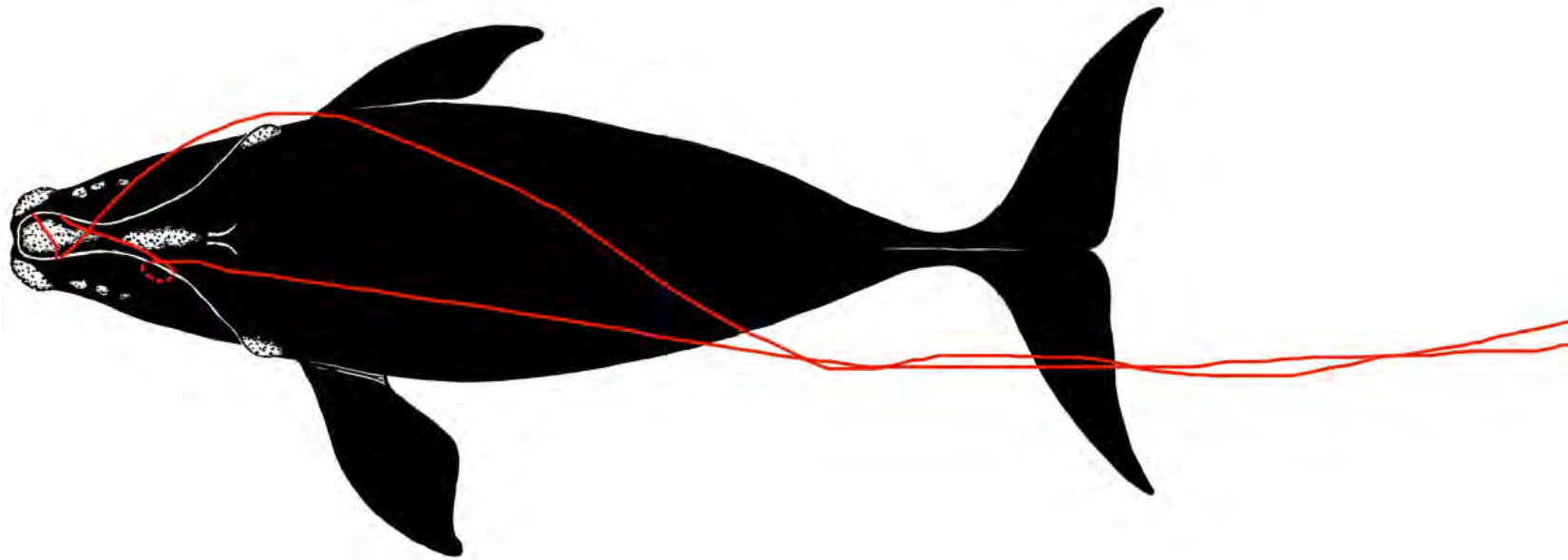
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
7,241 lbs (T)	9,000 lbs	Good



Species	Right Whale	Whale ID	Eg #2320
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Date first observed entangled (date seen prior without gear)		04 Aug 2002 (02 Aug 2002)			
Sex	Female	Birth year	Unknown	Age at entanglement	10+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-18	E21-02	
Gear sample collected?	No	Gear type	Canada, unknown gear



Reproductive prior to entanglement detection?		No			
Reproductive after entanglement detection?		Yes			
Entanglement severity		Moderate			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Medium	Medium	Unknown	Low	Medium
Duration of time carrying gear		Minimum 782 days, maximum 884 days			
Disentangled?		No			
Status		Alive until seen dead in 2015 unknown cause			
Number of prior entanglement interactions		2			

Entanglement configuration	Not well-understood and changed in detail over time; lines wrap rostrum at least three times, one of the wraps, tightly; line did not appear to involve the flippers and trailed the flukes an unknown distance. Likely occurred in/near Bay of Fundy
Anchoring point(s)	Rostrum
Gear configuration confidence	Low
Remaining questions	Nature of flippers
Comments	Extensive weaving of baleen was documented well into entanglement history; gear eventually shed.



04 Aug 2002 ECE



04 Aug 2002 ECE



24 Mar 2003 PCCS



24 Mar 2003 PCCS



28 Apr 2003 PCCS



19 Apr 2004 PCCS

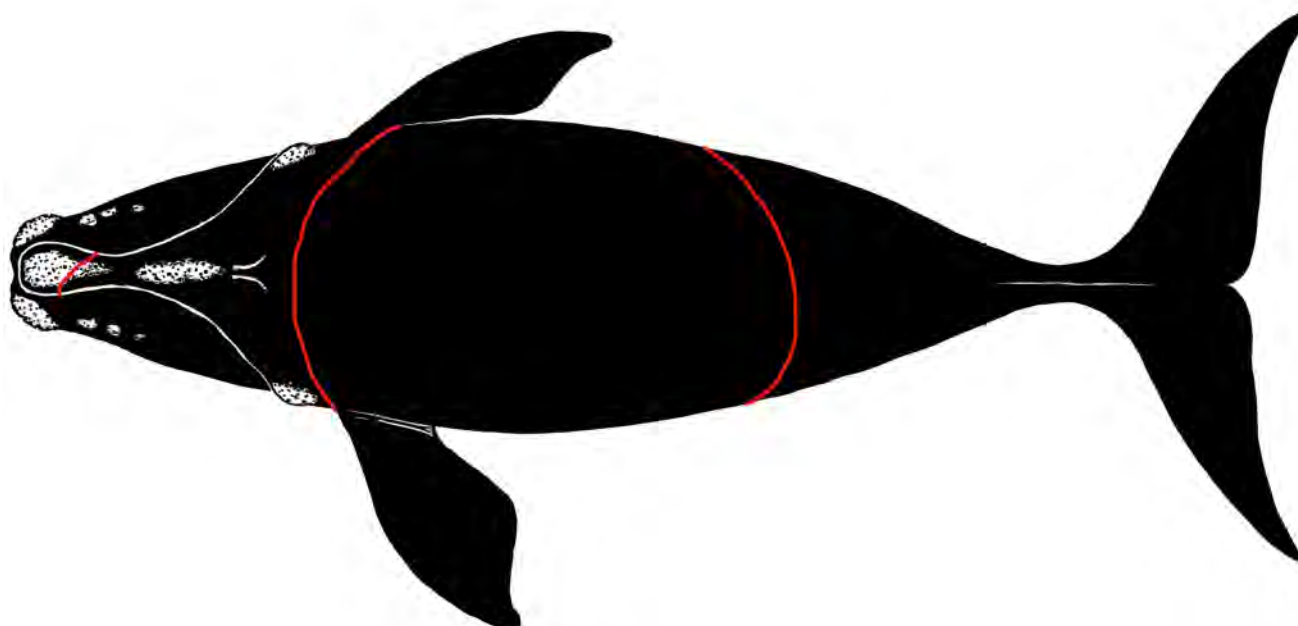


19 Apr 2004 PCCS

Species	Right Whale	Whale ID	Eg #1815
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Date first observed entangled (date seen prior without gear)		22 Aug 2002 (20 Sep 2001)			
Sex	Female	Birth year	Unknown	Age at entanglement	15+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-25	E27-02	
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?		Yes			
Reproductive after entanglement detection?		No			
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Unknown	High	Unknown	Medium	Low
Duration of time carrying gear		Minimum 1 day, maximum 335 days			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2002			
Number of prior entanglement interactions		2			

Entanglement configuration	Not well-understood; tight rostrum wrap, tight wrap behind head and wrap of back.
Anchoring point(s)	Rostrum, body
Gear configuration confidence	Low
Remaining questions	Whereabouts of bitter end entering and exiting the mouthline; nature of flippers, trailing line.
Comments	Whale has not been seen since entanglement sighting.



22 Aug 2002 NEFSC



22 Aug 2002 NEFSC



22 Aug 2002 NEFSC



22 Aug 2002 NEFSC

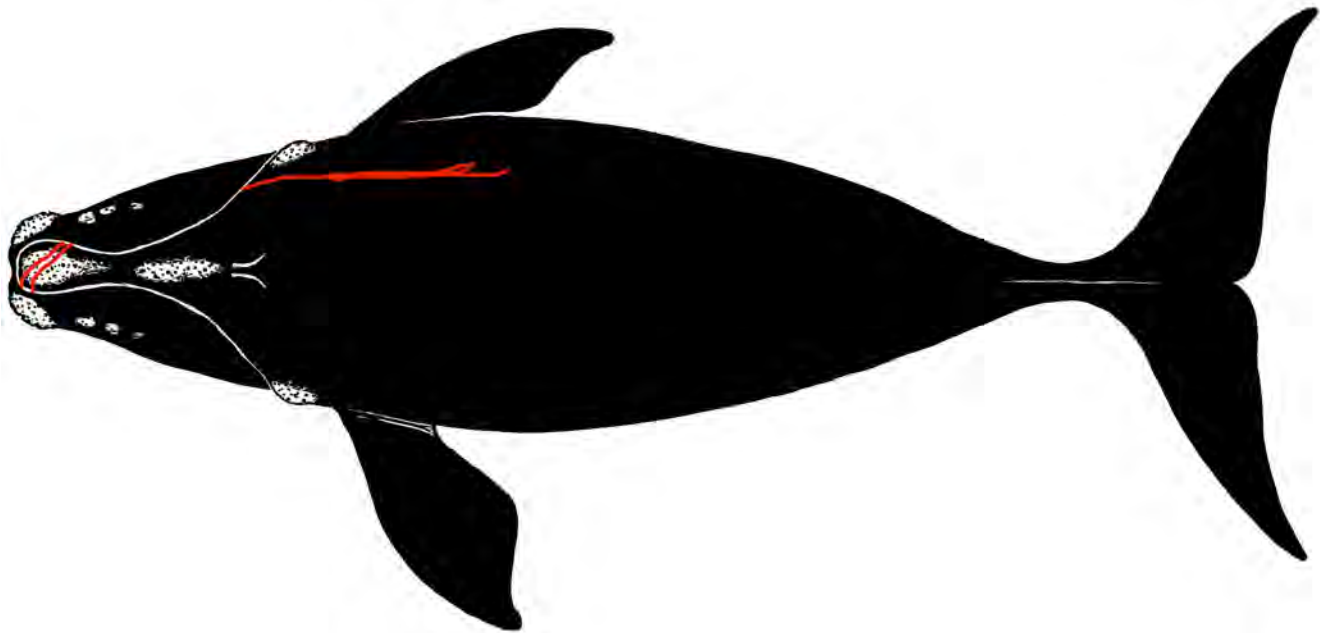


22 Aug 2002 NEFSC

Species	Right Whale	Whale ID	Eg # 2040
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Date first observed entangled (date seen prior without gear)		24 Aug 2002 (03 Jul 2002)	
Sex	Female	Birth year	1990
		Age at entanglement	12

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-21	E25-02	
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?		Yes/Yes			
Reproductive after entanglement detection?		Yes			
Entanglement severity		Moderate			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Unknown	Low	Medium
Duration of time carrying gear		Minimum 14 days, maximum 74			
Disentangled?		No			
Status		Alive - Last sighted in 2022			
Number of prior entanglement interactions		2			

Entanglement configuration	Not well-understood; 1-2 tight rostrum wraps with some trailing line exiting right mouthline.
Anchoring point(s)	Rostrum
Gear configuration confidence	Low
Remaining questions	Whereabouts of bitter ends entering and exiting the mouthline; nature of flippers, trailing line.
Comments	Entanglement was likely more extensive prior to discovery; baleen pulled from mouth.



24 Aug 2002 CG



24 Aug 2002 CG

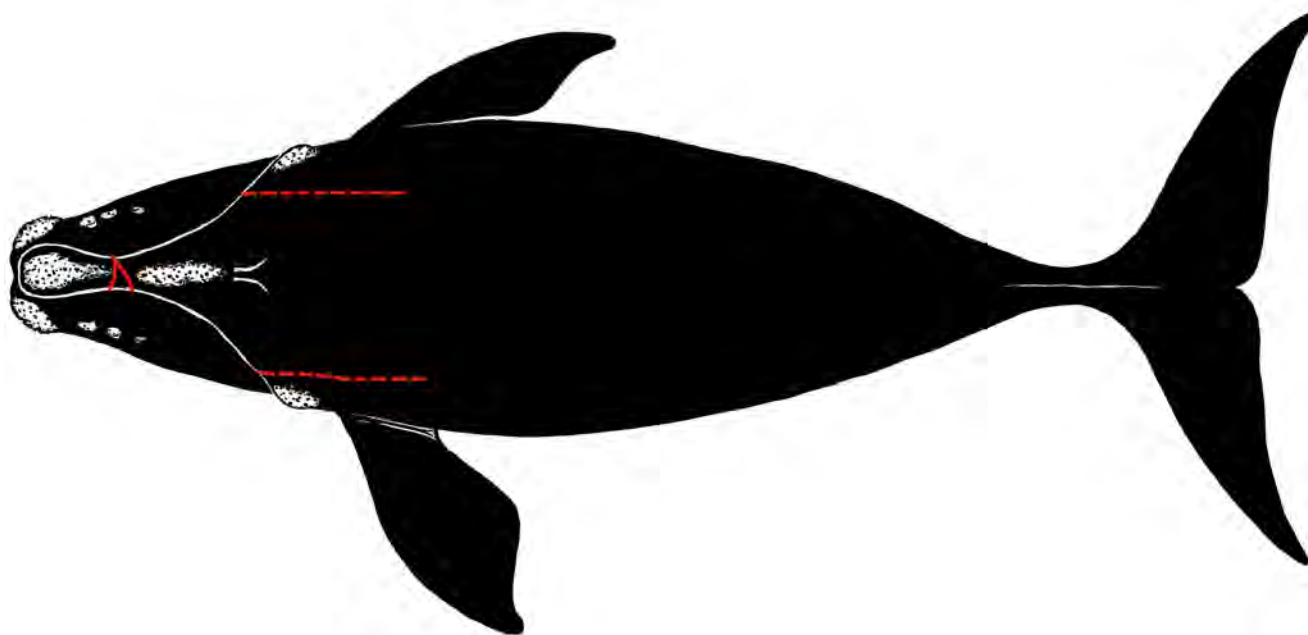


17 Sep 2002 NEA

Species	Right Whale	Whale ID	Eg #3210
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Date first observed entangled (date seen prior without gear)		28 Aug 2002 (Unknown)			
Sex	Male	Birth year	Unknown	Age at entanglement	1+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2002-27	E29-02	
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	High	Unknown	None	Low
Duration of time carrying gear		Minimum 1092 days, maximum unknown			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2005			
Number of prior entanglement interactions		0			

Entanglement configuration	Two wraps of line tight around rostrum; no trailing line seen.
Anchoring point(s)	Rostrum
Gear configuration confidence	Low
Remaining questions	Whereabouts of bitter ends entering and exiting the mouthline.
Comments	Considered potentially lethal due to constricting wraps of line around rostrum.



