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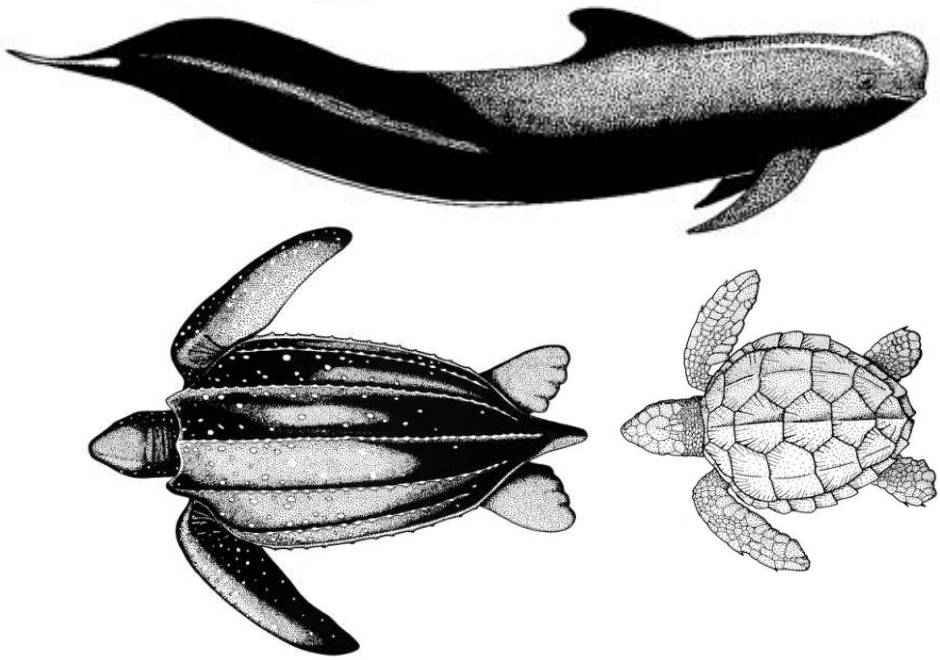

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
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Abstract

The U.S. Atlantic Pelagic Longline fleet operates throughout the northwestern Atlantic Ocean, including along the U.S. coast from the Gulf of Mexico to New England, the waters of the Caribbean, and in international waters of the North Atlantic Ocean. The Atlantic longline fleet is defined as a Category I fishery under the Marine Mammal Protection Act, and it is also the subject of management under the Endangered Species Act due to interactions with leatherback (*Dermochelys coriacea*) and loggerhead (*Caretta caretta*) turtles. Total bycatch of marine mammals and turtles in the longline fishery was estimated for 2012 using data from the pelagic longline fishery observer program and a mandatory fishery logbook reporting program. We applied a delta-lognormal approach to estimate region specific and total annual interactions with protected species in the fishery. During 2012, there were an estimated 596.2 (424.7 – 837.0 [95% CI]) interactions with leatherback turtles and 680.7 (518.0 – 894.5 [95% CI]) interactions with loggerhead turtles. The primary marine mammals interacting with this fishery were pilot whales (*Globicephala* sp.) with an estimated 242.6 (145.8 – 404.0 [95% CI]) interactions with unspecified pilot whales and an additional 10.0 (2.0 – 51.0 [95% CI]) interactions with genetically identified short-finned pilot whales. Potential sources of bias and uncertainty in these bycatch estimates are discussed.

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Introduction

Pelagic longline fisheries operate throughout the world's oceans targeting large pelagic fish including swordfish, tunas, and sharks. The U.S. Atlantic Pelagic Longline fleet operates throughout the northwestern Atlantic Ocean, along the U.S. coast from the Gulf of Mexico to New England, the waters of the Caribbean, and in international waters of the North Atlantic Ocean (Figure 1). The Atlantic longline fleet is defined as a Category I fishery under the Marine Mammal Protection Act (50 CFR Part 229, Federal Register Vol. 69, No. 135, 15 July 2003) due to frequently documented interactions with marine mammals.

The fishery is also the subject of management under the Endangered Species Act (ESA) due to frequent interactions with marine turtles including leatherback (*Dermochelys coriacea*) and loggerhead sea turtles (*Caretta caretta*). In June 2004, a Biological Opinion was issued by the National Marine Fisheries Service, Southeast Regional Office, finding that the U.S. Pelagic Longline Fleet posed a jeopardy to leatherback turtles in the Atlantic Ocean as defined under the ESA. To allow continued operation of the fishery, the Biological Opinion mandated increased reporting of bycatch, required education and outreach programs to train fishers in careful handling and release of turtles, and instituted large-scale changes in fishing gear. Most notably, the fishery was required to exclusively use "circle" hooks (size 16/0 or greater) and to adopt safe handling and release practices for sea turtles after August 2004. These mandates were based upon expected reductions in bycatch rate due to hook shape and size demonstrated by experimental studies conducted in the Northeast Distant Water (NED) fishing area and

an expected reduction in post-release mortality by using the handling and release protocols (Watson *et al.*, 2005).

In addition, several time-area closures were introduced into the fishery in 2000 and 2001 due to concerns over both finfish and protected species bycatch (NMFS 2003, 50 CFR Part 635). These include year-round closures near the De Soto Canyon in the Gulf of Mexico after 1 November 2000 (Figure 1, Label A) and in waters off the Atlantic coast of Florida after 1 March 2001 (Figure 1, Label B). Seasonal closures are in effect in the Charleston Bump region between 1 February and 30 April (Figure 1, Label C) and in a bluefin tuna area off the New Jersey coast between 1 June and 30 June (Figure 1, Label D). The NED area was closed to non-experimental longline fishing from 2001 to 2004 in response to high turtle bycatch. However, with the implementation of gear changes, it was reopened to fishing in June 2004.

In late 2009, regulations were implemented in the fishery to reduce the serious injury and mortality of pilot whales and Risso's dolphins in the mid-Atlantic bight region. The Pelagic Longline Take Reduction Plan (PLTRP) was developed based upon consensus recommendations of a team of scientists, managers, and commercial fisheries organizations per the Take Reduction Team process under the MMPA. Regulations were effective on 18 June, 2009 and include restriction of mainline lengths to less than 20 nautical miles in the mid-Atlantic Bight area and mandatory reporting requirements for fishermen operating in waters offshore of Cape Hatteras, North Carolina (50 CFR Part 229, Federal Register Vol. 74, No. 95, 18 May 2009).

The pelagic longline fishery has had a fishery observer program (Pelagic Observer Program, POP) in place since 1992 to document finfish bycatch, characterize

fishery behavior, and quantify the interactions with protected species (Beerkircher *et al.*, 2004). In addition, a mandatory fishery logbook system (FLS) has been in place since 1992 requiring vessel captains to report fishing effort, gear characteristics, and commercial catch. These data have been used to generate annual estimates of marine mammal and turtle bycatch (Johnson *et al.*, 1999; Yeung, 1999a; Yeung 1999b; Yeung, 2001; Garrison 2003; Garrison and Richards, 2004; Garrison 2005; Fairfield-Walsh and Garrison, 2006, 2007, 2008; Garrison, Stokes, and Fairfield 2009; Garrison and Stokes, 2010, 2012a, 2012b).

In this report, marine mammal and marine turtle bycatch estimates are calculated for pelagic longline fishery effort during 2012. Bycatch rates (catch per 1000 hooks) are quantified based upon observer data by fishing area and quarter. The estimated bycatch rate is then multiplied by the total fishing effort (number of hooks) reported to the FLS program to obtain estimates of total interactions for each species of marine mammal and turtle.

Methodology

Geographic Stratification

Fishery observer effort is currently allocated among 10 large geographic areas and calendar quarter based upon the historical fishing range of the fleet (Figure 1). The target annual coverage is 8% of the total reported hooks, and observer effort is allocated randomly based upon reported fishing effort during the previous calendar year in each quarter/fishing area stratum (Beerkircher *et al.*, 2004). Between 15 April and 15 June of 2012, observer coverage in the Gulf of Mexico (GOM) fishing area was greatly enhanced to collect more robust information on the interactions between pelagic longline vessels

and spawning bluefin tuna. As a result, the observer coverage for this time and area is dramatically higher than is typical for other strata. The bycatch estimates developed for each species are stratified by fishing area and quarter to reflect the design of the observer program.

In addition to observation of regular fishing, the POP program participated in a cooperative research program that included longline fishing in the Gulf of Mexico to test the effectiveness of "weak hooks" on target species catch and bycatch rates. There was 100% observer coverage of all experimental sets, and the experimental fishing is not included in extrapolated bycatch estimates because it is not representative of the normal fishing effort. A total of 115 sets (53,102 hooks) were observed in experimental fishing.

Bycatch rates for quarter-area strata with more than 10 reported longline fishery sets that had no corresponding observer coverage in 2012 were replaced with previously observed mean bycatch rates from 2007-2011.

Recent changes to the Magnuson-Stevens Fishery Conservation and Management Act have changed the restrictions on reporting fishery information including that collected by observers. NMFS rules therefore restrict the reporting of business information within temporal or spatial strata including fewer than 3 vessels. Business information includes information on the fishing gear or level of effort. As such, the number of sets and hooks cannot be reported in some quarter-area strata in reported effort data, observer data, or both. In cases where by simple calculation one could derive the level of effort in such cells, we have not reported sufficient information to make those calculations. Quarter-area strata where the level of reporting is limited by confidentiality concerns are noted in the appropriate tables.

Delta Lognormal Estimator

Sets in which a portion of the longline broke away, and therefore had multiple recorded haul times, were combined into single sets. This is consistent with the approach of the most recent mortality estimates (Garrison, 2003; Garrison and Richards, 2004; Garrison, 2005; Fairfield-Walsh and Garrison, 2006; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008 Garrison, Stokes, and Fairfield 2009; Garrison and Stokes, 2010, 2012a, 2012b). The mean and variance of catch rates for marine mammals and turtles observed in longline sets were calculated using a delta lognormal estimator (Pennington, 1993). The delta estimator is more appropriate than the simple mean because catch rates are generally log-normally distributed and bycatch events (i.e., positive sets) are rare. The unit of effort in this analysis is the number of hooks, consistent with methods used to estimate total catch and bycatch of finfish and previous analyses of protected resource interactions (Johnson *et al.*, 1999). The mean bycatch rate for each analytical stratum, t, is calculated as:

$$(1) \quad C_t = \frac{m_t}{n_t} e^{L_t} G\left(s_{L_t}^2 / 2\right),$$

where:

m_t is the number of sets with observed bycatch,

n_t is the total number of observed sets,

L_t is the mean of the log-transformed number of animals taken per 1000 hooks when bycatch occurred,

s_L^2 is the observed sample variance of the log transformed bycatch rate, and G is the cumulative probability function from the Poisson distribution given as:

$$(2)\quad G\left(s_L^2/2\right)=1+\frac{m_t-1}{m_t}\left(s_L^2/2\right)+\sum_{j=2}^{\infty}\frac{\left(m_t-1\right)^{2j-1}}{m_t^j\,(m_t+1)(m_t+3)....(m_t+2j-3)}\times\frac{\left(s_L^2/2\right)^j}{j!}.$$

The series was computed numerically over j terms until meeting a convergence criterion of a change in the function value of < 0.0001 with additional terms (j). Convergence was generally achieved with <10 terms. The variance of the delta estimator is:

$$(3)\ \mathrm{var}(C_t)=\frac{m_t}{n_t}\left(e^{2L_t}\right)\left[\frac{m_t}{n_t}G^2\left(s_L^2/2\right)-\left(\frac{m_t-1}{n_t-1}\right)G\left(\frac{m-2}{m-1}s_L^2\right)\right].$$

When m_t is equal to 1, the mean bycatch rate reduces to the simple mean rate where

$$(4)\quad C_t=\frac{\exp(L_t)}{n_t},$$

and

$$(5)\ \mathrm{var}(C_t)=\left(\frac{\exp(L_t)}{n_t}\right)^2.$$

The C_t calculated above gives the mean number of animals caught per 1000 hooks in the observed trips. To estimate total interactions, *N*, these rates are multiplied by the total number of hooks reported to the FLS database for each analytical stratum. The stratified estimates and associated variances were summed to provide annual estimates for each species. Approximate 95% confidence intervals (95% CI) were calculated assuming log-normal distribution of total mortality as *N/C* and *N·C* for the lower and upper confidence bounds respectively where:

$$(6)\qquad \mathrm{C}=\exp\left[\ \mathrm{z}_{\alpha}\sqrt{\mathrm{var}(\ln \mathrm{N})}\ \right],$$

and

$$(7)\ \mathrm{var}(\ln \mathrm{N})=\ln\left[1+\mathrm{var}(\mathrm{N})/\mathrm{N}^2\ \right],$$

where z_α is 1.96, the z score for $\alpha = 0.05$.

Sea Turtle Life History Form

Detailed information on the characteristics of longline interactions with sea turtles was recorded by the fisheries observers during 2012. These data include detailed descriptions of the type of interaction, the extent of entanglement, the location of any hook attached to the animal or swallowed, and other data (Appendix A). Detailed information on entanglement, hooked animals, and the location of hooks are shown in Appendix B.

