

## **Spatial distribution and dive behavior of Gulf of Mexico Bryde's whales: potential risk of vessel strikes and fisheries interactions**

**Melissa S. Soldevilla\*, John A. Hildebrand, Kaitlin E. Frasier, Laura Aichinger Dias, Anthony Martinez, Keith D. Mullin, Patricia E. Rosel, Lance P. Garrison**

\*Corresponding author: melissa.soldevilla@noaa.gov

*Endangered Species Research 32: 533–550 (2017)*

---

### **Commercial Shipping and Fishery Data Details**

Data collected by NOAA on shipping traffic from Automatic Identification System (AIS) transmissions, and on commercial fisheries from Vessel Monitoring System (VMS) receivers are subject to numerous data collection details and caveats that are worth understanding to fully interpret the spatial distribution of commercial ships and fisheries and the annual effort levels of fisheries. These details are provided below.

Commercial shipping AIS transmissions only represent about 50 – 60% of total vessel traffic; recreational vessels, small craft, and military vessels are exempt from carrying AIS and therefore are not represented in these data. Additionally, permanent AIS receivers are mainly located at large ports, so spatial coverage of AIS-received signals is not uniform throughout the Gulf. Port receivers have a minimum receiving capability of 24 miles (39 km) from shore, and transmissions from vessels beyond this range may not be received. Therefore, counts of vessels in offshore waters represent minimum estimates of vessel transit densities; actual counts are expected to be higher. Finally some data were missed during the Office of Coastal Survey's analysis<sup>1</sup>; however, this is expected to have only a minimal impact on data integrity (BOEM, NOAA 2015; data can be downloaded from [ftp://ftp.coast.noaa.gov/pub/MSP/AIS/CommercialVesselDensityOctober2009\\_2010National.zip](ftp://ftp.coast.noaa.gov/pub/MSP/AIS/CommercialVesselDensityOctober2009_2010National.zip)).

Commercial fisheries VMS data do not represent a direct measure of bottom longline fishery effort for these two fisheries as: 1) fishers may hold multiple permits and the target species and gear type being fished during each trip is unknown; 2) reef fish bottom longline endorsements are only required for fishers operating in waters east of 85.355° W; 3) large pelagics longline fishers must also carry a directed or incidental shark permit; 4) shark fishers who do not also have either a reef fish or large pelagics longline permit are not represented in these data; 5) the frequency of VMS transmissions is generally once per hour, but may occur more frequently for some vessels or some regions at the NMFS Office of Law Enforcement's discretion; and 6) transmissions occur 24 hours a day, 7 days a week and may represent vessels in transit, at rest, or handling gear.

### LITERATURE CITED

BOEM, NOAA (Bureau of Ocean Energy Management, National Oceanic and Atmospheric Administration) (2015) Commercial vessel density October 2009–2010 AIS National. [marinecadastre.gov/data](http://marinecadastre.gov/data) (accessed 8 October 2015)

---

<sup>1</sup> Some 1 km<sup>2</sup> grid cells were unable to be processed; infrequent data gaps occurred due to connection errors; and only a single transit was counted for each unique vessel per grid cell per day.