

Session: Data and Model Visualization

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The NEFSC has used numerous visualization tools in EBFM related activities, particularly relevant to Theme 5 – Communication and Peer Review. Examples are provided below.

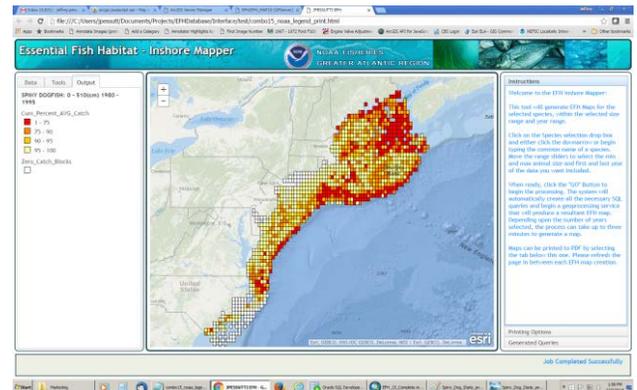
This educational video game incorporates actual bathymetric data and 3D coverage, allowing users to explore offshore bathymetry in an entertaining environment. The game’s conception, design, artistic creation, 3D modeling, animation and coding were all done in-house and quickly became one of the most popular exhibits during Sandy Hook Open House events.

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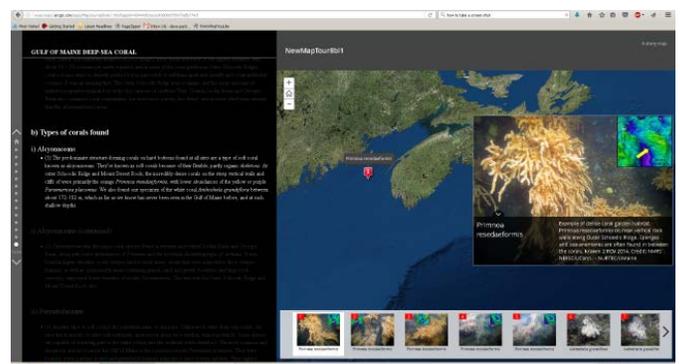
An Essential Fish Habitat (EFH) database was assembled from state and academic trawl surveys from the Gulf of Maine to South Carolina, as well as NEFSC groundfish surveys. A web portal is also being developed which allows users to generate EFH maps “on the fly”. The interface translates the user’s request into the appropriate SQL queries necessary to retrieve the data and performs all the necessary GIS calculations to produce an EFH map. The system can be easily updated as new EFH models are produced, and as new data sources are identified.

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The Gulf of Maine Deep-Sea Coral Story Map (DSC_StoryMap) is a web-based, interactive application using NOAA’s GeoPlatform. This is a work in progress. It allows imbedded images and videos and linking to real-time data sources. The user can control where to go in the StoryMap to explore the subject, providing more engagement than static webpages or presentations. This particular draft StoryMap focuses on Deep-sea Corals in the Gulf of Maine.

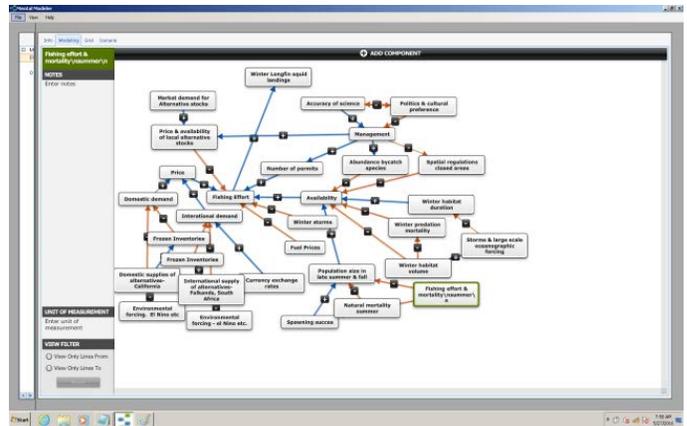
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Mental Modeler is a software package based in Fuzzy-logic Cognitive Mapping that allows user to develop semi-quantitative models. The NEFSC has used this collaboratively in ICES working groups, and also with the Marine Resource Education Program's (MREP) fishing industry partners by taking models developed on paper and transferring it to the software so that it could be visualized more fully. Additionally, Mental Modeler is being used in NEFSC Northeast Cooperative Research Program in several ongoing projects industry partners in the longfin squid and Atlantic mackerel fisheries.

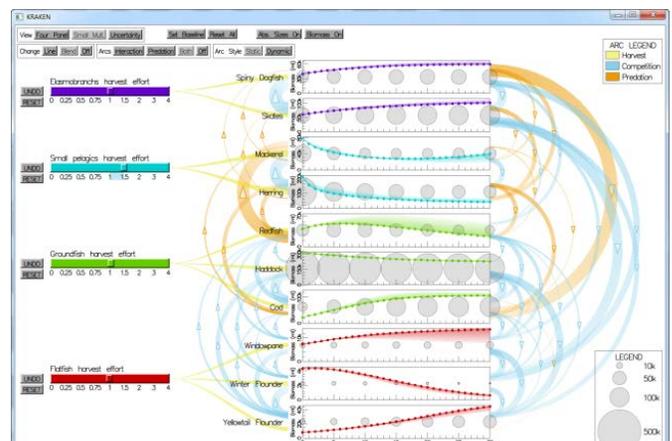
Webpage: <http://www.mentalmodeler.org/>

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The Kraken Visualization tool was developed at the NEFSC in collaboration with the University of New Hampshire's Data Visualization Research Lab. It allows the exploration of different exploitation levels on functional groups. The software package shows relative strengths of the interactions between species (competition and predation). As exploitation levels are changed, the time series of biomass for each species changes instantly. The program also provides visualization of uncertainty.

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Ves-V is a 3D model and data visualization tool developed in collaboration with PerspectX using the Unity 3D gaming engine. Model outputs of biomass or abundance are converted into 3D modeled fish in appropriate abundances, with the time series displayed for selected species. Multiple regions with different habitat types are supported. Data time series can also be visualized (survey indices have been successfully imported into the package). A split screen can show differences between two different scenarios.

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