Northeast Fisheries Science Center Reference Document 19-17

Serious Injury Determinations for Small Cetaceans and Pinnipeds Caught in Commercial Fisheries off the Northeast US Coast, 2013-2017

by Elizabeth Josephson, Frederick Wenzel, and Marjorie C Lyssikatos

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INTRODUCTION

The Marine Mammal Protection Act (MMPA) requires the National Marine Fisheries Service (NMFS) to estimate annual levels of human-caused mortality and serious injury to marine mammal stocks (section 117) and to categorize commercial fisheries based on their level of incidental mortality and serious injury of marine mammals (section 118). Serious injury (SI) determinations were addressed at NMFS-convened workshops in 1997 and 2007 (Angliss and DeMaster 1998; Andersen et al. 2008), and in January 2012 the agency published new national guidelines for distinguishing serious from non-serious injuries of marine mammals. A major goal of the new guidelines was to establish national consistency and transparency in SI determinations. To implement the new guidelines, Science Center SI determination staff (SID) are required to annually review the observer (OBS) and at-sea monitor (ASM) records on all incidentally caught marine mammals that were released alive. Determinations made on these fishery interactions are independently reviewed by another center's SID (e.g., Northeast Fisheries Science Center [NEFSC] determinations were sent to Southwest Fisheries Science Center [SWFSC]), the Greater Atlantic Regional Fisheries Office (GARFO), and the Atlantic Scientific Review Group (ASRG) before final determinations are published.

METHODS

Electronic records of all small cetacean and pinniped bycatch that were coded as alive or condition unknown for the 5-year period (2013-2017) were extracted from the Northeast Fisheries Observer Program (NEFOP) database. A principal component of these records included OBS/ASM notes that provided information on entanglement characteristics (e.g., animal in cod end), crew handling (e.g., rope tied animal, animals lifted overboard), animal condition (e.g., cut on dorsal flank, some blood), and state of released animal (e.g., swam away quickly, swimming sluggishly at surface, immediately sank). These data were independently compared to small cetacean (S) and pinniped (P) criteria contained in the aforementioned SI guidance document by 2 marine mammal researchers in the NEFSC Protected Species Branch. The 2 evaluators compared their determinations, and all differences were discussed to obtain agreement. Final injury determinations and mortality events were tabulated annually to estimate the proportion of observed SI animals relative to the other observed determinations (e.g., nonserious injury (NSI), uninjured (UI), and Dead (D) by gear type and species (Table 4). Proportions are used in stock assessment reports to partition the extrapolated bycatch estimate into SI vs. Mortality (see Waring et al. 2016). Determinations for 2012- 2016 have been previously published (Waring et al. 2015; Wenzel et al. 2015, 2016; Josephson et al. 2017, 2019). Cases where a determination could not be made were treated conservatively and included with the dead animals and hence represented in the final mortality and serious injury estimates reported in the annual stock assessment reports (Hayes et al. 2018).

Species codes and gear codes used in this report are contained, respectively, in Tables 1 and 2. The statistical area designations are presented in Figure 1.

RESULTS AND DISCUSSION

Small Cetaceans

In 2013, 4 records of observed takes recorded as alive or unknown were examined. Only 1, a coastal common bottlenose dolphin (*Tursiops truncatus truncatus*), was recorded as alive (Table 3). This dolphin was observed wrapped from just anterior of the dorsal fin to the leading part of the tail stock with a single layer of 12-inch mesh net. On its fluke was a "tangled mess" of approximately 100 meshes wrapped in a clump. The report states that the captain and crew were able to free the animal from the net within 5 minutes. No indents from net or gear, wounds, marks, or bleeding were observed on the dolphin. Once all gear was removed, the dolphin swam out of sight quickly. The animal was designated as a Non-Serious Injury (NSI; Table 3). A record of a pilot whale was determined to have been coded as unknown condition in error as it was clearly dead. Two reported takes of unidentified dolphins did not have enough information for the injury status to be determined; could not be determined (CBD) was the designation assigned to these animals (Table 3).

During 2014, NEFOP records of 1 Atlantic white-sided dolphin (*Lagenorhynchus acutus*), 4 common dolphins (*Delphinus delphis delphis*), 1 pilot whale (*Globicephala* sp.), 1 harbor porpoise (*Phocoena phocoena phocoena*), 1 Risso's dolphin (*Grampus griseus*), and 1 dolphin of unknown species were reviewed. The condition codes for these above cetaceans were recorded as "alive" or "unknown" (Table 3).

In February 2014, an otter trawl captured a common dolphin. The animal was dumped with the catch to the deck and had net loosely caught on its dorsal fin. The animal did not fall from any height to the deck and landed on the catch. It was slowly moving its jaw and fluke about 3-4 inches, as if it were trying to breathe through its mouth. In the photo the animal appears to have a dark, approximately 1 inch wide mark around mid mouth that the observer did not note. No other wounds, marks, or bleeding were seen. The animal was on deck about 1 minute and then dragged off deck by its fluke by the crew. The animal was released down the stern ramp with no gear left on it. About 15-20 seconds after its release, the dolphin was seen swimming slowly near surface and stayed on the surface the whole time, although the observer could not see well, as it was dark and the boat was steaming away. The animal was designated as SI.

In March 2014, 1 Atlantic white-sided dolphin was observed alive during the haul back of a trawl. The dolphin was loosely caught in the mouth of the net, near the bridles and head rope, with its head facing the mouth of net and body parallel to the net. It wiggled its body, not really thrashing, and made no noise. The observer saw it for 5-10 seconds before the cod end opened and the catch was released. No photos were taken. CBD was the designation assigned to this animal (Table 3).

In May 2014, 1 Risso's dolphin was observed in a trawl with its tail tangled in the cod end trip line. The animal, which was initially described by the crew as a "marine mammal," freed itself after a couple minutes and swam away without noticeable injuries. The animal freed itself before the crew could cut line. The crew described the animal as a pilot whale, but black and white. A Risso's dolphin was sighted later in trip, and the crew confirmed it was same species as the bycatch interaction. CBD was the designation assigned to this animal (Table 3).

In July 2014, 1 common dolphin fell out of the cod end when the catch was dumped on deck. Signs of breathing (slow, 5-6 breaths) were noticed while the animal was on deck. Slow eye movement was seen, but no other movements were observed. The crew pushed it off the stern ramp. The dolphin took a minute to right itself once in the water then slowly swam away, gaining speed with distance. This animal was designated as SI.