30 Aug 2002 NEA



25 Sep 2002 NEA



30 Aug 2002 NEA



25 Sep 2002 NEA



30 Aug 2002 NEA

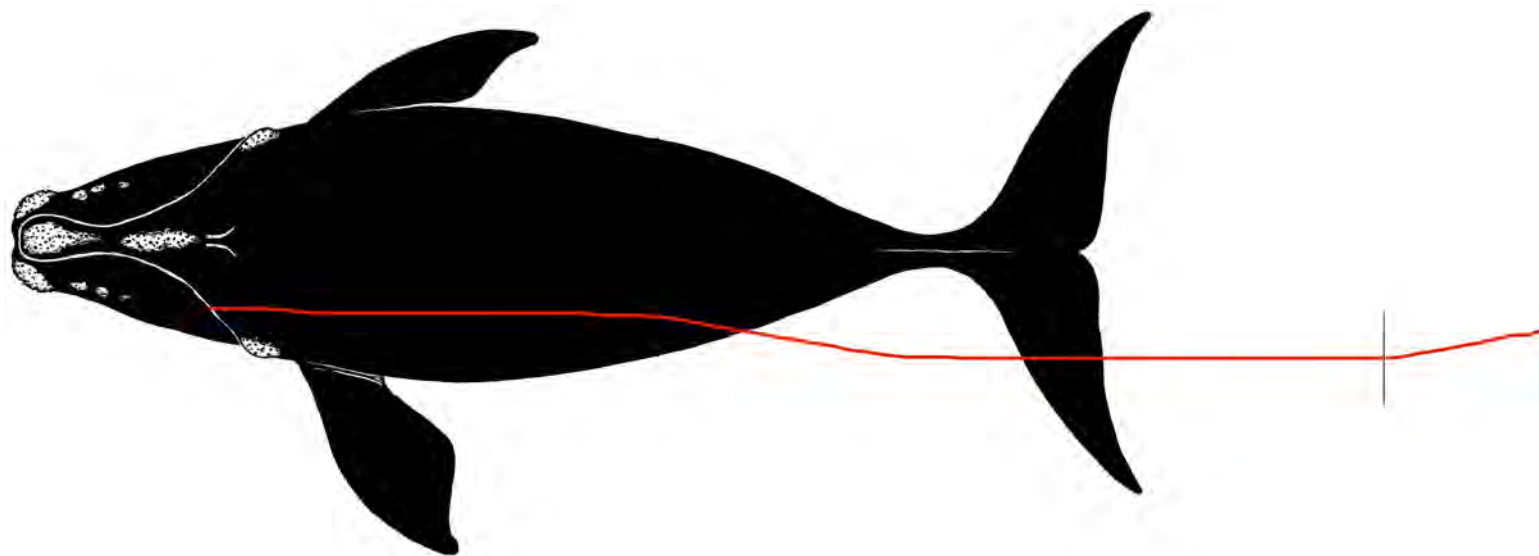


19 May 2004 NEFSC

Species	Right Whale	Whale ID	Eg #2240
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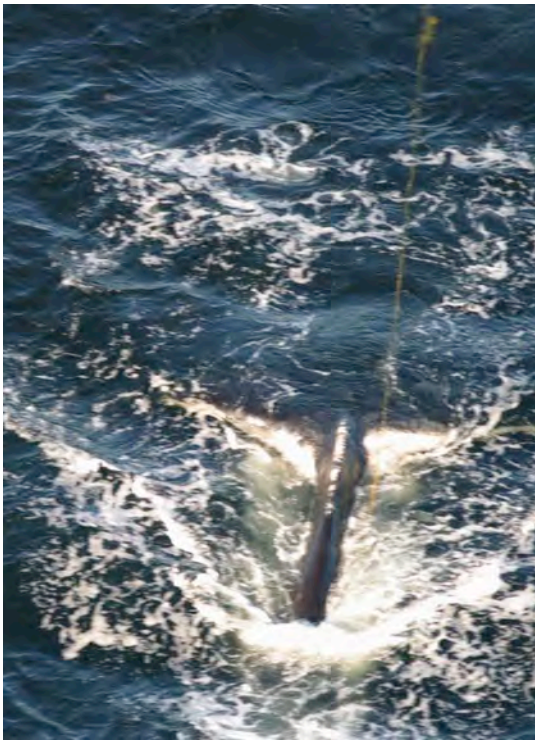
Date first observed entangled (date seen prior without gear)		14 Jan 2003 (01 Sep 2002)			
Sex	Female	Birth year	Unknown	Age at entanglement	12+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2003-01	E01-03	
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?		Yes			
Reproductive after entanglement detection?		No			
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Medium	Low	Unknown	None	High
Duration of time carrying gear		Minimum 1 day, maximum 254 days			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2005			
Number of prior entanglement interactions		3			

Entanglement configuration	Line caught in mouthline and trailing ~ 50 feet aft of flukes.
Anchoring point(s)	Mouthline
Gear configuration confidence	Low
Remaining questions	Whereabouts of second bitter end.
Comments	The second bitter end may be trapped by a knot in the baleen; unseen but exiting the mouthline or ingested. Gear shed by next sighting in May 2003 but animal seen in poor condition by August 2003 and remained in poor condition through 2005 when last seen.



14 Jan 2003 FWRI



14 Jan 2003 FWRI



15 May 2003 NEFSC



14 Jan 2003 FWRI

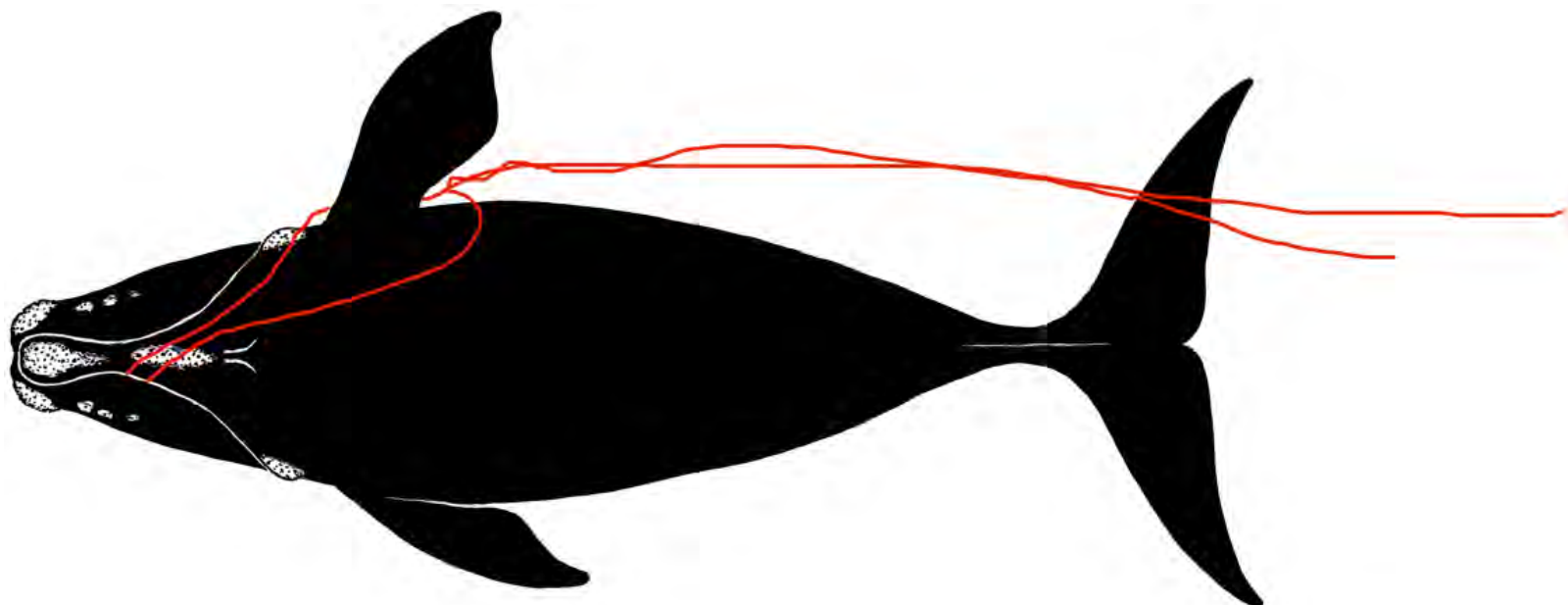


5 Mar 2004 PCCS

Species	Right Whale	Whale ID	Eg #1430
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Date first observed entangled (date seen prior without gear)		27 Mar 2003 (01 Aug 2002)			
Sex	Female	Birth year	Unknown	Age at entanglement	20+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2003-04	E05-03	
Gear sample collected?	No	Gear type	



Reproductive prior to entanglement detection?		Yes			
Reproductive after entanglement detection?		No			
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	High	None	Medium
Duration of time carrying gear		Minimum 72 days, maximum 309			
Disentangled?		No			
Status		Presumed dead - Last sighted in 2003			
Number of prior entanglement interactions		2			

Entanglement configuration	Continuous piece of line caught in baleen of left mouth folds around right flipper and trails unknown distance aft of flukes.
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	There is the possibility that line wrapped right flipper. Flipper is white.
Comments	Whale has not been seen since entanglement year



20 May 2003 NEFSC



07 Jun 2003 NEFSC

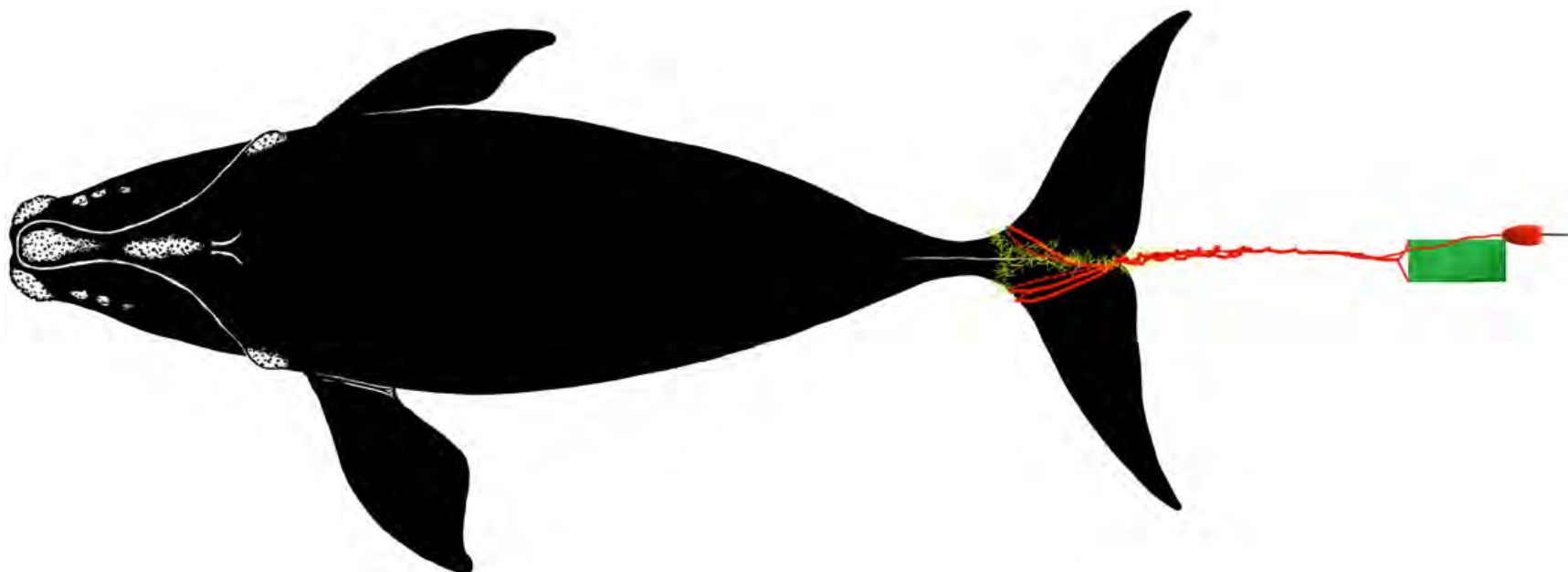


07 Jun 2003 NEFSC

Species	Right Whale	Whale ID	Eg #3392
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Date first observed entangled (date seen prior without gear)		9 Jul 2003 (Unknown)			
Sex	Male	Birth year	Unknown	Age at entanglement	1+

Case study ID	PCCS	NMFS	GEAR ID
	WR-2003-12	E15-03	J070903
Gear sample collected?	Yes	Gear type	Lobster and unknown



Reproductive prior to/after entanglement detection?					
Entanglement injury severity			Moderate		
Entanglement configuration risk			High		
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	None	None	Unknown	None	Medium
Duration of time carrying gear		Minimum 1 day, maximum unknown			
Disentangled?		Yes - 09 Jul 2003			
Status		Alive - Last sighted in 2022			
Number of prior entanglement interactions		0			

Entanglement configuration	Single pot and buoy line wrapped around both fluke blades; heavy gauge monofilament netting wrapping tailstock.
Anchoring point(s)	Fluke
Gear configuration confidence	High
Remaining questions	None
Comments	Considered potentially lethal due to constricting wraps of line around flukes.

Polymer type	PP/PET	
Gear component	Vertical	
Rope diameter (inches)	3/8 (0.394) rope and 5/16 (0.313) monofilament	
Breaking strength (lbs)	Tested	1 717
	New	2 600



09 Jul 2003 CWR



09 Jul 2003 CWR



09 Jul 2003 CWR

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

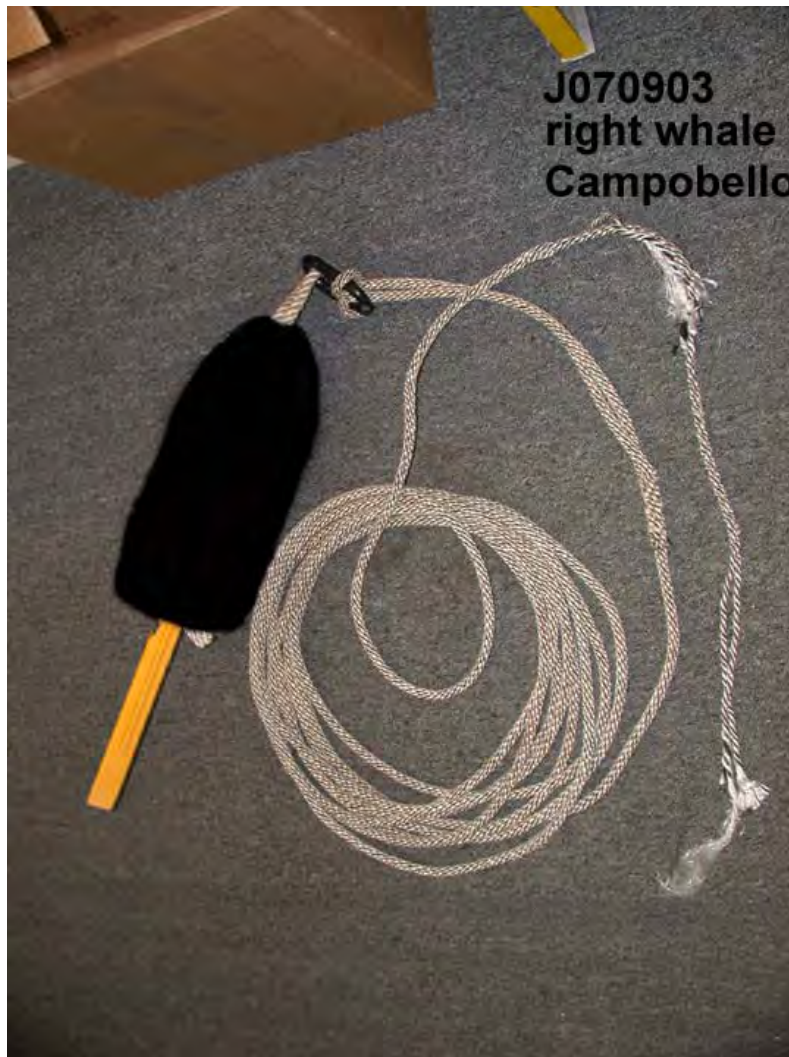
J070903

NMFS NO.

