Rough-toothed dolphin (*Steno bredanensis*):

Summary of review of AquaMaps predictions for WCR undertaken by Kristin Kaschner & Randall Reeves, December 2011-12-08

Revision of AquaMaps predictions based on available regional data (KK)

Based on the mean depth of sightings of this species reported from spring surveys in the northern Gulf of Mexico between 1991-2001 (Maze-Foley & Mullin 2006), rough-toothed dolphins appear to prefer deeper waters of the lower continental slope. However, the density estimated from line-transect surveys conducted in the fall between 1998 – 2001 in the same area indicated that the depth range of the species in this area should be extended to also include parts of the shallower shelf water, although it should be noted that observed high densities were based on a very low sample size of just 3 sightings (Fulling et al. 2003). Using the 48 species occurrence records available through OBIS for the study area, I computed relative encounter rates of the species by calculating the proportion of total sighting events of this particular species in each of the 42 half degree "presence cells". The analysis of mean depth values associated with cells in which relative encounter rates were high also indicated that the species occurs regularly in shelf waters. I therefore expanded the depth envelope accordingly. I also slightly raised the preferred minimum temperature settings to capture the substantially lower densities of the species observed along the US Atlantic coast lines in comparison to those observed within the Gulf of Mexico proper. Final input parameter settings can be seen in Table 1 and resulting gradient predictions, generated using the AquaMaps model (Kaschner et al. 2008), are shown in Figure 1. To show the most likely known and probable occurrence of the species in the WCR I applied a presence threshold of 0.6 supported by recent validations for global predictions (Kaschner et al. 2011) (Figure 2).

Mapping parameters for Steno bredanensis (rough-toothed dolphin),
FAOAreas: 21 | 27 | 31 | 34 | 37 | 41 | 47 | 51 | 57 | 61 | 67 | 71 | 77 | 81 | 87 ,
Pelagic: True,
Bounding Box (NSWE): ,90,-90,-180,180

	Min	Pref Min (10th)	Pref Max (90th)	Max
Depth (m)	0	50	2000	8000
SST (°C)	15	23	30	32.94
Salinity (psu)	30.9	32.91	35.24	39.36
Primary Production	0	298	838	3160

Table 1: AquaMaps input parameter settings for revised map generation

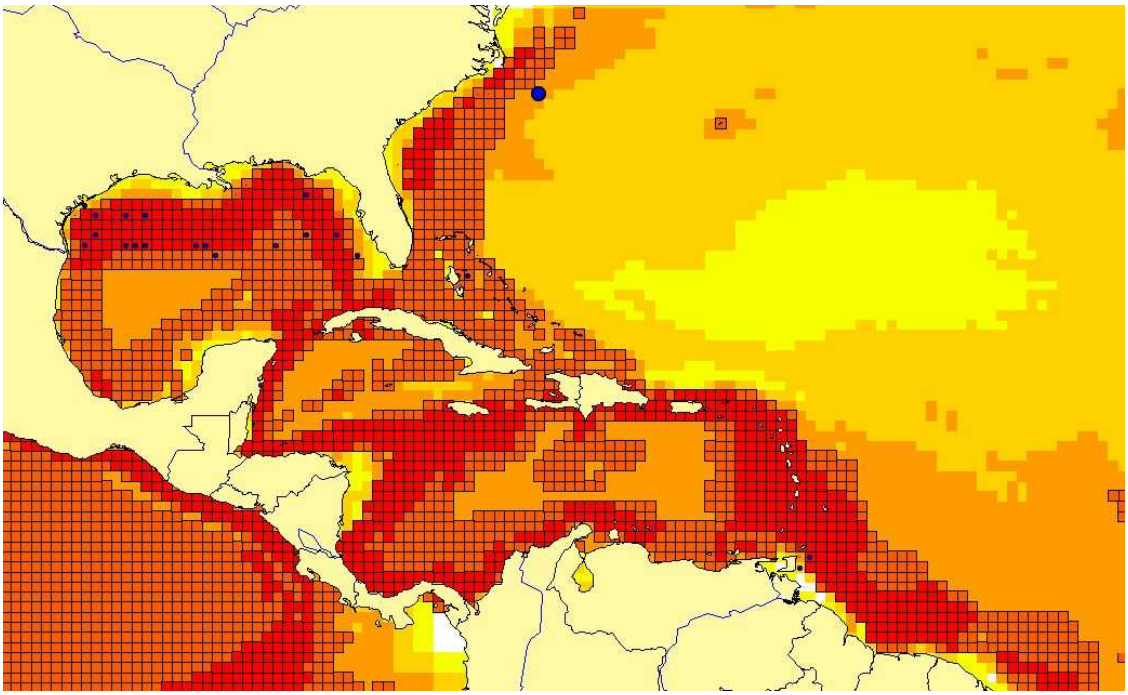

Fig 1. Predicted relative habitat suitability based on envelope settings in Table 1 and calculated relative encounter rates based on available sightings from OBIS (blue). Cells with probability values above the selected threshold are shown with boundaries. *Note that not all occurrences are available/accessible through online data repositories, such as OBIS (www.iobis.org), and records shown on the map do not necessarily represent the whole extent of documented species occurrence!

