Chesapeake Bay Program | Indicator Analysis and Methods Document
[Restoring Wetlands on Agricultural Lands] | Updated October 2018

Indicator Title: Restoring Wetlands on Agricultural Lands

Relevant Outcome(s): Wetlands

Relevant Goal(s): Vital Habitat

Location within Framework (i.e., Influencing Factor, Output or Performance): Performance

A. Data Set and Source

(1) Describe the data set. What parameters are measured? What parameters are obtained by calculation? For what purpose(s) are the data used? Acres of wetlands established, rehabilitated, or re-established on agricultural lands in the Bay watershed are measured. No calculations are performed on the measured acreage. Data is used in the CBP watershed model scenario input deck.

(2) List the source(s) of the data set, the custodian of the source data, and the relevant contact at the Chesapeake Bay Program.
- Source: Jeff Sweeney, Chesapeake Bay Program, EPA provides data submitted by jurisdictions.
- Custodian: Jennifer Greiner, Habitat GIT Coordinator, FWS
- Chesapeake Bay Program Contact (name, email address, phone number): Margot Cumming (Habitat GIT Staff, Chesapeake Research Consortium, cumming.margot@epa.gov, 410-267-9830)

(3) Please provide a link to the location of the data set. Are metadata, data-dictionaries and embedded definitions included?
http://ches.communitymodeling.org/models/CBPhase5/index.php

B. Temporal Considerations

(4) Data collection date(s): Data is submitted by jurisdictions into the CBP Watershed Model Scenario Input Deck (data beginning 2009 are input to scenarios in phase 5.3.2 WSM) in early spring of each year for the previous year (i.e., in 2018 the Program received data for 2017). Data of implementation is collected for the period July 1 – June 30. For example, 2017 covers July 1, 2016 – June 30, 2017.

(5) Planned update frequency (e.g., annual, biannual, etc.):
- Source Data: Annual
- Indicator: Annual

(6) Date (month and year) next data set is expected to be available for reporting: May 2019

C. Spatial Considerations

(7) What is the ideal level of spatial aggregation (e.g., watershed-wide, river basin, state, county, hydrologic unit code)? HUC 10 watershed scale data

(8) Is there geographic (GIS) data associated with this data set? If so, indicate its format (e.g., point, line polygon). No baywide GIS dataset exists. States may have their own GIS capabilities.

(9) Are there geographic areas that are missing data? If so, list the areas. N/A

(10) Please submit any appropriate examples of how this information has been mapped or otherwise portrayed geographically in the past. N/A

D. Communicating the Data

(11) What is the goal, target, threshold or expected outcome for this indicator? How was it established? In 2014, the Chesapeake Bay Program adopted an Outcome in the Chesapeake Bay Watershed Agreement to create or reestablish 85,000 acres of tidal and non-tidal wetlands by 2025. This goal is based on the wetland restoration targets outlined in the Watershed Implementation Plans (WIPs) that will help watershed jurisdictions meet the goals of the Bay's "pollution diet," or Total Maximum Daily Load (TMDL). Under this target, 83,000 acres of tidal and non-tidal wetlands should be created or reestablished on agricultural lands. This 83,000-acre target under the 85,000 acres stated in the Outcome of the Agreement was established in the Wetlands Management Strategy. See http://www.chesapeakebay.net/documents/22037/2a_wetlands_6-24-15_ff_formatted.pdf for more information.

(12) What is the current status in relation to the goal, target, threshold or expected outcome? Between 2010 and 2018, 10.97% of the goal has been achieved.

(13) Has a new goal, target, threshold or expected outcome been established since the last reporting period? Why? No.

(14)   Has the methodology of data collection or analysis changed since the last reporting period? How? Why? All data reported here reflect only established, rehabilitated, or re-established wetlands on agricultural lands. These wetlands are considered functional and of benefit since they provide increased wetland habitat, among other services. Although partners report information for wetlands establishment

or re-establishment in urban areas, these data are not included in this indicator since some (such as urban stormwater ponds) are established primarily to capture stormwater runoff and are not considered to be valuable habitat.

