

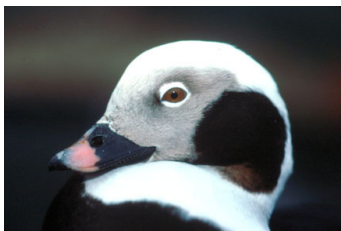
Wind Energy and the Marine Environment



- **The Challenge:** Offshore wind generated electricity promises to be an important source of renewable energy for the future; however, there is the potential for negative interactions between birds and wind turbines in the marine environment. Information on the distribution of seabirds and the factors that influence them is needed in order to make informed decisions about siting of future wind energy projects along the Atlantic coast. Occurrence and distribution data are available for some marine bird species, but region-wide information is lacking, limiting the ability of regulatory agencies to evaluate the placement of proposed wind structures and minimize adverse effects on seabirds.



- **The Science:** The USGS Patuxent Wildlife Research Center has developed a geo-referenced relational database of seabird occurrence for the Western Atlantic. More than 250,000 occurrence records, dating back to the early 1900s, have been compiled along with a variety of biophysical information that can be used to develop predictive models. Maintenance of this database and analysis of the information will be a priority for the Department of the Interior as proposed offshore wind development projects continue to increase over the next decade.



- **The Future:** Recent development of species-specific models by Patuxent scientists have shown that the North Atlantic Oscillation (NAO), a large-scale climatic pattern, can influence seabird distributions by exerting powerful, but complicated, forces on ocean temperatures and circulation. Understanding how marine wildlife responds to climate change and renewable energy development is critical for effective conservation planning and the design of future monitoring programs.