Marine Mammal Serious Injury Determination

The Marine Mammal Protection Act (MMPA) requires that mortality and serious injury of marine mammals incidental to commercial fishing operations be reduced to a level approaching a zero mortality rate. "Serious injury" has been defined as an injury more likely than not to result in mortality (NOAA Fisheries 50 CFR 229.2, Angliss and DeMaster, 1998). In prior annual reports, serious injury determinations were based upon criteria developed during a workshop of NOAA Fisheries and external experts convened in 1997 (Angliss and DeMaster, 1998). These guidelines were reviewed at a workshop conducted during 2007, and a proposed revision of the criteria for serious injuries in pinnipeds, large whales, and small cetaceans was developed (Anderson et al. 2008). This proposal was reviewed and evaluated by NMFS, and a policy for determining serious vs. non-serious injury in marine mammals with associated criteria was established in 2012

(NMFS 2012a, NMFS 2012b). Serious injury determinations were made on a case by case basis after reviewing the observations and comments of fishery observers. Observer comments for all takes of marine mammals from 2012 (Appendix B) were reviewed, and serious injury determinations were made based upon observer comments and photographs (when available) consistent with the 2012 guidelines.

Marine Mammal Biopsy Sampling and Species Identification

POP observers are equipped with long-handled poles that include a tip designed to collect a small sample of skin ("biopsy sample") from turtles and marine mammals. When the opportunity arises to collect a sample from a marine mammal safely, the observers attempt to use the biopsy pole to scrape a small amount of skin and tissue from the dorsal surface of the animal. These samples are stored for later genetic analyses. DNA from biopsy samples are extracted and sequenced, and these sequences are compared to a database of genetic information for cetacean species to determine or verify species identifications by the NMFS Southeast Marine Mammal Molecular Genetics laboratory.

Results and Discussion

Reported Fishing Effort and Observer Coverage

The total reported pelagic longline fishing effort included 8.0 million hooks during 2012 (Table 1A, Figure 2). The reported fishery effort included 11,025 sets during 2012, 945 of which were observed by the POP program (Tables 1B and 2B, Figure 2). The overall percent coverage during regular fishing was 8.5% expressed as a proportion of reported hooks and 8.6% as a proportion of reported sets (Table 3). The

relatively high annual rate reflects the 31.2% coverage of the fishery during the second quarter in the GOM. Observer coverage for other area-quarter strata is shown in Table 3. The location of experimental fishing sets is shown in Figure 3.

Areas with no observer coverage during 2012 with more than 10 sets of reported fishing effort include the Northeast Distant (NED) during quarters 3 and 4 and the Tuna North (TUN) during quarters 1 and 4 (Table 3).

Observed Protected Species Interactions

There were 37 observed interactions with leatherback turtles and 43 with loggerhead turtles (Table 4, Figure 4) in 2012 in regular and experimental fishing combined. There was also one interaction with an unidentified hardshell turtle in the NEC area. The greatest number of observed leatherback takes occurred in the GOM during the 2nd quarter and in the NEC region during the 3rd quarter (Table 4A, Figure 4). Loggerhead takes were observed in the greatest numbers in the NEC during the 3rd quarter (Table 4B, Figure 4). These totals include 2 leatherback turtles taken during experimental fishing in the GOM fishing area.

The vast majority of the turtles were characterized as being released alive and injured (i.e., most had been hooked) based upon recorded information on the sea turtle life history form (Table 5). One leatherback turtle was observed dead in the GOM area. Leatherback turtles were most typically hooked externally, while loggerhead turtles were primarily hooked in the mouth or beak or swallowed the hook (Table 5). All gear was removed before release from 45 of the 81 turtles captured (Table 6). A total of 8

leatherbacks and 2 loggerheads were released either entangled or with the hook and line remaining that was > ½ the carapace length (Table 6).

There were 30 interactions observed with marine mammals (Table 7, Figure 5). This included twenty interactions with pilot whales (19 unidentified pilot whales, 1 short-finned pilot whales) in the MAB, three Risso's dolphins (2 in the MAB and 1 in the NEC) and six bottlenose dolphins. One animal was initially identified as a pilot whale, but it was genetically identified as a short-finned pilot whale. Twenty of the observed marine mammal interactions were categorized as serious injuries including 14 pilot whales, 2 Risso's dolphins, and 4 bottlenose dolphin (Table 8). One pantropical spotted dolphin was observed dead in an experimental haul in the GOM. Twelve of the serious injuries were due to animals being hooked in the mouth/head, and an additional six cases involved being released with gear likely to further entangle the animal (Table 8).

Stratum estimates of total interactions for sea turtles are shown in Table 9. High leatherback estimated interactions occurred in the GOM during quarter 3 (84.4 animals) and quarter 4 (104.4 animals, Table 9). For loggerhead turtles, the estimated interactions were highest in the NEC (145.2 animals) and the FEC in the first quarter (53.4 animals, Table 9).

The quarter-area strata estimates for observed marine mammal mortality, serious injury, and live releases are presented in Table 10. Pilot whale serious injuries occurred in the MAB, NEC and FEC.

Estimated Interactions in Unobserved Areas with Fishing Effort

The average bycatch rates and estimated catches in strata that were not observed during 2012 are summarized in Table 11. There were observed sea turtle takes in prior years in NED-Quarter 3, NED-Quarter 4, TUN-Quarter 1, and TUN-Quarter 4 for Leatherbacks. Loggerhead interactions occurred in NED-Quarter 3 and NED-Quarter 4 in prior years (Table 11a). Due to the high historical rates of loggerhead bycatch in the NED area, an estimated 148.0 loggerhead turtles were taken in this unobserved stratum during 2012 (Table 11a).

Total Estimated Bycatch

There were an estimated total of 596.2 (424.7 – 837.0 [95% CI]) interactions with leatherback turtles during 2012 in regular fishing and an additional 2 interactions in experimental fishing (Table 12). The highest number of interactions occurred in the GOM and SAB areas. For loggerhead turtles, the estimated total number of interactions was 680.7 turtles (518.0 – 894.5 [95% CI], Table 12). The areas with the highest estimated interactions included the NED, NEC and the FEC. Annual estimates of marine mammal bycatch are shown in Table 13 with a total of 242.6 (145.8 – 404.0 [95% CI]) interactions with unspecified pilot whales and 10.0 (2.0 – 51.0 [95% CI]) with short-finned pilot whales.

Trends in Bycatch Estimates

The leatherback take estimate reached a historical high in 2004, and prior to that had increased sharply since 1998 (Figure 6). A significant decrease in the leatherback

bycatch rate and the annual estimated number of interactions with leatherback turtles occurred beginning in 2005 after the implementation of regulations in August 2004. The estimated take of leatherback turtles remained low and generally trended downward during 2007-2011. There was a significant increase in estimated leatherback turtle take during 2012 relative to recent years. This was related in part to a sharp increase in reported fishing effort during 2012 and elevated catch per unit effort.

Loggerhead turtle interactions since 2000 have been well below the historical highs that occurred in the mid-1990's (Figure 6). Following the implementation of regulations, the bycatch dropped in 2005, but rebounded to be slightly lower than the pre-regulation period. The 2012 estimate continues an upward trend that has been occurring since 2008. The sharp increase in effort had a lesser effect on estimated loggerhead takes because the effort increase occurred primarily in the GOM where loggerhead bycatch rates are relatively low. There appears to be a cyclic pattern in loggerhead bycatch rate occurring at 4-5 year intervals since 1996.

For pilot whales (unspecified and short-finned pilot whales combined), the 2012 estimate was lower than that for 2011, but remains at an elevated level relative to the time series since 1995 (Figure 7). The bycatch estimate for Risso's dolphins was higher than that for 2011 but remained relatively low (Figure 7).

The total fishery effort was significantly higher during 2012 compared to 2011 and prior years since 2000. The greatest proportional increase in reported fishing effort occurred in the GOM area (2011: 1,246 x 10^3 hooks, 2012: 2,729 x 10^3 hooks), though fishing effort was also higher in the MAB, FEC, and NEC areas compared to 2011. The

increase in fishing effort had the greatest impact on the estimate of leatherback turtle takes where the bycatch rate is historically high in the GOM area.

The lack of observer coverage in the NED area during quarter 3 is problematic for the estimation of bycatch for loggerhead turtles. The bycatch rate in this area-quarter is high historically, and the level of fishing effort is also high. Therefore, the imputed bycatch rate for the NED accounted for nearly a quarter of the estimated loggerhead turtles taken during 2012. This estimate should be treated with caution since it is based on data from prior years.

Sources of Bias and Uncertainty

The fishery logbook data is a mandatory reporting program, and thus it is expected that reporting rates are generally high. Due to the intense management focus on the longline fishery, there has been close monitoring of reporting rates, and observed trips can be directly linked to reported effort. In general, the gear characteristics and amount of observed effort is consistent with the reported effort. However, reporting errors are possible in this fishery that would result in a bias in bycatch estimates.

Observer coverage in the pelagic longline fishery is generally high, particularly in comparison to that of other commercial fisheries. The sampling level is sufficient to provide reasonably precise estimates of interactions with protected species. The observed coefficients of variation for annual estimates of both loggerhead and leatherback turtles are below the 30% benchmark established by guidelines for precision set by NOAA Fisheries.

The delta estimator was applied to calculate bycatch rates primarily to maintain consistency with previous estimates for this fishery (Johnson *et al.*, 1999; Yeung, 1999a; Yeung, 1999b; Yeung, 2001; Garrison, 2003; Garrison and Richards, 2004; Garrison, 2005; Fairfield-Walsh and Garrison, 2006, 2007, 2008; Garrison, Stokes, and Fairfield 2009; Garrison and Stokes, 2010, 2012a, 2012b). This approach assumes that: 1) catch rates (animals per hook) are log-normally distributed, and 2) the number of hooks is an appropriate unit of effort. The first assumption was critically examined for sea turtles in Johnson *et al.* (1999); however, it is difficult to verify for marine mammals given the generally low rate of these interactions. The delta estimator is sensitive to the assumption of log-normality, and violations of this assumption may result in biased (positive or negative) estimates of catch rate and associated variances. The second assumption has not been examined critically in previous analyses. The current approach assumes that total bycatch is linearly related to the total number of hooks fished. If this assumption is not correct, for example if there are saturation effects resulting in a non-linear relationship between the number of hooks and total catch, then there is potentially a bias, of unknown direction and magnitude, in the estimate of total bycatch.

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Table 9. Estimated interactions with sea turtles in the pelagic longline fishery during 2012 by fishing area and quarter indicates strata where effort cannot be reported due to confidentiality considerations.

Table 10. Estimated A) Mortalities, B) Serious Injury, C) Released Alive, and D) Total Interactions with marine mammals in the pelagic longline fishery during 2012 by fishing area and quarter. NR indicates strata where effort cannot be reported due to confidentiality considerations.

Table 11. Bycatch rates for sea turtles in area-quarter strata with reported effort that were not observed in 2012. There were no observed marine mammal takes in the prior five years in the unobserved strata.

Table 12. Total estimated interactions and experimental takes for A) Leatherback and B) Loggerhead turtles and C) Unidentified hardshell turtles in the pelagic longline fishery during 2012 by fishing area. This includes estimates for strata that were not observed during 2012.

Table 13. Total estimated interactions with marine mammals in the pelagic longline fishery during 2012.

Figure 1. Pelagic longline fishing areas in the North Atlantic Ocean: CAR = Caribbean, GOM = Gulf of Mexico, FEC = Florida East Coast, SAB = South Atlantic Bight, SAR = Sargasso Sea, MAB = Mid-Atlantic Bight, NEC = Northeast Coastal, NED = Northeast Distant, NCA = North Central Atlantic, TUN = Tuna North. Year-round closed areas in the DeSoto Canyon (A) and the Florida East Coast (B) are indicated along with seasonal closures in the Charleston Bump (C) and in the Mid-Atlantic (D).

Figure 2. Observed and reported pelagic longline fishing effort during 2012.

Figure 3. Locations of experimental sets during 2012.

Figure 4. Observed pelagic longline fishing effort and sea turtle takes during 2012.

Figure 5. Observed pelagic longline fishing effort and marine mammal takes during 2012.

Figure 6. Historical trends in fishery effort and estimated marine turtle takes in the pelagic longline fishery between 1992 and 2012 for A) Leatherback Turtles, and B) Loggerhead Turtles. Errors bars represent 95% confidence intervals.

Figure 7. Historic trends in fishery effort and estimated marine mammal takes in the pelagic longline fishery from 1992 to 2012 for A) Pilot Whales and B) Risso's Dolphins. Errors bars represent 95% confidence intervals. For 2011-2012, the total includes both unidentified pilot whales and short-finned pilot whales.

Table 1. Total amount of fishing effort reported to the pelagic longline logbook program during 2012 by quarter and fishing area. Fishing effort is reported as A) Number of hooks (thousands) and B) Number of sets. NR indicates strata where effort cannot be reported due to confidentiality considerations.

A. Number of Hooks (thousands)

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	NR	527.0	709.6	110.8	0	0	0	226.4	74.7	NR	NR	1,686.6
2	0	274.8	612.8	355.2	0	91.4	0	490.6	0	NR	0	1,892.7
3	0	283.3	741.8	663.0	NR	535.9	233.6	99.6	NR	NR	0	2,609.0
4	0	235.1	665.6	437.0	NR	161.4	78.9	128.5	95.5	NR	NR	1,847.5
Total	NR	1,320.2	2,729.8	1,566.0	NR	788.7	312.5	945.0	NR	182.6	9.3	8,035.8

B. Number of Sets

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	NR	746	966	175	0	0	0	300	83	NR	NR	2,313
2	0	440	949	466	0	105	0	566	0	NR	0	2,612
3	0	469	1100	870	NR	568	261	188	NR	NR	0	3,522
4	0	375	963	614	NR	177	88	199	104	NR	NR	2,578
Total	NR	2,030	3,978	2,125	NR	850	349	1,253	NR	231	11	11,025

Table 2. Total amount of fishing effort observed during 2012 by quarter and fishing area. Fishing effort is reported as A) Number of hooks (thousands) and B) Number of sets. Dashes indicate cells where no fishery effort was reported. NR indicates strata where effort cannot be reported due to confidentiality considerations.