E15-03

Gear Description:

Long length of 'Easy Haul' attached to a lobster buoy. The line is in excellent condition



Rope description:

A $\frac{3}{8}$ inch 3-strand PP/PET line with 3 white PET rope yarns and 3 black PP mono rope yarns per strand (trade name 'Easy Haul'). The line is an oversized $\frac{3}{8}$ inch. It is a sinking line, SpGr 1.135,

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,717 lbs (T)	2,600 lbs	Very good



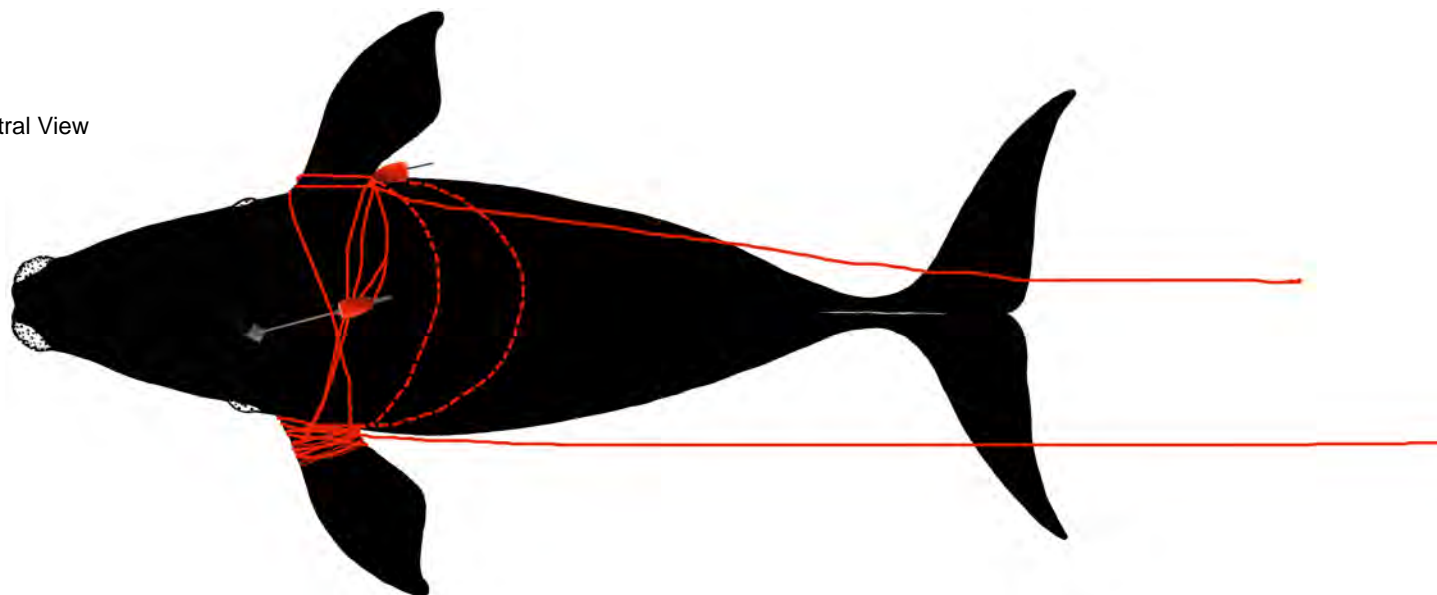
J070903 PP/PET combo ('Easy Haul')

Species	Right Whale	Whale ID	Eg #3346
----------------	--------------------	-----------------	-----------------

Date first observed entangled (date seen prior without gear)		17 Mar 2004 (30 Jan 2004)	
Sex	Male	Birth year	2003
		Age at entanglement	1

Case study ID	PCCS	NMFS	GEAR ID
	WR-2004-02	E02-04	J031704
Gear sample collected?	Yes	Gear type	U.S. northeast lobster insh

Ventral View



Reproductive prior to/after entanglement detection?					
Entanglement injury severity			Severe		
Entanglement configuration risk			High		
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	None	None	High	Low	Medium
Duration of time carrying gear		Minimum 4 057 days, maximum 4 103			
Disentangled?		Yes - partial, 19 Mar 2004			
Status		Presumed dead - Last sighted in 2015			
Number of prior entanglement interactions		1			

Entanglement configuration	Whale has extensive wraps of line at right flipper with lines extending along chest to less wraps at left flipper; two lines wrap over the back anchored by flipper wraps; line trails to 15ft and 30ft behind flukes; buoy(s) and highflier pinned to chest. Some of the gear traced to Maine state waters.
Anchoring point(s)	Flippers, body
Gear configuration confidence	High
Remaining questions	None
Comments	Body wraps resolved through disentanglement; as of 2015, wraps at right flipper persist.

Polymer type	Polypro/PET	
Gear component	Vertical	
Rope diameter (inches)	3/8 (0.406)	
Breaking strength (lbs)	Tested	1 597
	New	2 600



17 Mar 2004 WT



19 Mar 2004 WT



15 Feb 2008 FWRI

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J031704

NMFS NO.

E02-04

Gear Description:

The gear consisted of a two types of sinking line but only one length was analyzed. One end of this line showed evidence of a tensile break.



Rope description:

$\frac{3}{8}$ inch 3-Strand PP/PET blend. Two rope yarns with mono filament polypropylene wrapped with multifilament polyester. The third strand has two rope yarns the same as above and one rope yarn all green polypropylene monofilament. The line has considerable surface abrasion that is uniform along its length.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,597 lbs (T)	2,600 lbs	Poor

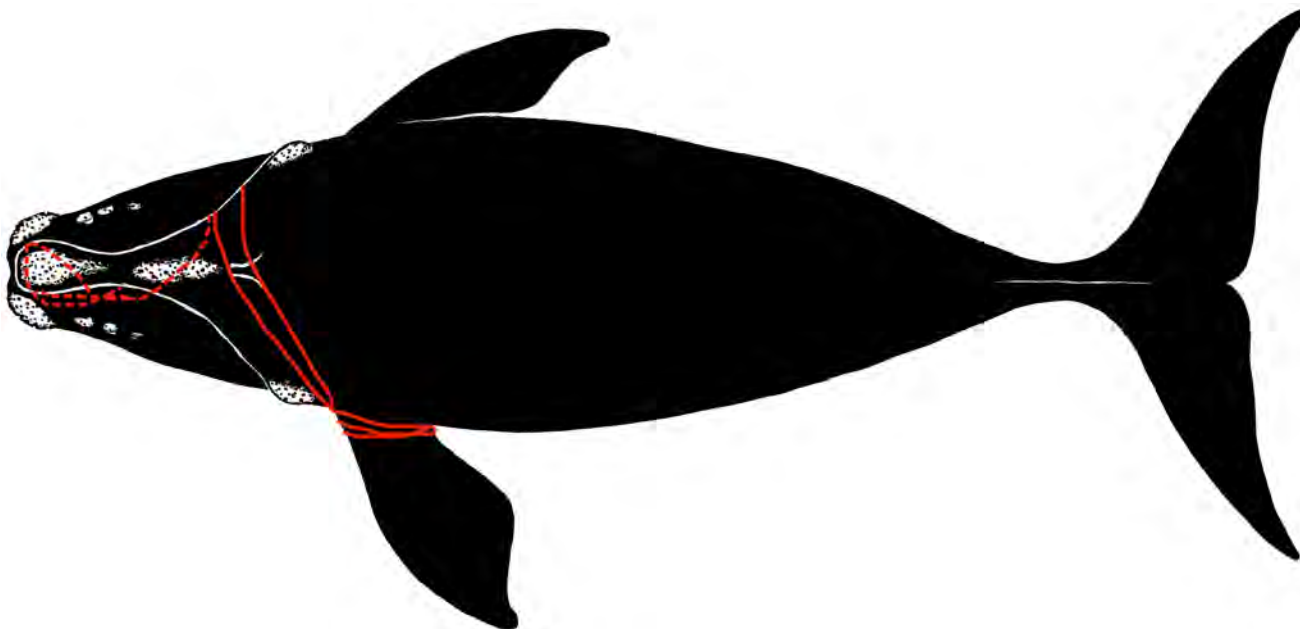


J031704 $\frac{3}{8}$ 3-Strand PP/PET blend. Note uniform surface abrasion.

Species	Right Whale	Whale ID	Eg #2301
----------------	--------------------	-----------------	-----------------

Date first observed entangled (date seen prior without gear)		06 Sep 2004 (18 Sep 2003)	
Sex	Female	Birth year	1993
		Age at entanglement	11

Case study ID	PCCS	NMFS	GEAR ID
	WR-2004-21	E20-04	J090604 a-c
Gear sample collected?	Yes	Gear type	Unknown



Reproductive prior to/after entanglement detection?		Yes/No			
Entanglement injury severity		Severe			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	None	High	High	Medium	Medium
Duration of time carrying gear		Minimum 93 days, maximum 530 days			
Disentangled?		No			
Status		Dead 03 Mar 2005			
Number of prior entanglement interactions		3			

Entanglement configuration	Line wrapping over head from right mouthline to left flipper wraps; line essentially cleated from baleen on right to flipper on left.
Anchoring point(s)	Mouthline, flipper
Gear configuration confidence	Moderate
Remaining questions	The extent of wrapping at left flipper unknown; bitter ends cannot be accounted for and unclear if any line was trailing.
Comments	Extensive weaving of line through baleen was documented at necropsy.

Polymer type		PP	PP/PET	PP/PET
Gear component				
Rope diameter (inches)		3/8 (0.394)	1/2 (0.472)	7/16 (0.425)
Breaking strength (lbs)	Tested	486	900	700
	New	2 430	4 500	3 500



06 Sep 2004 NEA



06 Sep 2004 NEA



04 Mar 2005 WHOI



04 Mar 2005 WHOI



04 Mar 2005 WHOI



04 Mar 2005 WHOI

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J051099

NMFS NO.

E4-99

Gear Description:

Note on gear indicated use with gill net operation. As seen in photo, the separate segment on the left has been unlaidd and one end indicates a tensile break.

The gear consisted of a large length of the 3-strand polypropylene rope described below and a segment of $\frac{5}{8}$ inch combo rope too short to analyze.



Gear set possibly associated with gill netting.

Rope description:

J051099-b: Short segment of $\frac{5}{8}$ inch combo rope

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
5,440 lbs (A)	6,800 lbs	Good

Rope description:

J051099-a: 1/2 inch 3-Strand, yellow PP monofilament with one blue rope yarn in one strand.

There are 7 rope yarns per strand including marker. Little wear, some broken filaments along length. Some of the line was in better condition as seen in the lower photo.

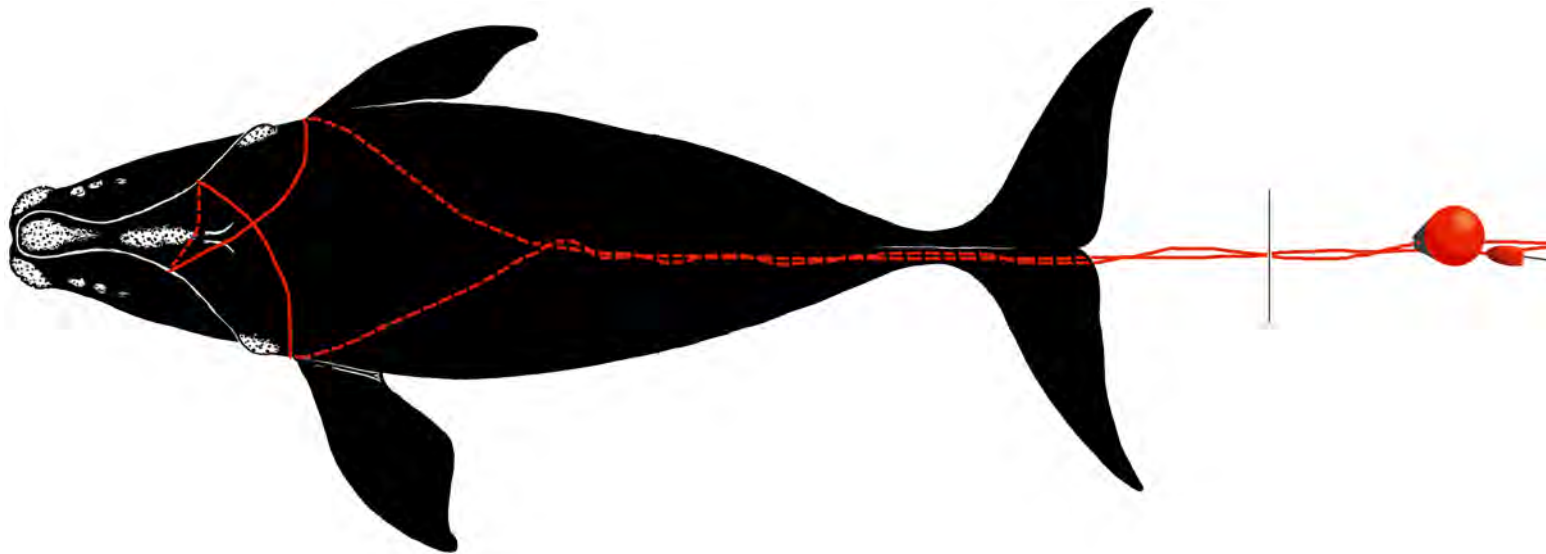
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,757 lbs (T)	3,780 lbs	Fair



Species	Right Whale	Whale ID	Eg #3314
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Date first observed entangled (date seen prior without gear)		6 Dec 2004 (24 Sep 2004)	
Sex	Female	Birth year	2003
		Age at entanglement	2

