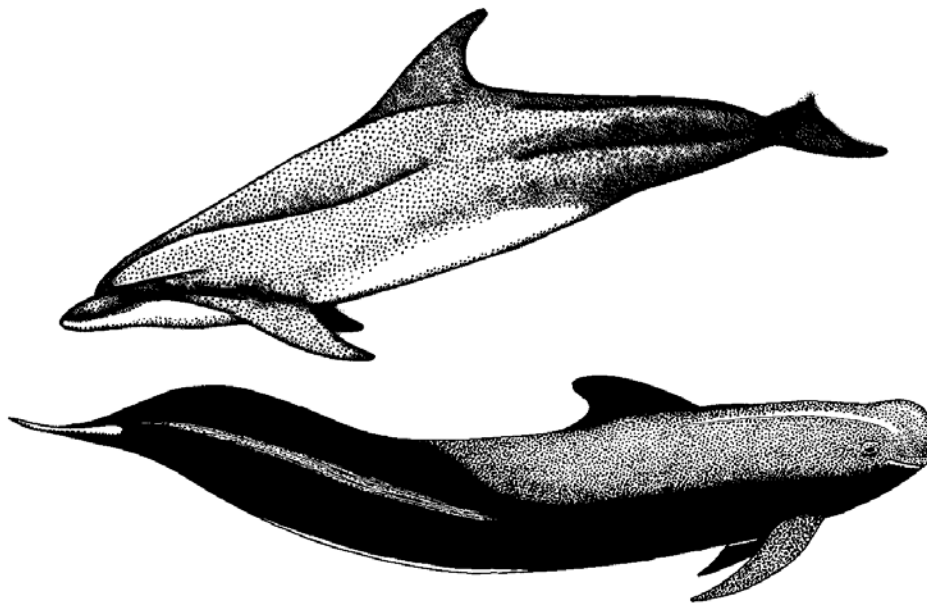




REVISED MORTALITY ESTIMATES OF MARINE MAMMAL BYCATCH BY THE
U.S. ATLANTIC PELAGIC LONGLINE FLEET IN 1992-1997 BASED ON SERIOUS
INJURY GUIDELINES.

BY

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Introduction

A report on marine mammal incidental bycatch by the U.S. Atlantic longline fleet that lands tuna and Atlantic swordfish in 1992-1997 was recently published ([Johnson et al. 1999](#)). It provided estimates of the bycatch rates of marine mammals observed to be dead upon return to sea by scientific observers. The observations were taken from a representative sample of the fleet, in which each encounter of a marine mammal with the pelagic longline gear was recorded by the scientific observer. The observer reported the status of the animal after its release from the gear and upon its return to sea as "dead", "alive", or "unknown". Observers classified marine mammals as "alive upon return to sea" solely based on the immediate status or condition of the animals during the encounter while the animals were still in sight, for lack of information or expertise to determine the projected survivorship. By this standard, estimates of the bycatch rates of marine mammals released dead (hereinafter referred to as mortality estimates) ranged from 0 in 1995 and 1997 to 50 (10-256, 95% CI) in 1992 ([Johnson et al. 1999](#)).

An animal usually sustains trauma or injury to various degrees during interaction with longline gear. "Serious injury" is interpreted as injury of sufficient severity to significantly increase the near-term probability of death of the animal ([Angliss and DeMaster 1998](#)). Failure to take into account serious injury to an animal that might result in near-term death after release would underestimate the impact of the fishery on a species. A set of proposed serious injury guidelines was drafted by the Marine Mammal Conservation Division, Office of Protected Resources, NOAA Fisheries (Federal Register Docket No., I.D. 051398C) based on the reports of the Serious Injury Workshop ([Angliss and DeMaster 1998](#)) and Guidelines for Assessing Marine Mammal Stocks (GAMMS) Workshop ([Wade and Angliss 1997](#)). The guidelines were condensed into fifteen criteria for determining whether a marine mammal in the longline bycatch is considered to be seriously injured (Table 1). Criteria #1-10 comprise the type of injury that is highly likely to directly prevent or impair movement or feeding, and thus should always be considered serious injury. Criteria #11-15 do not necessarily indicate that movement or feeding has been directly prevented or impaired and will not automatically be considered serious. Mortality estimates of marine mammal bycatch in the pelagic longline fishery for 1992-1997 were re-assessed in this document using the "serious injury" criteria, where an animal designated as seriously injured was presumed to be dead. Marine mammals observed to be killed incidentally during pelagic longline fishing operations in the U.S. Atlantic therefore comprised the ones actually observed to be dead upon return to sea, and the ones observed to be seriously injured upon return to sea.

Methods

Observer programs were implemented separately by the NEFSC (Northeast Fishery Science Center) and SEFSC (Southeast Fishery Science Center) until 1995, after which they were united under the management of the SEFSC. Observers record the species, estimated length, and codes concerning the condition/status of each individual marine mammal incidentally caught by pelagic longline gear onto incidental take log sheets. The SEFSC and NEFSC observer programs had different formats for their log sheets. Both formats contained a condition/status code which

generally classifies the animal as dead, alive, or of unknown state, while an entanglement code which describes the manner of interaction with the gear was also provided in the NEFSC format (Table 2). To supplement this information, observers usually described the manner in which the animal was hooked/entangled and released, and the types of injury sustained in greater detail in the comments section of the log sheet, and took photographs of the animal whenever possible. In this document, the designation of a marine mammal observed to be caught incidentally by the pelagic longline fishery in 1992-1997 as being "seriously injured" was based on checking available observer comments on each animal against the "serious injury" criteria (Table 1). If the animal exhibited a condition matching one or more of criteria #1-10, then it was classified as "seriously injured", and for the purpose of the bycatch estimates was considered to be dead.

Hence, the animals that were "seriously-injured" were grouped into the "dead upon return to sea" category with the animals that were actually observed to be dead, and the mortality of the marine mammals bycatch for the pelagic longline fishery in 1992-1997 were estimated based on this classification following the methods described in [Johnson et al. \(1999\)](#). The tables 5(6), 6(9), 7(11), 8(12), 9(13), 10(17) in this document present the revised observed and estimated mortality under the serious injury classification. The number in parenthesis refers to the corresponding table in Johnson et al. (1999) which contains the original mortality estimates without serious injury classification. Tables in [Johnson et al. \(1999\)](#) are distinguished with a superscript '1' in this document.

Results and Discussion

Revised Mortality Estimates

Observed and logbook-reported effort in Tables 1-4¹ were not altered. Table 5(6) lists the information of the marine mammal bycatch events. In one event there was a change in the species. **The animal caught in 1995, 3rd quarter, trip number A53034, haul number 15 was identified as a pilot whale (Table 6¹). The species was changed to Risso's dolphin based on the photograph taken by the observer (Table 5(6)).** Consequently, the revised number of pilot whales (*Globicephala* spp.) observed caught for 1992-1997 was decreased by one to **58**, and Risso's dolphin (*Grampus griseus*) increased by one to **22**.

Some animals previously classified as "alive" in Table 6¹ were now redistributed into the "injured" category in Table 5(6), which for the purpose of bycatch estimation amounted to being dead. The sole animal previously of "unknown" state was also now considered "injured". **Revised numbers showed an observed total of 44 "alive" and 43 "injured" (Table 5(6)). Of the injured, 28 were pilot whales - including 2 identified as short-fin pilot whales, 13 were Risso's dolphins, and one each of Atlantic spotted dolphin and killer whale. The number actually observed to be "dead" upon return to sea was unaltered and remained at four.** Three Risso's dolphins were reported dead upon return to sea (one from the MAB in 1994 and two from the GOM in 1993 and 1996). One pilot whale from the MAB was reported dead (1992), as per [Johnson et al. \(1999\)](#).

The estimates of total bycatch were not affected by the serious injury classification. They remained the same as given in [Johnson et al. \(1999\)](#). Only the "dead" and "alive" estimates, which are subsets of the total, were revised. Table 6(9) gives the estimates by year, quarter, NAREA

fishing area, and lowest taxonomic grouping available of the total bycatch, and those dead and alive upon return to the sea. Annual estimates of marine mammal bycatch for NAREA and the lowest taxonomic grouping available are shown in Table 7(11). Annual estimates for larger ocean areas (MAREA - Gulf of Mexico waters, U.S. Atlantic EEZ waters, and other Atlantic waters) are provided in Table 8(12). Estimates of bycatch in Table 9(13) were constructed by summing the mortality estimates over all MAREAs and taxa (Table 8(12)) by year. These more precise pooled estimates of Table 9(13) indicate that the U.S. pelagic longline fleet operating in the Atlantic (including the Gulf of Mexico) during 1992-1997 caught a low of 45 (12-163, 95%CI) total marine mammals in 1997 and a high of 581 (318-1162, 95%CI) total marine mammals in 1992, as reported in Johnson et al. (1999). Of these, no marine mammal was dead upon return to the sea in 1997, but **it was estimated that as many as 343 (200-635, 95% CI) were returned to the sea dead in 1995** based on the serious injury criteria (Table 9(13)). **Summing the mortality estimates over all MAREAs by year and taxon in Table 8(12) gives a range of 0-87 Risso's dolphins and 15-200 pilot whales released dead between 1992-1997, 17 Atlantic spotted dolphins and 16 killer whales in 1994, and 58 shortfin pilot whales in 1995 (Table 3).**

Serious Injury and Mortality

The catch information of the marine mammals observed caught by the pelagic longline fishery in 1992-1997 including the available observer's comments on animal status and condition is listed in Table 10(17). Also given are the injury criteria (#1-15) that each incidentally-caught marine mammal was known to or was assumed to meet. An animal ascertained to meet one or more of the criteria #1-10 (Table 1) was classified in Table 10(17) as "seriously injured" (S.I.) = Yes (dead), otherwise, S.I. = No (alive).