A. Number of Hooks (thousands)

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	0.0	36.3	29.3	NR	0.0	0.0	0.0	13.8	NR	0.0	0	88.9
2	0.0	19.8	191.2	33.0	0.0	8.1	0.0	25.2	0.0	NR	0	284.2
3	0.0	23.2	42.0	46.6	0.0	55.0	0.0	NR	0.0	NR	0	179.1
4	0.0	20.7	34.4	26.0	0.0	NR	0.0	8.3	34.8	0.0	0	131.9
Total	0.0	99.9	297.0	NR	0.0	NR	0.0	NR	NR	NR	0.0	684.1

B. Number of Sets

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	0	54	37	NR	0	0	0	20	NR	0	0	125
2	0	35	292	40	0	12	0	34	0	NR	0	422
3	0	39	59	55	0	54	0	NR	0	NR	0	226
4	0	32	53	33	0	NR	0	11	36	0	0	172
Total	0	160	441	NR	0	NR	0	74	40	NR	0	945

Table 3. Percentage of reported fishing effort observed during 2012 by quarter and fishing area by A) Number of hooks and B) Number of sets. Dashes indicate no reported fishing effort. Cells in which >10 longline sets were reported with no observer coverage are indicated in bold. Totals indicate overall percentage coverage by area and quarter and exclude experimental fishing.

A. Number of Hooks

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	0.0	6.9	4.1	5.5	-	-	-	6.1	4.5	**0.0**	0	5.3
2	-	7.2	31.2	9.3	-	8.9	-	5.1	-	10.3	-	15.0
3	-	8.2	5.7	7.0	0.0	10.3	**0.0**	4.3	0.0	16.8	-	6.9
4	-	8.8	5.2	6.0	0.0	4.8	**0.0**	6.5	36.4	**0.0**	0	7.1
Total	0	7.6	10.9	7.1	0	9.0	**0**	5.5	22.3	8.3	0	8.5

B. Number of Sets

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	0.0	7.2	3.8	5.7	-	-	-	6.7	4.8	**0.0**	0.0	5.4
2	-	8.0	30.8	8.6	-	11.4	-	6.0	-	10.5	-	16.1
3	-	8.3	5.4	6.3	0.0	9.5	**0.0**	4.8	0.0	16.1	-	6.4
4	-	8.5	5.5	5.4	0.0	4.0	**0.0**	5.5	34.6	**0.0**	0.0	6.7
Total	0.0	7.9	11.1	6.5	0	8.6	**0.0**	5.9	21.3	8.2	0	8.6

Table 4. Total number of observed interactions with A) Leatherback turtles, B) Loggerhead turtles, and C) All sea turtles in the pelagic longline fishery during 2011 by quarter and fishing area. Dashes indicate areas where there was no observed fishing effort, and an X indicates an area where no effort was reported. Counts include turtles taken during experimental fishing.

A. Leatherback Turtles

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	-	1	1	0	X	-	X	1	0	-	-	**3**
2	X	2	4	0	X	0	X	1	X	0	X	**7**
3	X	0	5	2	-	4	-	1	-	0	X	**12**
4	X	2	7	1	-	1	-	3	1	-	-	**15**
Total	**-**	**5**	**17**	**3**	**-**	**5**	**0**	**6**	**1**	**0**	**-**	**37**

B. Loggerhead Turtles

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	-	4	1	0	X	X	X	2	0	-	-	**7**
2	-	3	0	1	X	2	X	0	X	0	X	**6**
3	X	3	1	2	-	16	-	0	-	0	X	**22**
4	X	2	1	3	-	2	-	0	0	-	-	**8**
Total	**-**	**12**	**3**	**6**	**-**	**20**	**-**	**2**	**-**	**0**	**-**	**43**

C. All Turtles

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	-	5	2	0	X	1*	X	3	0	-	-	**11**
2	-	5	4	1	X	2	X	1	X	0	X	**13**
3	X	3	6	4	-	20	-	1	-	0	X	**34**
4	X	4	8	4	-	3	-	3	1	-	-	**23**
Total	**-**	**17**	**20**	**9**	**-**	**26**	**-**	**8**	**1**	**0**	**-**	**81**

*NEC quarter 1 includes one Unidentified hardshell turtle.

Table 5. Summary of A) Release condition, B) Hook location in hooked animals, and C) Animals with all gear removed, by hook location for sea turtles observed in the pelagic longline fishery during 2012. Hook location information is recorded on the sea turtle life history form (Appendix A) by the observer. Counts include turtles taken during experimental fishing.

A. Capture condition

Species	Alive, Uninjured	Alive, unknown	Alive, injured	Dead/ Unresponsive	Unknown	Total
Leatherback	12	3	21	1	0	37
Loggerhead	2	1	40	0	0	43
Unidentified Hardshell	0	1	0	0	0	1
Total	**14**	**5**	**61**	**1**	**0**	**81**

B. Hook Location in hooked animals

				Internal			External	
Species	**Not Hooked**	**Unknown if Hooked**	**Hooked, Location Unknown**	**Unknown Internal**	**Swallowed**	**Beak or Mouth**		**Total**
Leatherback	13	3	0	0	0	3	18	37
Loggerhead	2	1	0	1	15	21	3	43
Unidentified Hardshell	0	1	0	0	0	0	0	1
Total	**15**	**5**	**0**	**1**	**15**	**24**	**21**	**81**

C. Animals with all gear removed, by hook location

				Internal			External	
Species	**Not Hooked**	**Unknown if Hooked**	**Hooked, Location Unknown**	**Unknown Internal**	**Swallowed**	**Beak or Mouth**		**Total**
Leatherback	10	0	0	0	0	1	8	19
Loggerhead	2	0	0	0	4	17	3	26
Unidentified Hardshell	0	0	0	0	0	0	0	0
Total	**12**	**0**	**0**	**0**	**4**	**18**	**11**	**45**

Table 6. Release status and gear removal for sea turtles captured and released alive in the U.S. Atlantic Pelagic Longline Fishery during 2012. Counts include turtles captured during experimental fishing. Condition columns refer to post-release mortality categories in Table 1 of SEFSC 2012. One leatherback turtle was observed dead.

Release Status	Leatherback*	Loggerheads	Unidentified Hardshell
Released entangled (Condition Column A)	5	1	1
Released with hook and line ≥ ½ carapace length (Condition Column B)	3	1	0
Released with hook and line < ½ carapace length (Condition Column C)	9	15	0
Released with all gear removed (Condition Column D)	19	26	0

* These totals do not include one leatherback turtle observed dead.

Table 7. Total number of marine mammals observed in interactions with the pelagic longline fishery during 2012 by quarter and fishing area. Dashes indicate areas where there was no observed fishing effort, and an X indicates an area where no effort was reported.

Quarter	CAR	FEC	GOM	MAB	NCA	NEC	NED	SAB	SAR	TUN	TUS	Total
1	-	0	0	2	X	-	X	2	0	-	-	**4**
2	X	0	0	2	X	0	X	0	X	0	X	**2**
3	X	1	1	8	-	4	-	0	-	0	X	**14**
4	X	0	2	8	-	0	-	0	0	-	-	**10**
Total	**-**	**1**	**3**	**20**	**-**	**4**	**-**	**2**	**0**	**0**	**-**	**30**

Table 8. Summary of release condition and serious injury types for marine mammals observed in the pelagic longline fishery during 2012. Serious injury determinations were based upon written observer comments (Appendix B). "Entangled" indicates that the animal was released with line remaining attached that is likely to further entangle the animal. Codes indicate table injury categories defined in the Small Cetacean Serious Injury Guidelines (NMFS, 2012).

Species	Alive	Dead	Serious Injury Type			Serious Injury Total	Total
			Hooked in Head/Mouth (S5a)	Gear Attached Likely to Entangle (S6)	Freed After Entanglement (S7b)		
Bottlenose dolphin	2	0	0	2	2	4	6
Risso's dolphin	1	0	1	1	0	2	3
Pilot whale	5	0	11	3	0	14	19
Short-finned pilot whale	1	0	0	0	0	0	1
Pantropical Spotted Dolphin*	0	1	0	0	0	0	1
Total	**9**	**1**	**12**	**6**	**2**	**20**	**30**

*The Pantropical Spotted Dolphin was observed dead in an experimental set.

Table 9. Estimated interactions with sea turtles in the pelagic longline fishery during 2012 by fishing area and quarter. NR indicates strata where effort cannot be reported due to confidentiality considerations.

A. Captured Dead

Species	Quarter	Area	# Positive Sets	# Observed Sets	Mean CPUE	CV	Hooks Reported (x1000)	Estimated Catch
4	GOM	1	53	0.0449	1.0000	665.6	29.9	4.0

B. Released Alive

Species	Quarter	Area	# Positive Sets	# Observed Sets	Mean CPUE	CV	Hooks Reported (x1000)	Estimated Catch
Leatherback	1	FEC	1	54	0.0252	1.0000	527.0	13.3
Leatherback	1	GOM	1	37	0.0338	1.0000	709.6	24.0
Leatherback	1	SAB	1	20	0.0541	1.0000	226.4	12.3
Leatherback	2	FEC	2	35	0.1131	0.7247	274.8	31.1
Leatherback	2	GOM	2	292	0.0119	0.7398	612.8	7.3
Leatherback	2	SAB	1	34	0.0379	1.0000	490.6	18.6
Leatherback	3	GOM	4	59	0.1137	0.5171	741.8	84.4
Leatherback	3	MAB	1	55	0.0495	1.0000	663.0	32.8
Leatherback	3	NEC	4	54	0.0760	0.4878	535.9	40.7
Leatherback	3	SAB	1	NR	0.3561	1.0000	99.6	35.5
Leatherback	4	FEC	2	32	0.1284	0.6992	235.1	30.2
Leatherback	4	GOM	6	53	0.1569	0.3963	665.6	104.4
Leatherback	4	MAB	1	33	0.0302	1.0000	437.0	13.2
Leatherback	4	NEC	1	7	0.1200	1.0000	161.4	19.4
Leatherback	4	SAB	3	11	0.4118	0.5490	128.5	52.9
Leatherback	4	SAR	1	36	0.0289	1.0000	95.5	2.8

B. Released Alive - Continued

Species	Quarter	Area	# Positive Sets	# Observed Sets	Mean CPUE	CV	Hooks Reported (x1000)	Estimated Catch
Loggerhead	1	FEC	4	54	0.1012	0.4909	527.0	53.4
Loggerhead	1	GOM	1	37	0.0338	1.0000	709.6	24.0
Loggerhead	1	SAB	2	20	0.1646	0.6883	226.4	37.3
Loggerhead	2	FEC	3	35	0.1422	0.5870	274.8	39.1
Loggerhead	2	MAB	1	40	0.0248	1.0000	355.2	8.8
Loggerhead	2	NEC	2	12	0.1598	0.6747	91.4	14.6
Loggerhead	3	FEC	3	39	0.1410	0.5809	283.3	39.9
Loggerhead	3	GOM	1	59	0.0198	1.0000	741.8	14.7
Loggerhead	3	MAB	2	55	0.0426	0.7100	663.0	28.2
Loggerhead	3	NEC	12	54	0.2709	0.2796	535.9	145.2
Loggerhead	4	FEC	2	32	0.1044	0.7401	235.1	24.5
Loggerhead	4	GOM	1	53	0.0255	1.0000	665.6	17.0
Loggerhead	4	MAB	3	33	0.0788	0.5633	437.0	34.4
Loggerhead	4	NEC	1	7	0.2401	1.0000	161.4	38.7
Unid. Hardshell	3	NEC	1	54	0.0274	1.0000	535.9	14.7

Table 10. Estimated A) Serious Injury, B) Released Alive, and C) Total Interactions with marine mammals in the pelagic longline fishery during 2012 by fishing area and quarter. NR indicates strata where effort cannot be reported due to confidentiality considerations. Totals exclude experimental sets.

A. Serious Injury

Species	Quarter	Area	# Positive Sets	# Observed Sets	Mean CPUE	CV CPUE	# Hooks Reported (x1000)	Estimated Catch
Pilot Whale	1	MAB	1	10	0.1190	1.0000	110.8	13.2
Bottlenose Dolphin	1	SAB	2	20	0.2322	0.7781	226.4	52.6
Pilot Whale	2	MAB	1	40	0.0186	1.0000	355.2	6.6
Pilot Whale	3	FEC	1	39	0.0427	1.0000	283.3	12.1
Risso's Dolphin	3	MAB	1	55	0.0227	1.0000	663.0	15.1
Pilot Whale	3	MAB	4	55	0.1123	0.5306	663.0	74.5
Bottlenose Dolphin	3	NEC	1	54	0.0171	1.0000	535.9	9.2
Pilot Whale	3	NEC	1	54	0.0206	1.0000	535.9	11.0
Bottlenose Dolphin	4	GOM	1	53	0.0236	1.0000	665.6	15.7
Risso's Dolphin	4	GOM	1	53	0.0449	1.0000	665.6	29.9
Pilot Whale	4	MAB	3	33	0.1205	0.6446	437.0	52.7

Table 10 cont.

