S E D A R

Southeast Data, Assessment, and Review

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Management Unit Definition for the Gulf Menhaden Stock in the U.S. Gulf of Mexico

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Definition of the Fishery

The reduction fishery in the U.S. Gulf of Mexico catches three species of menhaden:

Gulf menhaden:	*Brevoortia patronus*
Yellowfin menhaden:	*Brevoortia smithi*
Finescale menhaden:	*Brevoortia gunteri*

Gulf menhaden comprise over 99% of the catch in the reduction purse-seine fishery (Ahrenholz 1981).

Geographic Distribution

Gulf menhaden range from the Yucatan Peninsula in Mexico, across the western and northern Gulf to Tampa Bay, Florida. Finescale menhaden occur from Mississippi Sound southwestward to the Gulf of Campeche in Mexico. Yellowfin menhaden range from Chandeleur Sound, Louisiana, southeastward to the Caloosahatchee River, Florida (and presumably around the Florida peninsula), to Cape Lookout, North Carolina (Hildebrand 1948, Suttkus 1956 and 1958, Christmas and Gunter 1960, Gunter and Christmas 1960, Reintjes and June 1961, Reintjes 1964, Turner 1969 and 1970). The yellowfin menhaden was reported from Grand Bahama Island and became the first authenticated record of a North American species from beyond the Continental Shelf (Levi 1973).

Management Unit

Gulf menhaden dominate the reduction fishery in the Gulf with other menhaden species representing less than 1% of the annual catch (Ahrenholz 1981). Considering that *B. patronus* is the only significant species in the fishery and is biologically considered to be a unit stock in the Gulf, the management unit is defined as the total population of *B. patronus* in the U.S. Gulf of Mexico.

Genetic studies suggest a single unit stock of gulf menhaden in the northern Gulf of Mexico. In the western Gulf, a single population of *B. patronus* has been identified using mtDNA (Anderson 2007). Anderson and McDonald (2007) noted that despite the similarities between *B. patronus* and *B. gunteri*, the two sympatric species may hybridize occasionally; however, the evidence is limited to a single individual sampled from Texas waters showing introgression. In the eastern Gulf, results from Anderson and Karel (2007) indicate that unidirectional gene flow has occurred between *B. patronus* and Atlantic menhaden (*B. tyrannus*), with flow coming from the southeastern Gulf into the Atlantic and reaching as far north as the Indian River Lagoon. Gene flow in the reverse direction has not been found, and *B. tyrannus* genes have not been found in the Gulf of Mexico population.

Bycatch considerations and the management unit

The majority of the management unit is the relatively homogeneous population of *B. patronus.* There is a minor aggregation of the other menhaden species and other clupeids.

Guillory and Hutton (1982) reviewed previous studies which characterized bycatch in the reduction fishery and proposed an east-west classification of the bycatch. They noted that the bycatch in Mississippi/eastern Louisiana is characterized by high numbers of species and by the predominance of striped mullet and sciaenids; whereas, in western Louisiana/Texas, the bycatch is characterized by low numbers of species and by the predominance of clupeids and Atlantic bumper (*Chloroscombrus chrysurus*). In a number of those studies, additional clupeid species occurred with differing regularity. While Dunham (1975) noted that Atlantic thread herring (*Opisthonema oglinum*) was encountered 2.33% by weight, Guillory and Hutton (1982) found threadfin shad (*Dorosoma petenense*) occurred in the catch at 13.2% (BY NUMBERS OR WGT?), while skipjack herring (*Alosa chrysochloris*), gizzard shad (*D. cepedianum*) and scaled sardine (*Harengula pensacolae*) each accounted for a mere 0.1% by number or weight. Similarly, Condrey (1994) found that Atlantic thread herring made up less than 1% of the catch in the two years he sampled directly from the reduction fleet.

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