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COMMON BOTTLENOSE DOLPHIN (*Tursiops truncatus truncatus*): Northern Gulf of Mexico Continental Shelf Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

The northern Gulf of Mexico (i.e., U.S. Gulf of Mexico) Continental Shelf Stock of common bottlenose dolphins inhabits waters from 20 to 200 m deep in the northern Gulf from the U.S.-Mexican border to the Florida Keys (Figure 1). Genetically distinct "coastal" and "offshore" ecotypes of bottlenose dolphins (Hoelzel *et al.* 1998; Vollmer 2011) occur in the Gulf of Mexico, and the Continental Shelf Stock, while predominantly of the coastal ecotype, may also include dolphins of the offshore ecotype (Vollmer 2011). The Continental Shelf Stock range may extend into Mexican and Cuban territorial waters; for example, a stranded dolphin from the Florida Panhandle was rehabilitated and released over the shelf off western Florida and traveled into the Atlantic Ocean (Wells *et al.* 1999). However, there are no available estimates of either abundance or mortality from Mexico or Cuba to incorporate in this assessment.

This stock's boundaries abut other bottlenose dolphin stocks, namely the Oceanic Stock and the three coastal stocks. While individuals from different stocks may occasionally overlap, the degree of overlap is unknown and it is not thought that significant mixing or interbreeding occurs between them. Genetic studies have shown significant differentiation between inshore stocks and the adjacent coastal stock (Sellas *et al.* 2005) and among dolphins living in coastal and shelf waters (Vollmer 2011). These results suggest that if there is spatial overlap there may be mechanisms reducing interbreeding between the stocks. Overall, stock structure of bottlenose dolphins in the northern Gulf of Mexico is complex and has not been fully examined. Continued studies are necessary to examine the current stock boundaries delineated in coastal, shelf and oceanic waters. As research is completed, it may be necessary to revise stocks of bottlenose dolphins in the northern Gulf of Mexico.

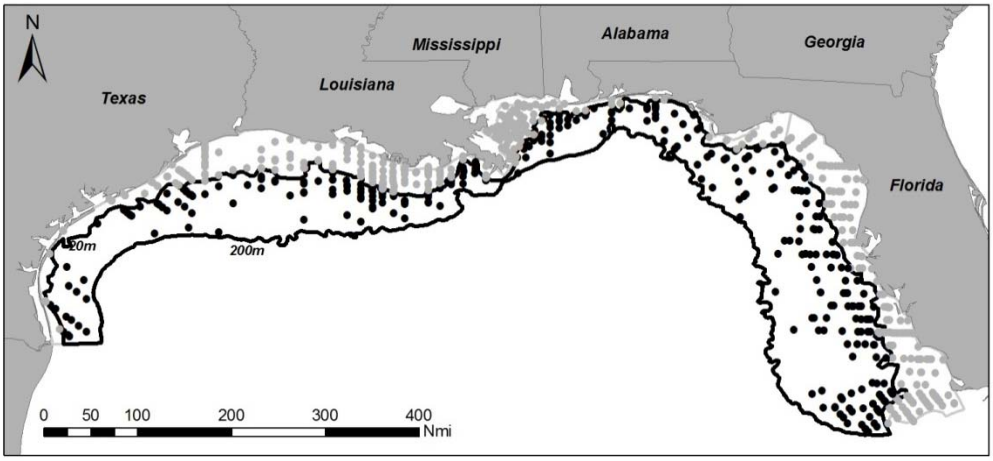

Figure 1. *Locations (circles) of common bottlenose dolphin groups sighted in coastal and continental shelf waters during aerial surveys conducted in spring, summer and fall of 2011 and in winter of 2012. Dark circles indicate groups within the boundaries of the Continental Shelf Stock. The 20-m and 200-m isobaths are shown.*

POPULATION SIZE

The best abundance estimate available for the northern Gulf of Mexico Continental Shelf Stock of bottlenose dolphins is 51,192 (CV=0.10; Table 1). This estimate is from an inverse-variance weighted average of seasonal abundance estimates from aerial surveys conducted during spring 2011, summer 2011, fall 2011 and winter 2012.

Earlier abundance estimates

Please see Appendix IV for a summary of abundance estimates, including earlier estimates and survey descriptions.