Case study ID	PCCS	NMFS	GEAR ID
	WR-2004-19	E26-04	J120604 a-c
Gear sample collected?	Yes	Gear type	Canada lobster



Reproductive prior to/after entanglement detection?		No/ No			
Entanglement injury severity		Severe			
Entanglement configuration risk		High			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Medium	Medium	Unknown	High	High
Duration of time carrying gear		Minimum 9 days, maximum 96 days			
Disentangled?		Yes - 31 Dec 2004			
Status		Alive - last sighted in 2018			
Number of prior entanglement interactions		1			

Entanglement configuration	Line through mouth with both halves crossing over head and down to forward insertion of flippers; line twists together beneath the whale and trails over ~400ft to balloon float and bullet buoy. Gear traced to Bay of Fundy.
Anchoring point(s)	Mouthline
Gear configuration confidence	High
Remaining questions	None
Comments	Entanglement remarkably symmetrical

Polymer Type	Polysteel	Polysteel	PP/PET/Lead
Gear Component	Vertical	Vertical	Vertical
Rope Diameter (inches)	7/16 (0.413)	3/8 (0.374)	3/8 (0.394)
Breaking Strength (lbs)	Tested	2 431	2 592
	New	4 100	3 400

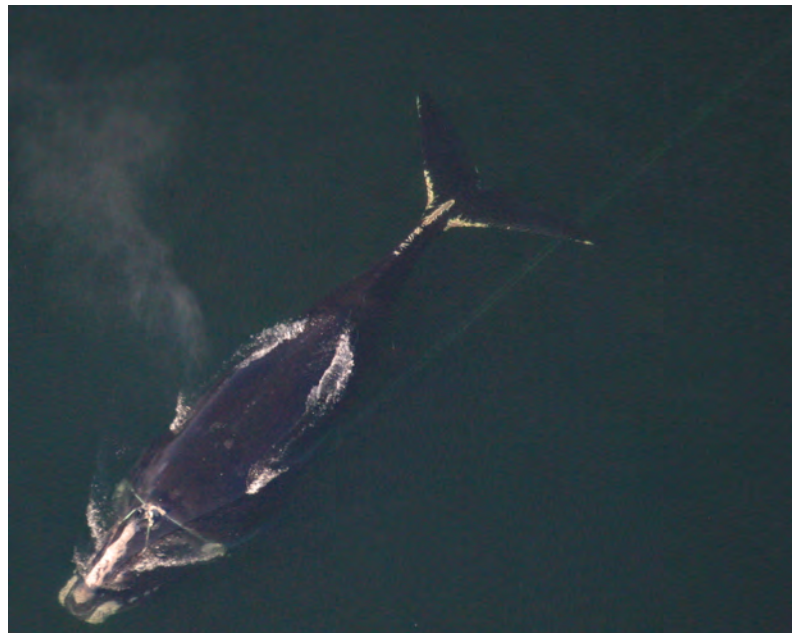
This case study was developed under NOAA Award # NA09NMF4520413 to the Consortium for Wildlife Bycatch Reduction, administered at the New England Aquarium, Boston, MA, USA (available at www.bycatch.org). See: Knowlton, A.R., J. Robbins, S. Landry, H.A. McKenna, S.D. Kraus, T. B. Werner. 2015. Effects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



21 Dec 2004-WT



21 Dec 2004-WT



30 Dec 2004-WT

DATA SHEET

FORENSIC ANALYSIS OF ROPES WHALE ENTANGLEMENT PROJECT

SPECIMEN ID NO.

J120604

NMFS NO.

E26-04

Gear Description:

Identified as lobster end line buoy mooring. Contained 3 lines, 2 Polysteel 3-strand and one lead line (very short length present)



Rope descriptions:

J120604-a $\frac{7}{16}$ inch white Polysteel 3-strand with one blue marker yarn in one strand. 10 rope yarns per strand. Float rope.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,431 lbs (T)	4,100 lbs	Good



J120604-a

J120604-b $\frac{3}{8}$ inch pale blue Polysteel 3-strand with one orange marker yarn in one strand. 11 rope yarns per strand. Float rope.

Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
2,592 lbs (T)	3,400 lbs	Good



J120604-b

J040901-c $\frac{3}{8}$ inch diameter 12 strand braided leadline with braid over a 0.21 diameter core containing lead wire. Braid consisted of 4 strands black mono polypropylene, 4 strands green mono polypropylene and 4 strands of white multi polyester. This was tucked into the end line at intervals to keep it from floating at the surface.

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

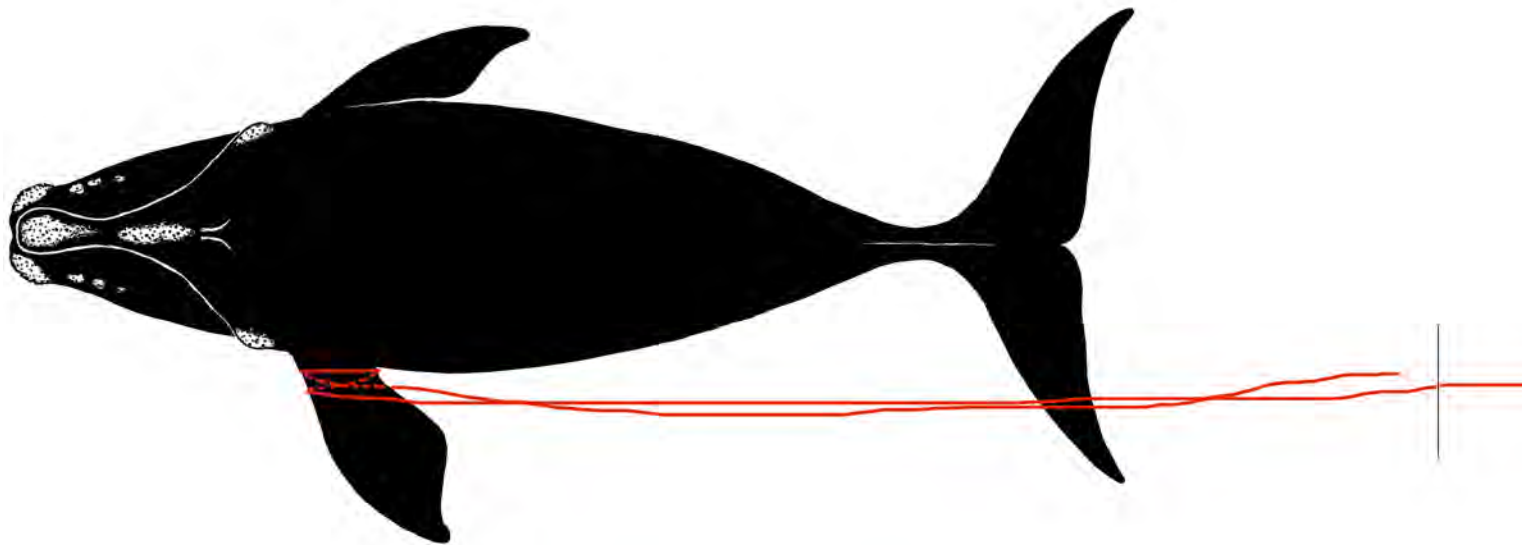


J120604-c

Species	Right Whale	Whale ID	Eg #1167
----------------	--------------------	-----------------	-----------------

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

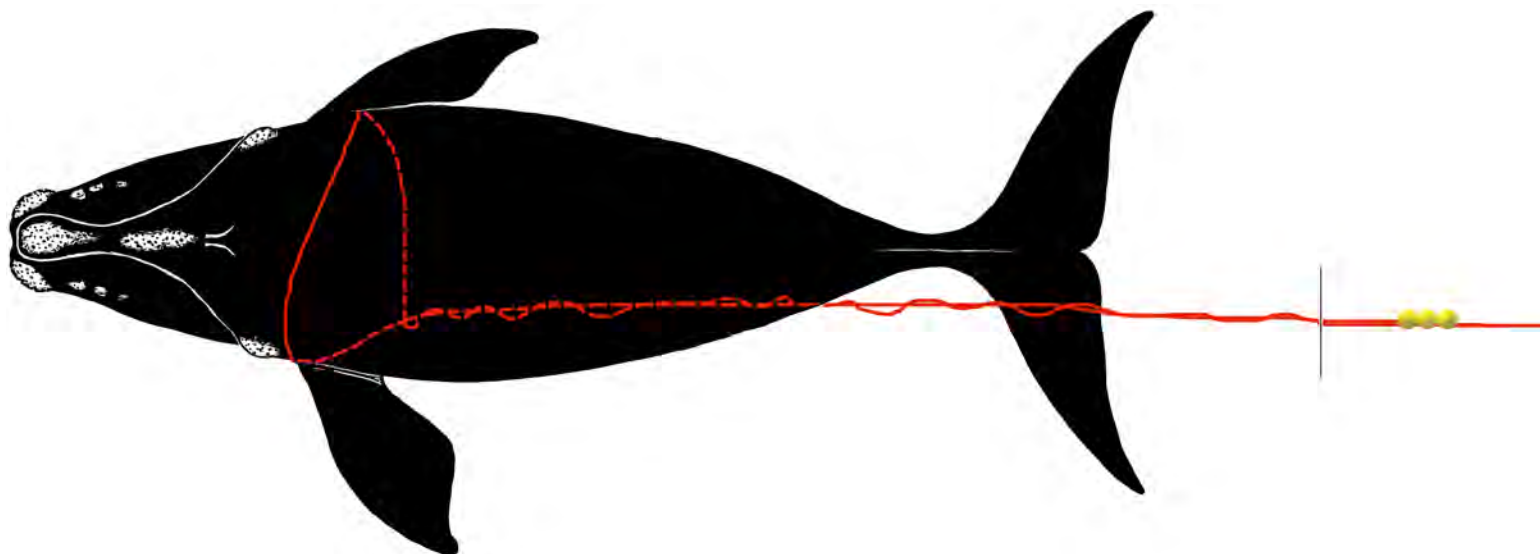


19 Sep 2011 NEA

Species	Right Whale	Whale ID	Eg #3445
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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



Species	Right Whale	Whale ID	Eg #1403
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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	E30-06	
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 2022			
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

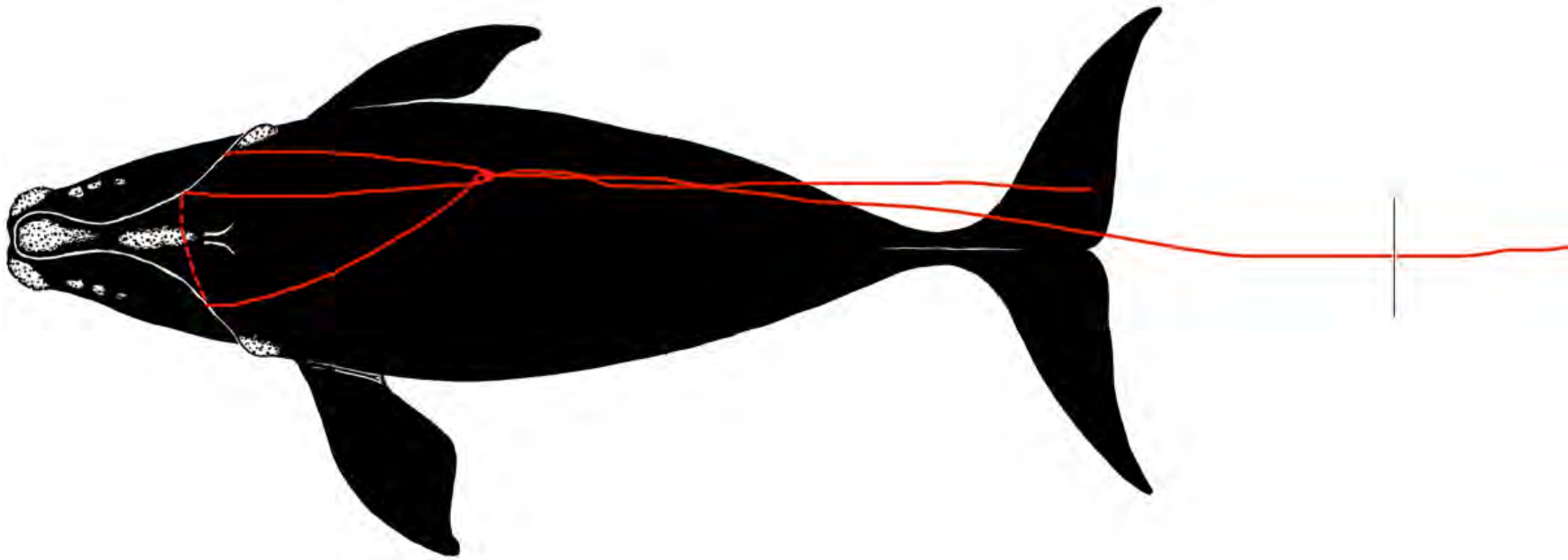


03 May 2007 PCCS

Species	Right Whale	Whale ID	Eg #3610
----------------	--------------------	-----------------	-----------------

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, partial - 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). 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.

