

UNIVERSITY OF DELAWARE

# Research



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## Illuminating THE Human Experience

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## Delaware Estuary a \$10 billion asset

The Delaware Estuary contributes over \$10 billion annually to the region's economy, and that's a conservative estimate, according to the University of Delaware's Water Resources Agency (WRA) in the first economic impact study of the estuary in 20 years.

The estuary's watershed occupies 6,000 square miles in New Jersey, Pennsylvania, Delaware and Maryland, and serves more than 6.7 million people. It supplies drinking water to the fifth largest metropolitan economy in the country. And companies across the Mid-Atlantic region, from DuPont to the Salem Nuclear Power Plant, depend on its waters to sustain their business.

"By putting an economic value on ecology, we can show that the natural resources of the Delaware Estuary provide real and significant economic benefits to the tri-state region," says WRA Director Gerald Kauffman. "What's more, we can show they're worthy of investment to keep them healthy and productive."

The study, available at [www.ipa.udel.edu/publications/water.html](http://www.ipa.udel.edu/publications/water.html), was commissioned by the Partnership for the Delaware Estuary, one of 28 tidal systems named by Congress to the U.S. Environmental Protection Agency's National Estuary Program.



### DELAWARE ESTUARY ECONOMIC STUDY

In the first economic impact study of the estuary in 20 years, WRA researchers measured the value of the tidal Delaware River, Delaware Bay and tributaries in three different ways and found an economic impact of:

- \$10 billion through economic activity from recreation, water quality and supply, hunting and fishing, forests, agriculture and parks;
- \$12 billion through the value of goods and services provided by the estuary's ecosystems (such as water filtration, flood reduction and carbon storage); and
- \$10 billion through employment, including more than 500,000 direct and indirect jobs with annual wages in the coastal, farm, ecotourism, water/wastewater, recreation and port industries. This does not include federal, state and local income tax benefits, which researchers expect would have increased the economic value by one-quarter to one-third.

**NOTE:** The three economic categories were not summed because of "overlap in values." For example, the ecosystem values of forests for water quality benefits are partially captured in the economic value of water supply.

## Climate change study focuses on heat stress in poultry



KATHY F. ATKINSON

To help the chickens of the future, Carl Schmidt is looking to the chickens of the past.

Schmidt, associate professor of animal and food sciences and biological sciences at UD, is studying heat stress on chickens — both those that would have been around in the

grocery stores of the 1950s and those found in supermarkets today.

The \$4.7 million, five-year research project is funded by the Climate Change Initiative of the U.S. Department of Agriculture's National Institute of Food and Agriculture.

"The basic thought is that with climate change, it's not so much the fact that the average temperature is going to go up a couple of degrees; it's more the anticipation that there will be more heat waves, they will

be hotter and they will last longer. And that is a problem for poultry production," Schmidt says.

By studying poultry from the 1950s, or "heritage" chickens, Schmidt is trying to see if any specific alleles, or individual gene variances, have been bred out of modern chickens that might make them less resistant to heat stress.

"Our hope is to identify particular alleles that help them survive heat stress. The thought is that if we can identify these alleles, industry could attempt to breed the alleles into their production lines," he says.

The heritage chickens for the study have been provided

by the University of Illinois. In 1956, Illinois scientists set aside a male and female line of chickens and stopped selecting them for improved meat production. Those lines have been maintained, unselected, throughout the years, allowing researchers to study the chickens much as they would have been found in the 1950s.

Among their differences, a heritage chicken is much smaller than a modern one. A modern chicken would go to market in six weeks; the heritage bird in 16 weeks.



Heritage Chicken Modern Chicken