Recent survey and abundance estimate

The Southeast Fisheries Science Center conducted aerial surveys of continental shelf waters (shoreline to 200 m depth) along the U.S. Gulf of Mexico coast from the Florida Keys to the Texas/Mexico border during spring

(March-April) 2011, summer (July-August) 2011, fall (October-November) 2011 and winter (January-February) 2012. The surveys were conducted along tracklines oriented perpendicular to the shoreline and spaced 20-30 km apart. The total survey effort varied during each survey due to weather conditions, but ranged between 13,500 – 15,600 km. Each survey incorporated a two-team approach to develop estimates of visibility bias using the independent observer approach with Distance analysis (Laake and Borchers 2004). A model for the probability of detection on the trackline as a function of sighting conditions (seas state, glare, water color, etc.) was developed using data across all four surveys. This model was then applied to detection probability functions specific to each survey to account for the probability of detection as a function of distance from the trackline and additional environmental covariates. A bootstrap resampling approach was used to estimate the variance of the estimates. The survey data were post-stratified into spatial boundaries corresponding to the defined boundaries of bottlenose dolphin stocks within the surveyed area. The abundance estimates for the Continental Shelf Stock of bottlenose dolphins were based upon tracklines and sightings in waters from the 20-m to the 200-m isobaths and between the Texas-Mexico border and the Florida Keys. The seasonal abundance estimates for this stock were: spring – 45,171 (CV=0.22), summer – 64,583 (CV=0.16), fall – 34,181 (CV=0.20) and winter – 58,561 (CV=0.25). Due to the uncertainty in stock movements and apparent seasonal variability in the abundance of the stock, a weighted average of these seasonal estimates was taken where the weighting was the inverse of the CV. This approach weights estimates with higher precision more heavily in the final weighted mean. The resulting weighted mean and best estimate of abundance for the Continental Shelf Stock of common bottlenose dolphins was 51,192 (CV=0.10).

Table 1. Summary of recent abundance estimates for the northern Gulf of Mexico Continental Shelf Stock of common bottlenose dolphins. Month, year and area covered during each abundance survey, and resulting abundance estimate (N_{best}) and coefficient of variation (CV).

Season/Year	Area	N_{best}	CV
Spring, summer and fall 2011, winter 2012	Continental Shelf waters, 20-200 m	51,192	0.10

Minimum Population Estimate

The minimum population estimate is the lower limit of the two-tailed 60% confidence interval of the log-normal distributed abundance estimate. This is equivalent to the 20th percentile of the log-normal distributed abundance estimate as specified by Wade and Angliss (1997). The best estimate of abundance for bottlenose dolphins is 51,192 (CV=0.10). The minimum population estimate for the northern Gulf of Mexico is 46,926.

Current Population Trend

A trend analysis has not been conducted for this stock. There are 2 abundance estimates from 1998-2001 fall surveys and year-round, seasonal 2011-2012 surveys. Methodological differences between the estimates need to be evaluated to quantify trends.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

Current and maximum net productivity rates are unknown for this stock. For purposes of this assessment, the maximum net productivity rate was assumed to be 0.04. This value is based on theoretical modeling showing that cetacean populations may not grow at rates much greater than 4% given the constraints of their reproductive history (Barlow *et al.* 1995).

POTENTIAL BIOLOGICAL REMOVAL

Potential Biological Removal (PBR) is the product of the minimum population size, one half the maximum net productivity rate and a recovery factor (MMPA Sec. 3.16 U.S.C. 1362; Wade and Angliss 1997). The minimum population size is 46,926. The maximum productivity rate is 0.04, the default value for cetaceans. The recovery factor is 0.5 because the stock is of unknown status. PBR for the Gulf of Mexico Continental Shelf Stock of common bottlenose dolphins is 469.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

The total annual human-caused mortality and serious injury for the Continental Shelf Stock of common bottlenose dolphins during 2009–2013 is unknown because this stock is known to interact with unobserved fisheries (see below), and also because the most current observer data for the shrimp trawl fishery are for 2007-2011. The mean annual fishery-related mortality and serious injury during 2009–2013 for observed fisheries and strandings

identified as fishery-caused was 0.6. Additional mean annual mortality and serious injury during 2009–2013 due to other human-caused actions (oil platform removal operations) was 0.2. The minimum total mean annual human-caused mortality and serious injury for this stock during 2009–2013 was 0.8. This does not include an estimate for the commercial shrimp trawl fishery. The 5-year unweighted mean annual mortality estimate for 2007-2011 for the commercial shrimp trawl fishery was 56 (CV=0.42) (see Shrimp and Butterfish Trawl section below).