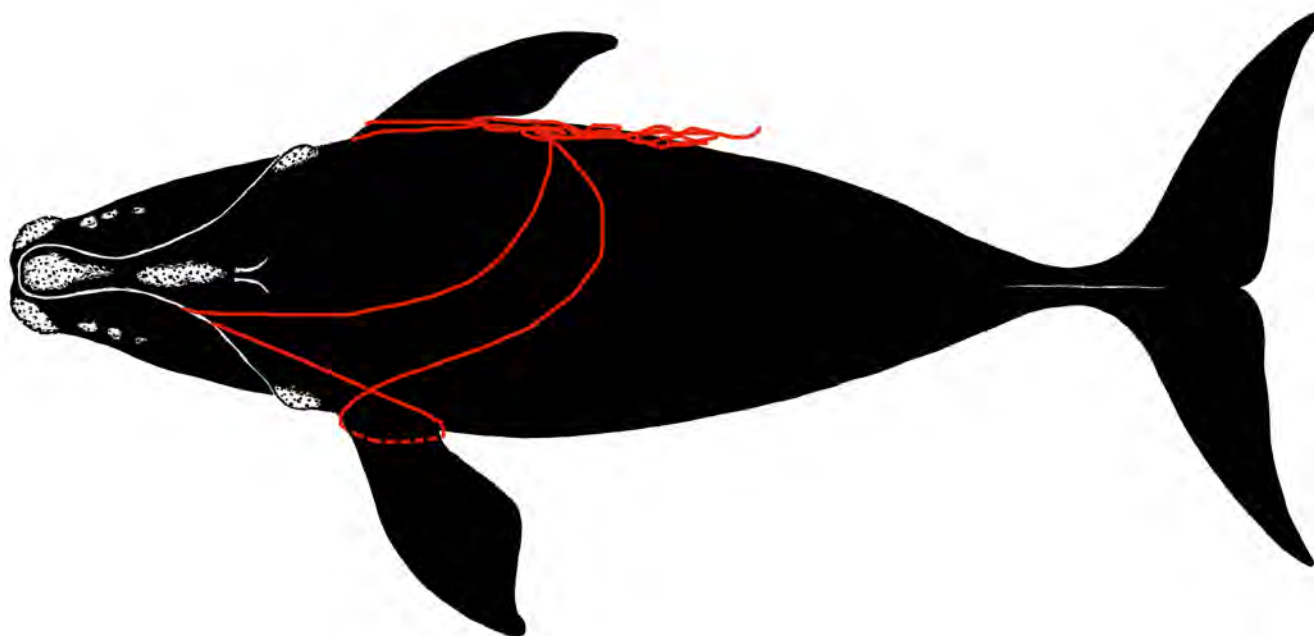
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,292 lbs (T)	1,700 lbs	Good



Species	Right Whale	Whale ID	Eg # 2029
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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	E02-07	
Gear sample collected?	No	Gear type	

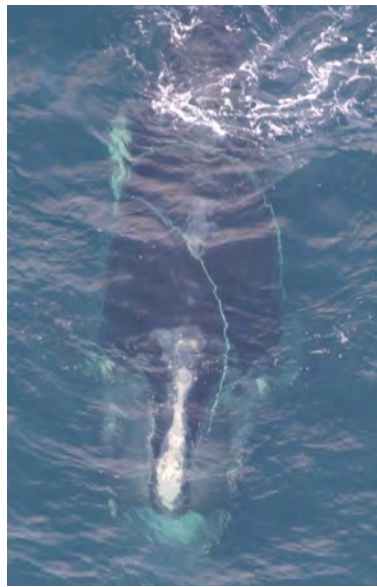


Reproductive prior to entanglement detection?		Yes/Yes			
Reproductive after entanglement detection?		Yes			
Entanglement severity		Severe			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	High	Low	Medium
Duration of time carrying gear		Minimum 193 days, maximum 610 days			
Disentangled?		Yes, partial - 18 Sep 2007			
Status		Alive - Last sighted in 2022			
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

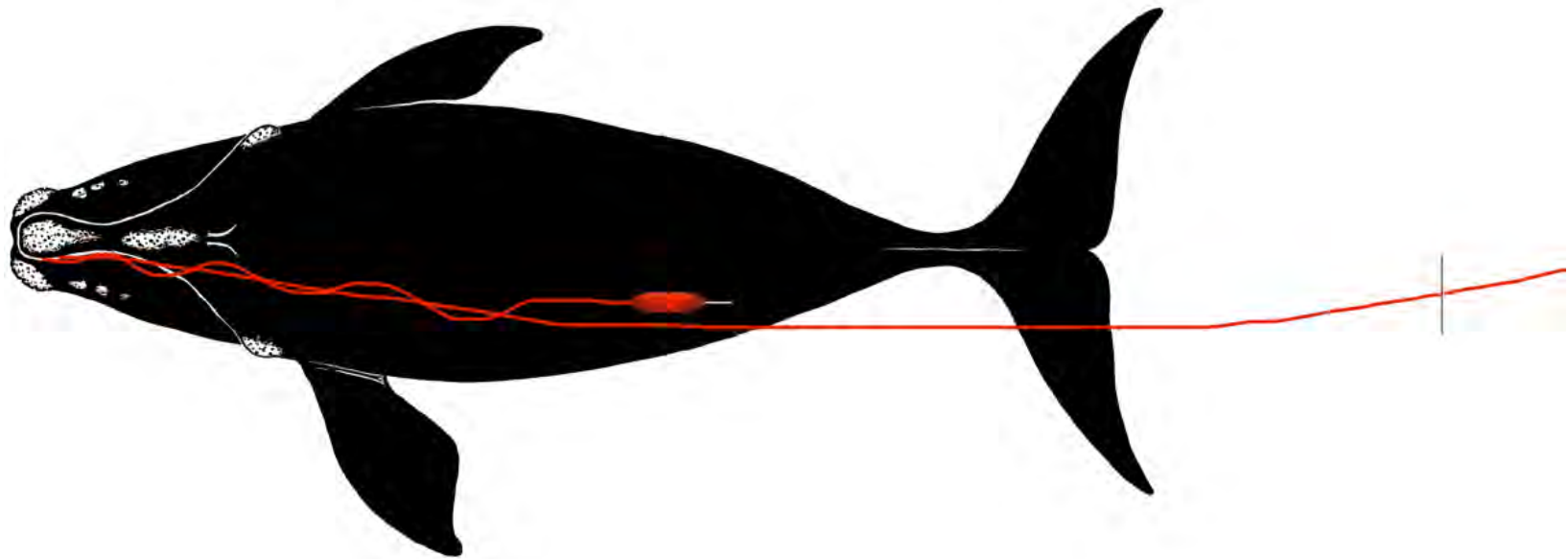


02 Feb 2011 FWRI

Species	Right Whale	Whale ID	Eg #3260
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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	E07-07	
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 2022			
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

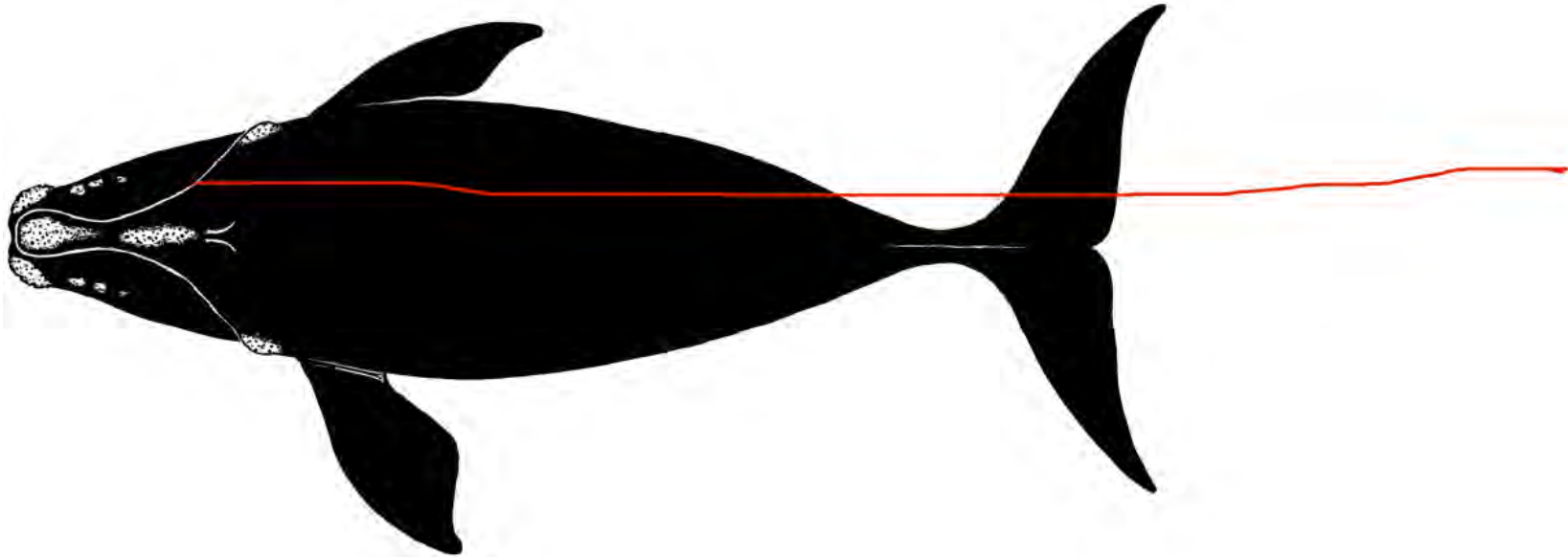


25 June 2007 NEFSC

Species	Right Whale	Whale ID	Eg #2645
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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	E03-08	
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

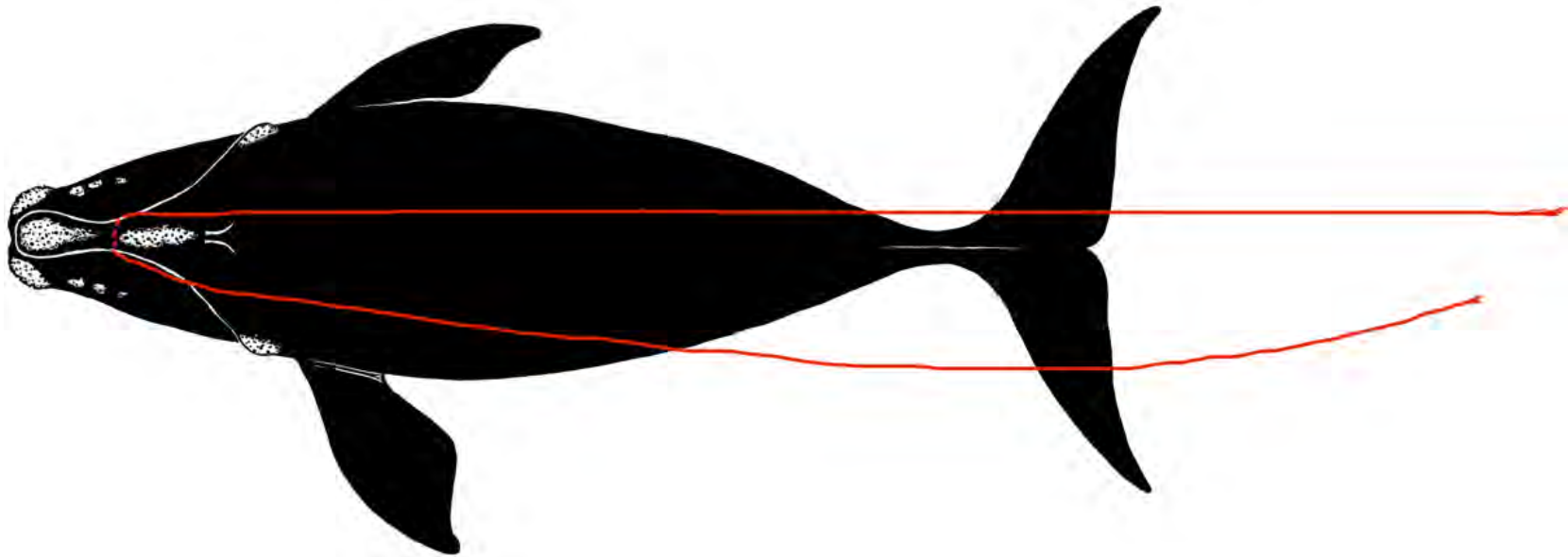


11 Mar 2008 PCCS

Species	Right Whale	Whale ID	Eg #3333
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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	E04-08	
Gear sample collected?	No	Gear type	

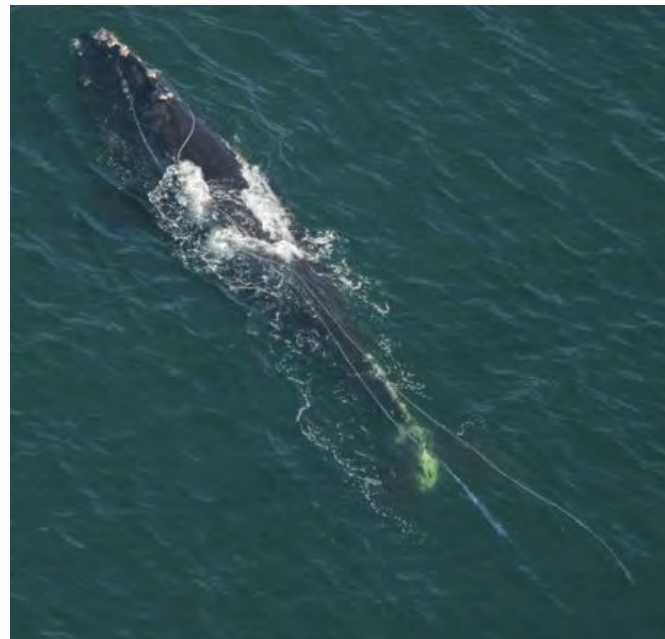


Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Moderate			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Unknown	None	Medium
Duration of time carrying gear		Minimum 4 days, maximum 234 days			
Disentangled?		No			
Status		Alive - Last sighted in 2022			
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

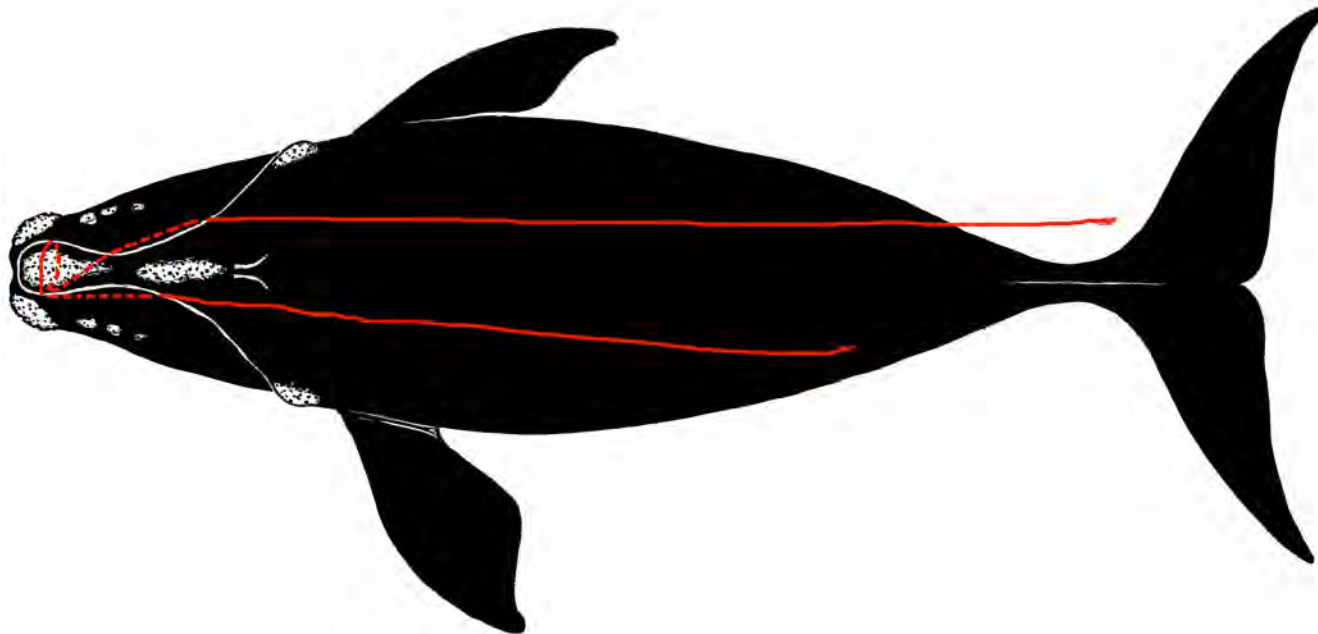


10 Feb 2010 GDNR

Species	Right Whale	Whale ID	Eg #1980
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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	E5-08	
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

