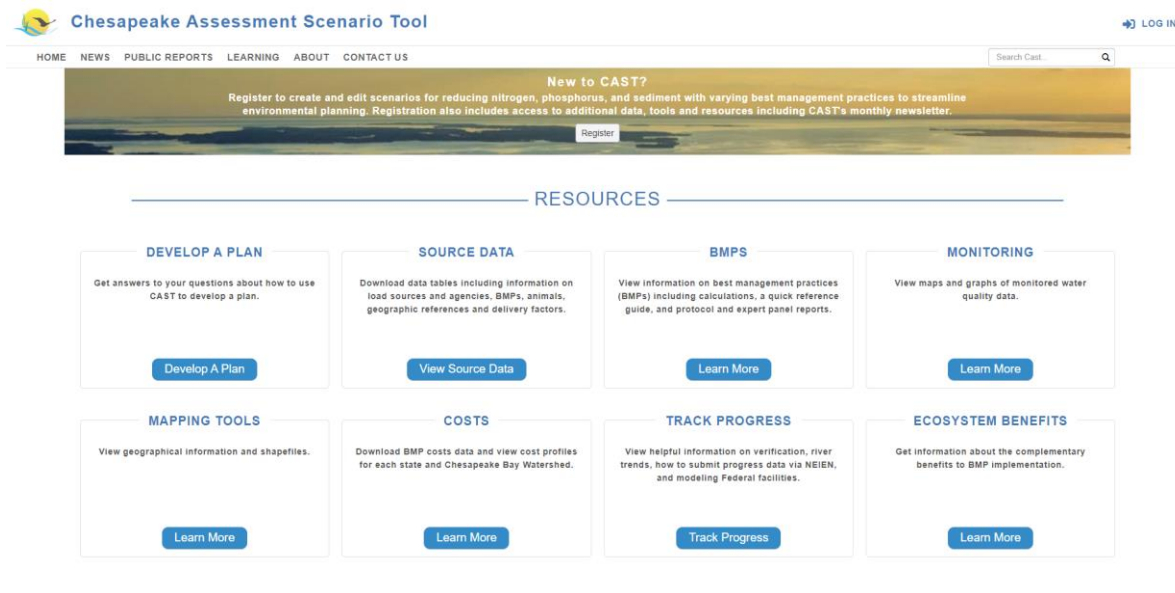


CAST UPDATES

Helen Golimowski

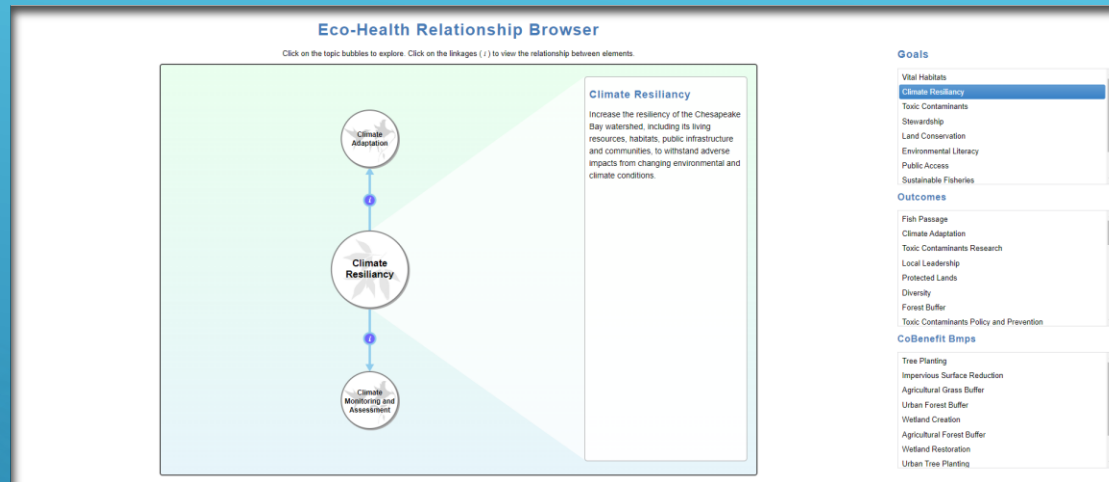
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February 27, 2023



CAST HOMEPAGE

- ▶ Monitoring Page
 - ▶ View maps and graphs of monitored water quality data
- ▶ Ecosystem Benefits
 - ▶ Get information about the complementary benefits to BMP implementation




► The Chesapeake Bay Program developed the Ecosystem Benefits Browser, an interactive tool that visualizes and summarizes the Goals, Outcomes, and Co-benefits associated with CAST BMPs.