In November 2014, a live common dolphin was observed in a trawl fishery. The dolphin

was rolling in the net belly, with its pectoral flipper and fluke sticking out of meshes. The cod end was detached to release on deck. The animal was observed on the net reel but was not brought over the net reel. The crew saw the animal moving in the net, and the observer saw some movement of the fluke, but it was not thrashing. The observer only saw the fluke well and some portion of the left side. No sounds were heard. No wounds, marks, or bleeding were seen. The animal was out of the water less than 5 minutes and then was pushed down the stern ramp to release. The observer could not see the animal after release. This animal was designated as a Serious Injury (SI).

In September 2014, a gillnet trip with an ASM reported a take of 1 live common dolphin. The captain saw a dolphin which appeared tangled by "a flipper" and then popped out as the net was brought out of water. The ASM was alerted to the incident, tried to get a picture of it escaping, but did not get to that side of boat in time. The captain commented that the dolphin swam away. No blood was seen in the water. A pod of common dolphins was seen in the area of the net when it was set, 30 minutes prior. No photos were taken. CBD was the designation assigned to this animal (Table 3).

In October 2014, an ASM aboard a gillnet trip briefly saw only the head of a harbor porpoise. It appeared to be dead, with no meshes seen wrapped around head and no movement. This animal was designated as dead (Table 3).

In October 2014, an unidentified dolphin was observed entangled in net, hanging loosely in the net bag. Photos were inconclusive. CBD was the designation assigned to this animal (Table 3).

In November 2014, a trawl fishery reported a pilot whale take that was sideways in the belly of the net. The pilot whale was pinned onto the net reel for about 10 seconds. The crew cut the gear to get the animal out and released it while the cod end was still in the water. The observer only saw the left side, not the right. No wounds, marks, or bleeding were seen. The observer saw the mouth opening and closing, but no other movements were seen. The animal was out of water for about 20 seconds. The animal was seen swimming away from boat with a pod that followed the boat for about 5 minutes before disappearing. No photos were taken. The animal was designated as SI (Table 3).

In 2015, 3 small cetacean records were reviewed, 2 of which were determined to be SI cases and the other CBD. The 2 SI interactions were both Risso's dolphins in bottom trawl gear, and category S4 was applied since both animals were brought on deck. A harbor porpoise was seen by an observer on a gillnet trip. The observer described the animal as thrashing out of the net and swimming away quickly. This animal was designated CBD (Table 3).

In 2016 there were no observed interactions with small cetaceans categorized as alive or of unknown status recorded in NEFSC observer databases.

In 2017 there were 17 small cetacean records reviewed, plus 1 that was identified as an unknown marine mammal. Three Risso's dolphins had interactions with bottom trawl gear, 2 of which were determined to be serious injuries because they were brought on deck, and the third was put into the "dead" category. This last animal was noticed floating ventral side up behind the vessel during net retrieval. A bottlenose dolphin was taken in gillnet gear, but not enough information was recorded to make an injury determination. The animal was removed from the net before bringing the net onboard. A harbor porpoise interaction with gillnet gear was designated as SI. While not brought on board, it remained at the surface with little movement after being freed from entangling wraps and was still at the surface when last seen. A white-sided dolphin caught in bottom trawl gear was brought on board in the belly of the net and dumped on deck. While the animal seemed vigorous after release, it may have retained a line around its tailstock that the crew had used to get it overboard. This dolphin was designated as SI because it was on deck. A common dolphin released alive from gillnet gear was designated as SI under criteria S7b – entangled in gear but released gear-free. The dolphin was responsive and alert upon release, but not very active. Nine common dolphins

(7 in the same haul) were coded by the observer as status unknown but were designated by the serious injury reviewers as dead. An unidentified dolphin taken in gillnet was also determined to be dead. The unidentified marine mammal was taken in trawl gear and designated as CDB as the animal was seen only briefly during haul back. While it seemed to free itself by making a large hole in the net, it was unknown whether there were any injuries or remaining entanglement.

In summary, 34 records of small cetaceans from 2013 to 2017 were reviewed for injury determination. Of these, 11 were designated as SI, 1 as NSI, 9 as CBD, and 13 as dead. Four common dolphins, 4 pilot whales, 1 white-sided dolphin, and 4 Risso's dolphins were seriously injured as a result of interacting with bottom trawl gear. One dolphin of unknown species sustained serious injury in trawl gear, and 1 unidentified marine mammal was classified as CBD in its interaction with trawl gear. The NSI designation was a bottlenose dolphin interaction in a gillnet. One white-sided dolphin, 1 harbor porpoise, 1 Risso's dolphin, 1 common dolphin, 1 bottlenose dolphin, and 3 unidentified dolphins were designated as CBD during this period, all but the harbor porpoise and bottlenose dolphin in bottom trawl gear.

In bottom trawl gear from 2013-2017, serious injuries were determined in 1.6% of common dolphins (out of a total of 187 bycaught animals), 10% of pilot whales (out of a total of 10 bycaught animals), 18.2% of Risso's dolphins (out of a total of 22 bycaught animals), and 6.3% of white-sided dolphins (out of a total of 16 bycaught animals). One harbor porpoise and 1 common dolphin were designated as serious injuries in interaction with gillnets. No serious injuries were found in observed alive fishery bycaught small cetaceans found in midwater trawls or purse seines.

Pinnipeds

In 2013, observers recorded 1 harbor seal (*Phoca vitulina vitulina*) and 1 gray seal (*Halichoerus grypus atlantica*) bycaught during summer in Gulf of Maine Atlantic herring purse seine sets. The harbor seal was trapped under part of the purse seine but was freed by the crew and actively swam away. The gray seal was swimming in the seine but swam off when the crew lowered the top of the net. Both seals were designated as NSI (Table 3).

One live harbor seal was observed in the trawl fishery in January 2014. Observers noted that the seal swam into the net while it was still in the water during haul back and was trapped in the cod end of the net for about 10 minutes. The seal was not caught in any meshes, just entrapped by net. The net was emptied on deck, not from any height, and the seal climbed out and moved quickly down the trawl ramp. The seal was on deck for less than 15 seconds. While on deck, the seal moved around with no odd behavior or injuries seen. The observer was able to see the entire body and found no wounds, marks, or bleeding. This animal was designated as NSI (Table 3).