Beginning in 2010, acreage from the Chesapeake Bay Watershed Model progress scenario input deck is used in the indicator. Input deck data are developed using state submissions (reported via the National Environmental Information Exchange Network - NEIEN), and the CBP Scenario Builder tool. Any negative values reported could indicate the state corrected incorrect data from previous years. Data custodians attempted to adjust the data by counting the negative values against the year with incorrect data, where appropriate documentation existed. Specifically, several negative values reported by Pennsylvania were used to correct the wetland acres for 2009 in the historical data portion of this spreadsheet (this indicator begins tracking at 2010).

In July of 2016, a state review of the data resulted in some corrections to information for this wetlands indicator. These corrections are reflected in this indicator and are reflected in the 2016 progress run and in the historical data clean-up that states will conduct for the next version of the Watershed Model. Specifically, Pennsylvania corrected wetland acreage from 2011-2015, and West Virginia corrected wetland acreage for 2015.

In 2018, the Partnership will be transitioning to using Phase 6 of the Chesapeake Bay Watershed Model. This transition will impact the data record for several indicators, including this one, and will provide more accurate data. See the following for more information:
https://www.chesapeakebay.net/news/blog/updated_tools_help_address_pollution_and_plan_for_the_future.

(15) What is the long-term data trend (since the start of data collection)? Acres of restored wetland are slowly on the rise.

(16) What change(s) does the most recent data show compared to the last reporting period? To what do you attribute the change? Is this actual cause or educated speculation? Our data shows that cumulative acres decreased by 1,773 for a total of 9,103. As previously mentioned, this data reflects the accuracy of the data collected and reported from the states for inclusion in the input deck for the Watershed Model.

(17) What is the key story told by this indicator?
High quality, abundant wetlands are vital to the restoration of a healthy Chesapeake Bay. Wetlands provide:
- Water Quality and Flood Control Benefits
  - Wetlands catch runoff, take up excess nutrients, filter out sediments and contaminants, and release the water slowly into the water body.
  - By holding onto excess rain water and dampening storm surges wetlands provide important flood control benefits and protect against erosion.
- Habitat/Wildlife Benefits

- o Many migratory ducks, geese, and swans winter in the Chesapeake Bay watershed and rely on wetlands for food and habitat.
    - o Wetlands provide year-round habitat to other key species such as beavers, osprey, and mussels.
- Added Scenic and Recreational Value: Over 46 million Americans enjoy recreational fishing, 5 million enjoy hunting waterfowl.

E. Adaptive Management

(18) What factors influence progress toward the goal, target, threshold or expected outcome? Funding, landowner willingness/marketing and outreach, inaccurate and incomplete reporting, understanding of importance of restoration among decision-makers, technical understanding among restoration practitioners, and climate change. For more information about factors influencing progress, read the Management Strategy at http://www.chesapeakebay.net/documents/22037/2a_wetlands_6-24-15_ff_formatted.pdf.

(19) What are the current gaps in existing management efforts?

- Tracking Wetland Restoration and Enhancement: There is a clear need to streamline wetland restoration and enhancement tracking and to improve the accuracy of the data reported.
- Funding: Dedicated funding for restoration and enhancement implementation is not sufficient to meet the Wetland Outcome goals.
- Staffing: There is a need for more coordinated outreach and technical personnel to engage landowners and to increase staff capacity to develop design plans for restoration projects and perform project management.
- Data: Some states lack a comprehensive map of wetland resources in their state.
- Target/Prioritization Tools to identify priority sites or projects

(20) What are the current overlaps in existing management efforts? N/A

(21) According to the management strategy written for the outcome associated with this indicator, how will we (a) assess our performance in making progress toward the goal, target, threshold or expected outcome, and (b) ensure the adaptive management of our work?

(a) To track progress toward the goal, representatives from each watershed state compile all state, federal, and nongovernmental wetland restoration and enhancement accomplishments that take place in their states. Data are submitted to the CBP's watershed model scenario input deck through state submissions reported via NEIEN.

The Wetland Workgroup will work to streamline wetland restoration tracking and improve overall reporting, as well as the accuracy of reported practices and acreages. (b) The Wetland Workgroup will meet in the fall of each year to share progress and discuss any new challenges or opportunities. The workgroup will use this time to review performance assessment information and adjust management strategies if appropriate. As new issues are identified, the workgroup will collectively develop strategies to overcome barriers to restoration and identify future science needs.