► The link to the Browser can be found on the new Ecosystem Benefits page.

► <https://cast.chesapeakebay.net/ecohealth/index>

ECOSYSTEM BENEFITS BROWSER



Estuary Trends

Scientists evaluate short- and long-term trends in nutrients, dissolved oxygen (DO), Secchi depth (a measure of clarity), and chlorophyll-a based on water quality samples taken 1-2 times per month since the 1980s at more than 120 stations located throughout the mainstem of the Chesapeake Bay and the tidal portions of numerous tributaries on the western and eastern shores using procedures described by Murphy et al. (2019).

Changes in observed conditions (i.e., the conditions experienced by the estuary's living resources) are used to evaluate incremental progress towards improved habitats and attainment of water quality standards. Changes in flow-adjusted conditions account for year-to-year variations in streamflow or salinity and can be used for understanding the influence of watershed management actions on the estuary. The percent of stations improving, degrading, and showing no change using data collected through 2021 are summarized in the below table. Click [here](#) for further information about selected trends or click the "View Trends" button to plot customized maps of water quality concentrations and change.

| Water Quality Variable | Observed Conditions | | | Flow-adjusted Conditions | | |
|--|---------------------|-----------|-----------|--------------------------|-----------|-----------|
| | Improving | No Change | Degrading | Improving | No Change | Degrading |
| Short-term Trend (2012-13 to 2020-21) | | | | | | |
| Dissolved Oxygen (summer, bottom layer) | 9% | 89% | 22% | 5% | 66% | 29% |
| Secchi Depth (annual) | 20% | 65% | 15% | 25% | 62% | 13% |
| Chlorophyll-a (spring, surface layer) | 46% | 48% | 6% | 44% | 46% | 10% |
| Total Nitrogen (annual, surface layer) | 41% | 46% | 11% | 51% | 36% | 10% |
| Total Phosphorus (annual, surface layer) | 29% | 54% | 17% | 29% | 54% | 17% |
| Long-term Trend (Period of Record) | | | | | | |
| Dissolved Oxygen (Summer, bottom layer) | 24% | 46% | 30% | 18% | 50% | 33% |
| Secchi Depth (annual) | 19% | 26% | 56% | 20% | 27% | 53% |
| Chlorophyll-a (spring, surface layer) | 27% | 39% | 34% | 36% | 43% | 22% |
| Total Nitrogen (annual, surface layer) | 82% | 14% | 4% | 87% | 10% | 3% |
| Total Phosphorus (annual, surface layer) | 79% | 9% | 12% | 79% | 14% | 8% |

Murphy, R.R., E. Perry, J. Harcum, and J. Keisman. 2019. A generalized additive model approach to evaluating water quality, Chesapeake Bay case study. Environmental Modeling and Software 116(August 2019): 1-13.

► Updates to the Estuary Trends data is now live on CAST.

► The percent of stations improving, degrading, and showing no change using data collected through 2021 are summarized in the table on this page.

► Link updated to Tidal Water Quality Change: 2021 results.

► <https://cast.chesapeakebay.net/TrendsOverTime>

TIDAL WATER QUALITY TRENDS



- ▶ 2022 Progress
 - ▶ 2022 progress finalized and released on CAST around March 8
 - ▶ Progress may be delayed due to unresolved issues surrounding the verification assessments
- ▶ BMP Targeting Maps
 - ▶ Land-River segment scale
 - ▶ Nitrogen, phosphorus, and sediment targeting maps
 - ▶ Agriculture and urban sectors
 - ▶ Incorporating 2022 progress loads and delivery factors

FUTURE UPDATES

- ▶ Tidal Water Quality Trends
 - ▶ February's CAST webinar highlighted the Tidal Water Quality Trends information. We were joined by guest speakers Dr. Rebecca Murphy and Erik Leppo, to learn more about what these monitoring data-based trends mean for the overall health of the Bay. Rebecca walked through the available information and how it is analyzed and interpreted. Then, Erik demonstrated how to use the Bay Trends Mapping tool to visually and spatially represent the short- and long-term water quality trends over time.
- ▶ <https://cast.chesapeakebay.net/Learning/FreeTrainingVideos>

PAST CAST WEBINAR

- ▶ Conowingo and Climate Change WIPs
 - ▶ We will go over how to quantify the estimated loads differences between the Conowingo WIP and the Baseline Conowingo scenarios. We will also compare these results with the WIP III and Progress loads. Then, we will cover the WIPs that include climate change.
- ▶ Thursday, March 16th at noon EST
- ▶ Information will be included in the CAST Newsletter and posted to the Free Training Videos page

FUTURE CAST WEBINAR