B. Released Alive

Species	Quarter	Area	# Positive Sets	# Observed Sets	Mean CPUE	CV CPUE	# Hooks Reported (x1000)	Estimated Catch
Bottlenose Dolphin	1	MAB	1	10	0.1333	1.0000	110.8	14.8
Pilot Whale	2	MAB	1	40	0.0213	1.0000	355.2	7.6
Pilot Whale	3	MAB	1	55	0.0188	1.0000	663.0	12.5
Short-finned Pilot Whale	3	MAB	1	55	0.0152	1.0000	663.0	10.0
Bottlenose Dolphin	3	NEC	1	54	0.0163	1.0000	535.9	8.8
Risso's Dolphin	3	NEC	1	54	0.0213	1.0000	535.9	11.4
Pilot Whale	4	MAB	3	33	0.1197	0.5698	437.0	52.3

Table 10 cont.

C. Total Interactions

Species	Quarter	Area	# Positive Sets	# Observed Sets	Mean CPUE	CV CPUE	# Hooks Reported (x1000)	Estimated Catch
Bottlenose Dolphin	1	MAB	1	10	0.1333	1.0000	110.8	14.8
Pilot Whale	1	MAB	1	10	0.1190	1.0000	110.8	13.2
Bottlenose Dolphin	1	SAB	2	20	0.2322	0.7781	226.4	52.6
Pilot Whale	2	MAB	2	40	0.0399	0.6996	355.2	14.2
Pilot Whale	3	FEC	1	39	0.0427	1.0000	283.3	12.1
Risso's Dolphin	3	MAB	1	55	0.0227	1.0000	663.0	15.1
Pilot Whale	3	MAB	5	55	0.1307	0.4669	663.0	86.6
Short-finned Pilot Whale	3	MAB	1	55	0.0152	1.0000	663.0	10.0
Bottlenose Dolphin	3	NEC	2	54	0.0335	0.7006	535.9	17.9
Risso's Dolphin	3	NEC	1	54	0.0213	1.0000	535.9	11.4
Pilot Whale	3	NEC	1	54	0.0206	1.0000	535.9	11.0
Bottlenose Dolphin	4	GOM	1	53	0.0236	1.0000	665.6	15.7
Risso's Dolphin	4	GOM	1	53	0.0449	1.0000	665.6	29.9
Pilot Whale	4	MAB	6	33	0.2413	0.4165	437.0	105.5

Table 11. Bycatch rates for A) sea turtles and B) marine mammals in area-quarter strata with >10 reported sets that were not observed in 2012.

A. Sea Turtles

Bycatch Rate Source	Species	Quarter	Area	# Positive Sets	#Observed Sets	Mean CPUE	CV CPUE	# Hooks Reported (X1000) 2012	Estimated Catch 2012
Quarterly 07-11	Leatherback	3	NED	14	139	0.1185	0.2623	233.6	27.7
Quarterly 07-11	Leatherback	4	NED	5	37	0.1737	0.4217	78.9	13.7
Quarterly 07-11	Leatherback	1	TUN	1	21	0.0454	1.000	NR	1.2
Quarterly 07-11	Leatherback	4	TUN	1	21	0.0312	1.000	NR	1.2
Quarterly 07-11	Loggerhead	3	NED	32	139	0.6336	0.2265	233.6	148.0
Quarterly 07-11	Loggerhead	4	NED	4	37	0.1629	0.5055	78.9	12.9

B. **Marine Mammals**

Bycatch Rate Source	Species	Quarter	Area	# Positive Sets	#Observed Sets	Mean CPUE	CV CPUE	# Hooks Reported (X1000) 2012	Estimated Catch 2012
Quarterly 07-11	Risso's Dolphin	3	NED	1	139	0.0077	1.0000	233.6	1.8
Quarterly 07-11	False Killer Whale	4	TUN	1	21	0.0353	1.0000	39.8	1.4

Table 12. Total estimated interactions and experimental takes for A) Leatherback and B) Loggerhead turtles and C) Unidentfied turtles in the pelagic longline fishery during 2012 by fishing area. This includes estimates for strata that were not observed during 2012.

A. Leatherbacks

Area	Total	Total CV	Total 95% Confidence Interval	Experimental Takes
CAR	-	-	-	-
FEC	74.6	0.4508	32.1 - 173.2	-
GOM	249.7	0.2822	145.2 - 429.6	2
MAB	46.0	0.7685	12.1 - 174.9	-
NCA	-	-	-	-
NEC	60.1	0.4618	25.4 - 142.2	-
NED	41.4	0.2242	26.8 - 63.9	-
SAB	119.2	0.4275	53.4 - 266.1	-
SAR	2.8	1.0000	0.5 - 14.1	-
TUN	2.4	0.7073	0.7 - 8.5	-
TUS	-	-	-	-
Total	**596.2**	**0.174**	**424.7 – 837.0**	**2**

B. Loggerheads

Area	Total	Total CV	Total 95% Confidence Interval	Experimental Takes
CAR	-	-	-	-
FEC	156.9	0.2907	89.8 - 274.2	-
GOM	55.6	0.5903	19.1 - 162.5	0
MAB	71.5	0.4092	33 - 154.5	-
NCA	-	-	-	-
NEC	198.6	0.2870	114.4 - 344.6	-
NED	160.8	0.2123	106.6 - 242.7	-
SAB	37.3	0.6883	11 - 126.3	-
SAR	0.0	-	-	-
TUN	0.0	-	-	-
TUS	-	-	-	-
Total	**680.7**	**0.140**	**518.0 – 894.5**	**0**

C. Unidentified Hardshell Turtles

Area	Total	Total CV	Total 95% Confidence Interval	Experimental Takes
NEC	14.7	1.000	2.9-75.2	-

Table 13. Total estimated interactions with marine mammals in the pelagic longline fishery during 2012.

Species	Estimated Alive	CV Alive	Estimated Serious Injury	CV Serious Injury	Estimated Dead	CV Dead	Estimated Total	CV Total	95% Confidence Interval
Bottlenose Dolphin	23.5	0.7299	77.5	0.5780	0	-	101.0	0.4745	41.8 - 244
Risso's Dolphin	13.2	0.8749	45.0	0.7446	0	-	58.2	0.6087	19.4 - 175
Pilot Whale	72.4	0.4587	170.1	0.3326	0	-	242.6	0.2641	145.8 - 404
Short-finned Pilot Whale	10.0	1.0000	0	-	0	-	10.0	1.0000	2 - 51
False Killer Whale	1.4	1.0000	0	-	0	-	1.4	1.0000	0.3 - 7

Figure 1. Pelagic longline fishing areas in the North Atlantic Ocean: CAR = Caribbean, GOM = Gulf of Mexico, FEC = Florida East Coast, SAB = South Atlantic Bight, SAR = Sargasso Sea, MAB = Mid-Atlantic Bight, NEC = Northeast Coastal, NED = Northeast Distant, NCA = North Central Atlantic, TUN = Tuna North, TUS = Tuna South. Year-round closed areas in the De Soto Canyon (A) and the Florida East Coast (B) are indicated along with seasonal closures in the Charleston Bump (C) and in the Mid-Atlantic (D).

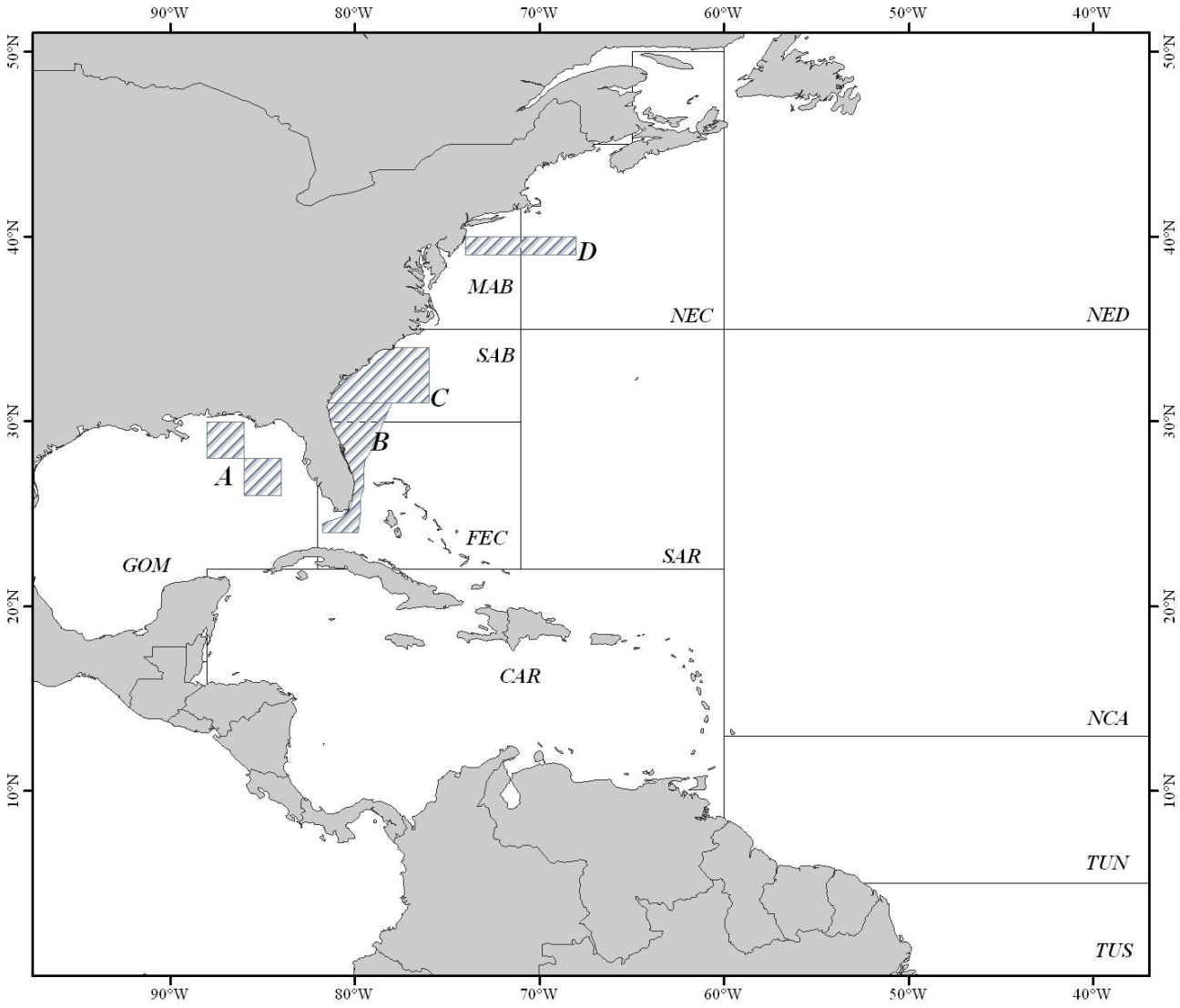


Figure 2. Observed (gray circles) and reported (black circles) pelagic longline fishing effort during 2012