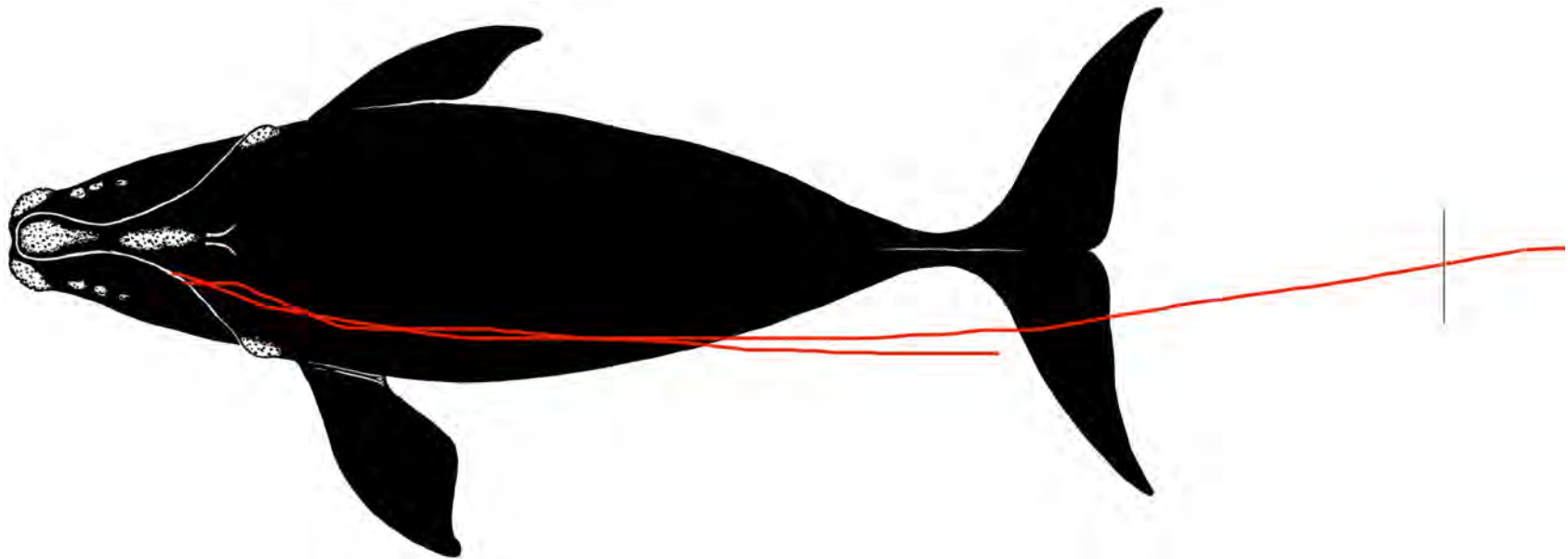


16 Apr 2008 PCCS

Species	Right Whale	Whale ID	Eg #1140
----------------	--------------------	-----------------	-----------------

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?		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	
Gear component	
Rope diameter (inches)	
Breaking strength (lbs)	Tested New



11 Mar 2008 PCCS



01 May 2010 PCCS



01 May 2010 PCCS



01 May 2010 PCCS

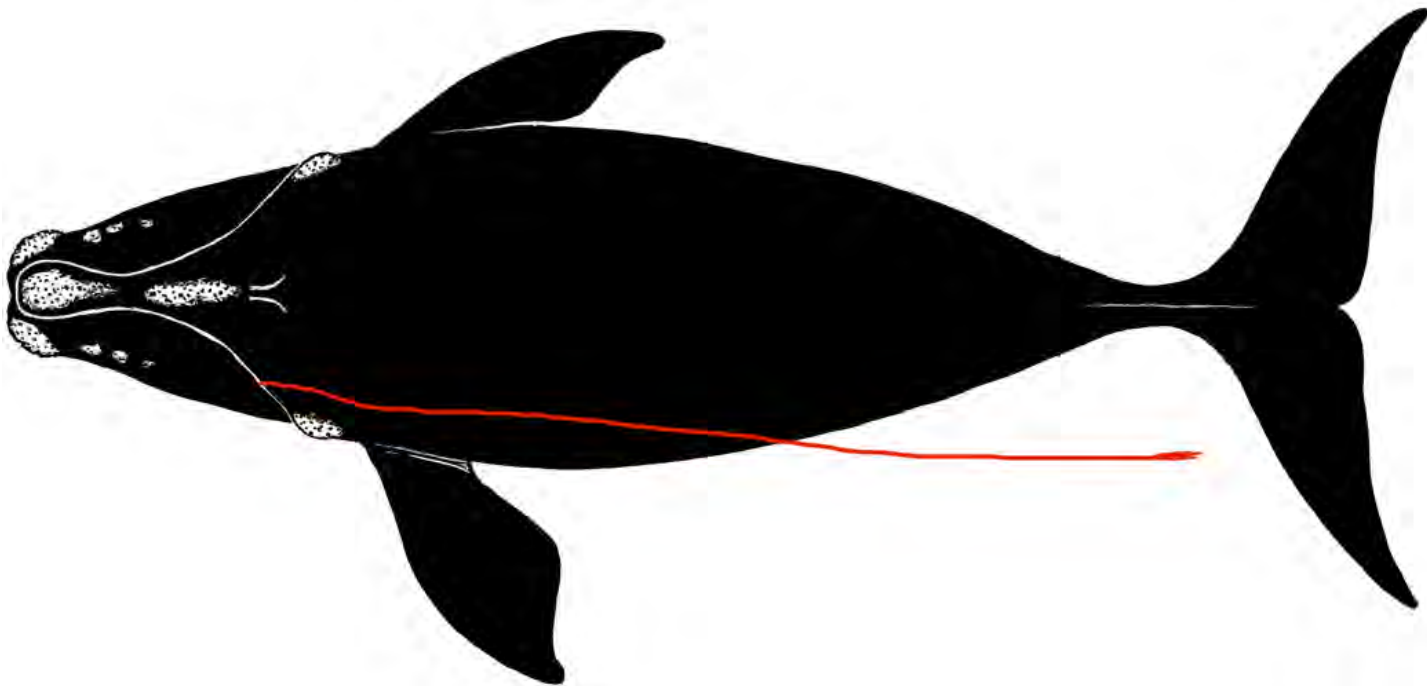


01 May 2010 PCCS

Species	Right Whale	Whale ID	Eg #1249
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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	E10-08	
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 2022			
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.

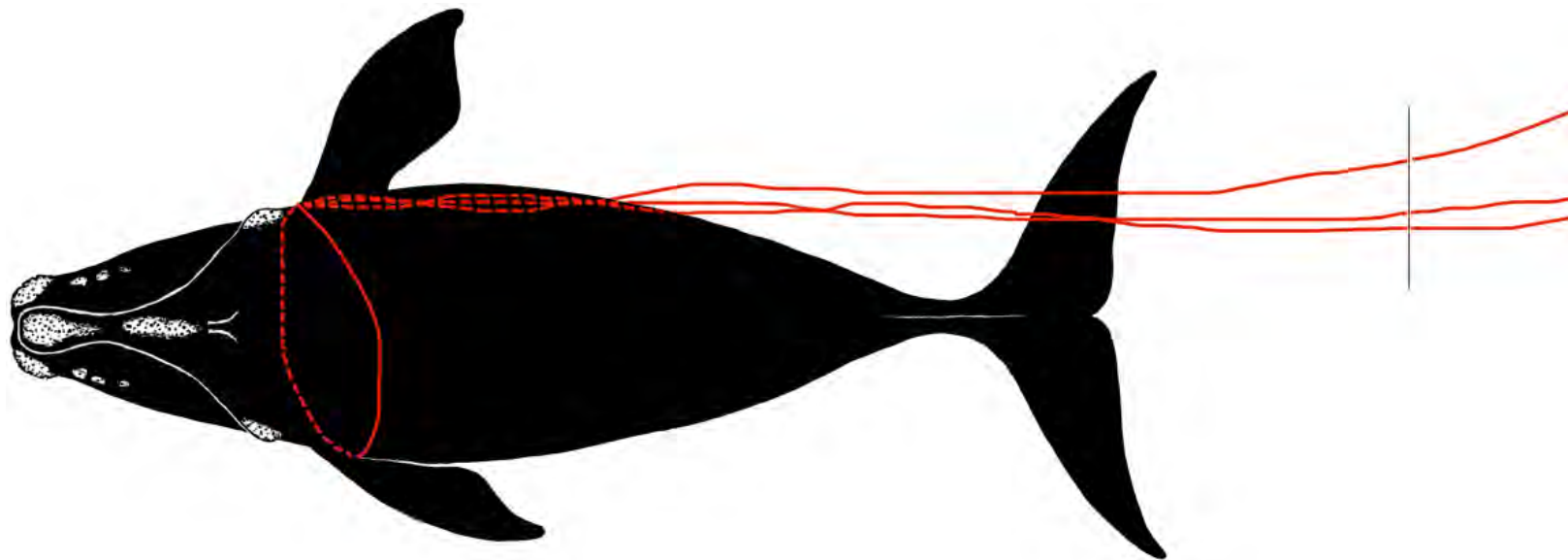


07 May 2008 NEFSC

Species	Right Whale	Whale ID	Eg #3294
----------------	--------------------	-----------------	-----------------

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			

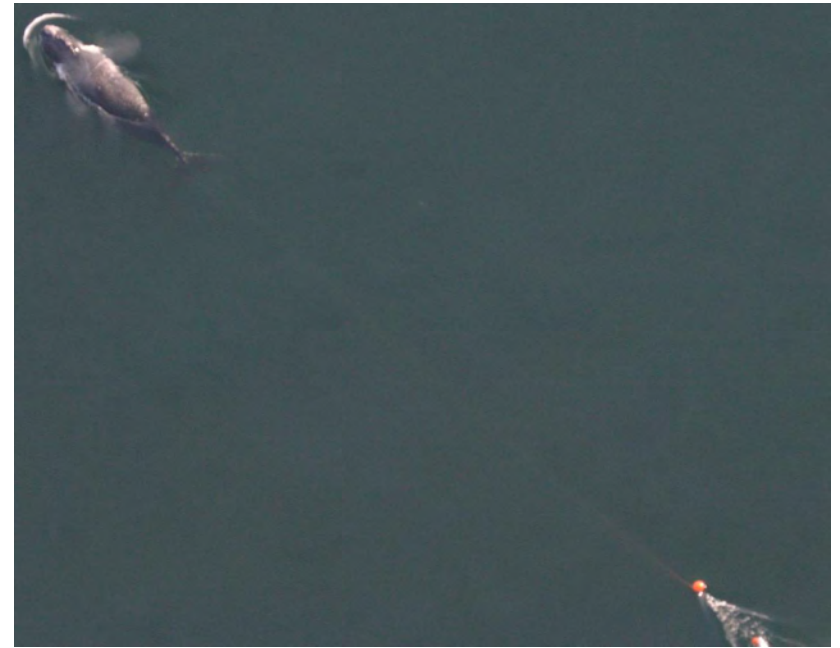
Entanglement configuration	Body wrap at level of flippers with three lines trailing aft of flukes to ~300feet.
Anchoring point(s)	Body
Gear configuration confidence	Low
Remaining questions	Some question remains if there was also a tight rostrum wrap (based on no evidence of line exiting mouth this seems 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). 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.

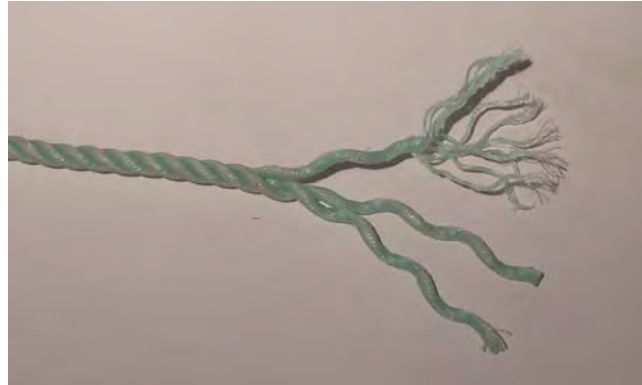


Gangion connection.

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.

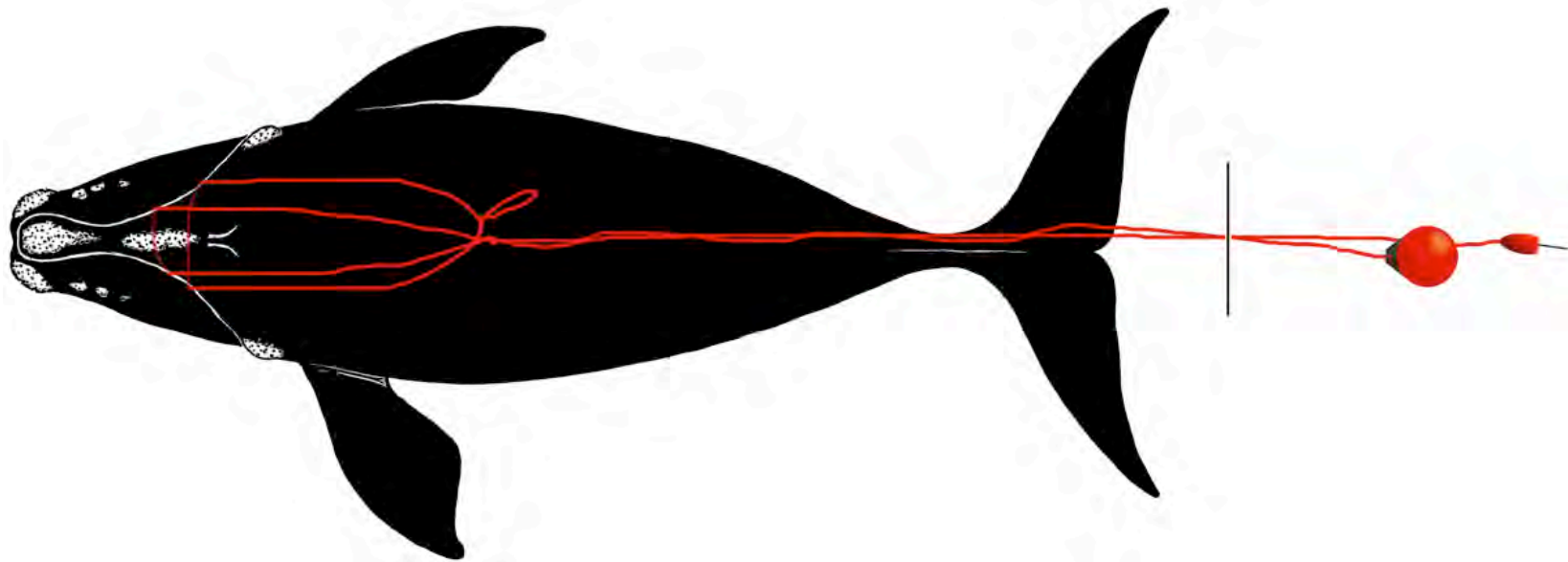
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,670 lbs (T)	1,700 lbs	Very good



