



Serious Injury Determinations for Small Cetaceans off the Southeast U.S. Coast, 2014

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Introduction and Methods

The Marine Mammal Protection Act (MMPA) requires NOAA's National Marine Fisheries Service (NMFS) to distinguish between injuries to marine mammals that are serious and not serious. During 2012 NMFS issued a policy directive and procedural directives to establish a process for distinguishing serious from non-serious injuries (NMFS 2012a, b). This document summarizes serious injury determinations for small cetaceans in southeast U.S. waters during 2014.

Data from various sources were assessed to compile this report. These sources include the NOAA National Marine Mammal Health and Stranding Response Database, the Marine Mammal Authorization Program (fisherman self-reports), incidental take reports (unauthorized research gear takes), fishery observer records (excluding the pelagic longline fishery), and opportunistic at-sea observations by NOAA and non-NOAA researchers, marine patrol, and private citizens. All instances in the data for which a small cetacean was released alive following a human-caused interaction, such as an entanglement in fishing gear or marine debris or a hooking, or observed alive at-sea entangled in fishing gear or debris, hooked, or boat struck, were evaluated.

Serious injury determinations were made following NMFS 2012 policy and guidelines (NMFS 2012a, b). Initially the data were evaluated by two marine mammal researchers in the Southeast Fisheries Science Center. All differences were discussed to obtain agreement. Determinations were reviewed by NMFS Determination Staff Working Group members from the Northeast Fisheries Science Center, NMFS Southeast Regional Office members, and Atlantic Scientific Review Group members.

In some instances, NOAA, stranding network partners, or private citizens disentangled or de-hooked an animal post-interaction (i.e., at some time after the initial entanglement or hooking). In these instances where there was a mitigation effort, a post-mitigation serious injury determination was made in addition to the initial serious injury determination. Both the initial and post-mitigation serious injury determinations are presented in Table 1. Post-mitigation determinations do not apply to situations where commercial fishermen or fisheries researchers released animals from gear at the time of the interaction. For management purposes (i.e., classifying fisheries on the LOF and take reduction planning), the pre-mitigation determination is used. For tallying the number of serious injuries, post-mitigation determinations are used (in cases for which there was mitigation) for comparing serious injuries to PBR in the Stock Assessment Reports (SARs) and are presented in the results section. The NMFS 2012b procedural directive states: "For cases where the animal is determined to be seriously injured and NOAA and/or an authorized partner successfully disentangles or dehooks the animal and the animal is determined to have no or non-serious injuries when released, it will be recorded as a serious injury when classifying fisheries on the LOF and informing management (e.g., take reduction planning), but will be recorded as a non-serious injury when compared to PBR in the SARs."

Mortality and serious injury resulting from the U.S. Atlantic pelagic longline fishery are detailed annually in a separate report (e.g., Garrison and Stokes 2014) and are not included in this document.

Type of fishery is given if information was available to attribute observed or collected gear to a specific fishery or type of gear. In some cases, gear was collected from stranded animals and sent to the NMFS Pascagoula Gear Repository. If gear experts could identify gear to

a specific fishery, or identify gear as recreational versus commercial, the specific information is given in Table 1. If gear could not be identified as belonging to a specific fishery, a general category, such as trap/pot gear, may be listed. Information on the fishery is given in as much detail as was known at the time of report preparation. As gear continues to be analyzed by the Pascagoula Gear Repository, information on fishery/gear is subject to change in future SARs.

Results

Fifteen small cetacean events from southeast U.S. waters during 2014 for which a determination was made of serious versus non-serious injury are included in Table 1. All events involved bottlenose dolphins. In total, 4 bottlenose dolphins were considered seriously injured; 6 bottlenose dolphins were considered not seriously injured (5 of these cases were mitigated and the post-mitigation determination was not serious); and for 5 bottlenose dolphin cases, it could not be determined if the injury was serious or not.

The Western North Atlantic (WNA) bottlenose dolphin stocks for which serious injuries may have been documented include the Northern North Carolina Estuarine System (NNCES) Stock; Northern Migratory Coastal Stock; and Southern Migratory Coastal Stock. The assignment of animals to a particular stock is impossible in some seasons and regions in coastal waters of North Carolina and Virginia and in estuarine waters near Beaufort Inlet because of stock overlap.

