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Case Study:

NOAA – Chesapeake Bay Ecosystem Explorer

NOAA, the National Oceanic and Atmospheric Administration, is dedicated to understanding and predicting changes in the Earth’s environment and conserving and managing coastal and marine resources to meet the United States’ economic, social, and environmental needs.

One of NOAA’s largest initiatives over the past 20 years has been to manage and improve the quality of the Chesapeake Bay estuary ecosystem. In recent years, NOAA has made it a priority to present its research to the public in order to enhance the general knowledge of environmental issues. NOAA worked with the Thinkmap team to adapt the Thinkmap technology to serve this mission.

Thinkmap visualizations are helping NOAA communicate the environmental issues of the Chesapeake Bay ecosystem, and more generally the science of environmental ecology, in a way that provokes thought, encourages exploration, and leads to understanding.

THE CHALLENGE

In 20 years, NOAA has made hundreds of thousands of observations of animal behavior, and produced thousands of pages of research in its work monitoring and restoring the Chesapeake Bay. This research has been of vital importance to scientists and policy makers, but an overall challenge has been to present this research in a way that non-scientists, educators, and high-school students can understand and appreciate. NOAA approached Thinkmap to help develop an interactive application to explain the interdependencies of the Bay ecosystem to educators, students and their parents.

THE SOLUTION

Thinkmap enables users of the Ecosystem Explorer to discover and understand the complex web of relationships within the Chesapeake Bay ecosystem. The Chesapeake Bay estuary ecosystem consists of many different plants and animals that are interdependent. Using the Ecosystem Explorer, a student can select any organism that lives in the bay, and determine what other organisms are dependent on it through an easy-to-understand, intuitive display. By choosing different organisms, a student learns how and why each of the many organisms is dependent on each other. Through the use of Thinkmap, what had been reams of charts has become an engaging interface that facilitates communication, learning, and discovery.

Among the main functions of Ecosystem Explorer:

- Selected species are shown in a dynamic food web visualization, showing the directional interdependencies of who eats whom
- Users can view either a single food chain centered upon a particular organism or switch to a full food web view, providing added context for the current species selection
- All species within the food web reside within certain trophic levels, as well as habitats. This information is represented with images of the organisms and with spatial connections among them.
- Along with the food web display, the interface also includes a detail window that provides additional information and imagery about the user's current selection.

The information display is scientifically accurate and the interface is intuitive and easy-to-grasp for students, educators and parents.

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