Fisheries Information

This stock interacts with the Category II Southeastern U.S. Atlantic, Gulf of Mexico shrimp trawl commercial fishery. This stock also interacts, or has the potential to interact, with 4 Category III commercial fisheries: Southeastern U.S. Atlantic, Gulf of Mexico shark bottom longline/hook-and-line; Southeastern U.S. Atlantic, Gulf of Mexico, Caribbean snapper-grouper and other reef fish; Atlantic Ocean, Gulf of Mexico, Caribbean commercial passenger fishing vessel (hook and line); and Gulf of Mexico butterfish trawl (Appendix III).

Shrimp and Butterfish Trawl

Between 1997 and 2011, 5 common bottlenose dolphins and 7 unidentified dolphins, which could have been either common bottlenose dolphins or Atlantic spotted dolphins, became entangled in the lazy line, turtle excluder device or tickler chain gear in the commercial shrimp trawl fishery in the Gulf of Mexico. All dolphin bycatch interactions resulted in mortalities except for 1 unidentified dolphin that was released alive in 2009. Soldevilla *et al.* (2015) provide mortality estimates calculated from analysis of shrimp fishery effort data and NMFS's Observer Program bycatch data. Annual mortality estimates were calculated for the years 1997-2011 from stratified annual fishery effort and bycatch rates, and a 5-year unweighted mean mortality estimate for 2007-2011 was calculated for Gulf of Mexico dolphin stocks. The 4-area (TX, LA, MS/AL, FL) stratification method was chosen because it best approximates how fisheries operate (Soldevilla *et al.* 2015). The mean annual mortality estimate for the continental shelf bottlenose dolphin stock is 56 (CV=0.42). Limitations and biases of annual bycatch mortality estimates are described in detail in Soldevilla *et al.* (2015). However, this estimate is not included in the total annual human-caused mortality and serious injury for this stock because estimates for 2012 and 2013 are not available.

In addition, during 2012, 1 bottlenose dolphin was observed entangled and released alive in the commercial shrimp trawl fishery, and it could not be determined if this animal was seriously injured (Maze-Foley and Garrison, in prep b). Also, during 2013, 1 bottlenose dolphin mortality was observed during commercial shrimp trawl fishing. Both of these animals likely belonged to the Continental Shelf Stock.

A trawl fishery for butterfish was monitored by NMFS observers for a short period in the 1980's with no records of incidental take of marine mammals (Burn and Scott 1988; NMFS unpublished data), although an experimental set by NMFS resulted in the death of 2 common bottlenose dolphins (Burn and Scott 1988). There are no other data available.

Shark Bottom Longline

No interactions between common bottlenose dolphins and this fishery were observed during 2004-2013 (Hale and Carlson 2007; Hale *et al.* 2007; Richards 2007; Hale *et al.* 2009; 2010; 2011; 2012; Gulak *et al.* 2013; 2014). The shark bottom longline fishery has been observed since 1994, and 3 interactions with bottlenose dolphins have been recorded, 2 of which likely involved the Continental Shelf Stock: 1 mortality (2003) and 1 hooked animal that escaped at the vessel (2002; Burgess and Morgan 2003). For the shark bottom longline fishery in the Gulf of Mexico, Richards (2007) estimated common bottlenose dolphin mortalities of 58 (CV=0.99), 0 and 0 for 2003, 2004 and 2005, respectively.

Reef Fish

During 2009–2013, 1 mortality and 1 serious injury were observed in the snapper-grouper and other reef fish fishery. During 2012 a mortality occurred when a dolphin was entangled in the mainline of bottom longline gear. During 2010 a serious injury occurred in which a common bottlenose dolphin was hooked in the rostrum and line was wrapped around the rostrum (Maze-Foley and Garrison in prep a). Both animals were likely from the Continental Shelf Stock, and both incidents occurred off Florida's west coast. In July 2006 NMFS implemented a mandatory observer program for this commercial fishery operating within the U.S. Gulf of Mexico (Scott-Denton *et al.* 2011).