Of 91 marine mammals between 1992-1997, only four were actually observed to be dead upon return to the sea, of which two were drowned after getting entangled in the mainline, and the cause of death for the other two were unspecified (Table 10(17)). Six of the 15 serious injury criteria (Table 1) summarized all the observed types of injury sustained by the all the other 87 marine mammals, of which 43 were determined to be seriously-injured and presumed dead (Table 4, Table 10(17)). The highest incidents (60 animals) of injury were of type #10 – "line entangled the animal and is likely to further entangle the animal" (Table 4). Mostly animals could only be assumed to fit this criterion (50 animals out of the 60) because of the difficulty in determining the likelihood of the line to further entangle the animal. Usually animals entangled in or hooked on the longline would have some line left on them upon release. It was assumed here that line of length greater than the estimated length of the animal was likely to further entangle the animal. More accurate assessment of this criterion would require report from observer as to the amount of line left and the location of the line on the animal.

A relatively large number of animals (33) was also assumed to have sustained injury of type #6 – "ingestion of gear" (Table 4). This is considered an extremely serious injury, but often observers were not able to judge whether gear was ingested. If the animal was hooked in an unspecified part of the mouth and the hook and all the line were not removed upon release of the animal, it was likely that gear could be ingested. By this reasoning, #8 – "hooked internally", #6 –

1. Loss of/damage to appendage/jaw.
2. Inability to use appendage(s).
3. Asymmetry in body shape.
4. Rupture/puncture of eyeball.
5. Inability to swim or dive.
6. Ingestion of gear.
7. Mouth is bound by the gear.
8. Cetacean is hooked internally (e.g., in the mouth).
9. Animal is anchored.
10. Line/net entangling the animal is likely to further entangle the animal.
11. Visible blood flow.
12. Swelling or hemorrhage.
13. Laceration.
14. Listlessness/inability to defend itself.
15. Equilibrium imbalance

Table 2. Codes for individual animal status/condition entered by observers on marine mammals incidental take log sheet.
The SEFSC and NEFSC observer programs have different log sheet formats and codes.

SEFSC

00 – unknown

10 – alive

"ingestion of gear", and # 10 – "...further line entanglement..." could probably be sustained concurrently. These were the 3 types of injury with the highest occurrence in 1992-1997. There was also the possibility of injury type #1 – "damage to appendage/jaw" being linked with # 8 – "hooked internally (e.g. in the mouth)", which might warrant clearer distinction.

Photographs were generally not useful for determining manner of entanglement or the injury to and condition of the animal. They were perhaps useful in some cases in aiding species identification. Very little of the animal was seen out of the water in even the sharpest of the photographs, unless the animal was actually hauled out of the water by the fishing vessel. It is recommended that observer training and reporting should emphasize the assessment of animal condition in the field according to the proposed set of injury criteria (Table 1), especially to the types that occur most frequently (Table 4), and research should focus on assessing the probability of mortality due to the frequently- occurring injury types.

Literature Cited

- [Angliss, R. P., and D. P. DeMaster.](#) 1998. Differentiating serious and non-serious injury of marine mammals taken incidental to commercial fishing operations: report of the serious injury workshop 1-2 April 1997, Silver Spring, MD. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-13, 48 p.
- [Johnson, D. R., C. Yeung, and C. A. Brown.](#) 1999. Estimates of marine mammal and marine turtle bycatch by the U. S. Atlantic pelagic longline fleet in 1992-1997. NOAA Tech. Mem. NMFS-SEFSC-418, 70 p.
- [Wade, P. R. and R. P. Angliss.](#) 1997. Guidelines for assessing marine mammal stocks: report of the GAMMS Workshop April 3-5, 1996, Seattle, WA. NOAA Tech. Mem. NMFS-OPR-12, 93 p.

Table 1. Criteria for classifying a marine mammal caught in pelagic longline gear as "seriously-injured", and presumed dead for the purpose of estimating bycatch mortality. These criteria are based on the reports of the Serious Injury Workshop ([Angliss and DeMaster 1998](#)) and Guidelines for Assessing Marine Mammal Stocks (GAMMS) Workshop ([Wade and Angliss 1997](#)). Criteria #1-10 comprise the types of injury that are highly likely to directly prevent or impair movement or feeding, and thus should always be considered serious injury. Criteria #11-15 do not necessarily indicate that movement or feeding has been directly prevented or impaired and will not automatically be considered serious.

21 – dead, fresh

NEFSC

1) Entanglement situation

00- unknown

01- fell from gear at a point unknown

02 – fell from gear before exiting water

03 – fell from gear once hauled out of water

04 – fell from gear due to force of roller

05 – removal requires cutting of gear/animal

06 - removal does not require cutting of gear/animal

for longline fisheries only:

07 – foul hooked, cut from gear

08 – foul hooked, removed from gear

10 – sea bird caught, gangion attached to mainline

11 seabird caught, gangion unattached to mainline

99 – other

2) Animal condition (in parentheses are codes applied before mid 1995)

00 – unknown (00)

01 – alive, condition unknown (10)

02 – alive, not injured (11)

03 – alive, injured (14)

04 – alive, gear in/around mouth

05 - alive, gear in/around flipper

06 – alive, gear in /around another single body part

07- alive, gear in/around several body parts

08 – alive, seen by captain /crew only (30)

10 – dead, condition unknown (20)

11 – dead, fresh (21)

12 – dead, moderately decomposed (22)

13 - dead, severely decomposed (23)

14 – dead, seen by captain/crew only (40)

99 – other

Table 3. The pooled bycatch estimates of dead (est. DEAD) animals and the upper and lower 95% lognormal confidence bounds (UDED, LDED) over all MAREAs by year and taxon (also see Table 12).

COMMON NAME	YR	est. DEAD	UDED	LDED
ATLANTIC SPOTTED DOLPHIN	94	17	87	3
KILLER WHALE	94	16	82	3
PILOT WHALE	92	105	311	35
PILOT WHALE	93	15	77	3
PILOT WHALE	94	137	310	61
PILOT WHALE	95	200	368	109
SHORTFIN PILOT WHALE	95	58	202	17
RISSOS DOLPHIN	92	74	257	21
RISSOS DOLPHIN	93	36	184	7
RISSOS DOLPHIN	94	87	178	43
RISSOS DOLPHIN	95	85	293	26
RISSOS DOLPHIN	96	52	266	10

Table 4. The types of serious injury (as specified in Table 1) sustained by marine mammals caught in pelagic longline gear in 1992-1997 and not actually observed to be dead upon return to sea (n=87). The classification was based on observers' comments on animal condition in the field (Table 17). Only six of the 15 types specified in the serious injury guidelines (Table 1) were encountered, and the frequency of occurrence of each type is given. Some animals were confirmed to have sustained a certain type of injury (X), while others may only be assumed to have sustained a certain type of injury (?).

<u>Type of Serious Injury</u>	<u>Frequency of occurrence</u> <u>X + ?</u>	<u>% frequency</u> <u>(n=87)</u>
1 Loss of/damage to appendage/jaw.	8 + 10 = 18	20.7%
6 Ingestion of gear.	0 + 33 = 33	37.9%
8 Cetacean is hooked internally (e.g., in the mouth).	24 + 13 = 37	42.5%
10 Line/net entangling the animal is likely to further entangle the animal.	10 + 50 = 60	67.0%
11 Visible blood flow.	2 + 0 = 2	2.3%
13 Laceration.	5 + 1 = 6	6.9%

Table 5(6). Marine mammal bycatch observed in U.S. Atlantic pelagic longline fishery in 1992-7, listed by calendar quarter (QTR), vessel trip identifier (TRIP), set on which bycatch was observed (HAUL#), the number of hooks set (HOOKS), fishing region (NAREA), the total number observed (ANIMLS), the numbers out of the total which were observed to be ALIVE, DEAD, and seriously INJURED (presumed dead) upon to the sea. Differences from Table 6¹ of [Johnson et al.](#) (1999) are in bold.