In June 2014, ASM monitors recorded the condition of 1 unidentified seal taken in sink gillnet gear as "alive" (Table 3). The seal fell out of the net while coming onboard, and the incidental take log reads, "Pretty sure it was a gray seal." There were 4 additional dead gray seals observed on this trip. There were no comments in the monitor's logbook suggesting how or why the seal was reported as alive. This animal was designated as dead (Table 3).

Observers recorded 2 gray seals taken during September 2014 in Gulf of Maine Atlantic herring purse seine sets as alive. The animals were photographed swimming within the catch; once the float line was low enough, the seals slipped right over the float line and swam away. These animals were designated as NSI (Table 3).

In 2015, 6 records of seals condition-coded as alive or unknown were reviewed. A harbor seal and an unidentified seal were observed as nonlethal interactions with gillnet gear, and the harbor seal was determined to be NSI while the unidentified seal was CBD because of lack of information. Two gray seals were observed in bottom trawl gear, one initially coded as alive and the other as

unknown. Upon review of the log details, the condition unknown animal was determined to be dead. The alive animal was determined to be an NSI, under directive code P4 (Appendix, Table 3) since it was brought on deck but was seen swimming freely after release. There were 2 observed interactions in herring purse seine gear, both seals unidentified as to species, and both determined to be NSI, since they were trapped temporarily but climbed over the float line and escaped.

In 2016 observers recorded 1 unknown species of seal and 5 gray seals bycaught in Gulf of Maine Atlantic herring purse seine sets. All of these interactions resulted in the seal swimming away alive and unharmed and were designated as NSI since they were trapped temporarily but climbed over the float line and escaped.

In 2017, 15 records of seals were reviewed for injury determination. One of these, a harbor seal interaction with bottom trawl gear, was determined to be NSI. Even though the seal was brought on board in the cod end of the net, it was active and alert and showed no signs of injury. It dove into the water off the stern ramp. Ten gray seals in sink gillnet gear and 1 gray seal in bottom trawl gear were determined to be mortalities. Three unidentified seals, 2 in gillnets and 1 in a trawl, were also determined to be dead.

In summary, from 2013 to 2017 no seals identified as harbor or gray seals were seriously injured from observed bycatch in purse seine, gillnet, bottom trawl, or midwater trawl gear (Table 4), though quite a few records initially recorded by the observer as unknown condition were determined to have been mortalities.

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Table 1. List of marine mammal codes, common names, and scientific names.

Code	Common Name	Scientific name
BODO	Common bottlenose dolphin	*Tursiops truncatus truncatus*
CODO	Common dolphin	*Delphinus delphis delphis*
HAPO	Harbor porpoise	*Phocoena phocoena phocoena*
UNPW	Long-finned or short-finned pilot whale	*Globicephala* spp.
PPDO	Harbor porpoise or dolphin	
RIDO	Risso's dolphin	*Grampus griseus*
WSDO	Atlantic white-sided dolphin	*Lagenorhynchus acutus*
UNDO	Unidentified dolphin	
GRSE	Gray seal	*Halichoerus grypus atlantica*
HASE	Harbor seal	*Phoca vitulina vitulina*
UNCE	Unidentified cetacean	
UNSE	Unidentified seal	
UNMM	Unidentified marine mammal	

Table 2. Northeast region commercial fishery gear codes.

Gear code	Gear description
OTB	Otter trawl bottom
OTM	Midwater Otter trawl
OTR	Otter Ruhle trawl
OTH	Otter trawl haddock separator
PSH	Purse seine
SGN	Sink gillnet

Table 3. Comparison of fishery observer or at-sea monitor animal condition codes and Protected Species Branch (PSB) injury determinations (SI = serious injury, NSI = nonserious injury, UI = uninjured, CBD = cannot be determined) for the 5-year period 2012-2016. Determinations are based on observer notes and small cetacean and pinniped criteria in the National Marine Fisheries Service Determination Directive (NMFS 2012). Northeast Gear codes are listed in Table 2, statistical areas are shown in Figure 1, and species codes are listed in Table 1.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
SGN	635	05-Feb-2013	BODO	alive		NSI	S7b, S14, and S15	All gear removed while in the water, actively swam away
OTB	522	16-Nov-2013	UNPW	unknown	advanced decomposition position	DEAD		Decomposed carcass
SGN	514	02-May-2013	UNSE	unknown		CBD		No additional info available
PSH	513	10-Jul-2013	HASE	alive		NSI	P7b	Released alive from purse seine.
PSH	513	14-Oct-2013	GRSE	alive		NSI	P7b	Released alive from purse seine.
OTB	622	13-Mar-2013	UNDO	unknown		CBD		No additional info available
OTB	514	14-Nov-2013	UNDO	alive, seen by captain/crew only		CBD		
OTB	616	02-Mar-2014	WSDO	alive		CBD		No additional info available.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
OTB	539	09-Nov-2014	CODO	alive		SI	S4	Animal on vessel deck.
OTB	537	15-Jul-2014	CODO	alive		SI	S4	Animal on vessel deck.
OTB	521	19-Feb-2014	CODO	alive		SI	S4	Animal on vessel deck.
OTB	525	09-May-2014	RIDO	alive, seen by captain/crew only		CBD		
OTB	622	05-Nov-2014	UNPW	alive		SI	S4	Animal on vessel deck.
OTB	514	04-Jan-2014	HASE	alive		NSI		Seal observed on deck < 15 secs.
OTB	615	17-Oct-2014	UNDO	alive		CBD		Photos inconclusive.
SGN	521	28-Sep-2014	CODO	alive, seen by captain/crew only		CBD		
SGN	514	04-Oct-2014	HAPO	unknown	dead	DEAD		Appeared to be dead.
SGN	521	05-Jun-2014	UNSE	unknown	dead	DEAD		Appeared to be dead

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
PSH	512	24-Sep-2014	GRSE	alive		NSI		Released alive from purse seine
PSH	512	25Sep-2014	GRSE	alive		NSI		Released alive from purse seine
OTB	622	08-Jul-2015	RIDO	alive		SI	S4	Caught in net belly. Alive, actively moving head/fins on deck. No wounds, marks, bleeding. Crew roped tail and
OTB	622	04-Mar-2015	RIDO	alive		SI	S4	Seen as net tripped, slid right to deck, head first. Only right side seen. Seen opening and closing mouth, not thrashing just slow movement of fins and fluke. Rake marks seen on R-side of body. No other wound, mark or bleeding seen. On deck ~3 min. Green rope (same as used on cod end) tied around tail, lifted over stern ramp w/crane. Rope snapped dropping directly into water headfirst, tail may have hit ramp, rope still attached. Engine neutral, gear out of H^2O.Seen in water ~1 min, swam away slowly.
SGN	537	26-Apr-2015	HAPO	alive		CBD		Never came out of water. Only dorsal surface was seen by observer ~8-10 secs. No wounds, marks or bleeding seen. No odors or tissue left on gear, no noise made. Animal thrashed out of the net, splashed, and swam away quickly (~1-2 secs).