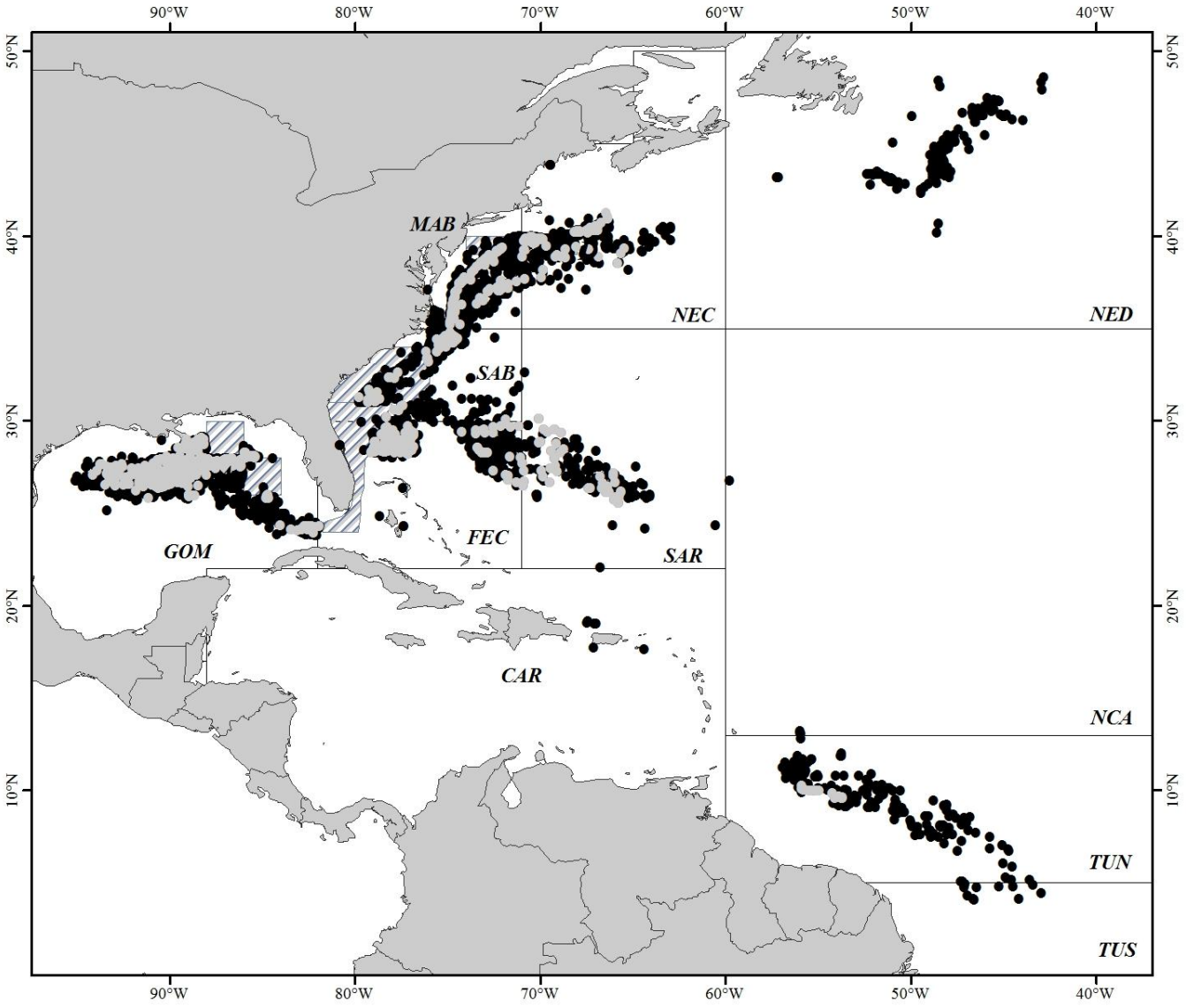


Figure 3. Locations of experimental sets during 2012

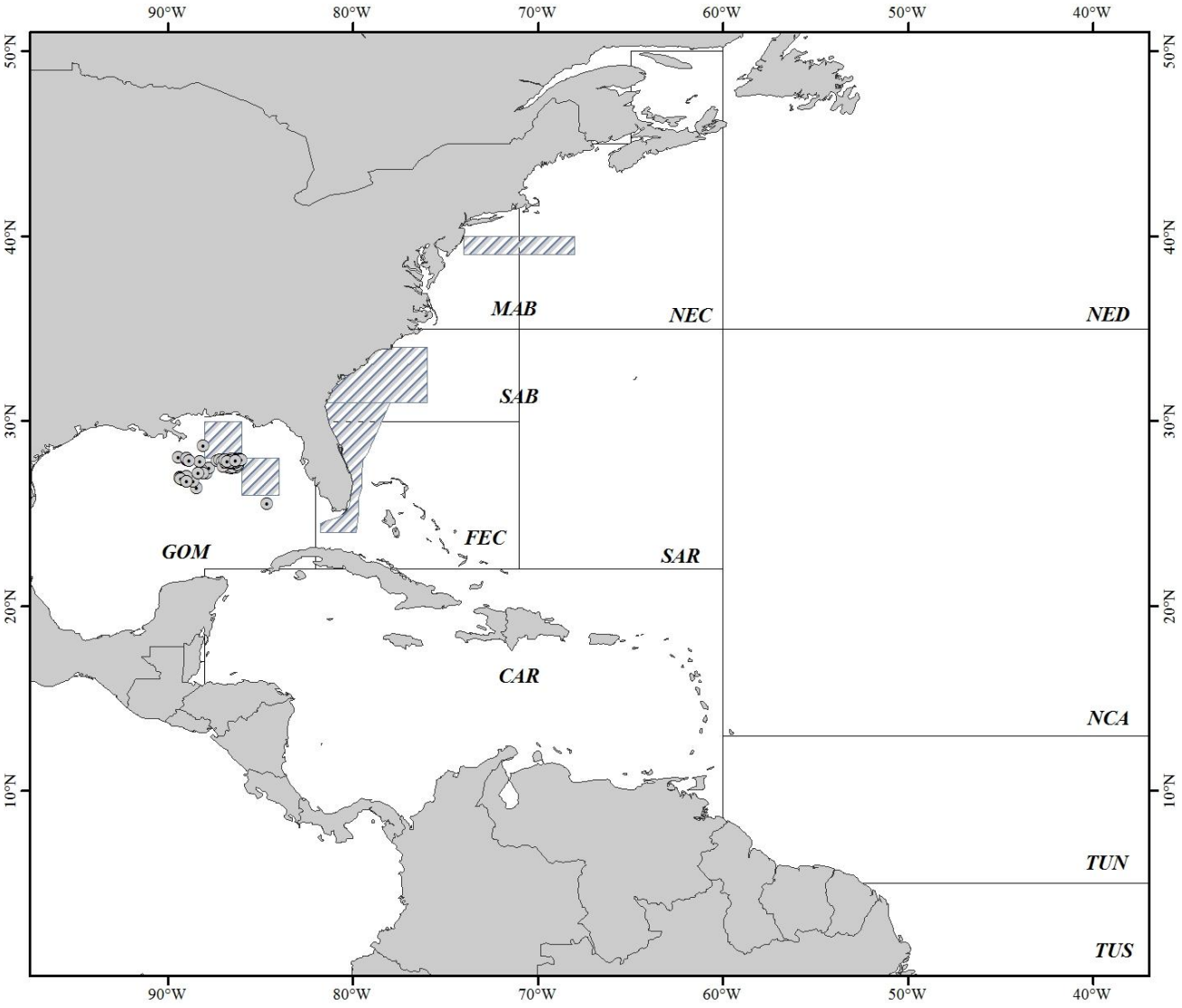


Figure 4. Observed pelagic longline fishing effort and sea turtle interactions during 2012

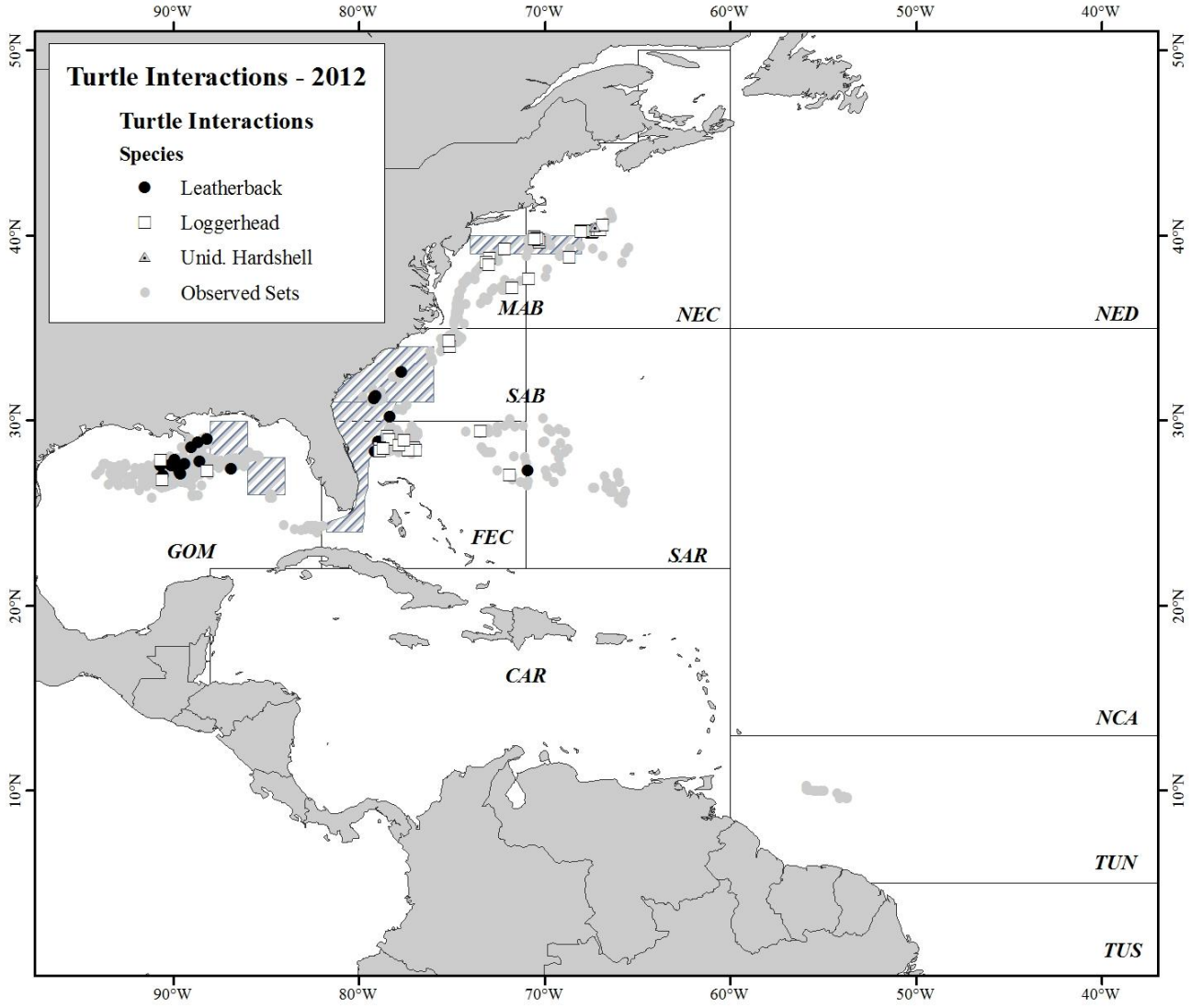


Figure 5. Observed pelagic longline fishing effort and marine mammal takes during 2012

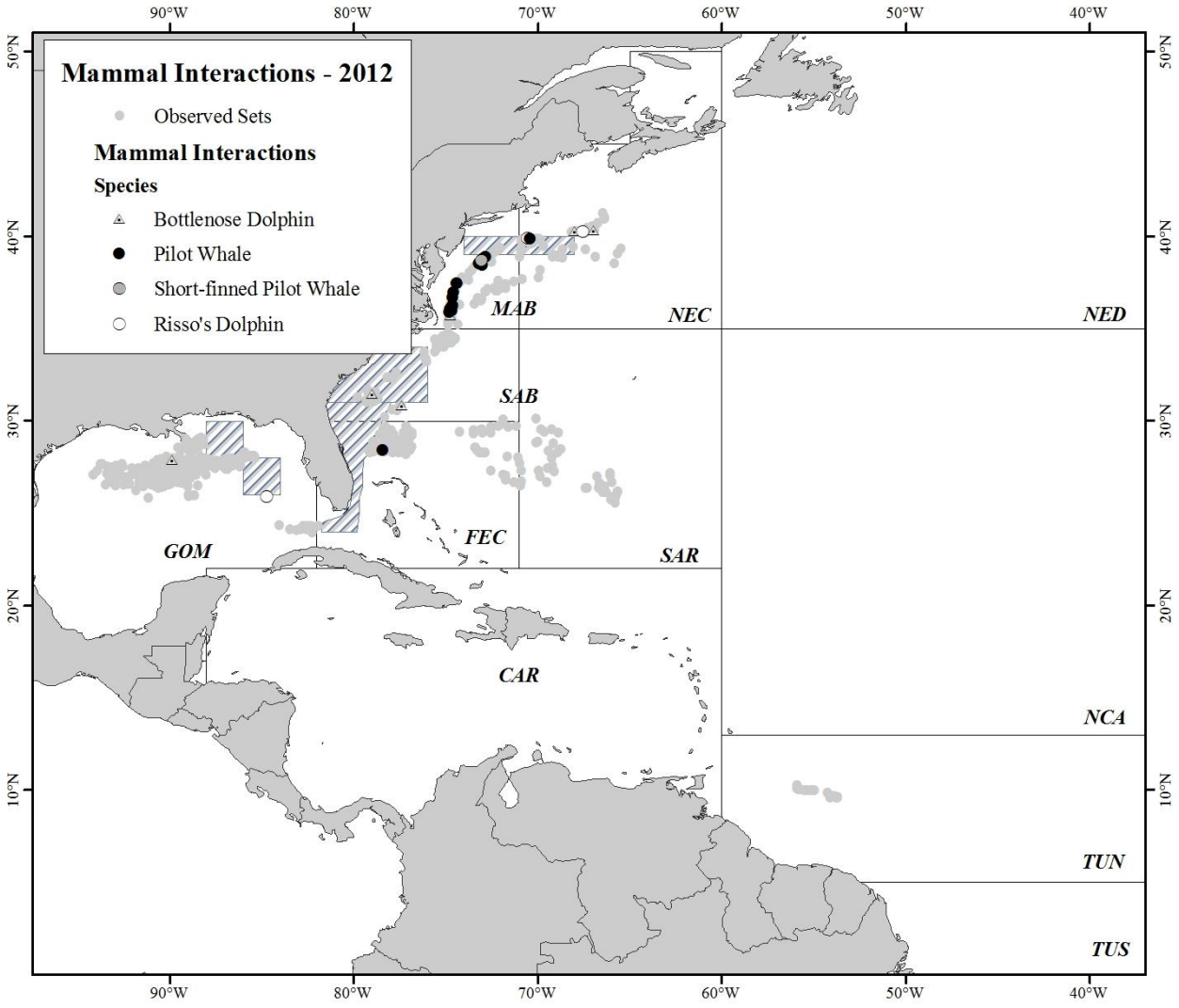
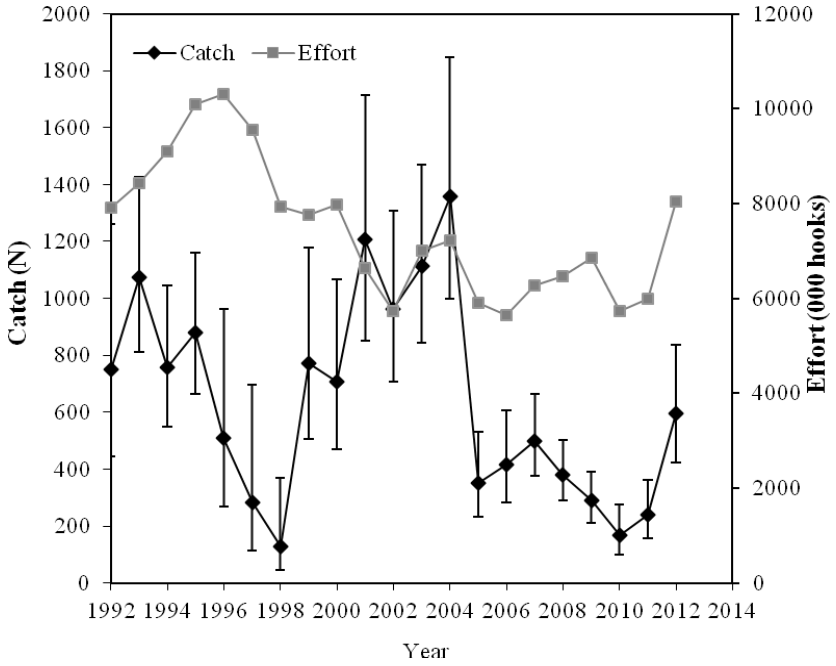


Figure 6. Historical trends in fishery effort and estimated marine turtle takes in the pelagic longline fishery from 1992 to 2012 for A) Leatherback Turtles, and B) Loggerhead Turtles. Errors bars represent 95% confidence intervals.

