

Eye on Estuaries: Where the buoys are

UNH program to monitor water every 30 minutes

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In 1960, Connie Francis sang the title track of the film "Where the Boys Are" as she dreamed of finding her future husband during spring break. She thought finding "The One" would unlock the secrets of life. Later in the film, she realized it's not that simple, because true understanding rarely comes from a single source.

That is the philosophy of several University of New Hampshire programs that are using automated buoys to collect environmental data from a variety of locations with the goal of better understanding life on Earth.

One of these programs is the Coastal Ocean Observing Center. The center's researchers maintain a buoy in the middle of Great Bay that records environmental data both above and below the water. Every half hour, reports of water temperature, salinity, wind speed and five other parameters are electronically relayed to the Center's Web site at www.cooa.unh.edu.

In 2006, the center deployed the Gulf of Maine's first ocean greenhouse gas measurement buoy about three miles northeast of the Isles of Shoals. Every two hours the buoy automatically records carbon dioxide levels in both the water and air, which indicates if the ocean is absorbing or emitting the greenhouse gas. The most recent data from this buoy can be seen at www.pmel.noaa.gov/co2/coastal/NH/data_070w_14d.htm

The UNH Atlantic Marine Aquaculture Center is another group of researchers that has a monitoring buoy about one mile south of White Island that is jointly maintained with Woods Hole Oceanographic Institution. This buoy collects near-continuous environmental data at the offshore aquaculture site, such as wave amplitude, temperature, salinity, turbidity and fluorescence at different depths.

Finally, several water quality monitoring buoys are operated by the UNH Marine Program. Four of the buoys, located in the Great Bay, Oyster River, Lamprey River and Squamscott River are part of the Great Bay National Estuarine Research Reserve's System-wide Monitoring Program. Two additional buoys, operated with support from the New Hampshire Estuaries Project (NHEP), are maintained at the mouth of the Piscataqua River in Portsmouth Harbor and seasonally in the Salmon Falls River. These six buoys monitor a suite of water quality parameters such as conductivity, dissolved oxygen, turbidity, and temperature at 30-minute intervals. Collectively, the data provide managers a comprehensive picture of water quality throughout the Great Bay estuary system. Data are included in the NHEP's indicator reports and triennial State of the Estuaries reports that track trends and overall environmental conditions of the Seacoast's largest estuary.

All of the information collected by automated buoys placed strategically in the region greatly enhances the ability of scientists to detect trends in the dynamic ocean and estuary environments. By gathering data from many vantage points, there is hope that a few more of life's secrets will be revealed.

Eye on our Estuaries is an educational column initiated by the N.H. Estuaries Project about coastal watershed issues. The NHEP is funded in part by a grant from the U.S. Environmental Protection Agency. For details, visit www.nhep.unh.edu.