



# Atlantic menhaden monitoring project

May 2006

## Atlantic menhaden were once Delaware's largest fishery:

A large Atlantic menhaden reduction plant made Lewes the number 1 port in the USA for pounds of fish landed during 1953. Over 360 million pounds of menhaden were landed that year in Lewes for reduction to fish meal and oil. Dead menhaden have a pungent odor due to their high oil content, which must have made Lewes a very smelly place back in those days!



Menhaden ready for processing in the 1950s. From the book, "And the men all singing...the story of Atlantic menhaden" by J. Frye (1978)

## For more information on the Atlantic menhaden monitoring project, please contact:

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## A most valuable fish

Atlantic menhaden (*Brevoortia tyrannus*), also known as bunker, are deep-bodied, small members of the herring family that have great value ecologically and economically. They may be the most important fish that most people have never heard of. Menhaden feed on phytoplankton (unicellular plants that add a green hue to the water) and are in turn a preferred food for most salt water game fish, such as bluefish and striped bass. Menhaden convert the simplest plants into animal tissue and are thus an important link in the food chain. Menhaden usually travel in huge schools and are caught in huge numbers by purse seines for the production of fish meal and fish oil.

## Atlantic menhaden in Delaware's Inland Bays

Young-of-the-year Atlantic menhaden enter the Inland Bays from the ocean during April through July. The menhaden grow quickly in the bays, increasing in length from 1" to 4" in three months, and then leave the bays. DDFW began monitoring young-of-the-year menhaden in 2002 to determine year class strength and growth rate. Menhaden were caught with a mid-water trawl and year class strength was determined by the number of menhaden caught per minute the trawl was towed. The catch per tow varied from a low of 0.8 in 2003 to a high of 10.1 in 2005.



## Atlantic menhaden and fish kills

The main purpose of monitoring menhaden year class strength was to provide information on reproduction and year class strength and to examine the relationship between menhaden year class strength and fish kills in the Inland Bays. The Inland Bays, particularly in marinas and dead end canals, often have poor water quality during the summer and early fall. This poor water quality, attributed to nutrient enrichment and poor circulation, occasionally leads to fish kills. Most Inland Bays fish kills are comprised solely of young-of-the-year Atlantic menhaden and these kills can involve huge numbers of menhaden. There does appear to be a relationship between the number and severity of fish kills and the abundance of young-of-the-year Atlantic menhaden: in 2003, a low menhaden abundance year, there were 5 kills involving an estimated 81,000 menhaden but in 2005, a high menhaden abundance year, there were 7 kills involving an estimated 3.4 million menhaden! 28 tons of young dead menhaden were removed from the water after the Mariners Cove fish kill in 2005. We estimated 2.3 million fish, based on recent measurements of length at weight in our survey. Knowing young-of-the-year menhaden abundance does not predict fish kills but it can help the DDFW estimate the potential severity of fish kills.