A. Leatherback Turtles



B. Loggerhead Turtles

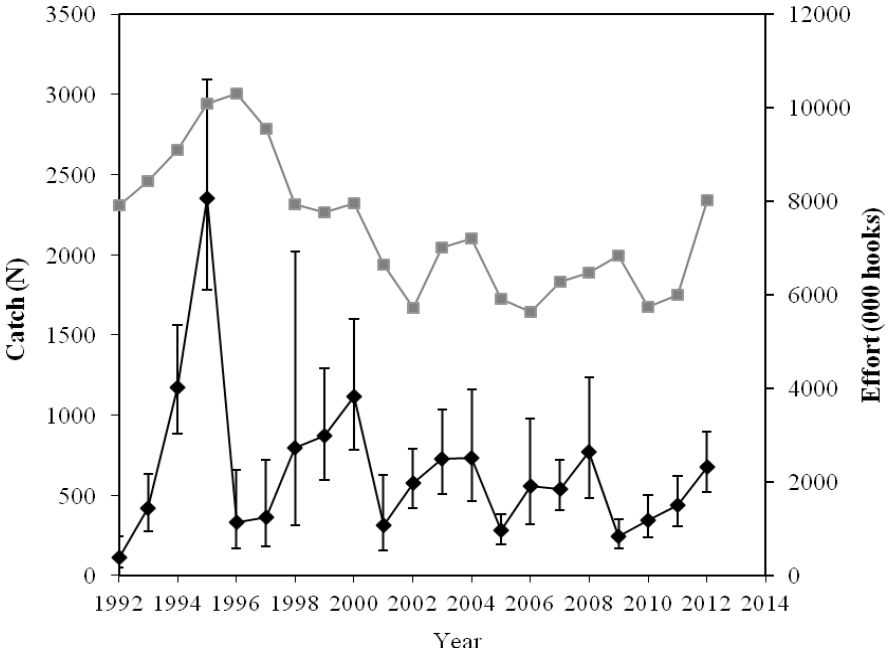
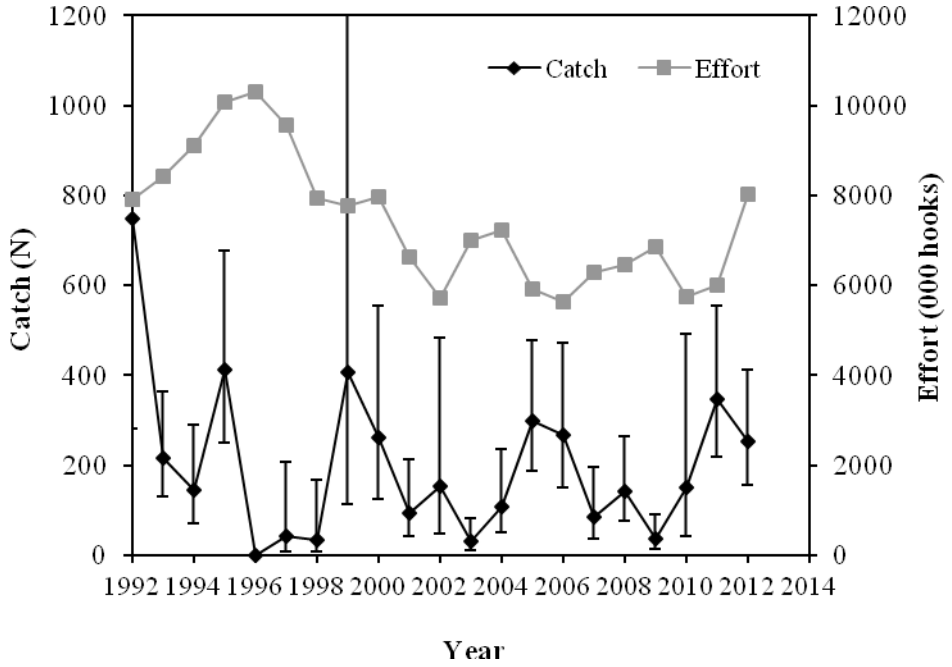
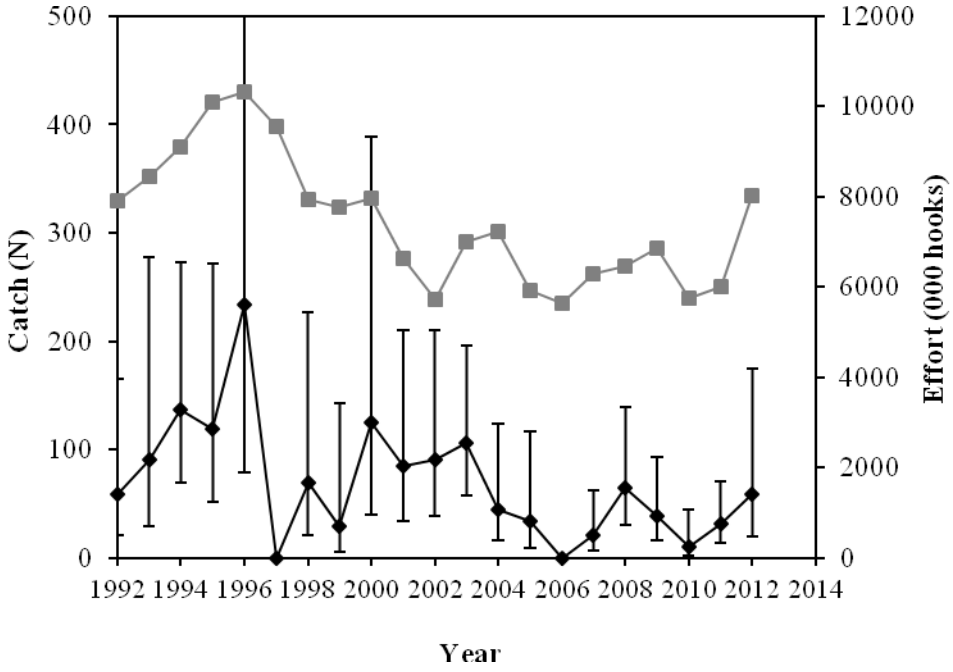


Figure 7. Historic trends in fishery effort and estimated marine mammal takes in the pelagic longline fishery from 1992 to 2012 for A) Pilot Whales and B) Risso's Dolphins. Errors bars represent 95% confidence intervals. For 2011-2012, the total includes both unidentified pilot whales and short-finned pilot whales.

A. Pilot Whales



B. Risso's Dolphins



Appendix A. Sea Turtle Life History Form (dated 12/04)

CAPTURE INFORMATION

TRIP ☐☐☐☐☐☐ **YEAR 20**☐☐ **MONTH**☐☐ **DAY**☐☐
SET/HAUL/TOW ☐☐☐ **SPECIMEN NUMBER BY TRIP** ☐☐☐

GEAR TYPE: ☐**Longline** ☐**Gill Net** _____ ☐**Trawl**_____ (note time in comments)
GEAR DEPTH: ☐**Surface** ☐**Midwater** ☐**Bottom** ☐ **Other** _____
TIME (24 hr) ☐☐☐☐ **WATER TEMP (°F)** ☐☐.☐
LATITUDE☐☐**deg**☐☐.☐**min N/S LONGITUDE**☐☐☐**deg**☐☐.☐**min E /W**
Did turtle slide out/escape from gear? Y / N Was turtle brought on board? Y / N

IDENTIFICATION (see back) **Number of Photos Taken?** ☐☐
SPECIES: ☐**Leatherback** ☐**Loggerhead** ☐**Kemp's ridley** ☐**Green** ☐**Hawksbill** ☐**Olive ridley**
☐**Unidentified Hardshell** ☐**Unknown**

CONDITION OF TURTLE AT CAPTURE ☐ **Injured** ☐ **Uninjured** ☐ **Unknown**
(Please check injury status above as well as condition below)
☐**Previously dead** ☐**Fresh dead** ☐**Comatose** **Attempted resuscitation? Y / N**
☐**Alive** ☐**Unknown (describe)** ☐**Other (describe)**

IF GEAR IS A FORM OF HOOK AND LINE, COMPLETE THIS SECTION, AS APPLICABLE:
HOOK TYPE ☐ **"J"** ☐ **Circle** ☐**Other (describe)** _____ **SIZE** ☐☐**/0**
MANUFACTURER/STYLE NO. _____**DEGREE OFFSET** ☐☐°
BAIT ☐**Squid** ☐**Mackerel** ☐**Sardine** ☐**Unknown**☐**Other describe)**_____**SIZE**_____
Caught on hook timer? Y / N If yes, fill in time elapsed ☐☐ ☐☐
Was light stick on hook?Y/N/U Circle: White, Pink, Blue, Green, Black, Red, Yellow, Purple, Aqua, Other, Unknown
If No, number of gangions to next light stick☐☐
Light Stick Color (circle)? White, Pink, Blue, Green, Black, Red, Yellow, Purple, Aqua, Other, Unknown
Number of gangions to next float ☐☐

HOOK LOCATION
(circle specific location; check box if specifics are not known; annotate drawing on reverse to indicate location as needed):
☐ **Not Hooked** ☐ **Not Known if Hooked** ☐**Hooked, but location totally Unknown**
Internal: ☐ **Unknown, internal**
☐ **Swallowed (Esophagus) Hook visible?** **Visible to insertion point / Partial hook / Not visible**
☐ **Beak/ Mouth (Circle one) Jaw Location (Check one)** ☐**upper**☐**lower**☐**side (mouth only)**
Check one for mouth: ☐ tongue ☐ glottis ☐ roof of mouth ☐ jaw joint ☐**other (describe)**

External: ☐**Unknown, external** ☐**Beak/Head/Neck** ☐**Carapace/Plastron**
☐**Front Flipper/Shoulder/Armpit** ☐**Rear Flipper/Groin/Tail**

Was hook removed from this animal? Y / N / Unknown / Not Applicable
Was animal entangled in gear? At capture? Y / N / Unknown At Release? Y / N / Unknown
How much gear (linear feet) was left on turtle when released? ☐☐☐.☐ **ft. (estimated/measured)**
Estimated carapace length (notch-to-tip straight line): ☐☐.☐ **ft (needed only if turtle is not boated & measured)**

BIOLOGICAL INFORMATION

DIMENSIONS (cm)	**Curved (measuring tape) Standard Measurements**	**Straight Line (calipers) Standard Measurements**	**Straight Line (calipers)**
Carapace Length	☐☐☐.☐ **notch-to-tip**	☐☐☐.☐ **notch-to-tip**	☐☐☐.☐ **notch-to-notch**
Carapace Width	☐☐☐.☐	☐☐☐.☐	

TAGS (identify address on each tag in the comments section)

Flipper Tag Number	**Metal (1) or Plastic(2)**	**Position (Flipper) LF, RF, LR, RR**	**Already Present (1) or Applied By Observer (2)**	**Were Tags Removed?**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**

PIT Tag

☐☐☐☐☐☐☐☐☐☐ ☐☐ ☐ **Scanned? Y / N**

Living Tag (describe)_____ **Other Tags (describe)** _____

(Put PIT tag label here)

BIOPSY SAMPLES TAKEN? Y (itemize below) **/ N / U**nsuccessful (If yes, USFWS 3-177 form may be needed)

RELEASE INFORMATION

LATITUDE ☐☐**deg**☐☐.☐**min N / S LONGITUDE** ☐☐☐**deg**☐☐.☐**min E / W**

TIME (24 hr) ☐☐☐☐ **WATER TEMP (°F)** ☐☐.☐

DATE, if different from capture: YEAR 20☐☐ **MONTH**☐☐ **DAY**☐☐

FINAL DISPOSITION

☐**Discarded Marked Dead/Unresponsive Carcass** ☐**Discarded Unmarked Dead/UnresponsiveCarcass**

☐**Salvaged Carcass/Parts (explain)** ☐**Released Alive** ☐**Taken to Holding Facility** ☐**Unknown (explain)**

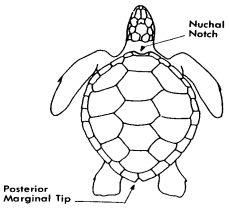
ADDITIONAL COMMENTS (list all biological samples collected; describe or sketch any anomalies):

_____

_____

_____

_____



IDENTIFICATION CRITERIA

Number of:

Left Lateral Scutes	☐	**Overlapping Scutes?**	**Y / N / U**	**Does Nuchal Scute**
Right Lateral Scutes	☐	**Inframarginal Pores?**	**Y / N / U**	**Touch 1st Lateral Scute?**
Vertebral Scutes	☐	**1 Pair Prefrontal Scales?**	**Y / N / U**	**Y / N / U**
L. Inframarginal Scutes	☐	**Lacks Bony Shell?**	**Y / N**	
R. Inframarginal Scutes	☐			

Dorsal Coloration ☐**Black** ☐ **Orange/Red-Brown** ☐**Brown**
☐**Gray-Green** ☐ **Other**_____

Appendix B

Table B1. Gear types and hooking locations based upon observed comments and the sea turtle life history form for each A) Leatherback, B) Loggerhead and C) Unidentified hardshell turtles observed during 2012. These data are summarized in Tables 5 and 6. Q indicates calendar quarter, "CL Est." indicates an estimated carapace length in feet, "CCL" indicates a measured curved carapace length in cm, and "N-N" indicates a straight line measurement of the turtle carapace from notch to notch (see Appendix A). Areas denoted with "Exp" indicate takes in experimental fishing. "Injury Cat. Row" and "Release Cond. Col." refer to rows and columns, respectively, for post-release mortality assignments in SEFSC 2012.

