

## **Striped dolphin (*Stenella coeruleoalba*):**

Summary of review of AquaMaps predictions for WCR undertaken by Kristin Kaschner  
& Randall Reeves, February 2012

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

Mean depth of the 51 sightings from line transect surveys in the northern Gulf of Mexico suggests the species is closely associated with slope waters (Maze-Foley & Mullin 2006). This was supported by the analysis of mean depth values of cells of documented presence for this species (61 available occurrence records from OBIS in 43 cells). Regional habitat use information summarized in available publications also suggests this is a primarily oceanic species, occurring near shore only in areas where deep water is close to land (Jefferson & Schiro 1997). The striped dolphin is considered a tropical, warm water species which, in the eastern tropical Pacific (ETP), is closely associated with year-round or seasonal upwelling, weak thermoclines, surface temperatures below 25 °C and surface salinities above 34.5 pss (Au & Perryman 1985). However, concentrations of striped dolphins in the ETP also occur in warmer waters, with the 28°C isotherm marking an upper threshold of preferred habitat (see Fig. 3 in (Ballance et al. 2006). This was generally supported by mean temperatures associated with sightings in the northern Gulf, which were also around 25.3°C, but extended up 28.6°C (Maze-Foley & Mullin 2006). I modified the temperature envelope based on this information and also adjusted the upper salinity threshold for this species to capture the documented occurrence in northwestern Gulf waters. In the North Pacific at least, this species seems to be mostly associated with oligotrophic habitats (Miyazaki et al. 1974, Reilly 1990, Ballance et al. 2006), which is also supported by the primary production envelope calculated from regional sightings. 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 representation of known and probable occurrence of the species in the WCR I applied a presence threshold of 0.6 as suggested by recent validation analyses (Kaschner et al. 2011)

The resulting distribution matches known occurrence of striped dolphins in the northern Gulf of Mexico quite well (Jefferson & Lynn 1994, Jefferson & Schiro 1997, Ward et al. 2001, Maze-Foley & Mullin 2006). Available information suggests that this species may be less common than other *Stenella* species in the Caribbean Sea, since there are comparatively few documented occurrences from around some Caribbean islands (Debrot 1998, Debrot et al. 1998, Roden & Mullin 2000, Ward et al. 2001) and the Venezuelan coast (Romero et al. 2001).

Mapping parameters for *Stenella coeruleoalba* (striped dolphin)\_3

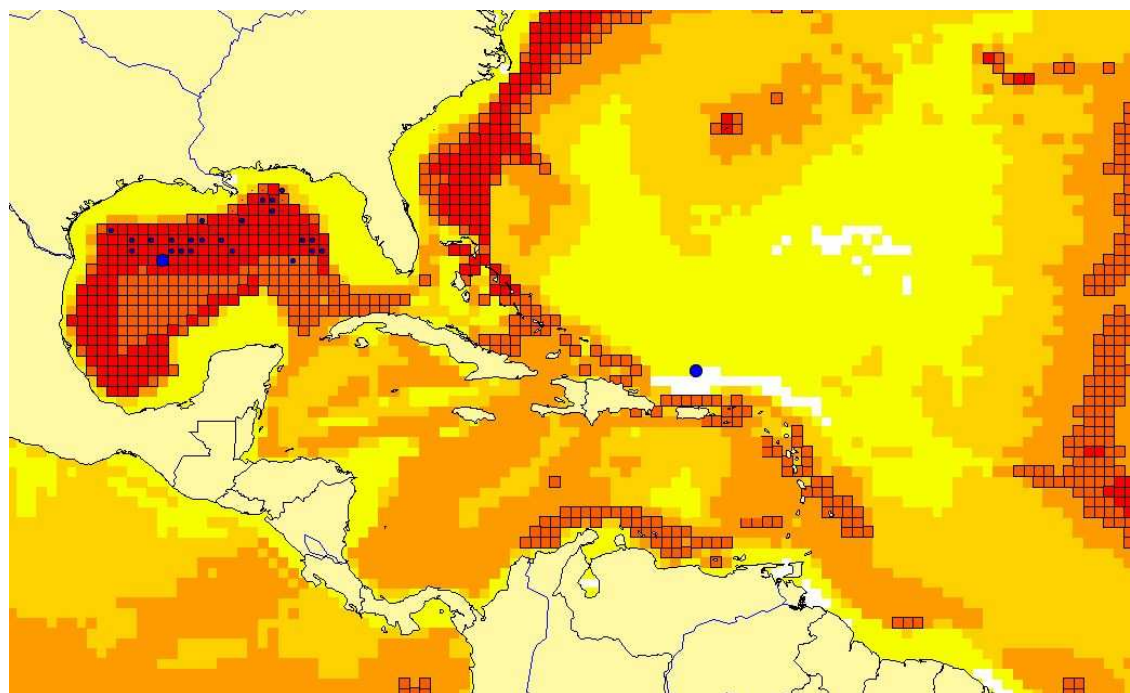
FAOAreas: 18 | 21 | 27 | 31 | 34 | 37 | 41 | 47 | 48 | 51 | 57 | 58 | 61 | 67 | 71 | 77 | 81 | 87