Species	Right Whale	Whale ID	Eg #3701
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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

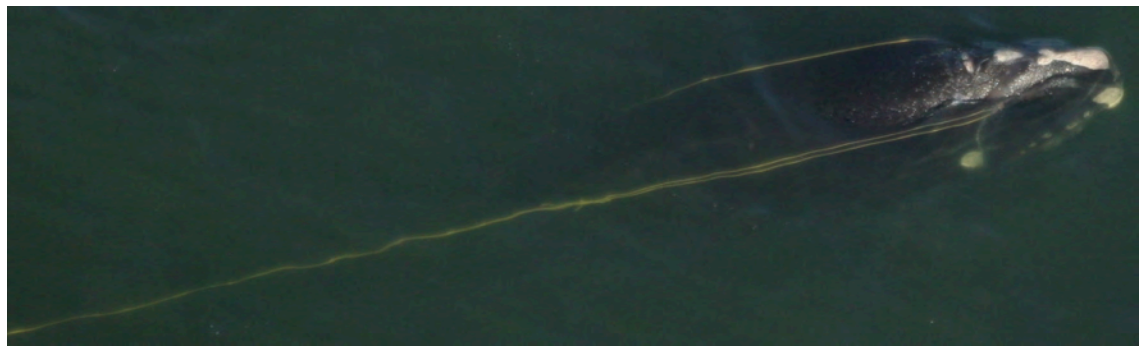


Reproductive prior to entanglement detection?					
Reproductive after entanglement detection?					
Entanglement severity		Minor			
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	None	Low	Medium
Duration of time carrying gear		Minimum 2 days, maximum 99 days			
Disentangled?		Yes - 27 Dec 2008			
Status		Alive - Last sighted in 2022			
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

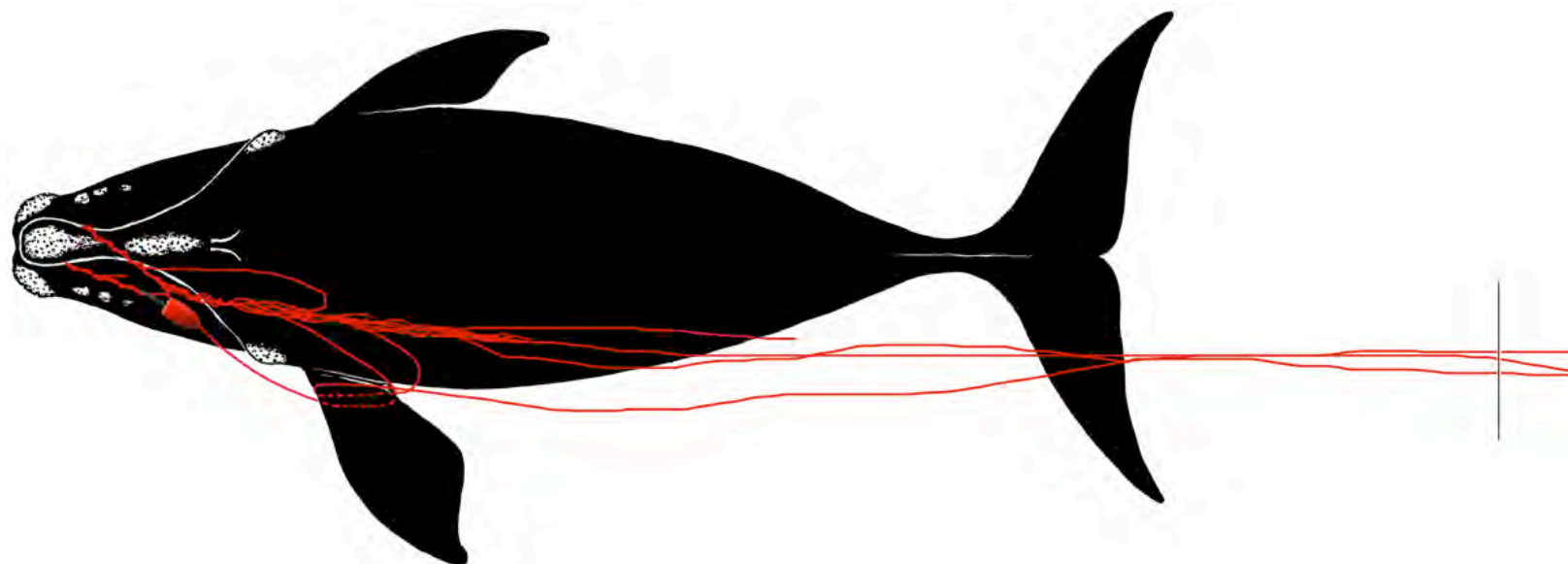


26 Dec 2008 FWRI

Species	Right Whale	Whale ID	Eg #3311
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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.

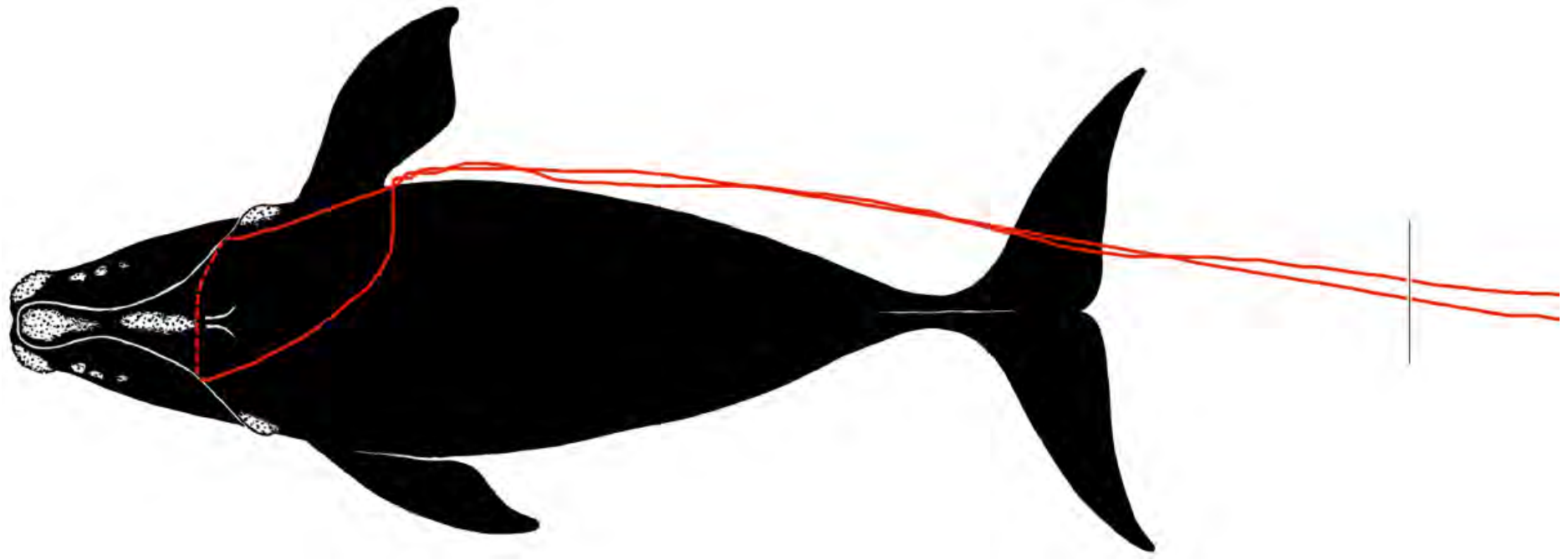


Connection of gangion. No specimen taken for gangion as it was so short.

Species	Right Whale	Whale ID	Eg #3420
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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 2022			
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

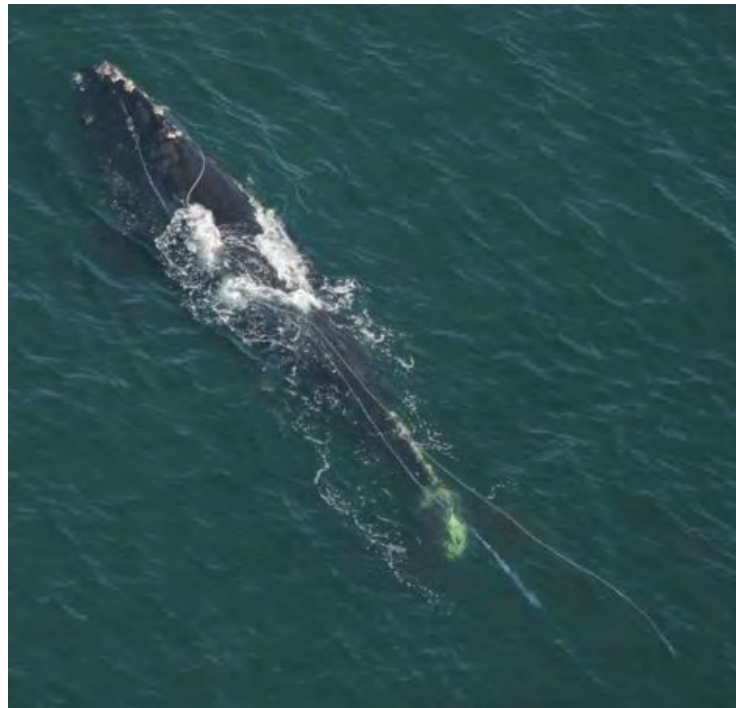
This case study was developed under NOAA Award # NA09NMF4520413 to the Consortium for Wildlife Bycatch Reduction, administered at the New England Aquarium, Boston, MA, USA (available at www.bycatch.org). See: Knowlton, A.R., J. Robbins, S. Landry, H.A. McKenna, S.D. Kraus, T. B. Werner. 2015. Effects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



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:

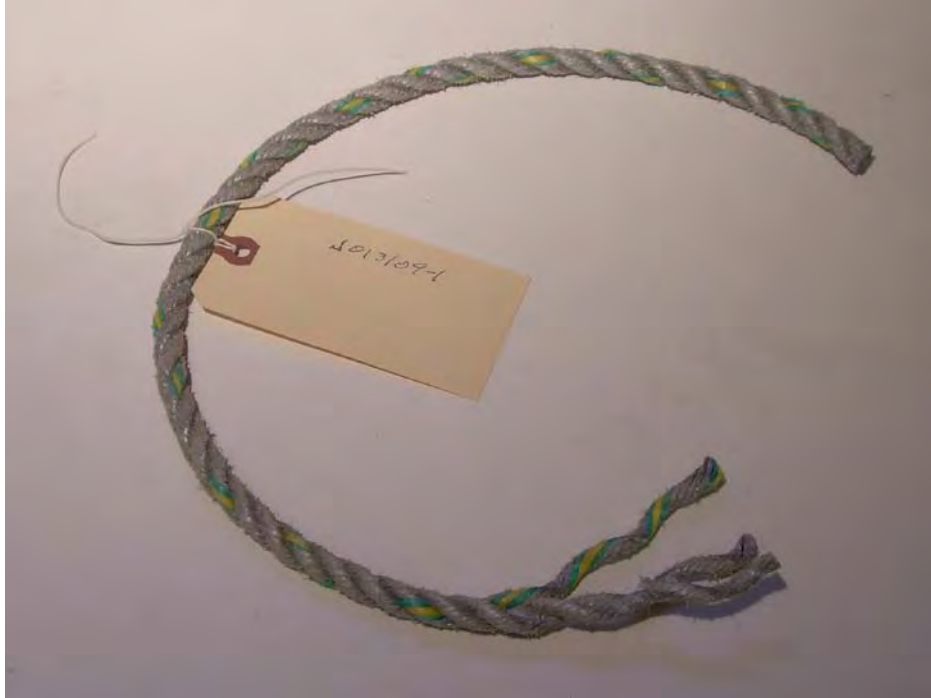
This limited specimen did not allow determination as to use. The unraveled green line (J0101309-2) is spliced into the grey line (J013109-1) and may have been a gangion for a trap. If so, the line could be a ground line. A small section of the grey line was also recovered and showed considerable damage.



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

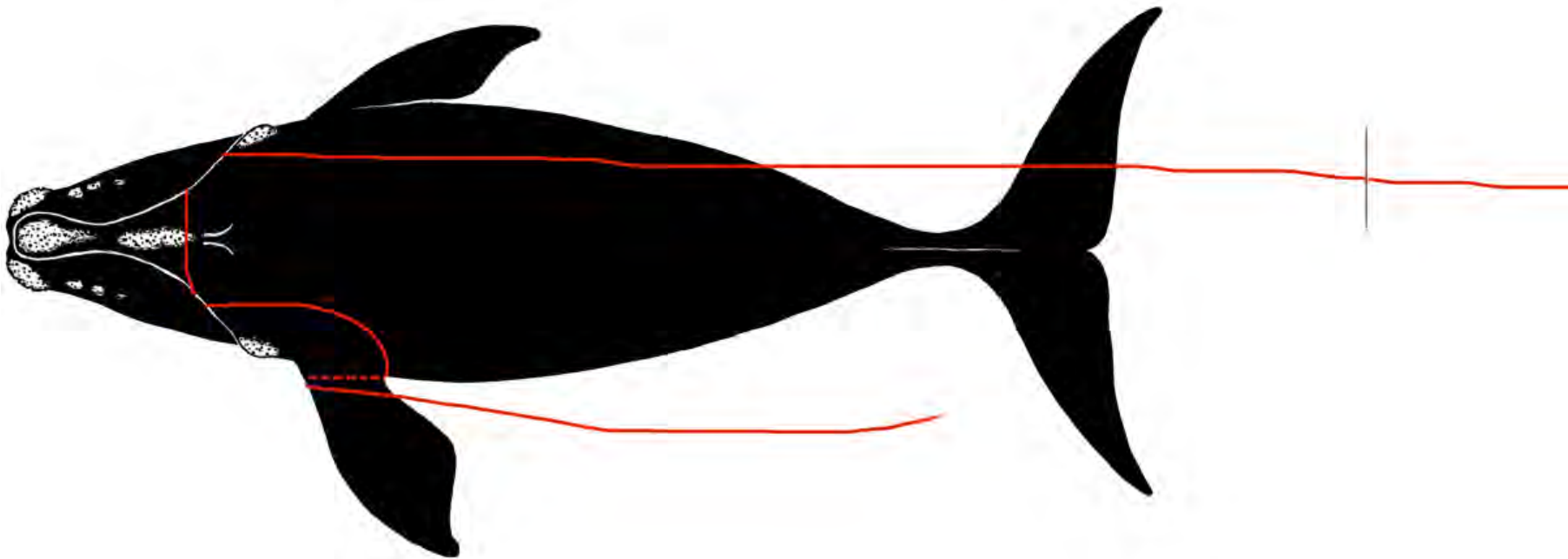


J013109-1

Species	Right Whale	Whale ID	Eg #3714
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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

