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OCCURRENCE OF AN OCEAN SUNFISH (*MOLA MOLA*) LARVA IN THE FLORIDA CURRENT

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ABSTRACT: *During a yearlong ichthyoplankton survey conducted in the Florida Current, a single ocean sunfish,* Mola mola*, was found from the 284 samples and 1,454 identified specimens. This sunfish larva is one of only 17 on record from the Gulf of Mexico and northwest Atlantic.*

Key Words: Ocean sunfish, *Mola mola*, ichthyoplankton, Florida Straits

MOLA MOLA, the most commonly encountered ocean sunfish, is widely distributed in temperate and tropical waters. It occurs globally in the Indian, Pacific and Atlantic oceans, and is common in the Gulf of Mexico. Several studies have addressed adult distributions, reproductive biology and/or maturation (Nakatsubo, 2008; Fulling et al., 2007; Cartamil and Lowe, 2004). Five areas, including the central gyres of the North Atlantic, South Atlantic, North Pacific, South Pacific and Indian Oceans, have been suggested for sunfish spawning (UNH, 2008). Sunfish are considered one of the most prolific oceanic spawners, with females producing as many as 300 million eggs at one time (Tortonese, 1986). Despite this fact, information on larval stage duration and development is rare and historical data are limited primarily to lone occurrences during ichthyoplankton surveys. Historic larval occurrences in the Gulf of Mexico and northwest Atlantic have been noted since 1869 (Table 1), with 16 individuals documented prior to this study.

MATERIALS AND METHODS—From December 2006 through November 2007, bimonthly ichthyoplankton surveys were conducted onboard the *R/V Walton Smith* at five stations located

TABLE 1. Historic occurrences of *Mola mola* larvae in Gulf of Mexico and northwest Atlantic Ocean.

Year	Month	Location	Length (mm)
1869	NA	Western N. Atlantic	NA
1938	March	Atlantic	NA
1938	April	N. Sargasso Sea	NA
1938	April	N. Sargasso Sea	NA
1938	April	N. Sargasso Sea	NA
1938	April	N. Sargasso Sea	NA
1938	April	N. Sargasso Sea	NA
1938	April	N. Sargasso Sea	NA
1961	NA	N. Sargasso Sea	54
1967	April	W. North Atlantic	3.0
1967	April	W. North Atlantic	4.2
1967	April	W. North Atlantic	5.5
1971	May	S. Atlantic [subtropical]	NA
1982	April	NW Atlantic	NA
1983	December	N. Gulf of Mexico	1.95
2003	February	W. North Atlantic - Florida Straits [near Bimini]	NA
2003	December	W. North Atlantic - Florida Straits [near Bimini]	NA

along a 12-km transect off of Port Everglades, Florida (Fig. 1). Two nets were fished at each station including a 0.61-m bongo with 0.335-mm and 0.202-mm mesh nets, and a Tucker trawl containing three 0.760-mm mesh nets. All nets were equipped with a General Oceanics Model 2030 flow meter and sampled water volumes averaged 593 m^3. Standard onboard physicochemical measurements were collected, with a conductivity-temperature-depth (CTD) meter attached to the net frames.

Sampling included the 0- to 25-m, 25- to 200-m, and 0- to 200-m depth stratums at each station. At each site, the ship's engines were used to keep the ship on location, thus allowing the current velocity to pass water through the nets. Speed-over-ground (e.g., 3 to 5 knots) generally matched the opposite northerly flowing surface current velocity of the Florida Current.

Following retrieval, nets were washed down with filtered seawater. Two replicate samples were taken at each station; one was archived. A Folsom plankton splitter was used to split samples as necessary. Samples were placed in 70% ethanol for long-term storage.

Following preservation, fishes were identified to the lowest possible taxon. Samples adhered to standard plankton quality control measures including taxonomic review of a subset of all taxa by senior scientists.

RESULTS—In February 2007, a single larval *Mola mola* specimen was captured in a 0.202-mm mesh net from a 0- to 200-m depth trawl at Station 4 in water depths of 290 m (Fig. 2). The fish was the only sunfish identified during the year-long survey which included 284 samples, with over 1,400 identified specimens from 62 taxa. The specific larval stage was undetermined.

DISCUSSION—Although there is little consensus regarding spawning periods for ocean sunfish, Nakatsubo (2008) concluded that ocean sunfish off the coast of Boso peninsula in Kamogawa, Japan, had a relatively long spawning period extending from late August to late September. Also, based on seasonal changes

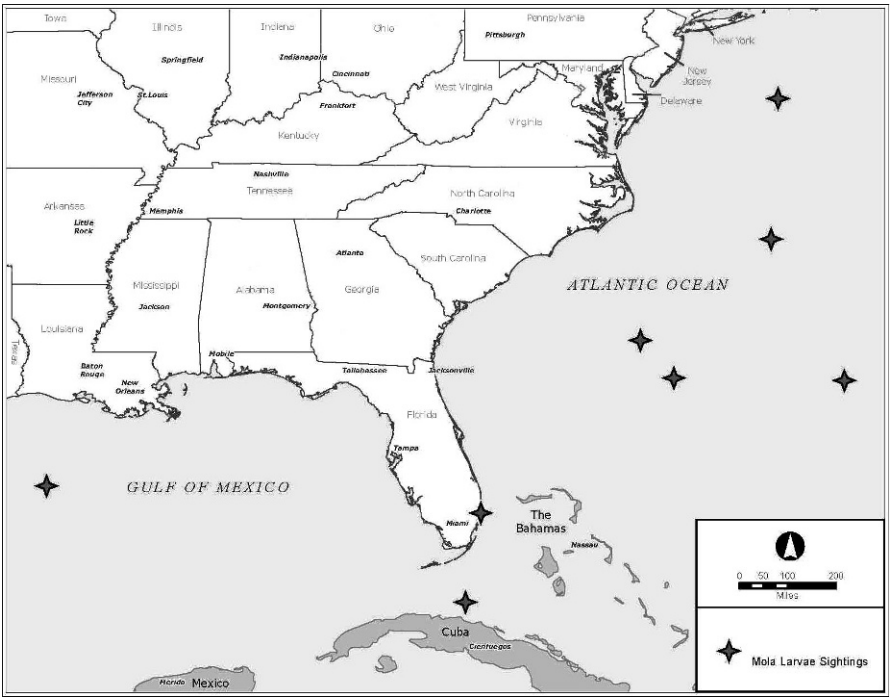

FIG. 1. *Mola mola* occurrences within the Gulf of Mexico and Western Atlantic oceans.

FIG. 2. Larval *Mola mola* caught off Port Everglades, Florida.

of gonadal index and the gonad maturational phases for 183 ocean sunfish captured from 1981 to 2006 in the waters off eastern Japan's Kanto region, Nakatsubo and coworkers (2007) determined that the spawning period for ocean sunfish is estimated to occur from August to October. Early historical 20th Century data suggest early spring spawning in the Gulf of Mexico and northwest Atlantic, but more recent occurrences suggest that winter spawning in tropical environs may be occurring.

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