COMMON NAME	YR	QTR	NAREA	TRIP	HAUL#	HOOKS	ANIMLS	ALIVE	DEAD	INJURED	SOURCE
ATLANTIC SPOTTED DOLPHIN	94	3	GOM	F16	7	810	1	0	0	1	SE
BOTTLENOSE DOLPHIN	93	1	NEC	A03	2	630	1	1	0	0	NE
BOTTLENOSE DOLPHIN	93	3	NEC	M02	14	612	1	1	0	0	SE
COMMON DOLPHIN	92	4	NEC	A03	5	735	1	1	0	0	NE
DOLPHIN	92	3	NEC	A30	2	1074	1	1	0	0	NE
KILLER WHALE	94	4	NED	A54003	15	960	1	0	0	1	NE
PANTROPICAL SPOTTED DOLPHIN	94	2	GOM	F15	6	691	1	1	0	0	SE
PILOT WHALE	92	3	NEC	A27	4	360	1	1	0	0	NE
PILOT WHALE	92	3	NEC	A27	5	360	2	1	1	0	NE
PILOT WHALE	92	4	NEC	A02	1	650	1	1	0	0	NE
PILOT WHALE	92	4	NEC	A02	5	560	1	0	0	1	NE
PILOT WHALE	92	4	NEC	A40	5	950	1	1	0	0	NE
PILOT WHALE	92	4	NEC	A63	3	745	1	1	0	0	NE
PILOT WHALE	92	4	NEC	A63	4	750	2	1	0	1	NE
PILOT WHALE	92	4	NEC	A25	2	540	1	1	0	0	NE
PILOT WHALE	92	4	NEC	J03	1	400	1	1	0	0	SE
PILOT WHALE	92	4	NEC	J03	4	380	1	1	0	0	SE
PILOT WHALE	93	1	NEC	A03	3	450	1	1	0	0	NE
PILOT WHALE	93	2	NEC	A80	2	990	2	2	0	0	NE
PILOT WHALE	93	2	NEC	A80	5	990	1	1	0	0	NE
PILOT WHALE	93	2	NEC	A80	7	990	2	2	0	0	NE
PILOT WHALE	93	2	NEC	A04	6	816	1	1	0	0	NE
PILOT WHALE	93	2	SEC	I10	5	378	1	1	0	0	SE
PILOT WHALE	93	3	NEC	B02	14	812	1	1	0	0	NE
PILOT WHALE	93	4	NEC	A02	9	430	1	1	0	0	NE
PILOT WHALE	93	4	NEC	A11	3	792	1	1	0	0	NE
PILOT WHALE	93	4	NEC	A11	4	990	1	1	0	0	NE
PILOT WHALE	93	4	NEC	A11	5	990	1	1	0	0	NE
PILOT WHALE	93	4	NEC	A14	2	390	1	1	0	0	NE
PILOT WHALE	93	4	NEC	A88	1	700	1	1	0	0	NE
PILOT WHALE	93	4	NEC	A83	3	540	1	0	0	1	NE
PILOT WHALE	94	1	NEC	A02	1	840	1	1	0	0	NE
PILOT WHALE	94	3	NEC	A28030	3	586	1	1	0	0	NE
PILOT WHALE	94	3	NEC	A28030	10	768	1	0	0	1	NE
PILOT WHALE	94	3	NEC	A44004	4	850	1	0	0	1	NE
PILOT WHALE	94	3	NEC	A44004	5	768	1	0	0	1	NE
PILOT WHALE	94	3	NEC	A44004	7	768	1	0	0	1	NE
PILOT WHALE	94	3	SEC	A32006	2	775	5	0	0	5	NE
PILOT WHALE	94	3	SEC	A32006	3	345	1	0	0	1	NE
PILOT WHALE	94	4	NEC	A54005	1	1296	2	0	0	2	NE
PILOT WHALE	95	3	NEC	A44040	5	925	1	0	0	1	NE
PILOT WHALE	95	3	NEC	A62058	1	588	1	0	0	1	NE
PILOT WHALE	95	3	NEC	A62058	4	630	1	0	0	1	NE
PILOT WHALE	95	3	NEC	A41032	5	650	1	0	0	1	NE
PILOT WHALE	95	3	NEC	A44043	6	700	1	0	0	1	NE
PILOT WHALE	95	3	NEC	A25041	9	770	1	0	0	1	NE
PILOT WHALE	95	3	NEC	A41031	6	900	1	0	0	1	NE
PILOT WHALE	95	4	NEC	A41034	1	1000	1	1	0	0	NE
PILOT WHALE	95	4	NEC	A41034	7	1000	1	0	0	1	NE
PILOT WHALE	95	4	NEC	A41034	8	1000	2	0	0	2	NE
PILOT WHALE	95	4	NEC	A44048	14	650	1	0	0	1	NE
PILOT WHALE	95	4	SEC	T12	3	357	1	1	0	0	SE
PILOT WHALE	97	3	NEC	B10045	9	550	1	1	0	0	SE
RISSOS DOLPHIN	92	4	GOM	J04	10	920	1	1	0	0	SE
RISSOS DOLPHIN	92	4	NEC	I02	2	500	1	0	0	1	SE
RISSOS DOLPHIN	92	4	NEC	I02	3	470	1	0	0	1	SE
RISSOS DOLPHIN	93	1	GOM	I05	1	300	1	0	1	0	SE
RISSOS DOLPHIN	93	3	NEC	B01	12	840	1	1	0	0	NE
RISSOS DOLPHIN	93	3	NEC	H08	1	500	1	1	0	0	SE

COMMON NAME	YR	QTR	NAREA	TRIP	HAUL#	HOOKS	ANIMLS	ALIVE	DEAD	INJURED	SOURCE
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RISSOS DOLPHIN	94	3	NEC A32008	2	880	1	0	1	0	NE
RISSOS DOLPHIN	94	3	NEC A44004	6	672	1	0	0	1	NE
RISSOS DOLPHIN	94	3	NEC A44004	8	768	1	0	0	1	NE
RISSOS DOLPHIN	94	3	NEC A53037	13	803	1	0	0	1	NE
RISSOS DOLPHIN	94	4	NEC A62002	3	630	1	0	0	1	NE
RISSOS DOLPHIN	94	4	NEC A62002	7	672	1	0	0	1	NE
RISSOS DOLPHIN	94	4	NEC A62002	9	672	1	0	0	1	NE
RISSOS DOLPHIN	95	3	NEC A41031	9	950	1	0	0	1	NE
RISSOS DOLPHIN	95	3	NEC A44040	9	850	1	1	0	0	NE
RISSOS DOLPHIN	95	3	NEC A44043	3	653	1	0	0	1	NE
RISSOS DOLPHIN	95	3	NEC A44043	11	490	1	0	0	1	NE
RISSOS DOLPHIN	95	3	NED A53034	15	561	1	0	0	1	NE
RISSOS DOLPHIN	96	3	GOM F38	12	924	1	0	1	0	SE
RISSOS DOLPHIN	96	3	NEC F39	4	1010	2	2	0	0	SE
RISSOS DOLPHIN	96	3	NEC F39	8	900	1	0	0	1	SE
SHORT BEAKED SPINNER DOLPHIN	97	1	SEC F45	8	996	1	1	0	0	SE
SHORTFIN PILOT WHALE	95	3	NEC A62071	1	478	1	0	0	1	NE
SHORTFIN PILOT WHALE	95	3	NEC A62071	2	478	1	0	0	1	NE
SPOTTED DOLPHIN	93	1	NEC A01	6	735	1	1	0	0	NE
MARINE MAMMAL UNIDENTIFIED	95	3	NEC F29	5	635	1	1	0	0	SE
MARINE MAMMAL UNIDENTIFIED	96	4	SEC K17	1	552	1	1	0	0	SE
TOTAL						91	44	4	43	

Table 6(9). Quarterly (QTR) observed (obs.) and estimated (est.) bycatch of marine mammals in the U.S. Atlantic longline fishery for 1992-7, stratified by taxon-NAREA-year-quarter. The three categories are the total number of animals (CATCH), the number of animals out of the total which were seriously injured or dead (DEAD), and the number out of the total which were ALIVE upon return to the sea. The estimated coefficients of variation for the bycatch estimates (CV_C, CV_D, CV_A for total, dead, and alive catches, respectively), and upper and lower 95% lognormal confidence bounds (UCAT, LCAT for total catch; UDED, LDED for dead animals; and ULIV, LLIV for living animals) are also given. The proportion of positive bycatch (PPC) is the proportion of sets observed in the stratum (N) in which at least one marine mammal or turtle was captured; PPD is the subset of PPC in which the animal was observed to be seriously injured=dead (PPD); PPA is the subset of PPC in which the animal was observed to be alive upon return to the sea. The coverage (COV) for a stratum is the ratio of observed to reported effort (hooks). Coverage below 5% is in bold type. No listing for a species-NAREA-quarter stratum implies an estimate of 0 if there is observer coverage, or if the stratum has no observer coverage, that there is no estimate available. Decimals are rounded to the nearest hundredth.