F. Analysis and Interpretation
Please provide appropriate references and location(s) of documentation if hard to find.

(22) What method is used to transform raw data into the information presented in this indicator? Please cite methods and/or modeling programs. Acreages of wetland BMPs implemented (agricultural wetland restoration) in each state are added to get total acreage of wetlands restored watershed-wide.

(23) Is the method used to transform raw data into the information presented in this indicator accepted as scientifically sound? If not, what are its limitations? Yes for acreage. However, the ability of restored acreage to replace lost functions is not well documented through monitoring.

(24) How well does the indicator represent the environmental condition being assessed? These data only include wetlands that were restored for the purposes of improving water quality. Additional projects that provide benefits to living resources but do not provide water quality improvements are not included. Projects which enhance the function of existing wetlands are also not included.

(25) Are there established reference points, thresholds, ranges or values for this indicator that unambiguously reflect the desired state of the environment? Yes, the 83,000 goal of wetland acres restored on agricultural lands.

(26) How far can the data be extrapolated? Have appropriate statistical methods been used to generalize or portray data beyond the time or spatial locations where measurements were made (e.g., statistical survey inference, no generalization is possible)? Data extrapolation unnecessary as data covers entire watershed.

G. Quality
Please provide appropriate references a location(s) of documentation if hard to find.

(27)   Were the data collected and processed according to a U.S. Environmental Protection Agency-approved Quality Assurance Project Plan? If so, please provide a link to the QAPP and indicate when the plan was last reviewed and approved. **If not, please complete questions 29-31.** Yes. Procedures at the Chesapeake Bay Program Office for

acquiring and managing data are documented in the following EPA-approved Quality Assurance Project Plan: "Standard Operating Procedures for Managing Nonpoint Source Data – Chesapeake Bay Program" on file for the EPA grant (contact: Quality Assurance Coordinator, Durga Ghosh, dghosh@usgs.gov).

(28) *If applicable:* Are the sampling, analytical and data processing procedures accepted as scientifically and technically valid? N/A

(29) *If applicable:* What documentation describes the sampling and analytical procedures used? N/A

(30) *If applicable:* To what extent are procedures for quality assurance and quality control of the data documented and accessible? N/A

(31)   Are descriptions of the study design clear, complete and sufficient to enable the study to be reproduced? Yes. Please see http://www.chesapeakebay.net/documents/SB_Documentation_V24_01_04_2013.pdf for Scenario Builder documentation (January, 2013) as well as http://ches.communitymodeling.org/models/CBPhase5/index.php for documentation of other elements of the Phase 5 watershed modeling tools.
Study/survey design procedures for managing nonpoint source data can found at: Quality Assurance Project Plan (QAPP) "Standard Operating Procedures for Managing Nonpoint Source Data – Chesapeake Bay Program" on file for the EPA grant (contact: Quality Assurance Coordinator, Durga Ghosh, dghosh@usgs.gov).

(32) Were the sampling, analytical and data processing procedures performed consistently throughout the data record? Yes, with one exception: the 2016 indicator update included Pennsylvania's reported acres (2011-2015) that are not reflected in the 2015 Model Progress Run input deck. Pennsylvania has committed to making sure these accurate acreage numbers are included in the 2016 Progress Run.
Moving forward, the workgroup will be relying on the Phase 6 Watershed model and NEIEN procedures within states to ensure accuracy of data. Corrections will be made through the state contacts and accounted for in the Phase 6 model.

(33) If data sets from two or more sources have been merged, are the sampling designs, methods and results comparable? If not, what are the limitations? Yes.

(34) Are levels of uncertainty available for the indicator and/or the underlying data set? If so, do the uncertainty and variability impact the conclusions drawn from the data or the utility of the indicator? No.

(35) For chemical data reporting: How are data below the MDL reported (i.e., reported as 0, censored, or as < MDL)? If parameter substitutions are made (e.g., using orthophosphate instead of total phosphorus), how are data normalized? How does this impact the indicator? N/A

(36) Are there noteworthy limitations or gaps in the data record?
These data include only wetlands that were restored for the purposes of improving water quality. Additional projects that provide benefits to living resources but do not provide water quality improvements are not included. Projects which enhance the function of existing wetlands are also not included.

H. Additional Information (*Optional)*

(37) Please provide any further information you believe is necessary to aid in communication and prevent any potential misrepresentation of this indicator. N/A