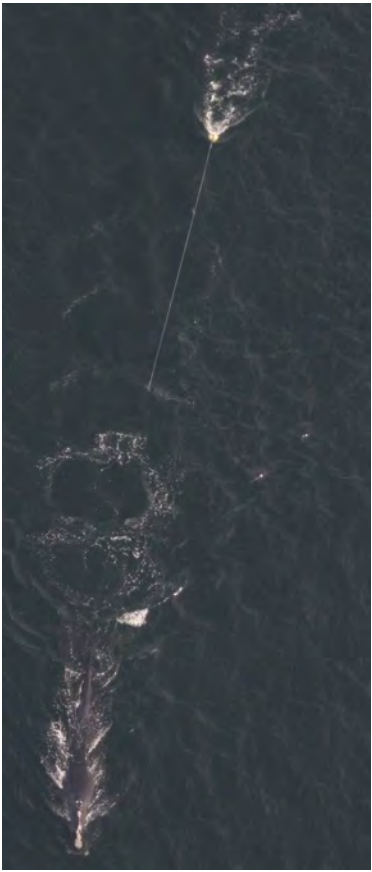


Reproductive prior to/after entanglement detection?					
Entanglement injury severity			Minor		
Entanglement configuration risk			High		
Wound severity	Mouth	Head/ Rostrum	Flippers	Body	Flukes
	Low	Low	Low	None	None
Duration of time carrying gear		Minimum 5 days, maximum 62 days			
Disentangled?		Yes, 12 Feb 2009			
Status		Alive - Last sighted in 2022			
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). 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

Species	Right Whale	Whale ID	Eg #1019
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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	E15-09	
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

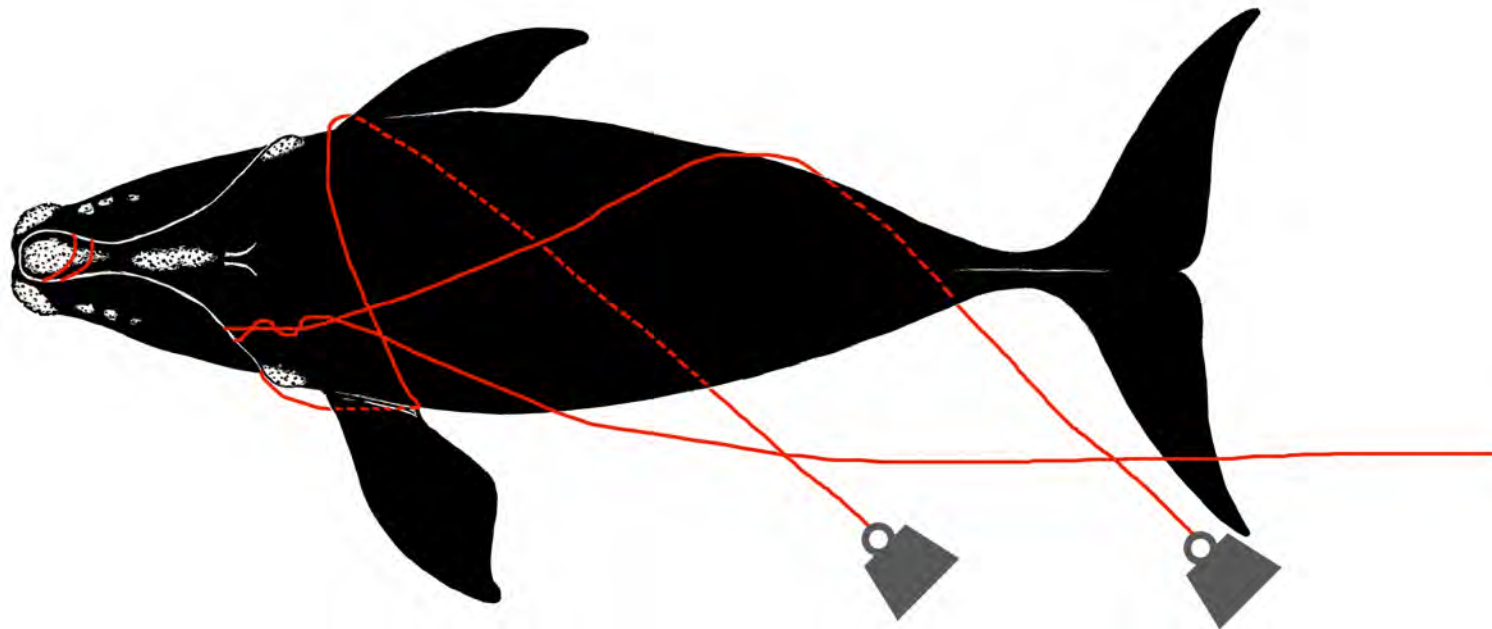


18 Jun 2009 CKC

Species	Right Whale	Whale ID	Eg #1151
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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

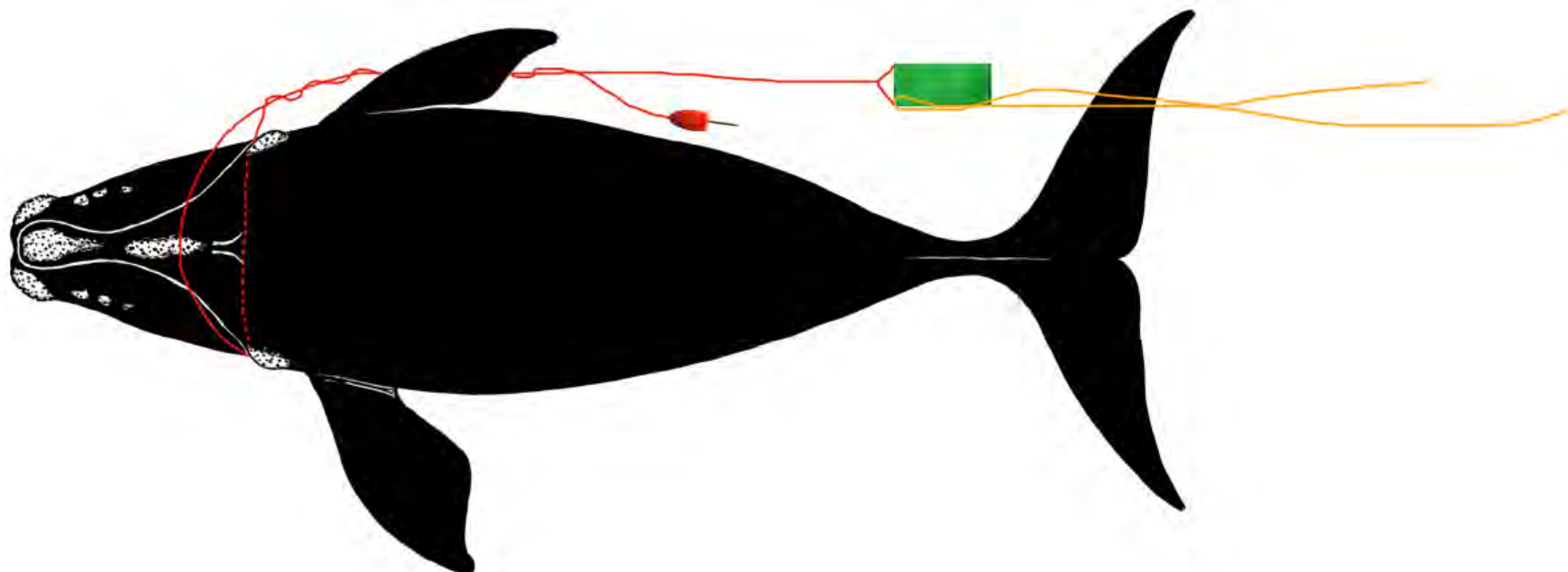


04 Sep 2009 PCCS

Species	Right Whale	Whale ID	Eg #3821
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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 2022			
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.

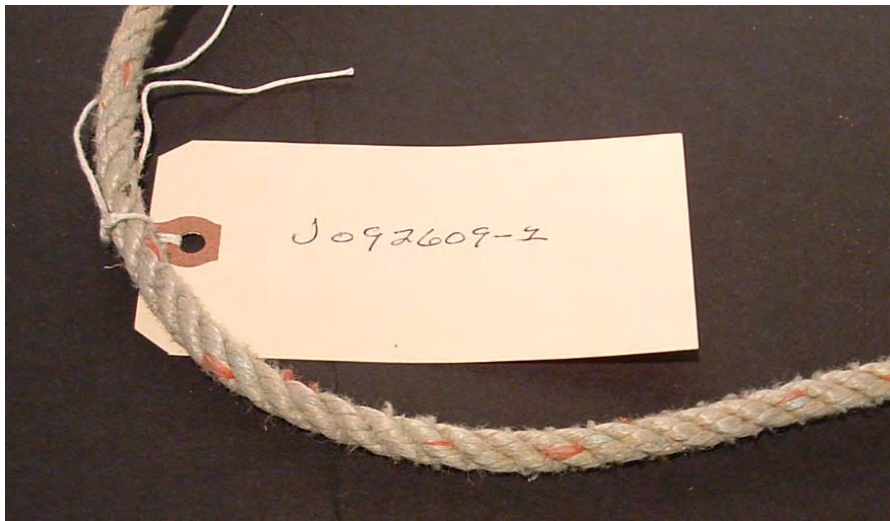
Tested (T) or adjusted (A) strength	Typical new strength	Rope condition
1,850 lbs (T)	2400 lbs	Good

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

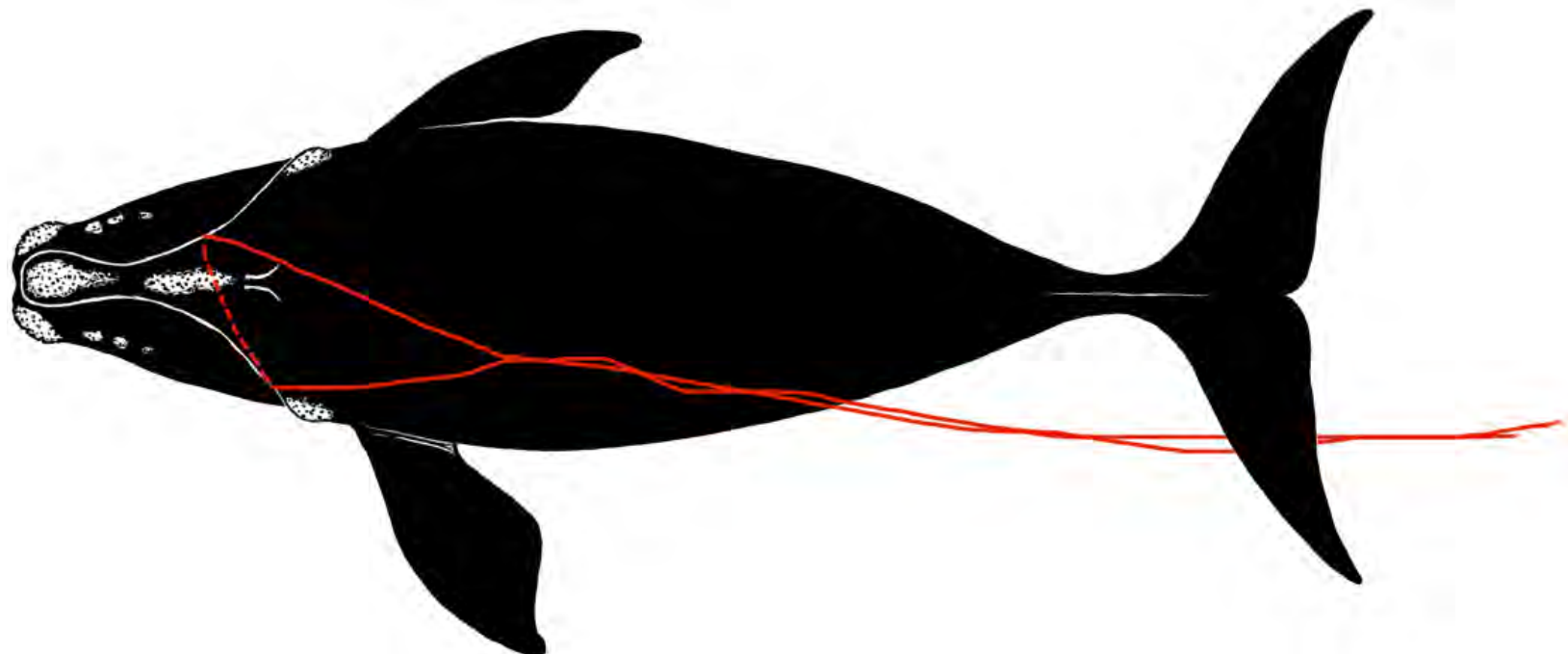


J092609-3

Species	Right Whale	Whale ID	Eg #3850
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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	E30-09	
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



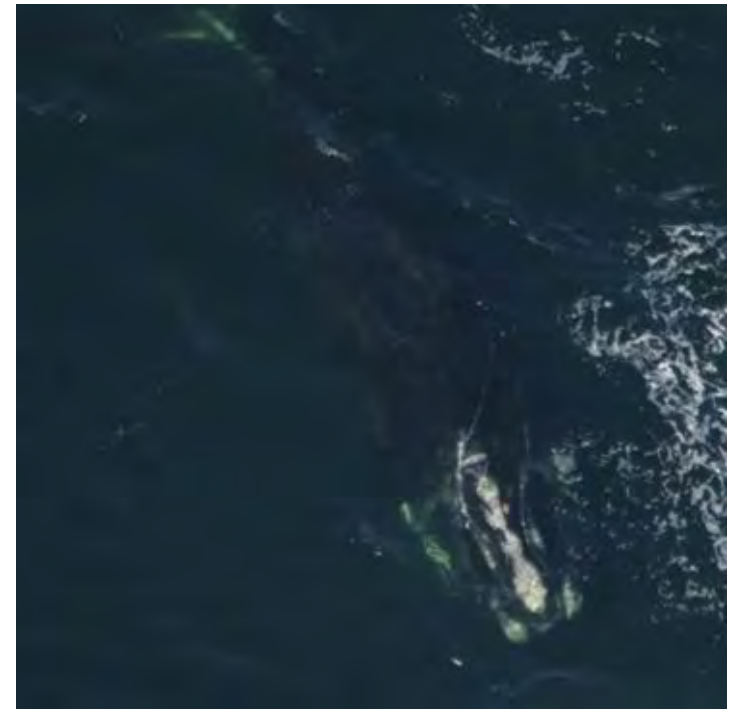
26 Nov 2009 HDD



26 Nov 2009 HDD



19 Jan 2010 GDNR



13 Jan 2010 FWRI



19 Jan 2010 GDNR