	NAREA	YR	QTR	N	PPC	obs. CATCH	est. CATCH	CV_C	UCAT	LCAT	PPD	obs. DEAD	est. DEAD	CV_D	UDED	LDED	PPA	obs. ALIVE	est. ALIVE	CV_A	ULIV	LLIV	COV
DOLPHIN	NEC	92	3	36	0.03	1	25	1	128	5	0	0	0	.	.	.	0.03	1	25	1	128	5	0.03
PILOT WHALE	NEC	92	3	36	0.06	3	223	0.74	811	61	0.03	1	74	1	378	14	0.06	2	149	0.7	511	43	0.03
total	92	3	3	4	248	4	248					1	74	3	174			3	174				
RISSOS DOLPHIN	GOM	92	4	37	0.03	1	15	1	77	3	0	0	0	.	.	.	0.03	1	15	1	77	3	0.06
COMMON DOLPHIN	NEC	92	4	62	0.02	1	13	0.99	66	3	0	0	0	.	.	.	0.02	1	13	0.99	66	3	0.07
PILOT WHALE	NEC	92	4	62	0.13	9	146	0.35	285	75	0.03	2	30	0.71	105	9	0.11	7	116	0.38	238	57	0.07
RISSOS DOLPHIN	NEC	92	4	62	0.03	2	39	0.7	135	11	0.03	2	39	0.7	135	11	0	0	0	.	.	.	0.07
total	92	4	4	13	213	4	69					4	69	9	144			9	144				
RISSOS DOLPHIN	GOM	93	1	42	0.02	1	45	1	230	9	0.02	1	45	1	230	9	0	0	0	.	.	.	0.07
BOTTLENOSE DOLPHIN	NEC	93	1	43	0.02	1	2	0.98	10	0	0	0	0	.	.	.	0.02	1	2	0.98	10	0	0.48
PILOT WHALE	NEC	93	1	43	0.02	1	3	0.98	15	1	0	0	0	.	.	.	0.02	1	3	0.98	15	1	0.48
SPOTTED DOLPHIN	NEC	93	1	43	0.02	1	2	0.98	10	0	0	0	0	.	.	.	0.02	1	2	0.98	10	0	0.48
total	93	1	4	52	4	52						1	45	3	7			3	7				
PILOT WHALE	NEC	93	2	38	0.11	6	47	0.5	119	19	0	0	0	.	.	.	0.11	6	47	0.5	119	19	0.10
PILOT WHALE	SEC	93	2	54	0.02	1	22	1	112	4	0	0	0	.	.	.	0.02	1	22	1	112	4	0.05
total	93	2	7	69	7	69						0	0	7	69			7	69				
PILOT WHALE	NEC	93	3	106	0.01	1	15	1	77	3	0	0	0	.	.	.	0.01	1	15	1	77	3	0.06
RISSOS DOLPHIN	NEC	93	3	106	0.02	2	38	0.73	136	11	0	0	0	.	.	.	0.02	2	38	0.73	136	11	0.06
BOTTLENOSE DOLPHIN	NED	93	3	34	0.03	1	24	1	123	5	0	0	0	.	.	.	0.03	1	24	1	123	5	0.05
total	93	3	4	77	4	77						0	0	4	77			4	77				
PILOT WHALE	NEC	93	4	71	0.1	7	93	0.39	193	45	0.01	1	15	1	77	3	0.08	6	78	0.42	172	35	0.08
total	93	4	7	93	7	93						1	15	6	78			6	78				
PILOT WHALE	NEC	94	1	27	0.04	1	4	0.98	20	1	0	0	0	.	.	.	0.04	1	4	0.98	20	1	0.20
total	94	1	1	4	1	4						0	0	1	4			1	4				
PANTROPICAL SPOTTED DOLPHIN	GOM	94	2	33	0.03	1	26	1	133	5	0	0	0	.	.	.	0.03	1	26	1	133	5	0.04
total	94	2	1	26	1	26						0	0	1	26			1	26				

	NAREA	YR	QTR	N	PPC	obs. CATCH	est.	CV_C	UCAT	LCAT	PPD	obs. DEAD	est.	CV_D	UDED	LDED	PPA	obs. ALIVE	est.	CV_A	ULIV	LLIV	COV
ATLANTIC SPOTTED DOLPHIN	GOM	94	3	49	0.02	1	15	1	77	3	0.02	1	15	1	77	3	0	0	0	.	.	.	0.06
PILOT WHALE	NEC	94	3	99	0.05	5	75	0.44	172	33	0.04	4	56	0.49	140	22	0.01	1	19	1	97	4	0.07
RISSOS DOLPHIN	NEC	94	3	99	0.04	4	57	0.5	143	23	0.04	4	57	0.5	143	23	0	0	0	.	.	.	0.07
PILOT WHALE	SEC	94	3	46	0.04	6	49	0.75	182	13	0.04	6	49	0.75	182	13	0	0	0	.	.	.	0.07
total		94	3			16	196					15	177					1	19				
PILOT WHALE	NEC	94	4	78	0.01	2	16	1	82	3	0.01	2	16	1	82	3	0	0	0	.	.	.	0.07
RISSOS DOLPHIN	NEC	94	4	78	0.04	3	46	0.57	130	16	0.04	3	46	0.57	130	16	0	0	0	.	.	.	0.07
KILLER WHALE	NED	94	4	43	0.02	1	6	1.01	31	1	0.02	1	6	1.01	31	1	0	0	0	.	.	.	0.15
total		94	4			6	68					6	68					0	0				
UNIDENTIFIED	NEC	95	3	93	0.01	1	24	1	123	5	0	0	0	.	.	.	0.01	1	24	1	123	5	0.05
PILOT WHALE	NEC	95	3	93	0.08	7	146	0.37	295	72	0.08	7	146	0.37	295	72	0	0	0	.	.	.	0.05
RISSOS DOLPHIN	NEC	95	3	93	0.04	4	87	0.51	223	34	0.03	3	69	0.59	202	24	0.01	1	18	1	92	4	0.05
SHORTFIN PILOT WHALE	NEC	95	3	93	0.02	2	63	0.7	218	18	0.02	2	63	0.7	218	18	0	0	0	.	.	.	0.05
RISSOS DOLPHIN	NED	95	3	39	0.03	1	25	1	128	5	0.03	1	25	1	128	5	0	0	0	.	.	.	0.05
total		95	3			15	345					13	303					2	42				
PILOT WHALE	NEC	95	4	51	0.08	5	103	0.51	263	40	0.06	4	84	0.59	245	29	0.02	1	19	1	97	4	0.05
PILOT WHALE	SEC	95	4	13	0.08	1	33	1	169	6	0	0	0	.	.	.	0.08	1	33	1	169	6	0.03
total		95	4			6	136					4	84					2	52				
RISSOS DOLPHIN	GOM	96	3	43	0.02	1	23	1	118	4	0.02	1	23	1	118	4	0	0	0	.	.	.	0.04
RISSOS DOLPHIN	NEC	96	3	22	0.09	3	153	0.72	543	43	0.05	1	55	1	281	11	0.05	2	98	1	501	19	0.02
total		96	3			4	176					2	78					2	98				
UNIDENTIFIED	SEC	96	4	37	0.03	1	20	1	102	4	0	0	0	.	.	.	0.03	1	20	1	102	4	0.04
total		96	4			1	20					0	0					1	20				
SHORT-BEAKED SPINNER DOLPHIN	SEC	97	1	27	0.04	1	13	0.99	66	3	0	0	0	.	.	.	0.04	1	13	0.99	66	3	0.05
total		97	1			1	13					0	0					1	13				
PILOT WHALE	NEC	97	3	65	0.02	1	30	1	153	6	0	0	0	.	.	.	0.02	1	30	1	153	6	0.05
total		97	3			1	30					0	0					1	30				

Table 7(11). Annual observed (obs.) and estimated (est.) bycatch of marine mammals in the U.S. Atlantic longline fishery for 1992-1997, stratified by taxon-NAREA-yr. The three categories are the total number of animals (CATCH), the number of animals out of the total which were seriously injured or dead (DEAD), and the number out of the total which were ALIVE upon return to the sea. The estimated coefficients of variation for the bycatch estimates (CV_C, CV_D, CV_A for total, dead, and alive catches, respectively), and upper and lower 95% lognormal confidence bounds (UCAT, LCAT for total catch; UDED, LDED for dead animals; and ULIV, LLIV for living animals) are also given. The proportion of positive bycatch (PPC) is the proportion of sets observed in the stratum (N) in which at least one marine mammal or turtle was captured; PPD is the subset of PPC in which the animal was observed to be seriously injured=dead (PPD); PPA is the subset of PPC in which the animal was observed to be alive upon return to the sea. The coverage (COV) for a stratum is the ratio of observed to reported effort (hooks). No listing for a species-NAREA stratum implies an estimate of 0 if there is observer coverage, or if the stratum has no observer coverage, that there is no estimate available. Decimals are rounded to the nearest hundredth.

	NAREA	YR	N	PPC	obs.	est.	CV_C	UCAT	LCAT	PPD	obs.	est.	CV_D	UDED	LDED	PPA	obs.	est.	CV_A	ULIV	LLIV	COV
					CATCH						DEAD						ALIVE					
RISSOS DOLPHIN	GOM	92	61	0.02	1	47	1	240	9	0	0	0	.	.	.	0.02	1	47	1	240	9	0.02
COMMON DOLPHIN	NEC	92	105	0.01	1	27	1	138	5	0	0	0	.	.	.	0.01	1	27	1	138	5	0.04
DOLPHIN	NEC	92	105	0.01	1	18	1	92	4	0	0	0	.	.	.	0.01	1	18	1	92	4	0.04
PILOT WHALE	NEC	92	105	0.10	12	465	0.33	881	246	0.03	3	116	0.6	342	39	0.09	9	352	0.34	675	184	0.04
RISSOS DOLPHIN	NEC	92	105	0.02	2	82	0.7	284	24	0.02	2	82	0.7	284	24	0.00	0	0	.	.	.	0.04
total					17	639					5	198					12	444				
RISSOS DOLPHIN	GOM	93	233	0.00	1	36	1	184	7	0	1	36	1	184	7	0.00	0	0	.	.	.	0.08
BOTTLENOSE DOLPHIN	NEC	93	258	0.00	1	13	0.99	66	3	0	0	0	.	.	.	0.00	1	13	0.99	66	3	0.08
PILOT WHALE	NEC	93	258	0.05	15	180	0.29	312	104	0	1	16	1	82	3	0.05	14	164	0.3	291	92	0.08
RISSOS DOLPHIN	NEC	93	258	0.01	2	27	0.73	97	8	0	0	0	.	.	.	0.01	2	27	0.73	97	8	0.08
SPOTTED DOLPHIN	NEC	93	258	0.00	1	12	1	61	2	0	0	0	.	.	.	0.00	1	12	1	61	2	0.08
BOTTLENOSE DOLPHIN	NED	93	75	0.01	1	18	1	92	4	0	0	0	.	.	.	0.01	1	18	1	92	4	0.07
PILOT WHALE	SEC	93	154	0.01	1	20	1	102	4	0	0	0	.	.	.	0.01	1	20	1	102	4	0.06
total					22	306					2	52					20	254				
ATLANTIC SPOTTED DOLPHIN	GOM	94	154	0.01	1	17	1	87	3	0.01	1	17	1	87	3	0.00	0	0	.	.	.	0.05
PANTROPICAL SPOTTED DOLPHIN	GOM	94	154	0.01	1	20	1	102	4	0	0	0	.	.	.	0.01	1	20	1	102	4	0.05
PILOT WHALE	NEC	94	244	0.03	8	86	0.38	176	42	0.02	6	60	0.44	138	26	0.01	2	26	0.72	92	7	0.08
RISSOS DOLPHIN	NEC	94	244	0.03	7	88	0.37	179	43	0.03	7	88	0.37	179	43	0.00	0	0	.	.	.	0.08
KILLER WHALE	NED	94	61	0.02	1	14	1	72	3	0.02	1	14	1	72	3	0.00	0	0	.	.	.	0.07
PILOT WHALE	SEC	94	136	0.01	6	82	0.76	306	22	0.01	6	82	0.76	306	22	0.00	0	0	.	.	.	0.04
total					24	307					21	261					3	46				
	NAREA	YR	N	PPC	obs.	est.	CV_C	UCAT	LCAT	PPD	obs.	est.	CV_D	UDED	LDED	PPA	obs.	est.	CV_A	ULIV	LLIV	COV