The Gulf of Mexico (GOM) bottlenose dolphin stocks for which serious injuries were documented include the St. Joseph Sound, Clearwater Harbor Stock and the Northern Coastal Stock.

There were nearly an equal number of records from the NOAA National Marine Mammal Health and Stranding Response Database and at-sea observations. The stranding records consisted of bottlenose dolphins entangled in commercial crab trap/pot gear, hook and line fishing gear, and a single instance of an entanglement in a haul/beach seine net. The at-sea observations consisted of animals entangled in and sometimes trailing hook and line fishing gear, crab trap/pot gear or other unidentified gear/debris. There were no fisheries observer records, Marine Mammal Authorization Program (fisherman self-reports) records, or incidental take reports (unauthorized research gear takes) involving live animals during 2014 to evaluate for this report.

Acknowledgements

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Literature Cited

- Garrison, L.P. and L. Stokes. 2014. Estimated bycatch of marine mammals and turtles in the U.S. Atlantic pelagic longline fleet during 2013. NOAA Tech. Memo. NMFS-SEFSC-667, 61 pp.
- NMFS 2012a. Process for distinguishing serious from non-serious injury of marine mammals. National Marine Fisheries Service Policy Directive PD 02-038. January 2012. Available from: <http://www.nmfs.noaa.gov/pr/laws/mmpa/policies.htm> [Federal Register Notice, Vol. 77, No. 14, page 3233, January 23, 2012]
- NMFS 2012b. Process for distinguishing serious from non-serious injury of marine mammals: Process for injury determinations. National Marine Fisheries Service Policy Directive PD 02-038-01. January 2012. Available from: <http://www.nmfs.noaa.gov/pr/laws/mmpa/policies.htm> [Federal Register Notice, Vol. 77, No. 14, page 3233, January 23, 2012]

Table 1. Serious injury (SI) determinations for cetaceans taken in SE U.S. waters during 2014 using criteria in "Process for distinguishing serious from non-serious injury of marine mammals: Process for injury determinations" (NMFS 2012b; see Appendix I for details of injury categories and criteria). STR = stranding from NOAA National Marine Mammal Health and Stranding Response Database; MMAP = Marine Mammal Authorization Program; OBS = observer record; At-Sea = Opportunistic at-sea sightings; ITR = incidental take report, unauthorized research gear take; Tt = *Tursiops truncatus*; ATL = Atlantic Ocean; GOM = Gulf of Mexico; IRLES = Indian River Lagoon Estuarine System; JES = Jacksonville Estuarine System; NNCES = Northern North Carolina Estuarine System; SNCES = Southern North Carolina Estuarine System; NM Coastal = Northern Migratory Coastal; and SM Coastal = Southern Migratory Coastal.

| Source of Data/Fishery Type | Animal ID | Species | Area (ATL, GOM, CAR)/ Stock Name (if known) | Date of Take or Report | Recorded Animal Condition | Initial SI Determination | NMFS 2012 SI Policy Criteria (for Small Cetaceans) | Injury Determination Criteria/Comments | Post-Mitigation SI Determination (for cases with mitigation; N/A is noted for cases without mitigation) | NMFS 2012 SI Policy Criteria (for Small Cetaceans) | Post-Mitigation Injury Determination Criteria/Comments |
|-----------------------------|---------------|---------|---|------------------------|---------------------------|--------------------------|--|---|---|--|--|
| At-Sea | Row 77 | Tt | CAR/Puerto Rico and U.S. Virgin Islands Stock | 2-Feb-2014 | Alive | CBD | | citizen reported animal as entangled in trash; little info available | N/A | | |
| At-Sea | Row 78 | Tt | GOM/Chokoloskee Bay, Ten Thousand Islands, Gullivan Bay | 13-Apr-2014 | Alive | CBD | | citizen reported an animal with thick plastic netting around its mandible; no visible bleeding; little info available | N/A | | |
| At-Sea | Row 79 | Tt | GOM/St. Joseph Sound, Clearwater Harbor | 16-May-2014 | Alive | Serious | S6 | citizen reported an animal dragging a crab pot; little info available | N/A | | |
| At-Sea | Row 81 | | ATL/SNCES or NNCES | 6-Aug-2014 | Alive | CBD | | researcher reported an animal with unknown line or monofilament entanglement anterior to the dorsal fin; little info available | N/A | | |
| At-Sea | Row 83 [TOMA] | Tt | ATL/JES | 24-Jul-2014 | Alive | CBD | | researchers sighted a known animal, TOMA, with monofilament line wrapped around its dorsal fin in an area of previous dorsal fin injury (fin partially severed); unknown if any gear is trailing; little info available | N/A | | |
| At-Sea | Row 85 | Tt | GOM/St. Andrew Bay | 23-Sep-2014 | Alive | CBD | | dolphin and snorkel ecotour operator photo-documented an animal with a hook and lure in mouth; the lure was hooked to the upper and lower jaw limiting the animal's ability to open its mouth; operator believes the gear may have come off the animal on its own, but this was not confirmed | N/A | | |
| At-Sea | Row 87 | Tt | ATL/IRLES | 8-Oct- | Alive | Not serious | S7b | calf with possible mouth | N/A | | |