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
SGN	513	17-Sep-2015	HASE	alive		NSI	P4	Entangled with head and front flippers through mesh. Came up unresponsive but after ~30 secs. began to foam from nostrils (~3 tbps) and move slightly. No other wounds, marks or bleeding seen. Placed on back of vessel until end of haul, ~30mins. Was looking around, alert. Released by crew w/ boat in neutral, swam circles around the boat a few times, then began to follow for ~1min. as boat started to steam.
OTB	521	28-Sep-2015	GRSE	unknown	dead	DEAD		First spotted seal after cod end was dumped out covered in catch. Seal was orientated belly down and head up. None of the body parts were entangled in the net. Observer was able to pull the seal out of the pile to a better spot to be sampled. When touching the seal the body was very firm to stiff.
OTB	525	07-Apr-2015	GRSE	alive		NSI	P4	Came out of belly of net when bag was tripped. On deck ~3-5 mins. Crew deck hoses, feet & brooms to push off deck. No wounds, marks, or bleeding seen. Once stern ramp was reached, seal slid down ramp into water head first, surfaced about 2 seconds later and was observed swimming freely at
SGN	537	08-Feb-2015	UNSE	unknown		CBD		Seal reported by captain, obs seasick. Captain information unclear if dead or alive when released.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
PSH	512	24-Oct-2015	UNSE	alive		NSI		Trapped in bunt during pumping but escaped over floatline after pumping complete. Seen surfacing for a minute or two at a time, but disappeared below catch. After pumping seen climbing over floatline - no injuries seen.
PSH	512	24-Oct-2015	UNSE	alive		NSI		Trapped in bunt during pumping but escaped over floatline after pumping complete. Seen surfacing for a minute or two at a time, but disappeared below catch. After pumping seen climbing over floatline - no injuries seen.
PSH	512	01-Oct-2016	UNSE	unknown		NSI		When the contents of the net were released, it rolled out of the net and into the water due to gravity. The observer wasn't sure if they ever saw the animal move or not. Too dark to be able to tell if it swam away or sank. ID of the seal not confirmed, but observer saw light gray/tan coat with mottled dark spots. Approximately 4 feet long. Photos and videos confirm uninjured.
PSH	512	01-Oct-2016	GRSE	alive		NSI		Did not appear to be injured or entangled. Never made contact with walls of net. Observed swimming over floatline.
PSH	512	01-Oct-2016	GRSE	alive		NSI		Did not appear to be injured or entangled. Never made contact with walls of net. Observed swimming over floatline.
PSH	512	01-Oct-2016	GRSE	alive		NSI		Did not appear to be injured or entangled. Never made contact with walls of net. Observed swimming over floatline.
PSH	512	01-Oct-2016	GRSE	alive		NSI		Did not appear to be injured or entangled. Never made contact with walls of net. Observed swimming over floatline.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
PSH	512	01-Oct-2016	GRSE	alive		NSI		Did not appear to be injured or entangled. Never made contact with walls of net. Observed swimming over floatline.
OTB	514	02-Jan-2017	HASE	alive		NSI	P4	Observer first saw it in the cod end as the net was coming on board. Was sitting on top of catch right side up, active, alert. No signs of injury. Approx. 6 mins after coming on deck it dove into water off stern ramp. Did not resurface.
SGN	635	17-Feb-2017	BODO	alive		CBD		Take was removed from net before coming on board. No photos or samples taken.
OTB	616	28-Mar-2017	RIDO	alive		SI	S4	On deck for approx. 5 min. 2” cut around throat. Blood between pecs and around peduncle. Released by crew by tying rope around fluke and towing off stern with drum reel. Crew said release left no gear on animal, went in head first, did not resurface. Videos taken.
SGN ?	636	26-Mar-2017	CODO	alive		SI	S7b	Dolphin alive with fluke and peduncle wrapped in net. Dolphin pulled alongside and disentangled by capt. Responsive and alert – eyes and mouth moving – but not very active. No visible wounds. Swam away when lowered into water. No gear left on animal.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	526	26-Mar-2017	GRSE	unknown	dead	DEAD		Take fell out of the net before reaching the hauler. No details available on condition. No photos taken. Sank immediately at release.
SGN	515	02-Apr-2017	HAPO	alive		SI	S7b	When net was being brought up animal began to thrash around and freed itself. No wounds seen. Once free from net, stayed at surface with little fin movement. Bubbles could be seen coming from blowhole when waves washed over. Last seen still floating at surface after approx 1-2 minutes.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
OTB	626	12-Apr-2017	RIDO	alive		SI	S4	Once the animal was around the net drum, it ripped through the net and landed on its side on deck; let out a "croaking" noise. Animal was alive but not active or responsive to touch. Bubbles were seen coming from blow hole. Rope was tied around tail stock, animal was lifted, and then rope (knot still around tail) was cut releasing animal back into water, Dolphin floated sluggishly at surface with head out of water but was then surrounded by other dolphins and obs lost sight.
OTB	616	14-Apr-2017	RIDO	unknown	dead	DEAD		Dolphin observed floating ventral side up 120-150 feet behind vessel. No visible injuries.
OTB	515	31-Jun-2017	UNMM	unknown		CBD		Take seen in net when hauling gear on board. Net was lowered from deck to water to shake catch into cod end and when it was pulled back up the mammal was gone. A large hole was seen in the belly of the net.
OTB	537	08-Jul-2017	UNSE	unknown	dead	DEAD		Take was seen in the mouth of the net. Crew member said the animal had a very strong odor, was bloated, and organs were protruding from the body. Since observer was unable to see take for more than a few seconds, determined animal condition to be unknown, although likely dead, severe decomposition.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
OTB	562	08-Jul-2017	WSDO	alive		SI	S4	Animal on top of the fish pile when dumped on deck. Moving tail around. No wounds, marks, scars seen. Rope tied around tail stock to put overboard, rope possibly was still attached to the dolphin once in the water. Dolphin was seen in water after release and dove straight under.
SGN	521	03-Aug-2017	UNSE	unknown	dead	DEAD		Animal fell out of gear as it was being hauled. Unknown if sank/float at release. No photos/samples taken.
SGN	512	09-Aug-2017	UNSE	unknown	dead	DEAD		Only a glimpse of take in net. Unknown if sank/float at release. No photos/samples taken.
OTB	537	27-Aug-2017	GRSE	unknown	dead	DEAD		Animal on top of pile after net was tripped into checker pen. Unknown if alive or dead. Eyes were intact and lifelike, no fur sloughing off, no odor, warm to touch. Some liquid coming from nose, but no noticeable injuries. Take was moved overboard by wrapping a rope around the rear flippers and pushing it down ramp. Take sank immediately upon release.
OTB	537	05-Aug-2017	CODO	unknown	dead	DEAD		Take on deck. Unknown animal condition. No odor noticed, skin not flaking off, eyes dark, clear and intact. Moved off vessel with rope around tail. Unknown if sank/floated upon release or if any gear was left on.
OTB	537	05-Aug-2017	CODO	unknown	dead	DEAD		Take on deck. Unknown animal condition. No odor noticed, skin not flaking off, eyes dark, clear and intact. Moved off vessel with rope around tail.
OTB	537	05-Aug-2017	CODO	unknown	dead	DEAD		Take on deck. Unknown animal condition. No odor noticed, skin not flaking off, eyes dark, clear and intact. Moved off vessel with rope around tail.