					CATCH					DEAD					ALIVE							
UNIDENTIFIED	NEC	95	205	0.00	1	22	1	112	4	0	0	0	.	.	.	0.00	1	22	1	112	4	0.05
PILOT WHALE	NEC	95	205	0.05	12	211	0.3	376	118	0.05	11	197	0.32	361	108	0.00	1	14	1	72	3	0.05
RISSOS DOLPHIN	NEC	95	205	0.02	4	80	0.51	206	31	0.01	3	64	0.59	188	22	0.00	1	16	1	82	3	0.05
SHORTFIN PILOT WHALE	NEC	95	205	0.01	2	58	0.71	202	17	0.01	2	58	0.71	202	17	0.00	0	0	.	.	.	0.05
RISSOS DOLPHIN	NED	95	65	0.02	1	20	1	102	4	0.02	1	20	1	102	4	0.00	0	0	.	.	.	0.07
PILOT WHALE	SEC	95	79	0.01	1	40	1	205	8	0	0	0	.	.	.	0.01	1	40	1	205	8	0.03
	total				21	431					17	339					4	92				
RISSOS DOLPHIN	GOM	96	128	0.01	1	25	1	128	5	0.01	1	25	1	128	5	0.00	0	0	.	.	.	0.03
RISSOS DOLPHIN	NEC	96	23	0.09	3	240	0.72	852	68	0.04	1	86	1	440	17	0.04	2	153	1	782	30	0.01
UNIDENTIFIED	SEC	96	127	0.01	1	26	1	133	5	0	0	0	.	.	.	0.01	1	26	1	133	5	0.03
	total				5	291					2	111					3	179				
PILOT WHALE	NEC	97	98	0.01	1	34	1	174	7	0	0	0	.	.	.	0.01	1	34	1	174	7	0.04
SHORT BEAKED SPINNER DOLPHIN	SEC	97	95	0.01	1	13	0.99	66	3	0	0	0	.	.	.	0.01	1	13	0.99	66	3	0.04
	total				2	47					0	0					2	47				

Table 8(12). A) Annual observed (obs.) and estimated (est.) bycatch of marine mammals in the U.S. Atlantic longline fishery for 1992-1997, stratified by taxon-MAREA (major ocean regions)-year. The three categories are the total number of animals (CATCH), the number of animals out of the total which were seriously injured or dead (DEAD), and the number out of the total which were ALIVE upon return to the sea. The estimated coefficients of variation for the bycatch estimates (CV_C, CV_D, CV_A for total, dead, and alive catches, respectively), and upper and lower 95% lognormal confidence bounds (UCAT, LCAT for total catch; UDED, LDED for dead animals; and ULIV, LLIV for living animals) are also given. The proportion of positive bycatch (PPC) is the proportion of sets observed in the stratum (N) in which at least one marine mammal or turtle was captured; PPD is the subset of PPC in which the animal was observed to be seriously injured=dead (PPD); PPA is the subset of PPC in which the animal was observed to be alive upon return to the sea. The estimates here represent a summation of the stratum-wise estimates in Table 9. No listing for a species-year-MAREA stratum implies an estimate of 0 if there is observer coverage, or if the stratum has no observer coverage, that there is no estimate available. Decimals are rounded to the nearest hundredth.

	MAREA	YR	N	PPC	obs. CATCH	est. CATCH	CV_C	UCAT	LCAT	PPD	obs. DEAD	est. DEAD	CV_D	UDED	LDED	PPA	obs. ALIVE	est. ALIVE	CV_A	ULIV	LLIV
RISSOS DOLPHIN	GOM	92	61	0.02	1	47	1	240	9	0	0	0	.	.	.	0.02	1	47	1	240	9
COMMON DOLPHIN	US ATL	92	176	0.01	1	24	1	123	5	0	0	0	.	.	.	0.01	1	24	1	123	5
DOLPHIN	US ATL	92	176	0.01	1	17	1	87	3	0	0	0	.	.	.	0.01	1	17	1	87	3
PILOT WHALE	US ATL	92	176	0.06	12	420	0.34	803	220	0.02	3	105	0.6	311	35	0.05	9	319	0.35	617	165
RISSOS DOLPHIN	US ATL	92	176	0.01	2	74	0.71	257	21	0.01	2	74	0.71	257	21	0	0	0	.	.	.
RISSOS DOLPHIN	GOM	93	233	0	1	36	1	184	7	0	1	36	1	184	7	0	0	0	.	.	.
BOTTLENOSE DOLPHIN	OTHATL	93	170	0.01	1	16	1	82	3	0	0	0	.	.	.	0.01	1	16	1	82	3
BOTTLENOSE DOLPHIN	US ATL	93	412	0	1	13	0.99	66	3	0	0	0	.	.	.	0	1	13	0.99	66	3
PILOT WHALE	US ATL	93	412	0.03	16	193	0.28	330	113	0	1	15	1	77	3	0.03	15	178	0.29	311	102
RISSOS DOLPHIN	US ATL	93	412	0	2	26	0.73	93	7	0	0	0	.	.	.	0	2	26	0.73	93	7
SPOTTED DOLPHIN	US ATL	93	412	0	1	11	1	56	2	0	0	0	.	.	.	0	1	11	1	56	2
ATLANTIC SPOTTED DOLPHIN	GOM	94	154	0.01	1	17	1	87	3	0.01	1	17	1	87	3	0	0	0	.	.	.
PANTROPICAL SPOTTED DOLPHIN	GOM	94	154	0.01	1	20	1	102	4	0	0	0	.	.	.	0.01	1	20	1	102	4
KILLER WHALE	OTHATL	94	115	0.01	1	16	1	82	3	0.01	1	16	1	82	3	0	0	0	.	.	.
PILOT WHALE	US ATL	94	380	0.02	14	161	0.38	328	79	0.02	12	137	0.44	310	61	0.01	2	26	0.72	92	7
RISSOS DOLPHIN	US ATL	94	380	0.02	7	87	0.38	178	43	0.02	7	87	0.38	178	43	0	0	0	.	.	.
RISSOS DOLPHIN	OTHATL	95	204	0	1	20	1	102	4	0	1	20	1	102	4	0	0	0	.	.	.
MARINE MAMMAL UNIDENTIFIED	US ATL	95	284	0	1	22	1	112	4	0	0	0	.	.	.	0	1	22	1	112	4
PILOT WHALE	US ATL	95	284	0.04	13	252	0.3	444	143	0.04	11	200	0.32	368	109	0.01	2	53	0.78	205	14
RISSOS DOLPHIN	US ATL	95	284	0.01	4	81	0.51	209	31	0.01	3	65	0.59	191	22	0	1	16	1	82	3
SHORTFIN PILOT WHALE	US ATL	95	284	0.01	2	58	0.71	202	17	0.01	2	58	0.71	202	17	0	0	0	.	.	.
RISSOS DOLPHIN	GOM	96	128	0.01	1	25	1	128	5	0.01	1	25	1	128	5	0	0	0	.	.	.
MARINE MAMMAL UNIDENTIFIED	US ATL	96	150	0.01	1	43	1	220	8	0	0	0	.	.	.	0.01	1	43	1	220	8
RISSOS DOLPHIN	US ATL	96	150	0.01	3	74	0.73	267	20	0.01	1	27	1	138	5	0.01	2	47	1	240	9
PILOT WHALE	US ATL	97	193	0.01	1	29	1	148	6	0	0	0	.	.	.	0.01	1	29	1	148	6
SHORT BEAKED SPINNER DOLPHIN	US ATL	97	193	0.01	1	16	1	82	3	0	0	0	.	.	.	0.01	1	16	1	82	3

Table 9(13). Annual observed (obs.) and estimated (est.) bycatch of marine mammals and marine turtles in the U.S. Atlantic longline fishery for 1992-1997, stratified by group (marine mammal)-MAREA (major ocean regions)-year. The three categories are the total number of animals (CATCH), the number of animals out of the total which were seriously injured or dead (DEAD), and the number out of the total which were ALIVE upon return to the sea. The estimated coefficients of variation for the bycatch estimates (CV_C, CV_D, CV_A for total, dead, and alive catches, respectively), and upper and lower 95% lognormal confidence bounds (UCAT, LCAT for total catch; UDED, LDED for dead animals; and ULIV, LLIV for living animals) are also given. The proportion of positive bycatch (PPC) is the proportion of sets observed in the stratum (N) in which at least one marine mammal or turtle was captured; PPD is the subset of PPC in which the animal was observed to be seriously injured=dead (PPD); PPA is the subset of PPC in which the animal was observed to be alive upon return to the sea. The estimates here represent a summation of the of stratum-wise estimates in Table 9. No listing for a stratum implies an estimate of 0 if there is observer coverage, or if the stratum has no observer coverage, that there is no estimate available. Decimals are rounded to the nearest hundredth.