Hook and Line

During 2009–2013, there was 1 at-sea observation in 2010 in the Continental Shelf Stock area of a common bottlenose dolphin entangled in monofilament line and hooks, and this dolphin was considered seriously injured

(Maze-Foley and Garrison in prep a,b,c). It should be noted that, in general, it cannot be determined if hook and line gear originated from a commercial (i.e., charter boat and headboat) or recreational angler because the gear type used by both sources is typically the same. Also, it is not possible to estimate the total number of interactions with hook and line gear because there is no systematic observer program.

Other Mortality

The use of explosives to remove oil rigs in portions of the continental shelf in the western Gulf of Mexico has the potential to cause serious injury or mortality to marine mammals. These activities have been closely monitored by NMFS observers since 1987 (Gitschlag and Herczeg 1994). There had been no reports of either serious injury or mortality to common bottlenose dolphins until 2010 (NMFS unpublished data). One mortality occurred during 2010 when a bottlenose dolphin became entangled in a diver's guide line during platform removal operations. A diver discovered the dolphin at a depth of 25.9m and reported it to be motionless and unresponsive with both tail flukes caught in poly guide line, which was being used to transfer equipment to the sea floor. No explosives were involved in this incident.

A total of 1,878 bottlenose dolphins were found stranded in the northern Gulf of Mexico from 2009 through 2013 (NOAA National Marine Mammal Health and Stranding Response Database unpublished data, accessed 11 June 2014). Of these, 187 showed evidence of human interactions (e.g., gear entanglement, mutilation, gunshot wounds). Bottlenose dolphins are known to become entangled in, or ingest recreational and commercial fishing gear (Wells and Scott 1994; Wells *et al.* 1998; Gorzelany 1998), and some are struck by vessels (Wells and Scott 1997; Wells *et al.* 2008). The vast majority of stranded bottlenose dolphins are assumed to come from stocks that live nearest to land, namely the bay, sound and estuary stocks and the three coastal stocks. Nevertheless, it is possible that some of the stranded bottlenose dolphins belonged to the Continental Shelf or Oceanic Stocks and that they were among those strandings with evidence of human interactions. (Strandings do occur for other cetacean species whose primary range in the Gulf of Mexico is outer continental shelf or oceanic waters.)

An Unusual Mortality Event (UME) was declared for cetaceans in the northern Gulf of Mexico beginning 1 February 2010; and, as of September 2014, the event is still ongoing (Litz *et al.* 2014). It includes cetaceans that stranded prior to the *Deepwater Horizon* oil spill (see "Habitat Issues" below), during the spill, and after. During 2010-2013, 928 bottlenose dolphins were considered to be part of the UME. The vast majority of stranded bottlenose dolphins are assumed to belong to one of the coastal stocks or to bay, sound and estuary stocks. Nevertheless, it is possible that some of the stranded bottlenose dolphins considered part of the UME belonged to the Continental Shelf Stock.

HABITAT ISSUES

The *Deepwater Horizon* (DWH) MC252 drilling platform, located approximately 50 miles southeast of the Mississippi River Delta in waters about 1500 m deep, exploded on 20 April 2010. The rig sank, and over 87 days up to ~4.9 million barrels of oil were discharged from the wellhead until it was capped on 15 July 2010 (McNutt *et al.* 2012). During the response effort dispersants were applied extensively at the seafloor and at the sea surface (Lehr *et al.* 2010; OSAT 2010). In-situ burning, or controlled burning of oil at the surface, was also used extensively as a response tool (Lehr *et al.* 2010). The oil, dispersant and burn residue compounds present ecological concerns (Buist *et al.* 1999; NOAA 2011). The magnitude of this oil spill was unprecedented in U.S. history, causing impacts to wildlife, natural habitats and human communities along coastal areas from western Louisiana to the Florida Panhandle (NOAA 2011). It could be years before the entire scope of damage is ascertained (NOAA 2011).