A. Leatherback Turtles

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
1	FEC	1	C-16/0	0	Squid	203	Alive, injured	Released alive	Neck	Yes	Yes	No	0.0	I	D	4.5		
2	GOM	1	C-16/0	0	Squid	135	Alive, injured	Released alive	Armpit	No	No	No	2.0	I	B	3.5		
3	GOM Exp.	1	C-16/0	0	Sardine	81	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	4.3		
4	SAB	1	C-18/0	10	Squid, mackerel or herring	104, 194, or 329	Alive, injured	Released alive	Shoulder	No	No	No	0.0	I	C	5.0		
5	FEC	2	C-16/0 or C-18/0	0 or 10	Squid	284	Alive, injured	Released alive	Front flipper/shoulder/armpit	No	No	No	4.0	I	B	6.0		
6	FEC	2	C-16/0	0	Squid	945	Alive, uninjured	Released alive	Not hooked	N/A	Yes	Yes	14.0	V	A	6.0		
7	GOM	2	C-16/0	0	Squid	131	Alive, injured	Released alive	Roof of mouth	No	No	No	4.0	III	B	4.0		
8	GOM	2	C-16/0	0	Mackerel	153	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	6.0		
9	GOM	2	C-16/0	0	Sardine	117	Alive, injured	Released alive	Shoulder	Yes	No	No	0.0	I	D	5.0		
10	SAB	2	C-18/0	10	Mackerel	Unknown	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	6.0		
11	GOM	3	C-16/0	0	Squid	153	Alive, injured	Released alive	Shoulder	Yes	No	No	0.0	I	D	5.0		

Appendix B, Table B1, A. Leatherback Turtles cont.

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
12	GOM	3	C-16/0	0	Squid	180	Alive, injured (line abrasions)	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	6.0	.	.
13	GOM	3	C-16/0	0	Squid	180	Alive, injured	Released alive	Front flipper	Yes	Yes	No	0.0	I	D	3.5	.	.
14	GOM	3	C-16/0	0	Squid	189	Alive, injured	Released alive	Armpit	No	No	No	2.0	I	C	4.5	.	.
15	GOM	3	C-16/0	0	Squid	180	Alive, injured	Released alive	Rear flipper	Yes	Yes	No	0.0	I	D	5.5	.	.
16	NEC	3	C-16/0	10	Squid	257	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	5.0	.	.
17	NEC	3	C-18/0	10	Squid	248	Alive, injured	Released alive	Front flipper	No	Yes	Yes	11.0	I	A	4.0	.	.
18	NEC	3	C-16/0	10	Squid or mackerel	207 or 378	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	5.0	.	.
19	NEC	3	C-16/0	10	Squid or mackerel	252 or 356	Alive, unknown	Released alive	Not known if hooked	Unknown	Yes	Unknown	Unknown	IV	A	5.0	.	.
20	NEC	3	C-18/0 or C-16/0	10 or 0	Squid	239	Alive, unknown	Released alive	Not known if hooked	No	Unknown	Unknown	60.0	IV	A	4.0	.	.
21	NEC	3	C-18/0 or C-16/0	10 or 0	Squid	239	Alive, unknown	Released alive	Not known if hooked	No	Unknown	Unknown	52.0	IV	A	5.0	.	.
22	SAB	3	C-16/0	0	Mackerel	239	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	6.0	.	.
23	FEC	4	C-18/0	0	Squid	230	Alive, injured	Released alive	Armpit	No	No	No	0.3	I	C	5.0	.	.
24	FEC	4	C-16/0	0	Squid	198	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	4.0	.	.

Appendix B, Table B1, A. Leatherback Turtles cont.

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
25	GOM	4	C-16/0	0	Squid, mackerel or mullet	140	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	6.0	.	.
26	GOM	4	C-16/0	0	Squid	180	Alive, injured	Released alive	Roof of mouth	Yes	No	No	0.0	III	D	4.0	.	.
27	GOM	4	C-16/0	0	Sardine	113	Fresh dead	Discarded dead	Not hooked	N/A	Yes	Yes	5.0	V	Dead	4.0	.	.
28	GOM	4	C-16/0	0	Squid	189	Alive, injured	Released alive	Shoulder	No	No	No	2.0	I	C	4.5	.	.
29	GOM	4	C-16/0	0	Squid	189	Alive, injured	Released alive	Front flipper	No	No	No	2.0	I	C	4.5	.	.
30	GOM	4	C-16/0	0	Squid	153	Alive, injured	Released alive	Shoulder	Yes	No	No	0.0	I	D	6.0	.	.
31	GOM	4	C-16/0	0	Squid	153	Alive, injured	Released alive	Mouth side other	No	No	No	1.0	II	C	6.0	.	.
32	MAB	4	C-16/0	0	Squid	198	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	D	8.0	.	.
33	NEC	4	C-16/0	0	Squid	239	Alive, injured	Released alive	Front flipper	Yes	No	No	0.0	I	D	3.0	.	.
34	SAB	4	C-16/0	0	Squid or mackerel	252 or 423	Alive, uninjured	Released alive	Not hooked	N/A	Yes	No	0.0	V	C	4.0	.	.
35	SAB	4	C-16/0	0	Squid or mackerel	225 or 333	Alive, uninjured	Released alive	Shoulder	Yes	No	No	0.0	I	D	5.6	.	.
36	SAB	4	C-18/0	10	Squid or mackerel	302 or 410	Alive, injured	Released alive	Armpit	No	No	No	2.0	I	C	5.0	.	.
37	SAR	4	C-18/0	10	Squid or mackerel	302 or 419	Alive, injured	Released alive	Shoulder	No	No	No	1.0	I	C	5.0	.	.

Appendix B, Table B1, B. Loggerhead Turtles

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
1	FEC	1	C-16/0	0	Squid	212	Alive, injured	Released alive	Roof of mouth	No	No	No	1.0	III	C	3.0		
2	FEC	1	C-16/0	0	Squid	203	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.5	IV	C	2.5		
3	FEC	1	C-16/0	0	Squid	203	Alive, injured	Released alive	Front flipper	Yes	No	No	0.0	I	D	2.5		
4	FEC	1	C-18/0	10	Squid or mackerel	180 or 270	Alive, injured	Released alive	Beak (internal), lower jaw	Yes	No	No	0.0	I	D		65.0	58.0
5	GOM	1	C-16/0	0	Squid	135	Alive, injured	Released alive	Tongue	Yes	No	No	0.0	III	D	2.5		
6	SAB	1	C-16/0	0	Squid or mackerel	225 or 360	Alive, injured	Released alive	Mouth, side, other	Yes	No	No	0.0	II	D	2.0		
7	SAB	1	C-16/0	0	Squid or mackerel	225 or 360	Alive, injured	Released alive	Beak (internal), lower jaw	Yes	No	No	0.0	I	D		73.0	67.5
8	FEC	2	C-16/0	0	Squid	234	Alive, injured	Released alive	Mouth lower jaw other	Yes	No	No	0.0	II	D		69.0	66.5
9	FEC	2	C-16/0	0	Squid	945	Alive, injured	Released alive	Mouth lower jaw other	Yes	No	No	0.0	II	D	3.7		
10	FEC	2	C-16/0	0	Squid	234	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.3	IV	C		75.5	71.5
11	MAB	2	C-18/0	10	Squid	126	Alive, injured	Released alive	Mouth side other	Yes	No	No	0.0	II	D		58.4	53.7
12	NEC	2	C-16/0	10	Squid	221	Alive, injured	Released alive	Swallowed, hook partially visible	No	No	No	0.2	III	C		66.4	60.7
13	NEC	2	C-18/0	10	Squid	126	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.1	IV	C		57.1	53.0
14	FEC	3	C-18/0	0	Squid	189	Alive, injured	Released alive	Beak internal, lower jaw	Yes	No	No	0.0	I	D		68.8	60.6

Appendix B, Table B1, B. Loggerhead Turtles cont.

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
15	FEC	3	C-16/0	0	Squid	180	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.5	IV	C	2.0		
16	FEC	3	C-18/0	0	Squid	176	Alive, injured	Released alive	Beak external, unknown	Yes	No	No	0.0	I	D	4.5		
17	GOM	3	C-16/0	0	Squid	153	Alive, unknown	Released alive	Not known if hooked	No	Unknown	Unknown	144.0	IV	A	4.0		
18	MAB	3	C-16/0	0	Squid	131	Alive, injured	Released alive	Mouth, side, other	Yes	No	No	0.0	II	D	4.0		
19	NEC	3	C-18/0	10	Squid	185	Alive, injured	Released alive	Swallowed, hook partially visible	Yes	No	No	0.0	III	D		83.5	
20	NEC	3	C-16/0	10	Squid	257	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.2	IV	C		60.1	52.6
21	NEC	3	C-16/0	10	Squid	252	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.1	IV	C		67.0	60.1
22	NEC	3	C-16/0	10	Squid	261	Alive, injured	Released alive	Beak internal, lower jaw	Yes	No	No	0.0	I	D		75.0	67.9
23	NEC	3	C-16/0	10	Squid	252	Alive, injured	Released alive	Mouth, side, other	Yes	No	No	0.0	II	D		57.2	50.6
24	NEC	3	C-16/0	10	Squid	252	Alive, injured	Released alive	Swallowed, hook partially visible	Yes	No	No	0.0	III	D		67.9	61.4
25	NEC	3	C-16/0	10	Squid	252	Alive, injured	Released alive	Swallowed, hook partially visible	Yes	No	No	0.0	III	D		60.0	54.6
26	NEC	3	C-18/0 or C-16/0	10 or 0	Squid	239	Alive, injured	Released alive	Unknown internal	No	No	No	3.0	IV	B	2.0		
27	NEC	3	C-16/0	0	Squid	243	Alive, injured	Released alive	Front flipper	Yes	No	No	0.0	I	D	2.0		

Appendix B, Table B1, B. Loggerhead Turtles cont.

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
28	NEC	3	C-16/0	10	Squid or mackerel	230 or 324	Alive, injured	Released alive	Swallowed, hook partially visible	No	No	No	0.0	III	C		70.1	64.6
29	NEC	3	C-16/0	10	Squid or mackerel	230 or 324	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.2	IV	C		59.8	52.7
30	NEC	3	C-16/0	0	Squid	239	Alive, injured	Released alive	Tongue	Yes	No	No	0.0	III	D		60.7	55.7
31	NEC	3	C-16/0	10	Squid	248	Alive, injured	Released alive	Tongue	Yes	No	No	0.0	III	D		66.0	60.0
32	NEC	3	C-18/0 or C-16/0	10 or 0	Squid	239	Alive, injured	Released alive	Swallowed, hook not visible	No	No	No	0.4	IV	C			59.5
33	NEC	3	C-18/0	10	Squid	167	Alive, uninjured	Released alive	Not hooked, holding bait	Yes	No	No	0.0	V	D	2.5		
34	NEC	3	C-18/0	10	Squid	167	Alive, uninjured	Released alive	Not hooked, holding bait	Yes	No	No	0.0	V	D	4.0		
35	NEC	3	C-18/0	10	Squid	144	Alive, injured	Released alive	Mouth, side, unknown	No	No	No	0.5	III	C	3.0		
36	FEC	4	C-16/0	0	Squid	189	Alive, injured	Released alive	Mouth lower jaw other	No	Yes	No	0.2	II	C	4.0	.	.
37	FEC	4	C-18/0	0	Squid	230	Alive, injured	Released alive	Front flipper	Yes	No	No	0.0	I	D	2.0	.	.
38	GOM	4	C-16/0	0	Squid	131	Alive, injured	Released alive	Roof of mouth	No	No	No	0.5	III	C	3.0	.	.
39	MAB	4	C-16/0	0	Squid	198	Alive, injured	Released alive	Swallowed hook not visible	No	No	No	0.3	IV	C	.	73.2	64.9
40	MAB	4	C-16/0	0	Squid	198	Alive, injured	Released alive	Mouth side other	Yes	No	No	0.0	II	D	.	69.0	64.7

Appendix B, Table B1, B. Loggerhead Turtles cont.