NEGEAR	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition	PSB Determination	NMFS 2012 SI Determination Directive[2]	PSB comments regarding determination
OTB	537	05-Aug-2017	CODO	unknown	dead	DEAD		Take on deck. Unknown animal condition. No odor noticed, skin not flaking off, eyes dark, clear and intact. Moved off vessel with rope around tail.
OTB	537	05-Aug-2017	CODO	unknown	dead	DEAD		Take on deck. Unknown animal condition. No odor noticed, skin not flaking off, eyes dark, clear and intact. Moved off vessel with rope around tail.
OTB	537	05-Aug-2017	CODO	unknown	dead	DEAD		Take on deck. Unknown animal condition. No odor noticed, skin not flaking off, eyes dark, clear and intact. Moved off vessel with rope around tail.
OTB	537	05-Aug-2017	CODO	unknown	dead	DEAD		Take on deck. Unknown animal condition. No odor noticed, skin not flaking off, eyes dark, clear and intact. Moved off vessel with rope around tail.
SGN	539	20-Oct-2017	UNDO	unknown	dead	DEAD		Take was seen in net with entanglement concentrated around the fluke. Once net around fluke was cut, dolphin went under surface and sank immediately.
OTB	622	21-Oct-2017	CODO	unknown	dead	DEAD		Take first noticed when cod end was tripped into checker pen. Unknown animal condition; no odor detected, no movement noted while on deck. Floated upon release.
OTB	537	18-Oct-2017	CODO	unknown	dead	DEAD		Take noticed after net was tripped into checker pen and being set for next haul. Condition unknown; no notice of movement. Take was moved off the boat at the stern by rope around caudal peduncle; rope was cut to release. Unknown if sank/float at release.

Table 4. Summary of animal conditions (D = dead; DC = decomposed carcass; SI = serious injury; NSI = nonserious injury; UI = uninjured; CBD = could not be determined) by gear type, species, and year.

			Dead		Alive[1]				Proportions	
Gear Type	Species	Year	D[2]	DC[3]	SI	NSI	UI	CBD	Total [4]	% SI
Bottom Trawl	Bottlenose Dolphin *(Tursiops truncatus truncatus)*	2013							0	0.0%
		2014	3						3	0.0%
		2015	3						3	0.0%
		2016	5						5	0.0%
		2017	3						3	0.0%
	Common Dolphin (*Delphinus delphis delphis)*	2013	28						28	0.0%
		2014	38		3				41	7.3%
		2015	30	2					30	0.0%
		2016	24						24	0.0%
		2017	66	2					66	0.0%
	Gray Seal (*Halichoerus grypus atlantica*)	2013	7	1					7	0.0%
		2014	5	1					5	0.0%
		2015	3	1		1			4	0.0%
		2016	3						3	0.0%
		2017	7						7	0.0%
	Harbor Porpoise (*Phocoena phocoena phocoena)*	2013	1						1	0.0%
		2014	1	1					1	0.0%
		2015	0						0	0.0%
		2016							0	0.0%
		2017							0	0.0%
	Harbor Seal (*Phoca vitulina vitulina)*	2013	2						2	0.0%
		2014	2			1			3	0.0%
		2015	1						1	0.0%
		2016							0	0.0%
		2017				1			1	0.0%
	Pilot Whale (*Globicephala* spp.)	2013	4	6					4	0.0%
		2014	4	2	1				5	20.0%
		2015							0	0.0%
		2016	4						4	0.0%
		2017		1					0	0.0%
	Risso's Dolphin (*Grampus griseus)*	2013	4	1					4	0.0%
		2014	2	1				1	2	0.0%
		2015	1		2				3	66.7%
		2016	6						6	0.0%
		2017	5		2				7	28.6%
	White-sided Dolphin (*Lagenorhynchus acutus)*	2013	8	1					8	0.0%
		2014	3	1				1	3	0.0%
		2015	3	4					3	0.0%
		2016	4						4	0.0%
		2017	1	1	1				2	50.0%