Shortly after the oil spill, the Natural Resource Damage Assessment (NRDA) process was initiated under the Oil Pollution Act of 1990. A variety of NRDA research studies are being conducted to determine potential impacts of the spill on marine mammals. These studies have focused on identifying the type, magnitude, severity, length and impact of oil exposure to oceanic, continental shelf, coastal and estuarine marine mammals. For continental shelf and oceanic cetaceans, the NOAA-led efforts include: aerial surveys to document the distribution, abundance, species and exposure relative to oil from the DWH spill; and ship surveys to evaluate exposure to oil and other chemicals and to assess changes in animal behavior and distribution relative to oil exposure through visual and acoustic surveys, deployment of passive acoustic monitoring systems, collection of tissue samples, and deployment of satellite tags on sperm and Bryde's whales.

Vessel and aerial surveys documented common bottlenose dolphins, Atlantic spotted dolphins, rough-toothed dolphins, spinner dolphins, pantropical spotted dolphins, Risso's dolphins, striped dolphins, sperm whales, dwarf/pygmy sperm whales and a Cuvier's beaked whale swimming in oil or potentially oil-derived substances (e.g., sheen, mousse) in offshore waters of the northern Gulf of Mexico following the DWH oil spill. Given the location of the well head and the trajectory of the surface oil during the spill, it is likely the Continental Shelf Stock of

bottlenose dolphins was exposed to oil during the event. The effects of oil exposure on marine mammals depend on a number of factors including the type and mixture of chemicals involved, the amount, frequency and duration of exposure, the route of exposure (inhaled, ingested, absorbed, or external) and biomedical risk factors of the particular animal (Geraci 1990). In general, direct external contact with petroleum compounds or dispersants with skin may cause skin irritation, chemical burns and infections. Inhalation of volatile petroleum compounds or dispersants may irritate or injure the respiratory tract, which could lead to pneumonia or inflammation. Ingestion of petroleum compounds may cause injury to the gastrointestinal tract, which could affect an animal's ability to digest or absorb food. Absorption of petroleum compounds or dispersants may damage kidney, liver and brain function in addition to causing immune suppression and anemia. Long term chronic effects such as lowered reproductive success and decreased survival may occur (Geraci 1990).

STATUS OF STOCK

Common bottlenose dolphins are not listed as threatened or endangered under the Endangered Species Act, and the northern Gulf of Mexico Continental Shelf Stock is not considered strategic under the MMPA. Total U.S. fishery-related mortality and serious injury for this stock is not known, but at a minimum is greater than 10% of the calculated PBR and, therefore, cannot be considered to be insignificant and approaching zero mortality and serious injury rate. The status of bottlenose dolphins, relative to OSP, in the northern Gulf of Mexico continental shelf waters is unknown. There are insufficient data to determine population trends for this stock.

REFERENCES

Barlow, J., S.L. Swartz, T.C. Eagle and P.R. Wade. 1995. U.S. marine mammal stock assessments: Guidelines for preparation, background, and a summary of the 1995 assessments. NOAA Tech. Memo. NMFS-OPR-6, 73 pp.

Buist, I., J. McCourt, S. Potter, S. Ross and K. Trudel. 1999. In situ burning. Pure. Appl. Chem. 71(1): 43-65.

Burgess, G. and A. Morgan. 2003. Commercial shark fishery observer program. Renewal of an observer program to monitor the directed commercial shark fishery in the Gulf of Mexico and the south Atlantic: 2002(2) and 2003(1) fishing seasons. Final Report, U.S. National Marine Fisheries Service, Highly Migratory Species Management Division Award NA16FM0598.

Burn, D. and G.P. Scott. 1988. Synopsis of available information on marine mammals-fisheries interactions in the southeastern United States: Preliminary report. NMFS/SEFC, Miami Laboratory, Coastal Resources Division, Contribution ML-CRG-87/88-26, 37 pp.

Geraci, J.R. 1990. Physiologic and toxic effects on cetaceans. pp. 167-197 *in*: J. R. Geraci and D. J. St. Aubin (eds.) Sea mammals and oil: Confronting the risks. Academic Press, New York. 259 pp.

Gitschlag, G.R. and B.A. Herczeg. 1994. Sea turtle observations at explosive removals of energy structures. Mar. Fish. Rev. 56(2): 1-8.