| | | | | | | | | | | | |
|---|---------------------------|----|--|-----------------|-------------------|---------|-----|---|-------------|-----|---|
| | [c1LOPP] | | | 2014 | | | | entanglement of unknown origin; photos from March 2015 show the animal's mouth to be free of any entanglement; animal shed any possible gear on its own | | | |
| STR; commercial blue crab trap/pot gear | NER14- 00463 | Tt | ATL/NNCES or SM Coastal | 20-Jul- 2014 | Alive, injured | Serious | S12 | Trap/pot lines were twisted around each other and wrapped very tightly just forward of the animal's flukes. A commercial fisherman got the animal alongside his boat; he pulled the pots up to release tension on the line that was wrapped tightly around the fluke. He cut the twisted line off and said there were deep incisions where the lines were wrapped, going almost completely through to the bone. The animal was very lethargic during the disentanglement. | N/A | | |
| STR; haul/beach seine net | NER14- 00652 | Tt | ATL/NNCES, NM Coastal, or SM Coastal | 20-Oct- 2014 | Alive | Serious | S7b | Dolphin seen inside the haul seine net. When fishermen tried to lift net to let animal out, witnesses reported seeing a lot of thrashing but could not confirm the animal became entangled in the mesh at any point. The dolphin beached itself (stranded) shortly after and the fishermen turned it back around and it swam off. | N/A | | |
| STR; commercial stone crab trap/pot gear | SER14- 00042 [NIPT] | Tt | ATL/IRLES | 19-Jan- 2014 | Alive | Serious | S6 | Animal has line wrapped around its body anterior to dorsal fin and posterior to flippers; line is also wrapped around a flipper; additional line and a red buoy are trailing behind the animal. | Not serious | S7b | Successful disentanglement effort took place on 27-Jan-2014. Animal still being sighted by local researchers as of June 2015. |
| STR; hook and line gear | SER14- 00670 | Tt | GOM/Choctawhat chee Bay | 30-Jul- 2014 | Alive | Serious | S6 | Monofilament line embedded in both fluke blades of a calf and trailing behind 3-4', with bio-fouling of trailing line; left fluke is partially severed. | Not serious | S7b | Successful disentanglement of monofilament line from calf flukes conducted, with release on site. Animal resighted with mother on 20-Nov-2014 and appeared to be swimming well. |
| STR; hook and line gear | SER14- 00782 | Tt | GOM/Chokoloske e Bay, Ten | 9-Aug- 2014 | Alive | Serious | S6 | Metal leader and line wrapped around the | Not serious | S7b | Successful disentanglement of gear |