			Dead		Alive[1]				Proportions	
Gear Type	Species	Year	D[2]	DC[3]	SI	NSI	UI	CBD	Total [4]	% SI
Gillnet	Bottlenose Dolphin *(Tursiops truncatus truncatus)*	2013	1			1			2	0.0%
		2014	0						0	0.0%
		2015	2						2	0.0%
		2016	0						0	0.0%
		2017	3					1	3	0.0%
	Common Dolphin (*Delphinus delphis delphis)*	2013	6	1					7	0.0%
		2014	7	5					12	0.0%
		2015	3	3					6	0.0%
		2016	8	1					9	0.0%
		2017	21		1				22	4.5%
	Gray Seal (*Halichoerus grypus atlantica*)	2013	63	6					69	0.0%
		2014	155	5					160	0.0%
		2015	127	5					132	0.0%
		2016	39	5					44	0.0%
		2017	158						158	0.0%
	Harbor Porpoise (*Phocoena phocoena phocoena)*	2013	13	8					21	0.0%
		2014	27	2					29	0.0%
		2015	21	4				1	25	0.0%
		2016	12	1					13	0.0%
		2017	19		1				20	5.0%
	Harbor Seal (*Phoca vitulina vitulina)*	2013	20	2					22	0.0%
		2014	53	7					60	0.0%
		2015	83	9		1			93	0.0%
		2016	37	1					38	0.0%
		2017	64						64	0.0%
	Harp Seal (*Pagophilus groenlandicus*)	2013	2						2	0.0%
		2014	9						9	0.0%
		2015	12						12	0.0%
		2016	5						5	0.0%
		2017	6						6	0.0%
	Risso's Dolphin (*Grampus griseus*)	2013	1						1	0.0%
		2014	0						0	0.0%
		2015	0						0	0.0%
		2016	0						0	0.0%
		2017	0						0	0.0%
	White-sided Dolphin (*Lagenorhynchus acutus*	2013	1						1	0.0%
		2014	2						2	0.0%
		2015	0						0	0.0%
		2016	0						0	0.0%
		2017	0						0	0.0%

			Dead		Alive[1]				Proportions	
Gear Type	Species	Year	D[2]	DC[3]	SI	NSI	UI	CBD	Total [4]	% SI
Midwater Trawl	Common Dolphin (*Delphinus delphis delphis)*	2013							0	0.0%
		2014							0	0.0%
		2015							0	0.0%
		2016							0	0.0%
		2017							0	0.0%
	Gray Seal (*Halichoerus grypus atlantica*)	2013	1						1	0.0%
		2014							0	0.0%
		2015							0	0.0%
		2016							0	0.0%
		2017							0	0.0%
	Harbor Seal (*Phoca vitulina vitulina)*	2013							0	0.0%
		2014	1						1	0.0%
		2015	2						2	0.0%
		2016	1						1	0.0%
		2017							0	0.0%
	Pilot Whale (*Globicephala* spp.)	2013	3						3	0.0%
		2014	4						4	0.0%
		2015							0	0.0%
		2016	3						3	0.0%
		2017							0	0.0%
Purse Seine	Gray Seal (*Halichoerus grypus atlantica*)	2013				1			1	0.0%
		2014				2			2	0.0%
		2015							0	0.0%
		2016				5			5	0.0%
		2017							0	0.0%
	Harbor Seal (*Phoca vitulina vitulina)*	2013				1			1	0.0%
		2014							0	0.0%
		2015							0	0.0%
		2016							0	0.0%
		2017							0	0.0%

[1] Animals included under the alive category include animals with the following animal conditions: 0 – unknown; 1 – alive; 04 – Alive, hook/gear in/around mouth; 05 – alive, hook/gear in/around flipper; 06 – alive, hook/gear in/around another single body part; 07 – alive, hook/gear in/around several body parts; 08 – alive, seen by captain and/or crew only.

[2] Animals included under the dead category include the following animal conditions: 10 – dead, condition unknown; 11 – dead, fresh; 14 – dead, seen by captain/crew only.

[3] Animals included under the decomposed carcass category include the following animal conditions: 12 – dead, moderately decomposed; 13 – dead, severely decomposed.

[4] Decomposed carcass category (DC) values are not included in bottom trawl totals but are in gillnet totals. CBD values not included in any totals.

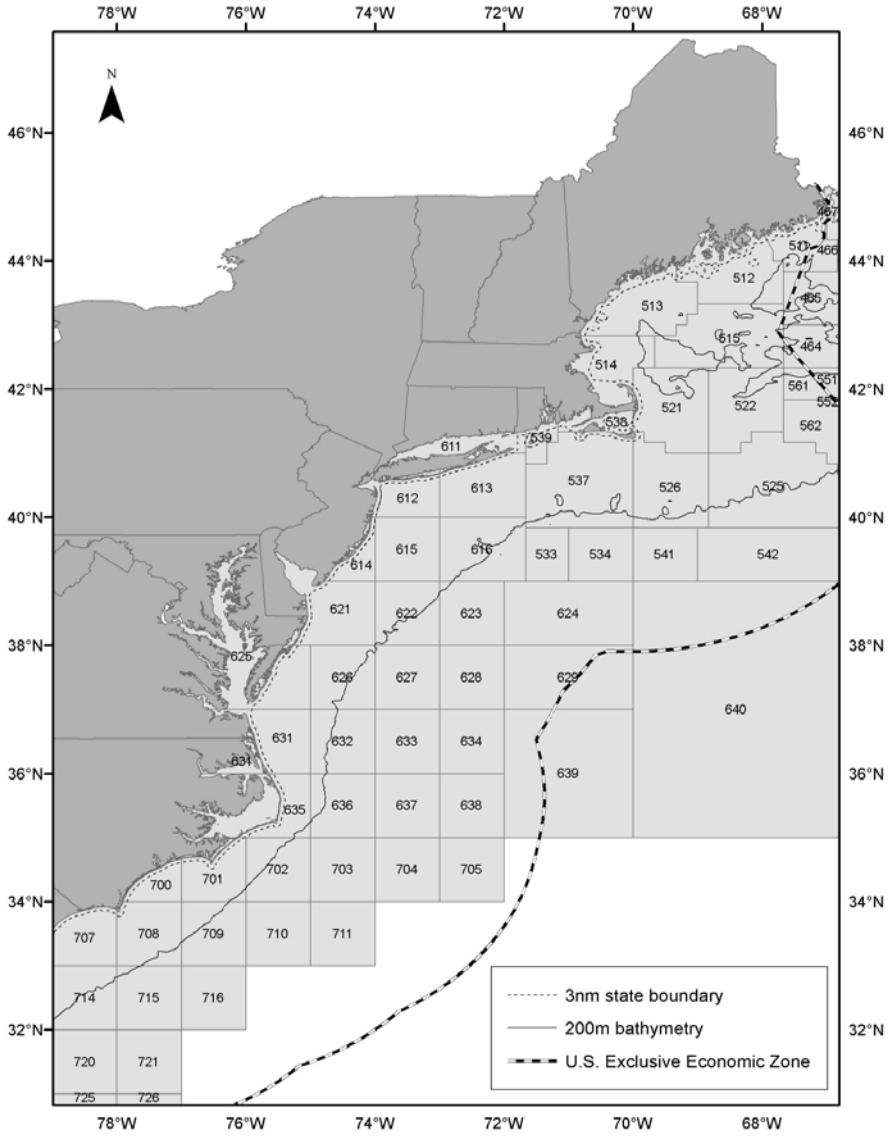

Figure 1. Fishery statistical areas.