Review of outputs by independent expert (Randall Reeves)

In the northern Gulf of Mexico, the part of the WCR with the most extensive systematic survey effort, rough-toothed dolphins were seen only in "oceanic" waters west of the Mississippi delta from 1990-94, whereas in subsequent years they were seen both east of the Mississippi and in shelf waters < 100 m deep (Maze-Foley & Mullin 2006). In fact, their distribution in the northern Gulf was primarily seaward of the 200 m isobath, including very deep offshore waters, but apparently extended onto the outer shelf (presumably meaning 100-200 m?) occasionally (Maze-Foley and Mullin 2006, their Fig 2j). Based on this information, as well as observations from strandings (e.g. (Mignucci-Giannoni et al. 1999), catches (Caldwell & Caldwell 1975), opportunistic sightings and surveys elsewhere in the region (e.g. Rinaldi et al. 2006, Gero and Whitehead, 2006), the occurrence is widespread but generally in low densities. These animals seem pretty mobile and sort of unpredictable in where they turn up, and group sizes are modest (say, 15-30 mostly).

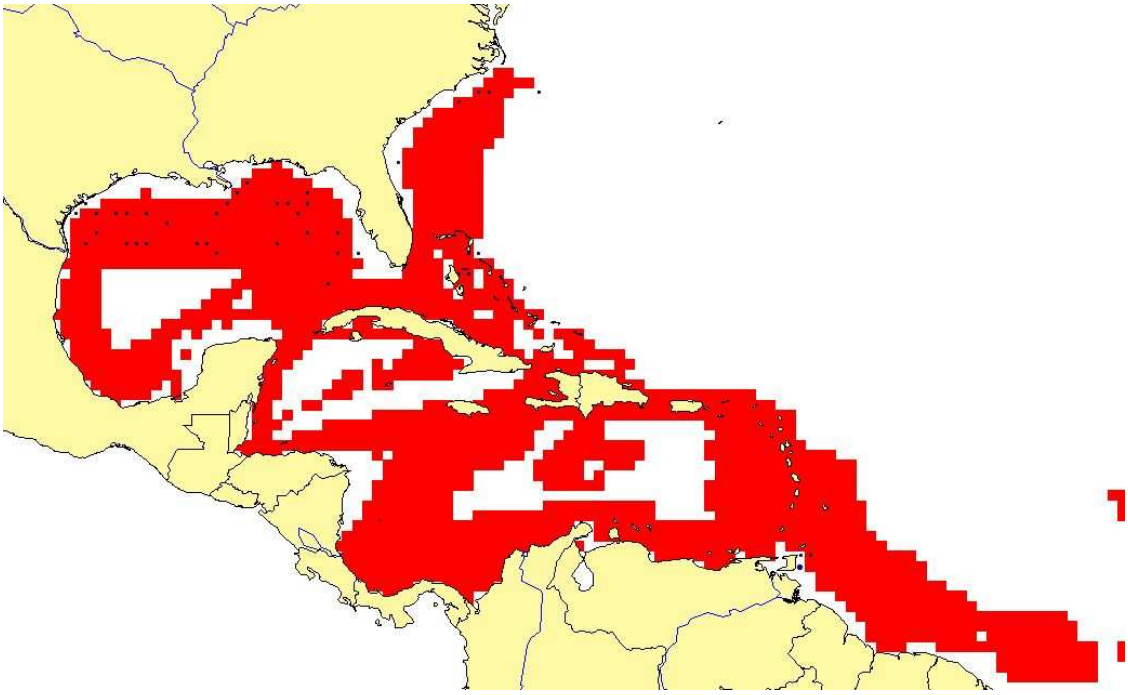

Fig 2. Consensus map of known and probable occurrence of species in WCR plus available sightings from OBIS (blue). *Note that not all occurrences are available/accessible through online data repositories, such as OBIS (www.iobis.org), and

records shown on the map do not necessarily represent the whole extent of documented species occurrence!

Quality of outputs: ★★★★

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