| | | | | | | | | | | | |
|--|-----------------|----|-----------------------------------|-----------------|-------|---------|---------|--|-------------|-----|---|
| | [Skipper] | | Thousand Islands, Gullivan Bay | | | | | peduncle of a calf and trailing ~5-6'. | | | from calf's peduncle on 4- Sep-2014. Animal resighted with its mother in February 2015 and appeared to be fine. [Animal resighted during March 2016 also, following initial report preparation.] |
| STR; commercial blue crab trap/pot gear | SER14- 00853 | Tt | ATL/JES | 25-Oct- 2014 | Alive | Serious | S7a | Animal was anchored by crab trap line wrapped around its peduncle/flukes. | Not serious | S7b | Successful disentanglement of line from animal's peduncle/flukes by citizen who was able to cut the line (single wrap). Citizen reported no signs of injury. |
| STR; hook and line gear | SER14- 00877 | Tt | GOM/Northern Coastal | 14-Aug- 2014 | Alive | Serious | S6 | Juvenile animal that hangs around Pensacola Fishing Pier is entangled in monofilament line. Entanglement wraps around both flukes' leading edges, lacerating the tissue, with about two feet of trailing line coming off the left fluke. The line is cutting into flukes, 2-3 inches deep and the left fluke appears to have a flap of tissue still attached but hanging. Attempts were made to capture the animal for disentanglement, but all attempts were unsuccessful. | N/A | | |
| STR; hook and line gear | SER14- 00899 | Tt | ATL/IRLES | 13-Nov- 2014 | Alive | Serious | S6, S8a | The calf was initially sighted on 13 November entangled in hook and line fishing gear around the dorsal fin which was cutting into leading edge of the dorsal fin with some damage to the trailing edge as well. The line was taut and the animal appeared to have difficulty surfacing normally (not fully raising the dorsal fin above the surface). When surfacing the line could be seen tugging on the animal with a recoil-like response in the calf. Along the left side of the animal a semi- circular metal object could be seen along with an oval metal sinker. The line was taut and extended caudally | Not serious | S7b | Successful capture and disentanglement of calf from fishing gear on 20- Nov-2014. The laceration to the leading edge of the dorsal fin extends a quarter of the way through the fin and an additional laceration is present along the trailing edge of the dorsal fin. There is a small healed laceration on the leading edge of the left fluke. There are two small lacerations (bleeding) on the dorsal side of the peduncle (possibly resulting from the capture net). Following the release the calf rejoined the mom and was witnessed high surfacing and breaching and was not having |

the distance of the flukes.
Further caudal from the
dorsal fin there was yellow
object attached to the line.

difficulty swimming as
witnessed prior to
intervention.

TABLE 2: Summary of Small Cetacean¹ 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. 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) * |
| 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 loss) | 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 time hooked |
| 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 |

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

² This table includes 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.

| | | | |
|------|---|---------------|--|
| 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 entanglement), response of individual animal, method used by human to remove gear from animal |
| 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 | |

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).

| | | | |
|------|--|---------------|--|
| 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 |

* Factors listed in the far right column of Table 2 are unique to the associated injury type. In addition to those listed in this column, the factors that should be considered, if available, when reviewing all case specific injury events in Table 2 include, but are not limited to:

- | | | |
|--|--|--|
| - Species | - Size of injury | - Compounding effects of multiple injuries obtained during a single event |
| - Age or age class (e.g., calf, juvenile, adult) | - Duration of injury (e.g., single event, repeated, chronic) | - Availability of data on multiple sequential events involving the same individual over time |
| - Sex | - Depth of injury (e.g., superficial or to the bone, penetrating muscle or organs) | - Susceptibility of the species to capture myopathy (spinner dolphins and porpoises notoriously sensitive; bottlenose dolphins robust; many others fall in between, with some unknown) |
| - Size of animal | - Cleanliness of injury (e.g., compression, tearing) | - Ability of rehabilitated animal to be released |
| - Overall health (e.g., nutritional status, body condition, pre-existing disease state, pre-existing injuries) | - Environmental condition (e.g., individuals out of their normal habitat, climate stressors) | - Relative effect of blood loss on different species |
| - Behavior during and/or after injury-causing interaction (e.g., dorsal arching, listlessness) | - Social stressors (e.g., social structure of species, separation of social individuals from the group, cow/calf separation) | |
| - Reproductive status (e.g., pregnant, lactating, has dependant calf) | - Cumulative effects of repeated exposures | |
| - Natural history (e.g., indigenous, migratory) | | |
| - Location of injury (e.g., mouth, head, body, fin, tail, internal) | | |

In addition to those factors listed above, the factors that apply to all fishery-interaction related case specific injuries include, but are not limited to:

- | | |
|---|--|
| - Entanglement type (e.g., hooked, anchored, entrapment) | - Habitat where animal is located (e.g., an animal with trailing gear areas of dense gear or an area with vegetation is more likely to risk snagging the gear and becoming anchored) |
| - Amount and size of gear (e.g., size, length and number of branches of line; number of buoys, traps or anchors; volume of netting) | - Entanglement duration |
| - Entanglement constriction (e.g., tight, loose, multiple wraps) | - Existence, type and amount of any trailing gear |
| | - Method of handling the animal during disentanglement |