APPENDIX. TABLES 2 AND 3 FROM NMFS PROCEDURE MANUAL

Table 2: Summary of Small Cetacean[1] Injury Categories and Criteria

Instructions: Each small cetacean injury event is recorded to the appropriate injury/information category using all available information and scientific judgment, as described in the Procedural Directive. For a single injury event to which several categories apply, the injury determination with the highest level of severity is assigned. More detailed information or extended observation on an individual case/animal may justify a determination differing from the guidance of this table.

Category	Injury/Information	Injury Determination [2]	Additional factors for evaluating whether "case specific" injuries are serious or non-serious (additional factors at end of table)
S1	A free-swimming animal observed at a date later than its human interaction, exhibiting signs of declining health believed to be resulting from initial injury (e.g., a marked skin discoloration, fat	SI[3]	
S2	Ingested gear[4] or hook(s)	SI	
S3	Visible blood loss	Case specific[5]	Amount of blood, location of the bleeding injury, duration of bleeding
S4	Animal brought on vessel deck following entanglement/entrapment(excluding scientific research targeting marine mammals and authorized as such under a NMFS scientific research permit, where the animal is brought on and placed on the vessel deck in a controlled manner)	SI	
S5a	Hook(s) in head (excluding criterion S5b), regardless of the presence of gear	SI	
S5b	Hook(s) confirmed in lip only, external tissue outside of teeth, no trailing gear	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, size of hook, depth of hooking, impairing ability to feed, presence of other injuries
S5c	Hook(s) in any body part, but hook(s) is removed or pulls out	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, depth of hook, hook pulls out cleanly vs. causes further injury during dehooking, method used to remove hook, length of
S5d	Hook(s) in appendage or body (excluding criterion S5a), without trailing gear or with trailing gear that does not have the potential[6] to: 1) become a constricting wrap on animal; 2) be ingested; 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, depth and location of hook, type and amount of gear attached
S6	Gear attached to free-swimming animal with potential[7] to: 1) become a constricting wrap on animal; 2) be ingested; 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	SI	

S7a	Anchored, immobilized, or entrapped and not freed	SI	
S7b	Anchored, immobilized, entangled, or entrapped before being freed without gear attached	Case specific	Duration of entanglement/entrapment, prolonged restraint or struggle that could lead to capture myopathy, gear type, where/how gear is attached to animal, associated injury (i.e., where directly or indirectly caused by initial
S8a	Gear wrapped and constricting on any body part or is likely to become constricting as the animal moves or grows	SI	
S8b	Gear wrapped and loose on any body part	Case specific	Gear type, amount of gear, potential for snag, potential to lead to criterion S8a, animal body size relative to gear (e.g., because of species or age), effect on animal movement, species sensitivity (e.g., frightens easily)
S9	Body trauma[8] not covered by any other criteria	Case specific	Location of wound, depth (e.g., superficial or to the bone, penetrating muscle or organs), length, number of lacerations, cleanliness (i.e., compression vs. tearing)
S10	Visible fracture(s), excluding pectoral fins (see criterion S13d for pectoral fin fractures)	SI	
S11	Vertebral transection, including fully severed flukes	SI	
S12	Body cavity penetration[9] by foreign object or body cavity exposure	SI	
S13a	Loss or disfigurement of dorsal fin	Case specific	Cleanliness (i.e., compression vs. tearing), nature of injury causing the loss, extent of fin loss (i.e., full or partial), amount and duration of blood loss

S13b	Partially severed flukes, transecting midline	SI	
S13c	Partially severed flukes, not transecting midline	Case specific	Cleanliness (i.e., compression vs. tearing), nature of injury causing the loss, amount and duration of blood loss
S13d	Partially or completely severed or fractured pectoral fin(s)	Case specific	Cleanliness (i.e., compression vs. tearing), nature of injury causing the loss, extent of fin loss (i.e., full or partial), amount and duration of blood loss, opened or closed fracture
S14	Social animal separated from group and/or released alone post-interaction (excluding criterion S15)	Case specific	Species (e.g., sensitivity, offshore vs. inshore), location of release (e.g., likelihood of animal locating its conspecifics)
S15	Dependent animal (i.e., calf, juvenile) released alone post-interaction or dependent animal left with a seriously injured or dead mother	SI	
S16	Observed or reported collision with vessel	Case specific	Speed of vessel, size of vessel, hull shape, part of vessel to strike the animal, size of animal compared to size of vessel, behavior of animal after collision, extent and location of wound(s) on animal

* [1] For the purposes of this table, small cetaceans include all odontocetes except sperm whales.

* [2] This table includes on only those criteria determined to be serious injuries or case specific based on expert opinion at the 2007 Workshop
* (Andersen et al. 2008) and by small cetacean experts on the NMFS Determination Staff working group. For the purposes of streamlining the information for the reader, criteria determined to be non-serious injuries are not included in this table.

* [3] SI = serious injury.

* [4] For the purposes of this table, gear is defined as any portion of fishing gear excluding the hook, which is considered separately. Lures are considered gear. Gear also generally refers to any type of debris entangling or attached to the animal.

* [5] Case specific = Could be a serious or non-serious injury, but either 1) there is insufficient information about the impact of a particular injury, or 2) additional factors must be considered on a case-by-case basis to determine the severity

* [6] For the purposes of this table, "potential" as it relates criterion S5d indicates that the trailing gear IS NOT capable of leading to any of the situations listed.

* [7] For the purposes of this table, potential as it relates criterion S6 indicates that the trailing gear IS capable of leading to any of the situations listed.

* [8] For the purposes of this table, "trauma" is defined as a wound or bodily harm caused by an extrinsic agent. Blunt trauma is an injury
* (abrasion, laceration, contusion or skeletal fracture) produced by a blunt object striking the body or impact of the body against a blunt object or surface. Sharp force trauma is an injury caused by a sharp or pointed object creating a penetrating (stab, chop or incision) wound.
* Laceration is defined as a ragged incision or a tearing of the skin. Lacerations are caused by blunt trauma that results in stretching, tearing, crushing, shearing, or avulsion of the tissue.