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
41	MAB	4	C-16/0	0	Squid	212	Alive, injured	Released alive	Swallowed hook partially visible	Yes	No	No	0.0	III	D	.	59.9	53.5
42	NEC	4	C-16/0	0	Squid	239	Alive, injured	Released alive	Mouth side other	Yes	No	No	0.0	II	D	.	65.0	.
43	NEC	4	C-16/0	0	Squid	239	Alive, injured	Released alive	Beak (internal) upper jaw	Yes	Yes	No	0.0	I	D	.	71.0	64.0

Appendix B. Table B1. C. Unidentified Hardshell

#	Area	Q	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Capture Condition	Final Disposition	Hook Location	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	Injury Cat. Row	Release Cond. Col.	CL Est. (ft)	CCL (cm)	N-N (cm)
1	NEC	3	C-18/0	10	Squid or mackerel	171 or 297	Alive, unknown	Released alive	Not known if hooked	No	Unknown	Unknown	17.0	IV	A	4.0		

Appendix B cont.

Table B2: 2012 observer comments and serious injury codes for marine mammals are presented. Lengths (cm) are estimated visually by the observer. Interaction type categories are based on NMFS Serious Injury determination policy.

Animal #	Species	Length (cm)	Release Condition	Interaction Type	Observer Comments
1	Pilot Whale	360	Serious Injury	S6 – Gear attached to free-swimming animal with potential to be ingested or entangle	[Check boxes indicate unknown if hooked or entangled. Line was not intentionally cut, released with 30 feet trailing.] Leader broke approx. 1/2 leader (5 fa, 30 feet) remained on animal. Hooking assumed but not known, animal was never close enough to tell. Swam off readily, sounded.
2	Bottlenose Dolphin	240	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate animals was entangled, not hooked. Entangled in mainline, gangion, and dropline around body, mouth, flipper, head and neck. Gear was removed and wraps cut.] Gear removed using long handled line cutter. Animal swam off vigourously.
3	Bottlenose Dolphin	210	Serious Injury	S6 – Gear attached to free-swimming animal with potential to be ingested or entangle	[Check boxes indicate animal was hooked in tail, not entangled. Animal was released with hook and 8 feet of line trailing.] The line was cut with line cutters as soon as the dolphin surfaced. About 8 ft. of line was trailing behind the dolphin. There were no tail wraps at the time of release, but the hook was still embedded. This dolphin was under the boat as the crew handled the leader, beleiving it was a swordfish. When the dolphin surfaced, the crew immediately cut the line. The dolphin appeared to be very tired as it swam away from the boat on the surface for a few minutes before diving normally.
4	Bottlenose Dolphin	270	Serious Injury	S6 – Gear attached to free-swimming animal with potential to be ingested or entangle	[Check boxes indicate animal was entangled, not hooked. Wrapped around tail and flukes in minaline. Gear was not removed and line was not cut, animal released with 12 ft. of grear.] Mainline was cut with mono cutters. MBD slowly swam away when released. It appeared to be tired.
5	Pilot Whale	300	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate animal was not hooked, but entangled around tail/flukes involving the mainline. Gear was removed from animal with all wraps cut.] There was a single wrap of the mainline around the tail just above the flukes. The crew pulled the mainline tight and cut one side of the loop with a long handled line cutter. The mainline wrap immediately came completely free. The pilot whale immediately took 2 or 3 breaths of air, then quickly dove and swam away rapidly.
6	Pilot Whale	300	Serious Injury	S5a – Hook in head	[Check boxes indicate animal was hooked in side of mouth. Line was cut with 9ft trailing animal on release.] The pilot whlae was making continuous attempts to dive, making it difficult for the crew to take hold of the leader or the snap. The snap kept sliding on the mainline, so there was no way to control the whale. Eventually, the crew cut the leader with a long-handled line cutter, approximately half-way down the leader leaving 9 ft. of trailing line. The pilot whale was tired but immediately began swimming away from the boat on the surface.

Appendix B, Table B2 (cont.)

Animal #	Species	Length (cm)	Release Condition	Interaction Type	Observer Comments
7	Pantropical Spotted Dolphin	178	Dead	Dead	[Check boxes indicate animal was not hooked but entangled in mainline around head, body, fins, and through mouth.] Animal was dead so it was boarded and all gear was removed from animal and fishing resumed. Dead whole with no bite marks, stress marks at peduncle from where mainline was wrapped.
8	Bottlenose Dolphin	240	Serious Injury	S7b – Entangled before being freed without gear attached	[Check boxes indicate animal was not hooked but entangled around tail/flukes and involved with mainline. Gear was removed from animal and wraps cut.] They lifted the dolphin by the tail, cut the main line leading away from the dolphin and were able to pull loops free using long handle boat hook. It was struggling very hard to get free and swam away very quickly upon release.
9	Risso's Dolphin	270	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate animal was not hooked. Entangled in mainline around tail/flukes. Wraps cut and all gear removed.] The cut mainline leading away from mammal and were able to use a boat hook to grab line and unwrap it from tail. All gear removed. Upon release, it righted itself, remained at the surface for a minute then dove away. I saw it surface twice as it swam away.
10	Pilot Whale	330	Serious Injury	S5a – Hook in head	[Check boxes indicate animal was hooked in side of mouth and entangled around tail/flukes in mainline, gangion, and dropline. Line cut near hook with 1 feet remaining. Entangling wraps cut.] Captain got as close to animal as possible and cut close to hook in mouth and cut the line tangled on the fluke.
11	Pilot Whale	480	Serious Injury	S5a – Hook in head	[Check boxes indicate animal was hooked with line in mouth and exact location of hook unknown. Diagram indicates animal hooked in mouth/head area. Line cut with 50 feet remainin with the animal. Not entangled] No attempt to remove the hook from the animals mouth. The line was cut near the clip with a pair of line snips, leaving ~50 ft. attached to the animal. Could not see the animal swim away as it was underwater and did not surface again once the line was cut. However, I am certain that the animal swam away normally.
12	Pilot Whale	420	Serious Injury	S5a – Hook in head	[Check boxes indicate animal was hooked with line in mouth and exact locatio of hook unknown. Diagram indicates animal hooked in mouth/head area. Line cut with 50 feet remainin with the animal. Not entangled] As soo as it was realized that a MPW was on the line, the crew cut the gangion near the clip. Gear remaining consisted of ~50' of line along with the hook. The animal quickly swam off normally once the line was cut.

Appendix B, Table B2 (cont.)

Animal #	Species	Length (cm)	Release Condition	Interaction Type	Observer Comments
13	Risso's Dolphin	210	Serious Injury	S5a – Hook in head	[Check boxes indicate animal hooked in unknown location. Diagram indicated hooked in mouth/head area. Hook not removed, line cut with 5 feet remaining. Not entangled] Mono cut with mono cutters. About five feet of mono left trailing. MRD quickly swam away upon release. IT was very active while trying to get close to boat. MRD was caught on gangion next to polyball. MRD was caught on a hook with flying fish bait.
14	Pilot Whale	390	Serious Injury	S6 – Gear attached to free-swimming animal with potential to be ingested or entangle	[Check boxes indicate that it was unknown if animal was hooked or entangled. Line cut with 60 feet trailing] There was no attempt to remove any gear from this pilot whale. The line (gangion) was cut as soon as it could be reached (near the clip). I estimate there to be ~60' of line still attached. Once the line was cut, the pilot whale swam off/dove down not to be seen again.
15	Pilot Whale	300	Serious Injury	S5a – Hook in head	[Check boxes indicate animal was hooked inside mouth. Hook not removed, but line cut with 1 feet remaining. Not entangled] Captain maneuvered vessel as close to animal as possible, then handlined it to side. Mainline was cut, then gangion was untangled and cut as close to mouth as possible. Animal swam off with no sign of distress. Animal swam off quickly with no visible distress.
16	Pilot Whale	210	Serious Injury	S6 – Gear attached to free-swimming animal with potential to be ingested or entangle	[Check boxes indicate that animals was hooked in unknown location. Diagram indicates line connecting to head/mouth. Hook not removed, line cut with 20 feet remaining with animal. Not entangled] Crew cut the leader with mono cutters. When released, MPW dove and swam away.
17	Pilot Whale	300	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate not hooked. Entangled in mainline around tail/flukes. Partial gear was removed with 3 feet remaining on animal. Wraps not cut.] 3 or 4 raps of mainline wrapped around tail just ahead of flukes. Mainline cut before and after, crew wary of powerful tail, swam away with wraps, longline cut about 1 foot from tail and about 3 foot from tail. Line unwrapping later a good possibility. Very powerful, crew didn't try to get too close, companion whale about same size there also. They swam away together.
18	Pilot Whale	180	Serious Injury	S5a – Hook in head	[Check boxes indicate animal hooked with line in mouth, but exact location of hook unknown. Diagram indicates hooked in mouth/head. Line cut with 1 foot of trailing line. Not entangled] The animals was hauled boat-side and the line was cut with a knife ~1 foot from the animals mouth. No attempt to remove hook. Swam away slowly but seemingly normal.

Appendix B, Table B2 (cont.)

Animal #	Species	Length (cm)	Release Condition	Interaction Type	Observer Comments
19	Pilot Whale	240	Serious Injury	S5a – Hook in head	[Check boxes indicate hooked with hook not visible and line in mouth. Diagram indicates hooked in head/mouth area. Line cut with 50 feet of trailing line attached on release. Not entangled] No attempt to remove the hook from the animal's mouth. The line was cut near the clip with a knife, leaving ~50 ft. of line reamining attached to the animal. Seemed to swim away normally.
20	Pilot Whale	210	Serious Injury	S5a – Hook in head	[Check boxes indicate hooked with hook not visible and line in mouth. Diagram indicates hooked in head/mouth area. Line cut with 50 feet of trailing line attached on release. Not entangled] No attempt to remove the hook from the animal's mouth. The line was cut near the clip with a knife, leaving 50 feet of line attached to the animal. Seemed to swim away normally.
21	Pilot Whale	150	Serious Injury	S5a – Hook in head	[Check boxes indicate animal was hooked, not entangled. Hook location indicated as not seen if hooked in mouth or hook swallowed. Line cut with 12 feet remaining on animal] Crew was pulling gangion closer to vessel, but saw tiger shark and immediately cut line so MPW could swim away. MPW very lively, swam away, immediately destroyed by TIGER SHARK, but released alive.
22	Pilot Whale	300	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate animal was not hooked. Entangled in gangion around flukes/tail. Gear was removed and wraps cut. Released with no gear remaining/ Captain maneuvered vessel as close as possible to animal, and a long handled line cutter was used to cut line from fluke. There was only one wrap around flike, the animal swam away with no discernible injury. It swam away with no sign of injury.
23	Pilot Whale	300	Serious Injury	S5a – Hook in head	[Check boxes indicate that animal was hooked in mouth area in unknown location, not entangled. Line cut with 2 feet left trailing[The animal was close to the bow of the boat, crewman hustled to front of boat and cut the line. I only saw it surface once, very briefly. It appeared to swim away strong with no visible injury.
24	Pilot Whale	300	Serious Injury	S5a – Hook in head	[Check boxes indicate animal was hooked in mouth area, not entangled. Hook location not observed. Line cut with 6 feet of trailing line remaining] Captain brought boat close to animal, but it dove and moved to stern, close to the prop, so the crew cut the line before the animal could get close to entangling the prop. Swam away very quickly, appeared uninjured.
25	Bottlenose Dolphin	180	Serious Injury	S7b – Entangled before being freed without gear attached	[Check boxes indicate animal was not hooked. Entangled in mainline around tail/flukes. All gear removed] half-hitch around tail flukes, only mainline. Crew member hanging over boat able to undo line. Bottlenose dolphin had half-hitch of mainline around tail (see drawing). Very tired, breathing loudly. Crewman able to unwrap hitch. Animal swam away. Not especially large (juvenile)

Appendix B, Table B2 (cont.)

Animal #	Species	Length (cm)	Release Condition	Interaction Type	Observer Comments
26	Bottlenose Dolphin	120	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate that animal was not hooked, but entangled in gangion/leader around flukes. All gear removed from animal] It was a little juvenile dolphin that seemed to have just gotten one wrap of the gangion around its fluke. As the line came to the surface, it disentangled itself and swam away with its mother. Swam away quickly with its mother.
27	Pilot Whale	300	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate not hooked or entangled. No gear on animal on release] As far as anyone could tell, this animal seemed to be chewing on the mainline or just holding it in its mouth. No gangions invovled so the mainline was cut at which time the animal let go and swam away with no visible injuries. Swam away quickly with no visible injuries.
28	Risso's Dolphin	240	Serious Injury	S6 – Gear attached to free-swimming animal with potential to be ingested or entangle	[Check boxes indicate unknown if animal was hooked, but animal was entangled in gangion/leader around flukes. Gear not removed and wraps not cut. Released with 12 feet remaining] The leader was pulled towards the boat untill the dolphin began tail salpping the water surface and trying to swim away. The line was cut by crew with 12' remaining. No attempt to remove wraps or a hook from the dolphin. The dolphin swam away slowly, but seemingly normal. The fact that it swam away slowly may have been due to a lack of energy, injury, or several other factors.
29	Short-finned Pilot Whale	360	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicated animal was not hooked, entangled in mainline through the mouth. Gear was removed and wraps cut. All gear removed] Long-handled line cutter used to cut mainline wrap around lower jaw and animal was freed without any remaining gear. Whale swam away leisurely upon release and appeared unharmed.
30	Pilot Whale	180	Released Alive	S7b – Entangled before being freed without gear attached	[Check boxes indicate animal was not hooked. Entangled in mainline around tail/flukes. Wraps cut and partial gear removed. 3 feet remaining with animal] This animal was hauled boat side and the crew attempted to remove the wraps with a gaffe. The were not successful removing the wrap of mainline from the animal's tail and cut the line with a knife, leaving ~3 feet attached to the animal. I believe the tail wrap was forming leisions in the animal's tail. Slowly swam away, seemingly normal.