MAREA	YR	N	PPC	obs. CATCH	est. CATCH	CV_C	UCAT	LCAT	PPD	obs. DEAD	est. DEAD	CV_D	UDED	LDED	PPA	obs. ALIVE	est. ALIVE	CV_A	ULIV	LLIV
MARINE MAMMALS																				
GOM	92	61	0.02	1	47	1	240	9	0	0	0	.	.	.	0.02	1	47	1	240	9
US ATL	92	176	0.08	16	534	0.28	922	309	0.03	5	179	0.46	419	77	0.06	11	359	0.31	656	196
total	92			17	581		1162	318		5	179		419	77		12	406		896	205
GOM	93	233	0	1	36	1	184	7	0	1	36	1	184	7	0	0	0	.	.	.
OTHATL	93	170	0.01	1	16	1	82	3	0	0	0	.	.	.	0.01	1	16	1	82	3
US ATL	93	412	0.04	20	242	0.24	387	151	0	1	15	1	77	3	0.04	19	227	0.25	369	140
total	93			22	294		653	161		2	51		261	10		20	243		451	143
GOM	94	154	0.01	2	37	0.71	129	11	0.01	1	17	1	87	3	0.01	1	20	1	102	4
OTHATL	94	115	0.01	1	16	1	82	3	0.01	1	16	1	82	3	0	0	0	.	.	.
US ATL	94	380	0.04	21	246	0.27	412	147	0.04	19	221	0.29	385	127	0.01	2	26	0.72	92	7
total	94			24	299		623	161		21	254		554	133		3	46		194	11
OTHATL	95	204	0	1	20	1	102	4	0	1	20	1	102	4	0	0	0	.	.	.
US ATL	95	284	0.07	20	414	0.23	648	264	0.05	16	323	0.26	533	196	0.01	4	91	0.53	243	34
total	95			21	434		750	268		17	343		635	200		4	91		243	34
GOM	96	128	0.01	1	25	1	128	5	0.01	1	25	1	128	5	0	0	0	.	.	.
US ATL	96	150	0.02	4	118	0.59	345	40	0.01	1	27	1	138	5	0.01	3	91	0.7	316	26
total	96			5	143		473	45		2	52		266	10		3	91		316	26
US ATL	97	193	0.01	2	45	0.73	163	12	0	0	0	.	.	.	0.01	2	45	0.73	163	12
total	97			2	45		163	12		0	0		0	0		2	45		163	12

Table 10(17). Observer comments relating to the condition of marine mammals observed caught in 1992-1997 by U.S. pelagic longline vessels operating in the North Atlantic. Unique trip identifier (TRIP #), date landed, common name of species taken, latitude (Lat), longitude (Lon), and estimated body length are given. Past status refers to the classification of the animal as "dead", "alive", or "unk(nown)" in Table 6¹ of Johnson et al. (1999). Injury codes 1-15 refer to criteria used to classified

animals as "seriously injured" in the present analysis (Table 1):

- | | | |
|---|--|---------------------------|
| 1=Loss of/damage to appendage/jaw | 2=Inability to use appendage(s) | 3=Asymmetry in body shape |
| 4=Rupture/puncture of eyeball | 5=Inability to swim or dive | 6=Ingestion of gear |
| 7=Mouth is bound by the gear | 8=Cetacean is hooked internally (e.g., in the mouth) | |
| 9=Animal is anchored | 10=Line/net entangling the animal is likely to further entangle the animal | |
| 11=Visible blood flow. | 12=Swelling or hemorrhage. | 13=Laceration. |
| 14=Listlessness/inability to defend itself. | 15=Equilibrium imbalance. | |

A '?' beside the code number indicates that such injury was probably sustained. Animals with types of injury matching at least one of criteria 1-10 were considered to be seriously injured (S.I. = 'Y') and were assumed to have died. Other types of injury were not considered serious (S.I. = 'N') and the animal was assumed to have survived. The source of the incidental take information is either from the SEFSC (SE) or the NESFC (NE). "Photo" indicates whether a photograph was taken, if so, the number of photographs and the quality (poor, good) were specified; a blank indicates no photographs were taken.

common name	yr	qtr	area	trip	haul	date	lat	lon	past status	injury code	S.I.	source	photo	estimated length (cm)	observer's comments
1 pilot whale	92	3	NEC	A27	4	9/3/92	37 12	74 29	alive	10?,13	N	NE		335	Small cut on part of the tail by mainline wrap.
2 pilot whale	92	3	NEC	A27	5	9/4/92	37 10	74 26	alive	10?,13	N	NE		375	Tail cut slightly by mainline.
3 pilot whale	92	3	NEC	A27	5	9/4/92	37 10	74 26	dead			NE		300	Dead, moderately decomposed.
4 dolphin	92	3	NEC	A30	2	6/17/92	39 51	61 55	alive		?	NE		200	Alive, condition unknown.
5 pilot whale	92	4	NEC	A02	1	10/1/92	36 53	74 32	alive	6?,8?	?	NE		300	Seemed to be hooked. If so, it bit off the hook. It could also have been just feeding on discarded bait.
6 pilot whale	92	4	NEC	A02	5	10/5/92	37 03	74 10	alive	8	Y	NE		250	Caught on hook. Gangion cut, hook left in mouth.
7 common dolphin	92	4	NEC	A03	5	10/6/92	39 55	70 05	alive		N	NE		305	Mainline caught on tail, animal unhurt.
8 pilot whale	92	4	NEC	A25	2	12/15/92	36 07	74 38	alive		N	NE		244	Mainline in mouth. Captain pulled mainline and freed whale.
9 pilot whale	92	4	NEC	A40	5	10/22/92	38 59	72 48	alive	10?,11,13	N	NE		250	Tail caught in mainline. Cut off as much gear as possible in rough seas. Swam away, but line had cut into right side of tail flukes, which was bleeding slightly.
10 pilot whale	92	4	NEC	A63	3	11/9/92	37 51	74 00	alive		N	NE			Caught on the mainline. Within ~ 20 ft of the boat it freed itself and swam away.
11 pilot whale	92	4	NEC	A63	4	11/9/92	37 53	74 09	alive	6?,8?,10?	?	NE		305	Caught in a gangion and not necessarily hooked. Line was cut and it swam away.
common name	yr	qtr	area	trip	haul	date	lat	lon	past status	injury code	S.I.	source	photo	estimated length (cm)	observer's comments
12 pilot whale	92	4	NEC	A63	4	11/9/92	37 53	74 09	alive	10	Y	NE		366	Tangled in mainline with a wrap or two around its body. It was hauled to the side of the boat and held for about one minute while the line was cut. Swam away, seemingly

uninjured.

13 Risso's dolphin	92	4	NEC	I02	2	11/9/92	35 37 74 37	unk	6?,8,10?	Y	SE		300	Caught (hooked) on longline gear - was alive and well; was cut off line and swam away with in a pod of about 20 animals.	
14 Risso's dolphin	92	4	NEC	I02	3	11/9/92	35 54 74 20	alive	6?,8,10?	Y	SE		280	Hooked on longline gear - alive and well; line was cut off and swam away. Was in a pod of about 15 animals.	
15 pilot whale	92	4	NEC	J03	1	11/4/92	38 05 73 45	alive		?	SE			Alive, condition unknown	
16 pilot whale	92	4	NEC	J03	4	11/4/92	38 13 73 50	alive		?	SE			Alive, condition unknown	
17 Risso's dolphin	92	4	GOM	J04	10	12/8/92	25 54 84 47	alive		?	SE			Alive, condition unknown	
18 spotted dolphin	93	1	NEC	A01	6	1/7/93	35 27 74 49	alive		?	NE			N/A	
19 bottlenose dolphin	93	1	NEC	A03	2	2/9/93	35 43 74 43	alive	6?,8?,10?	?	NE		210	Uninjured, immediately swam away after cutting monofilament ~25 ft. from hook.	
20 pilot whale	93	1	NEC	A03	3	2/9/93	35 41 74 45	alive	10?	?	NE		250	Mainline wrapped several times around tail - cut free with no apparent injury.	
21 Risso's dolphin	93	1	GOM	I05	1	2/14/93	24 56 84 18	dead	5,9,10		SE		200	Animal was tail tied in mainline, drowned - fresh, no decomposition.	
22 pilot whale	93	2	NEC	A04	6	5/13/93	39 39 69 04	alive	10?	?	NE		250	Female, tail wrapped. A second female pilot whale was waiting alongside.	
23 pilot whale	93	2	NEC	A80	2	6/8/93	35 48 74 26	alive		?	NE		300	Alive, uninjured	
24 pilot whale	93	2	NEC	A80	2	6/8/93	35 48 74 26	alive		?	NE		240	Alive, uninjured	
25 pilot whale	93	2	NEC	A80	5	6/8/93	35 55 74 30	alive	10?	?	NE		240	Not hooked - tail tangled in mainline. Cut free and swam off.	
26 pilot whale	93	2	NEC	A80	7	6/8/93	35 52 74 47	alive		?	NE		210	Alive, uninjured	
27 pilot whale	93	2	NEC	A80	7	6/8/93	35 52 74 47	alive		?	NE		240	Alive, uninjured	
28 pilot whale	93	2	SEC	I10	5	6/18/93	29 08 79 52	alive	10?	?	SE		200	Animal was in a pod of about 8-10 individuals. Animal was tail tied, cut freed, and swam away alive.	
29 Risso's dolphin	93	3	NEC	B01	12	8/7/93	40 16 67 40	alive	10?	?	NE		305	Tail wrapped. Crew cut mainline. Only small amount of monofilament remained on tail. Swam away slowly.	
30 pilot whale	93	3	NEC	B02	14	8/15/93	39 17 70 00	alive		N	NE		210	Not hooked, but had a wrap of mainline around caudal peduncle. Released unharmed.	
31 Risso's dolphin	93	3	NEC	H08	1	8/2/93	35 22 74 44	alive		?	SE			Alive, condition unknown	
32 bottlenose dolphin	93	3	NED	M02	14	7/26/93	43 52 39 53	alive		?	SE		205	Alive, not injured	
33 pilot whale	93	4	NEC	A02	9	10/1/93	39 04 72 30	alive		?	NE	6, poor	244	Alive, condition unknown	
34 pilot whale	93	4	NEC	A11	3	11/1/93	36 54 74 36	alive	6?,8?,10?	?	NE		195	Leader was cut and animal released unharmed	
common name	yr	qtr	area	trip	haul	date	lat	lon	status	injury code	S.I.	source	photo	estimated length (cm)	observer's comments
35 pilot whale	93	4	NEC	A11	4	11/1/93	36 56 74 37	alive		N	NE			180	Wrapped in mainline and float drop, but not hooked. Line was worked free and animal released unharmed.
36 pilot whale	93	4	NEC	A11	5	11/1/93	38 15 73 25	alive	6?,8?,10?	?	NE			210	Leader cut and animal released unharmed.