* [9] For the purposes of this table, "penetration" is defined as a wound occurring when a foreign object punctures the body. Penetrating wounds
* can be characterized as one of three types: stab (small external wound that is greater in length into the body than is apparent on the skin surface), incised (clean cuts into the skin which are longer on the skin surface than they are deep), or chop wounds (incised wounds that penetrate deep to the bone, leaving a groove or cut in the bone).

Table 3: Summary of Pinniped[1] Injury Categories and Criteria

Instructions: Each pinniped injury event is recorded to the appropriate injury/information category using all available information and scientific judgment, as described in the Procedural Directive. For a single injury event to which several categories apply, the injury determination with the highest level of severity is assigned. More detailed information or extended observation on an individual case/animal may justify a determination differing from the guidance of this table. Any injury leading to apparent significant health decline (e.g., skin discoloration, fat loss) is a serious injury.

Category	Injury/Information	Injury Determination [2]	Additional factors for evaluating whether "case specific" injuries are serious or non-serious (additional factors at end of table)
P1	A free-swimming animal observed at a date later than its human interaction, exhibiting signs of declining health believed to be resulting from initial injury (e.g., a marked change in body condition, tissue necrosis, emaciation,	SI[3]	
P2	Ingested gear[4] or hook(s)	SI	
P3	Visible blood loss	Case specific[5]	Amount of blood, location of the bleeding injury, duration of bleeding
P4	Animal brought on vessel deck following entanglement/entrapment(excluding scientific research targeting marine mammals and authorized as such under a NMFS scientific research permit, where the animal is brought on and placed on the vessel deck in a controlled	Case specific	Manner in which animal is brought on deck, length of time animal is on deck, environmental conditions (e.g., temperature)
P5a	Hook(s) in mouth (excluding criterion P5b), regardless of the presence of	SI	
P5b	Hook(s) confirmed in head (excluding criterion P5a), or in lip only (external tissue outside of teeth), no trailing gear	Case specific	Location on head (e.g., eye), depth of penetration, type of hook, prolonged restraint or struggle that could lead to capture myopathy, size of hook, impairing ability to feed
P5c	Hook(s) in any body part, but hook(s) is removed or pulls out	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, location of hooking on the body, depth of hook, hook pulls out cleanly vs. causes further injury during dehooking, method used to remove hook, length of time hooked
P5d	Hook(s) in appendage or body (excluding criteria P5a-c and P12), without trailing gear or with trailing gear that does not have the potential[6] to: 1) become a constricting wrap on animal; 2) be ingested, 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	NSI[7]	

P6	Gear attached in any manner to free-swimming animal with potential[8] to: 1) become a constricting wrap on animal; 2) be ingested; 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	SI	
P7a	Anchored/immobilized and not freed	SI	
P7b	Anchored, immobilized, or entangled before being freed without gear attached	Case specific	Duration of entanglement, prolonged restraint or struggle that could lead to capture myopathy, type of fishing gear, where/how gear immobilized animal, associated injury (where directly or indirectly caused by initial entanglement), response of individual
P8a	Gear wrapped and constricting any body part or likely to become constricting as the animal moves or grows	SI	
P8b	Gear wrapped loosely on any body part	Case specific	Type and amount of fishing gear, animal body size relative to gear (species, age), effect on movement, species sensitivity
P9	Body trauma[9] not covered by any other criteria	Case specific	Location of trauma on body, depth (superficial or to the bone, penetrating muscle or organs) length of laceration(s), number of lacerations, cleanliness (compression vs. tearing), amount and duration of blood loss, risk of infection or disease transmission (e.g., dog bites)
P10	Visible fracture(s), excluding broken appendages (see criterion P13 for broken appendages)	SI	

P11	Vertebral transection or fully severed flipper(s)	SI	
P12	Body cavity penetration[10] by foreign object or body cavity exposure	SI	
P13	Partially severed or fractured flipper(s)	Case specific	Cleanliness (clean cut vs. tear), nature of injury causing the loss, extent of fin or flipper loss, opened or closed fracture, dislocation, amount/duration of blood loss
P14	Dependent animal (i.e., pup, juvenile) released alone post-interaction or dependent animal left with a seriously injured or dead mother	SI	
P15	Observed or reported collision with vessel	Case specific	Speed of vessel, size of vessel, hull shape, part of vessel to strike the animal (e.g., propeller, hull), size of animal compared to size of vessel, location of strike on animal's body, extent and location of wound(s) to animal

[1] For the purposes of this table, pinnipeds include all pinniped species except walrus.

[2] This table includes on only those criteria determined to be serious injuries or case specific based on expert opinion at the 2007 Workshop (Andersen et al., 2008) and by pinniped experts on the NMFS Determination Staff working group. For the purposes of streamlining the information for the reader, criteria determined to be non-serious injuries are not included in this table.

[3] SI = serious injury.

[4] For the purposes of this table, gear is defined as any portion of fishing gear excluding the hook, which is considered separately. Lures are considered gear. Gear also generally refers to any type of debris entangling or attached to the animal.

[5] Case specific = Could be a serious or non-serious injury, but either 1) there insufficient information about the impact of a particular injury, or 2) additional factors must be considered on a case-by-case basis to determine the severity.

[6] For the purposes of this table, potential as it relates to criterion P5d indicates that the trailing gear IS NOT capable of leading to any of the situations listed.

[7] NSI = nonserious injury.

[8] For the purposes of this table, potential as it relates to criterion P6 indicates that the trailing gear IS capable of leading to any of the situations listed.

[9] For the purposes of this table, "trauma" is defined as a wound or bodily harm caused by an extrinsic agent. Blunt trauma is an injury (abrasion, laceration, contusion or skeletal fracture) produced by a blunt object striking the body or impact of the body against a blunt object or surface. Sharp force trauma is an injury caused by a sharp or pointed object or a bullet from a gunshot creating a penetrating

(stab, chop or incision) wound. Laceration is defined as a ragged incision or a tearing of the skin. Lacerations are caused by blunt trauma that results in stretching, tearing, crushing, shearing, or avulsion of the tissue.

[10] For the purposes of this table, “penetration” is defined as a wound occurring when a foreign object punctures the body, such as a bullet from a gunshot. Penetrating wounds can be characterized as one of three types: stab (small external wound that is greater in length
into the body than is apparent on the skin surface), incised (clean cuts into the skin which are longer on the skin surface than they are deep), or chop wounds (incised wounds that penetrate deep to the bone, leaving a groove or cut in the bone)

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