Gorzelany, J.F. 1998. Unusual deaths of two free-ranging Atlantic bottlenose dolphins (*Tursiops truncatus*) related to ingestion of recreational fishing gear. Mar. Mamm. Sci. 14(3): 614-617.

Gulak, S.J.B., M.P. Enzenauer and J.K. Carlson. 2013. Characterization of the shark and reef fish bottom longline fisheries: 2012. NOAA Tech. Memo. NMFS-SEFSC-652, 42 pp.

Gulak, S.J.B., M.P. Enzenauer and J.K. Carlson. 2014. Characterization of the shark and reef fish bottom longline fisheries: 2013. NOAA Tech. Memo. NMFS-SEFSC-658, 22 pp.

Hale, L.F. and J.K. Carlson. 2007. Characterization of the shark bottom longline fishery: 2005-2006. NOAA Tech. Memo. NMFS-SEFSC-554, 28 pp.

Hale, L.F., L.D. Hollensead and J.K. Carlson. 2007. Characterization of the shark bottom longline fishery: 2007. NOAA Tech. Memo. NMFS-SEFSC-564, 25 pp.

Hale, L.F., S.J.B. Gulak and J.K. Carlson. 2009. Characterization of the shark bottom longline fishery, 2008. NOAA Tech. Memo. NMFS-SEFSC-586, 23 pp.

Hale, L.F., S.J.B. Gulak and J.K. Carlson. 2010. Characterization of the shark bottom longline fishery, 2009. NOAA Tech. Memo. NMFS-SEFSC-596, 25 pp.

Hale, L.F., S.J.B. Gulak A.M. Napier and J.K. Carlson. 2011. Characterization of the shark bottom longline fishery, 2010. NOAA Tech. Memo. NMFS-SEFSC-611, 35 pp.

Hale, L.F., S.J.B. Gulak, A.N. Mathers and J.K. Carlson. 2012. Characterization of the shark bottom longline fishery, 2011. NOAA Tech. Memo. NMFS-SEFSC-634, 27 pp.

Hoelzel, A.R., C.W. Potter and P.B. Best. 1998. Genetic differentiation between parapatric 'nearshore' and 'offshore' populations of the bottlenose dolphin. Proc. R. Soc. Lond. B 265: 1177-1183.

Laake, J.L. and D.L. Borchers 2004. Methods for incomplete detection at distance zero. pp. 108-189 *In:* S.T. Buckland, D.R. Andersen, K.P. Burnham, J.L. Laake and L. Thomas (eds.) Advanced distance sampling. Oxford University Press, New York. 434 pp.

Lehr, B., S. Bristol and A. Possolo, eds. 2010. Oil budget calculator: Deepwater Horizon. Technical documentation. Prepared by the Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team for the National Incident Command. Available from: http://www.restorethegulf.gov/sites/default/files/documents/pdf/OilBudgetCalc_Full_HQ-Print_111110.pdf

Litz, J.A., M.A. Baran, S.R. Bowen-Stevens, R.H. Carmichael, K.M. Colegrove, L.P. Garrison, S.E. Fire, E.M. Fougeres, R. Hardy, S. Holmes, W. Jones, B.E. Mase-Guthrie, D.K. Odell, P.E. Rosel, J.T. Saliki, D.K. Shannon, S.F. Shippee, S.M. Smith, E.M. Stratton, M.C. Tumlin, H.R. Whitehead, G.A.J. Worthy and T.K. Rowles. 2014. Review of historical unusual mortality events (UMEs) in the Gulf of Mexico (1990–2009): Providing context for the complex and long-lasting northern Gulf of Mexico cetacean UME. Dis. Aquat. Organ. 112: 161-175.

Maze-Foley, K. and L.P. Garrison. in prep a. Preliminary serious injury determinations for small cetaceans off the southeast U.S. coast, 2007-2011.

Maze-Foley, K. and L.P. Garrison. in prep b. Preliminary serious injury determinations for small cetaceans off the southeast U.S. coast, 2012.

Maze-Foley, K. and L.P. Garrison. in prep c. Preliminary serious injury determinations for small cetaceans off the southeast U.S. coast, 2013.