37 pilot whale	93	4	NEC	A14	2	11/7/93	37 20 74 24	alive	6?,8?,10?	?	NE			305	Wrapped up but it dove under boat and crew cut line.
38 pilot whale	93	4	NEC	A83	3	12/20/93	35 37 74 23	alive	6?,8,10?	Y	NE			750	Mainline cut and hook, line and snap left in whale.
39 pilot whale	93	4	NEC	A88	1	11/19/93	37 17 74 24	alive		?	NE			210	Alive, uninjured
40 pilot whale	94	1	NEC	A02	1	1/8/94	37 15 74 20	alive		?	NE			168	Alive, condition unknown.
41 pantropical spotted dolphin	94	2	GOM	F15	6	6/20/94	27 37 88 25	alive		N	SE			250	Tail wrapped in a float dropline. The dolphin was brought aboard and the captain removed the line from the tail and successfully released the dolphin, which swam off uninjured.
42 pilot whale	94	3	NEC	A28030	3	8/9/94	39 01 72 41	alive		N	NE			250	Had mainline wrapped around its fluke; one end of the longline was cut while the other was pulled. This removed all of the mainline around the animal and it swam away.
43 pilot whale	94	3	NEC	A28030	10	8/16/94	38 55 72 51	alive	1,10?	Y	NE			213	Foul hooked in the pectoral fin. The gangion was cut and the animal swam away.
44 pilot whale	94	3	SEC	A32006	2	8/11/94	37 15 74 29	alive	6?,8,10?	Y	NE			305	Alive, gear in/around mouth. Took bait, gangion cut, whale freed
45 pilot whale	94	3	SEC	A32006	2	8/11/94	37 15 74 29	alive	6?,8,10?	Y	NE			274	Alive, gear in/around mouth. Took bait, gangion cut, whale freed. Remained at surface about one minute, then swam off.
46 pilot whale	94	3	SEC	A32006	2	8/11/94	37 15 74 29	alive	6?,8,10?	Y	NE			213	Alive, gear in/around mouth. Took bait, gangion cut, whale freed.
47 pilot whale	94	3	SEC	A32006	2	8/11/94	37 15 74 29	alive	6?,8,10?	Y	NE			213	Alive, gear in/around mouth. Took bait, gangion cut, whale freed.
48 pilot whale	94	3	SEC	A32006	2	8/11/94	37 15 74 29	alive	6?,8,10?	Y	NE			213	Alive, gear in/around mouth. Took bait, gangion cut, whale freed.
49 pilot whale	94	3	SEC	A32006	3	8/12/94	37 20 74 20	alive	1,10?	Y	NE			185	Foul hooked, cut from gear. Tangled in mainline, cut free, "unharmred".
50 Risso's dolphin	94	3	NEC	A32008	2	8/26/94	38 45 72 54	dead	5,9,10		NE			300	Wrapped in longline gear, mainline wrapped around body immediately adjacent to the flukes
51 pilot whale	94	3	NEC	A44004	4	9/16/94	38 24 73 24	alive	1,10?	Y	NE			300	Foul hooked in dorsal fin and release required cutting the mainline with gangion still attached. Animal was very much alive and swam off strongly.
52 pilot whale	94	3	NEC	A44004	5	9/17/94	38 16 73 30	alive	1?,10	Y	NE			300	Had to be cut from mainline before release with 6 wraps of mainline and part of a gangion around the base of the tail flukes. Animal was alive and in fair condition and when released, sank a few feet before swimming off slowly.
53 pilot whale	94	3	NEC	A44004	7	9/19/94	37 50 73 19	alive	6?,8,10	Y	NE			300	Was hooked in mouth and was hauled towards boat for about 10 minutes before it was cut from the mainline. It swam off strongly trailing approximately 50 fathoms of mainline from its mouth. Unlike previous takes of pilot whales, there were no sightings of additional animals in immediate area.
common name	yr	qtr	area	trip	haul	date	lat	lon	status	injury code	S.I.	source	photo	estimated length (cm)	observer's comments
54 Risso's dolphin	94	3	NEC	A44004	6	9/18/94	38 02 73 17	alive	8,10?	Y	NE			240	Was hooked in mouth and broke gangion from mainline when brought to within 5 yards of boat. ID characteristics included bulbous head, shortened body, falcate fin and uniform light gray color with scars along flanks and head.

55 Risso's dolphin	94	3	NEC	A44004	8	9/21/94	39 52 70 02	alive	1,10	Y	NE		250	Foul hooked in right tail fluke and mainline had to be cut to release. Some trailing mainline and leader still around tail.	
56 Risso's dolphin	94	3	NEC	A53037	13	9/21/94	39 55 69 20	alive	1?,6?,8?,10?	Y	NE	2, poor	300	Removal requires cutting of gear/animal. Alive, gear in/around another single body part.	
57 Atlantic spotted dolphin	94	3	GOM	F16	7	7/17/94	29 07 87 20	alive	8	Y	SE		152	Hooked in the corner of the mouth with the gangion line wrapped around its snout 3 times. Successfully unwrapped the line around its snout but the hook remained it. The dolphin swam away hurriedly in what appeared to be very good condition.	
58 killer whale	94	4	NED	A54003	15	9/21/94	47 24 40 48	alive	8,10?	Y	NE	2, poor	375	Fell from gear before exiting water. Alive, gear in/around mouth.	
59 pilot whale	94	4	NEC	A54005	1	12/9/94	35 42 74 42	alive	6?,8,10?	Y	NE		250	Alive, gear in/around mouth. Removal requires cutting of gear/animal	
60 pilot whale	94	4	NEC	A54005	1	12/9/94	35 42 74 42	alive	1?,10?	Y	NE	3, poor	250	Alive, gear in/around another single body part. Removal requires cutting of gear/animal	
61 Risso's dolphin	94	4	NEC	A62002	3	10/21/94	39 48 69 59	alive	10,11,13	Y	NE	2, good	350	Well-tangled about the fluke with a fair amount of mainline. Released with a good portion of the mainline still wrapped around the fluke. The captain hoisted the animal up and cut the mainline and it went off. It did not appear to be badly injured. There was a little bit of blood dripping from the caudal peduncle as it was hoisted up. The mainline wrapped around the flukes most probably came right off due to the nylon's rigid quality. The captain and crew were extremely careful in approaching the animal and cutting the gear. Probably young because did not display extensive scarring that an adult would characteristically have. The scarring was concentrated around the head, and dorsally to the anterior margin of the tall falcate dorsal. <i>Photos show very well the line wrapped around tail tightly. May indicate injury.</i>	
62 Risso's dolphin	94	4	NEC	A62002	7	10/25/94	39 44 70 54	alive	6?,8,10	Y	NE	1, poor	310	Hooked in the mouth. The captain pulled the gangion to the boat (after a considerable struggle for five minutes) and cut the line. It still had a hook and approximately 7 fathoms of 400 lb test line trailing from its mouth. The scarring of this individual looked to be extensive around the head, indicating an adult in mid to late life.	
63 Risso's dolphin	94	4	NEC	A62002	9	10/27/94	39 46 70 56	alive	6?,8,10	Y	NE	1, poor	230	Probably hooked in the mouth and appeared to be wrapped with line about the midsection of the body quite well. When the gangion was cut, it took off quite sluggishly. Not like the other two individuals we had caught prior during this trip. It seemed to "labor" away as if it had struggled all night long to free itself or was severely tangled about the midsection or tail flukes. It was not a healthy-looking getaway. The other two individuals caught previously this week produced mighty slaps of their flukes as the gangions were cut and scurried away, but this one did not but was rather lifeless. Could have been hooked and entangled early during the set and struggled all night to free itself and thus worn out.	
common name	yr	qtr	area	trip	haul	date	lat	lon	status	injury code	S.I.	source	photo	estimated length (cm)	observer's comments
64 pilot whale	95	3	NEC	A25041	9	8/10/95	40 15 67 53	alive	1?,6?,8?,10?	Y	NE			214	Could not tell whether hooked (gangion cut at snap) or just wrapped in line.
65 pilot whale	95	3	NEC	A41031	6	8/9/95	40 20 67 55	alive	6?,8,10?	Y	NE			280	Mouth hooked and line parted as captain attempted to get leader and cut it.
66 Risso's dolphin	95	3	NEC	A41031	9	8/12/95	40 25 67 30	alive	6?,8,10?	Y	NE			225	Surfaced 50 m from boat with hook in mouth. As he swam towards boat, captain grabbed gangion and cut it. Swam away apparently unharmed.