Pelagic: True

Bounding Box (NSWE):

	90	-90	-180	180
	Min	Pref Min (10th)	Pref Max (90th)	Max
Depth (m)	0	1000	3000	6000
SST (&deg;C)	10	16.88	26	30
Salinity (psu)	19.62	34.5	38	40
Primary Production	0	294	700	2600

Table 1: AquaMaps input parameter settings for revised map generation



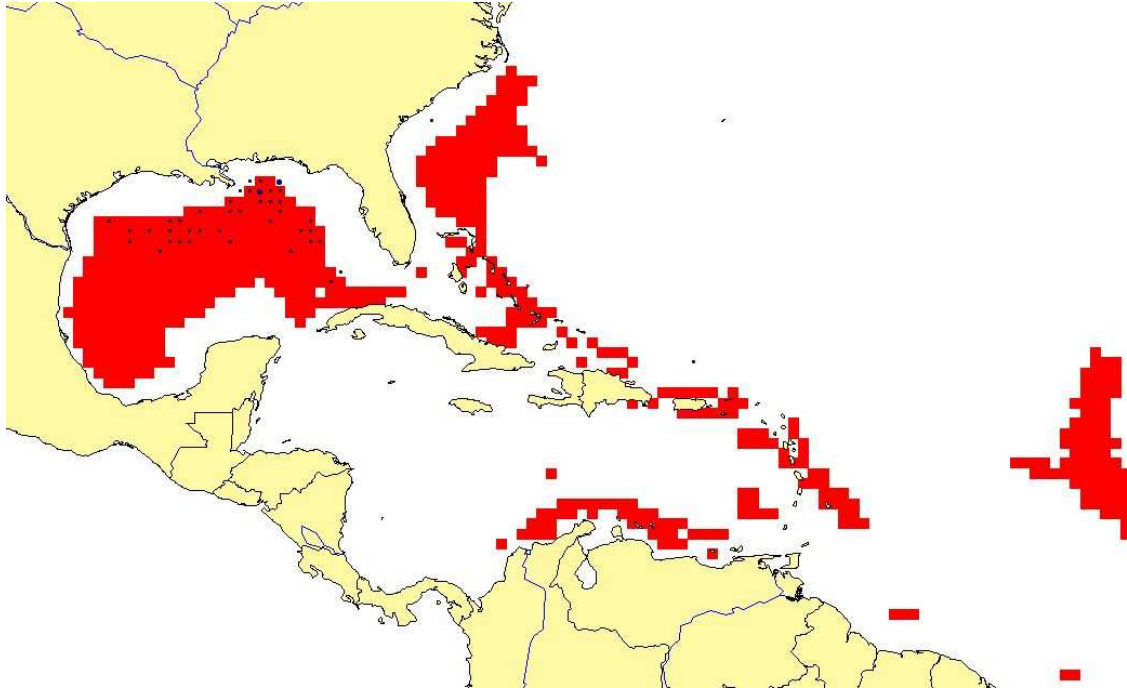
**Fig 1.** Predicted relative habitat suitability based on envelope settings in Table 1 and calculated relative encounter rates based on available sightings from OBIS (blue). Cells with probability values above the selected threshold are shown with boundaries. \*Note that not all records of occurrence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

### **Review of outputs by independent expert (Randall Reeves)**

The description by Perrin et al. (1994), based on Au and Perryman (1985) and Reilly (1990), depicts the distribution of striped dolphins as “complementary” to that of spinner and pantropical spinner dolphins, at least in the ETP. Whereas the latter species favour tropical surface water, striped dolphins (and common dolphins) tend to inhabit waters with large seasonal changes in surface temperature and thermocline depth and with seasonal upwelling. Such complementarity between the distributions of spinner and pantropical spotted dolphins on the one hand and striped dolphins on the other is not immediately evident from the systematic survey data for the northern Gulf of Mexico (Maze-Foley and Mullin 2006, their Fig. 2) but I am not aware of analyses from that region that are directly comparable to those by Au and Perryman (1985) and Reilly (1990) from the ETP.

The study by Davis et al. (2002) combined striped dolphins, Clymene dolphins, pantropical spotted dolphins, and spinner dolphins in a category called “oceanic stenellids” (a misnomer considering that they all belong to the genus *Stenella* but the family Delphinidae) and most of their resulting comparisons were to a category consisting of common bottlenose dolphins and Atlantic spotted dolphins. They concluded that the so-called oceanic stenellids more often occur over lower slope and abyssal regions in areas of cyclonic or confluence circulation while bottlenose dolphins and Atlantic spotted dolphins are found more in the shallow waters of the continental shelf and upper slope and not so much around cyclones and areas of confluence.

The relatively low quality assigned to the consensus map is partly meant to reflect our concern that it under-represents the actual distribution of this species, especially in the Caribbean Sea



**Fig 2.** Consensus map of known and probable occurrence of species in the WCR (including available sightings from OBIS (blue)). \*Note that not all records of occurrence are available/accessible through online data repositories, such as OBIS ([www.iobis.org](http://www.iobis.org)), and therefore the records shown on the map do not necessarily represent the whole extent of documented species occurrence.

**Quality of outputs: ★★**

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