McNutt, M.K., R. Camilli, T.J. Crone, G.D. Guthrie, P.A. Hsieh, T.B. Ryerson, O. Savas and F. Shaffer. 2012. Review of flow rate estimates of the *Deepwater Horizon* oil spill. P. Natl. Acad. Sci. USA 109 (50): 20260-20267.

NOAA. 2011. Public scoping for preparation of a programmatic environmental impact statement for the Deepwater Horizon BP Oil Spill. Available from: http://www.gulfspillrestoration.noaa.gov/wp-content/uploads/2011/04/Public-DWH-PEIS-Scoping-Review-Document1.pdf

Operational Science Advisory Team (OSAT). 2010. Summary report for sub-sea and sub-surface oil and dispersant detection: Sampling and monitoring. Prepared for P. F. Zukunft, RADM, U.S. Coast Guard, Federal On-Scene Coordinator, Deepwater Horizon MC252, December 17, 2010. Available from: http://www.restorethegulf.gov/sites/default/files/documents/pdf/OSAT_Report_FINAL_17DEC.pdf

Richards, P.M. 2007. Estimated takes of protected species in the commercial directed shark bottom longline fishery 2003, 2004, and 2005. NMFS SEFSC Contribution PRD-06/07-08, June 2007, 21 pp.

Scott-Denton, E., P.F. Cryer, J.P. Gocke, M.R. Harrelson, D.L. Kinsella, J.R. Pulver, R.C. Smith and J. Williams. 2011. Descriptions of the U.S. Gulf of Mexico reef fish bottom longline and vertical line fisheries based on observer data. Mar. Fish. Rev. 73(2): 1-26.

Sellas, A.B., R.S. Wells and P.E. Rosel. 2005. Mitochondrial and nuclear DNA analyses reveal fine scale geographic structure in bottlenose dolphins (*Tursiops truncatus*) in the Gulf of Mexico. Conserv. Genet. 6: 715-728.

Soldevilla, M.S., L.P. Garrison, E. Scott-Denton and J.M. Nance. 2015. Estimation of marine mammal bycatch mortality in the Gulf of Mexico shrimp otter trawl fishery. NOAA Tech. Memo. NMFS-SEFSC-672, 70 pp.

Vollmer, N.L. 2011. Population structure of common bottlenose dolphins in coastal and offshore waters of the Gulf of Mexico revealed by genetic and environmental analyses. Ph.D. Dissertation from University of Louisiana at Lafayette. 420 pp.

Wade, P.R. and R.P. Angliss. 1997. Guidelines for assessing marine mammal stocks: Report of the GAMMS Workshop April 3-5, 1996, Seattle, WA. NOAA Tech Memo. NMFS-OPR-12, 93 pp.

Wells, R.S. and M.D. Scott. 1994. Incidence of gear entanglement for resident inshore bottlenose dolphins near Sarasota, Florida. Page 629 *in:* W.F. Perrin, G.P. Donovan and J. Barlow (eds.) Gillnets and cetaceans. Rep. Int. Whal. Commn. (Special Issue 15), Cambridge, U.K.

Wells, R.S. and M.D. Scott. 1997. Seasonal incidence of boat strikes on bottlenose dolphins near Sarasota, Florida. Mar. Mamm. Sci. 3: 475-480.

Wells, R.S., J.B. Allen, S. Hofmann, K. Bassos-Hull, D.A. Fauquier, N.B. Barros, R.E. DeLynn, G. Sutton, V. Socha and M.D. Scott. 2008. Consequences of injuries on survival and reproduction of common bottlenose dolphins (*Tursiops truncatus*) along the west coast of Florida. Mar. Mamm. Sci. 24(4): 774-794.

Wells, R.S., S. Hofmann and T.L. Moors. 1998. Entanglement and mortality of bottlenose dolphins, *Tursiops truncatus*, in recreational fishing gear in Florida. Fish. Bull. 96(3): 647-650.

Wells, R.S., H.L. Rhinehart, P. Cunningham, J. Whaley, M. Baran, C. Koberna and D.P. Costa. 1999. Long-distance offshore movements of bottlenose dolphins. Mar. Mamm. Sci. 15(4): 1098-1114.