Climate Change and Fisheries Research in the Chesapeake Bay

A compilation of fisheries-based climate research and tools compiled by the NOAA Chesapeake Bay Office

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This compilation of fisheries-based climate research and tools was compiled by the NOAA Chesapeake Bay Office. The contents of this document were compiled based on a review of both peer-reviewed and grey literature as related to the 2014 Chesapeake Bay Agreement Goal to "increase the resiliency of the Chesapeake Bay Watershed, including its living resources, habitats, public infrastructure and communities, to withstand adverse impacts from changing environmental and climate conditions." This document is not intended to be an exhaustive list; recognizing that there are additional research and tool development under way within the region. This document will be updated on an annual basis.

Please contact Zoë Johnson (zoe.johnson@noaa.gov) to suggest content for the next edition of this publication.

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Section IX: Tools

Chesapeake Atlantis Model

The Chesapeake Atlantis Model was developed to conduct a simulation that accounts for tradeoffs in performance across a range of management objectives by incorporating spatially explicit information about the biological, geochemical, and physical dynamics of the Chesapeake Bay. This model has strong applications for simulating the direct and indirect impacts of climate change on the Bay ecosystem.

North Atlantic Landscape Conservation Cooperative Fish Habitat Decision Support Tool

This tool was created with funding from the United States Fish and Wildlife Service to provide resource managers and the general public with access to the extensive spatial data and results produced from multiple fish habitat assessments.

National Fish Habitat Partnership Data System

The National Fish Habitat Partnership (NFHP) data system supports coordinated efforts of scientific assessment and data exchange among the partners and stakeholders of the aquatic habitat community. Under the guidance of the NFHP Science and Data Committee, the system provides data access and visualization tools for authoritative NFHP data products and contributed data from partners. The underlying data management tools and best practices are

the foundation enabling partners, researchers, and managers to access and use data now and in the future.

LandScope

LandScope Chesapeake fills a need identified for a publicly accessible, watershed-wide land conservation priority system. Its purpose is to support collaboration among many partners in land conservation efforts throughout the region.

Maryland GreenPrint

The GreenPrint map displays targeted ecological areas (TEAs)—lands and watersheds of high ecological value that have been identified as conservation priorities by the Maryland Department of Natural Resources. It also displays information about four of Maryland's most active state-operated land conservation programs: Program Open Space - Stateside, the Maryland Agricultural Land Preservation Foundation, the Maryland Environmental Trust, and the Rural Legacy Program. GreenPrint offers a way to improve how these programs work together and assists in steering Project Open Space acquisitions to the TEAs. The TEAs were developed in 2008 and updated in 2011. This map shows the 2011 version of the TEAs, so some older acquisitions may not appear in the TEAs, even though they were acquired using the TEAs available at that time. The maps also display other protected land data for reference.

Virginia Coastal Geospatial and Educational Mapping System

Virginia Coastal Geospatial and Educational Mapping System (GEMS) is a gateway to Virginia's coastal resource data and maps; coastal laws and policies; facts on coastal resource values; and direct links to collaborating agencies responsible for current data. It includes a growing inventory of water- and land-based natural resources, conservation planning tools, and planning examples that can be used to help to protect Virginia's coastal ecosystems. Additionally, this tool was developed to promote community involvement and environmental education.

Virginia Department of Conservation and Recreation Conservation Lands Database

The Virginia Department of Conservation and Recreation digitally maps the boundaries for agency owned and managed state parks and state natural area preserves, the Commonwealth's state-wide Conservation Lands Database, and has grown to include state, federal, private, and locally managed lands and conservation easements.

Virginia Department of Environmental Quality Virginia Environmental Geographic Information System (VEGIS) Database

This application displays cross-media geographical features including petroleum release sites, solid waste facilities, 303D impaired waters, water-quality monitoring stations and more.

Virginia Department of Game and Inland Fisheries Database

The Mapping and Geographic Information Systems (GIS) section provides cartographic services, GIS/GPS training and technical support, spatial modeling, analysis, and geographic data development. The GIS section is within the Bureau of Wildlife Resources. The section supports a wide range of Department of Game and Inland Fisheries core functions, contributing map products and services throughout the agency. In addition, the GIS staff maintains internet mapping services for the public and provide data to other governmental and nongovernmental organizations.

Habitat Prioritization Tool

The Chesapeake Bay Habitat Tool provides spatial context for multi-habitat conservation opportunities in the Bay. Features of the tool include: a web map with Bay-wide data for important nearshore habitats; new benthic data layers to better describe the habitat on the Bay floor; and an interactive tool to prioritize wetland protection and restoration. This map and prioritization tool is designed to be screening-level tools. Results are not intended to be a replacement for site-specific knowledge nor a prescription for on-the-ground action.

Chesapeake Bay Fish Passage Prioritization Tool

The Chesapeake Fish Passage Prioritization project was designed by The Nature Conservancy to help managers identify potential fish passage projects that are most likely to produce ecological benefits. Results include three consensus-based scenarios that depict dams in the 64,000 square mile Chesapeake Bay watershed where passage projects would provide the greatest potential benefit for diadromous fish, resident fish, and brook trout, respectively. Additionally, an interactive map and tool allow users to examine results in the context of other relevant data, develop custom scenarios, and to model the effects of conducting a passage project at a given dam.

Chesapeake Bay U.S. Geological Survey Data

The data page contains USGS information for key national data sets and also more specific information for the Chesapeake Bay watershed. Links to selected state information are also included.