67 pilot whale	95	3	NEC	A41032	5	9/1/95	38 04	73 46	alive	1,10?	Y	NE		300	ganglion and cut it. Swam away apparently unharmed.
68 pilot whale	95	3	NEC	A44040	5	8/4/95	37 33	74 10	alive	1,10?	Y	NE	3, poor	300	Foul hooked, cut from gear. Alive, condition unknown.
69 Risso's dolphin	95	3	NEC	A44040	9	8/13/95	39 25	72 02	alive		N	NE	3, poor	180	Mainline and ganglion wrapped around tail. All gear cut from animal before release.
70 pilot whale	95	3	NEC	A44043	6	9/9/95	39 05	72 30	alive	1,10?	Y	NE		210	Foul hooked in flipper - broke ganglion off as it was hauled
71 Risso's dolphin	95	3	NEC	A44043	3	8/31/95	39 43	71 49	alive	6?,8?,10?	Y	NE		180	Mainline cut from around tail flukes and pulled from mouth. Animal swam off quickly upon release.
72 Risso's dolphin	95	3	NEC	A44043	11	9/7/95	39 05	72 32	alive	10?	Y	NE	1, poor	210	Mainline cut from around tail flukes. Animal swam off slowly after blowing.
73 Risso's dolphin (mis-identified as pilot whale before)	95	3	NED	A53034	15	9/13/95	46 13	40 07	alive	6?,8,10?	Y	NE	2, poor	400	Removal required cutting of gear/animal. Alive, gear in/around mouth. Animal came in on line. Appeared to be a pilot whale in size and shape. However animal was grey in color and had markings on back like a Risso's dolphin. Did not see indented head and was not able to see lower jaw. Animal was alive and appeared in good condition. Animal moved very quickly away from vessel after being cut free. <i>Photos show Risso's dolphin and not the pilot whale reported in the incidental take log, but cannot discern manner of entanglement or animal condition.</i>
74 pilot whale	95	3	NEC	A62058	1	8/13/95	37 01	74 31	alive	6?,8,10?	Y	NE		270	The whale jumped enough out of the water to see its upper flank and head. The animal was tethered to the mainline via a ganglion, with hook stuck inside the mouth. The animal went under and the captain cut the ganglion freeing the animal. This individual was probably a 2nd year sub-adult. It was freed with the hook in its mouth. It took off like an arrow when the ganglion was cut. The observer commented that the only concern about this animal is the possibility of infection from the hook wound in the mouth, or hindrance of feeding efficiency due to the gear hanging from its mouth, if it was not dislodged. Also, this was the 4 out of 7 trips in which this observer has seen a marine mammal foul hooked in the mouth. Marine mammals taking the longline bait have been observed to devour everything but the gill plates, with hook stuck in either the lower or upper maxilla.
75 pilot whale	95	3	NEC	A62058	4	8/14/95	37 09	74 24	alive	6?,8?,10, 13?	Y	NE		250	Thoroughly and extensively wrapped. Quite a bit of mainline around its caudal peduncle. No evidence of having been hooked in its mouth or head. It was pulled up to the boat. The tangle of line around its peduncle was cut at, with little success. It was tight. We cut some outer strands and it severed the line leading to the vessel, and free line from the animal into the depths of the ocean. Young individual. Left side of vessel with deep breath and a powerful flick of the flukes and dove underneath the vessel. Appeared to be in fairly good shape.
common name	yr	qtr	area	trip	haul	date	lat	lon	status	injury code	S.I.	source	photo	estimated length (cm)	observer's comments
76 shortfin pilot whale	95	3	NEC	A62071	1	9/28/95	38 28	73 30	alive	1,10?	Y	NE		325	Instead of having only the ganglion wrapped around the caudal peduncle, the hook was imbedded into the peduncle itself. Only one or two wraps of the ganglion along with the imbedded hook were left in the animal. The animal was pulled to the boat where unsuccessful attempts were made to dislodge the hook. The animal slowly moved away from the vessel as opposed to an aggressive kick of the tail and a dive. Lingered at the surface for nearly 1.5 minutes while boat steamed away and continued hauling in the gear. (Observer) feared the animal was exhausted physically and stressed out by the

whole ordeal. This individual was full-grown. "This was probably the only time (the observer) actually fear for the health and safety of an incidentally-taken marine mammal."

77 shortfin pilot whale	95	3	NEC	A62071	2	9/28/95	38 29	73 28	alive	1?,6?,8,10?	Y	NE	225	This young individual was hooked in the mouth. (Observer) could not exactly tell where (upper or lower mandible), however, it was clear this was the case. Obviously, this young individual was after the squid THAT was the bait the vessel was using. As we were coming upon the animal, it surfaced 3 times upside down. (Observer) had never seen this before in an entanglement situation with a pilot whale. The individual was pulled to the vessel with the intention of extracting the hook from its mouth. However, it was too strong. Thus, it was pulled as close to the vessel as possible and the gangion clipped as close to the mouth as possible. This animal shot off like a bullet to the deep as the gangion was cut.	
78 unidentified	95	3	NEC	F29	5	8/5/95	39 24	72 17	alive	1?,6?,8?,10?	?	SE	274	The mammal was not seen by the observer until it swam off. The crew was pulling in the gangion and then noticed it was, as they identified it, a whale. There were large unidentified dolphins in the area also. The mammal pulled itself free at the same time the crew noticed it was a mammal.	
79 pilot whale	95	4	NEC	A41034	1	10/14/95	37 00	74 36	alive	1?,6?,8?,10?	?	NE	250	As leader came to block, line stretched and snapped. Animal swam away after breaking off.	
80 pilot whale	95	4	NEC	A41034	7	10/14/95	35 43	74 37	alive	6?,8,10?	Y	NE	250	Mouth hooked. Captain cut leader and it disappeared.	
81 pilot whale	95	4	NEC	A41034	8	10/14/95	35 46	74 42	alive	6?,8?,10?	Y	NE	250	Freed by cutting leader.	
82 pilot whale	95	4	NEC	A41034	8	10/14/95	35 46	74 42	alive	1?,6?,8?,10?	Y	NE	250	Freed by cutting leader. When freed, it swam directly to join three other waiting animals and swam away together.	
83 pilot whale	95	4	NEC	A44048	14	10/16/95	37 45	73 25	alive	6?,8,10?	Y	NE	180	Animal cut from line, hooked in mouth. Swam off trailing gangion and 100 ft of mainline.	
84 pilot whale	95	4	SEC	T12	3	10/28/95	26 42	79 40	alive	1?,10?	?	SE	190	Entangled in mainline; monofilament cut away; whale swam away.	
85 Risso's dolphin	96	3	GOM	F38	12	7/28/96	29 01	87 47	dead	10		SE		Muscle tissue sample was taken from the head, and the lower jaw was also saved. The animal was entangled in the mainline and brought aboard dead.	
86 Risso's dolphin	96	3	NEC	F39	4	8/30/96	39 24	72 17	alive		N	SE	213	Mainline wrapped around flukes. Unwrapped flukes. Swam away uninjured.	
87 Risso's dolphin	96	3	NEC	F39	4	8/30/96	39 24	72 17	alive		N	SE	213	Mainline wrapped around flukes. Unwrapped flukes. Swam away uninjured.	
88 Risso's dolphin	96	3	NEC	F39	8	8/30/96	38 15	73 18	alive	6?,8,10?	Y	SE	244	Hooked in mouth. Line cut - 914 cm of line left attached (animal pulling very lively). Swam away uninjured.	
common name	yr	qtr	area	trip	haul	date	lat	lon	status	injury code	S.I.	source	photo	estimated length (cm)	observer's comments
89 unidentified	96	4	SEC	K17	1	12/14/96	30 26	76 55	alive		N	SE			Unidentified mammal was tangled in line. Black tail section seen just before dive; animal was free with no line attached.
90 short-beaked spinner dolphin	97	1	SEC	F45	8	2/25/97	32 10	78 03	alive	10?	N	SE		183	Tail wrapped in mainline. Mainline cut free. Animal swam away healthy.
91 pilot whale	97	3	NEC	B10045	9	8/3/97	39 12	72 25	alive	13	N	SE		366	Small pilot whale brought up; animal sluggish but swimming at side of vessel. Gear was tangled and wrapped around flukes only. Mainline and gangions were cut and all gear

tangled and wrapped around flukes only. Mainline and gangions were cut and all gear was removed. Animal then swam slowly away. Only injury suffered were small lacerations around flukes from gear, no knives used to free animal.

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