Forest Management and Water Yield: Tool Development and Synthesis of Outcomes for Embedded Wetlands

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Conservation Effects Assessment Project

USDA's Conservation Effects Assessment Project, CEAP, is a multi-agency effort led by the Natural Resources Conservation Service that quantifies conservation effects on the environment and builds the science base for voluntary conservation efforts nationwide. CEAP findings are used to guide conservation program development and support conservationists, producers, and partners in choosing effective conservation actions and making informed management decisions backed by science and data. Assessments are carried out at national, regional, and watershed scales for conservation efforts related to croplands, grazing lands, wetlands, and wildlife.

CEAP Wetland Assessments

Wetlands occur where water covers the soil or is present near the soil surface either seasonally or year-round. They provide a suite of ecosystem services, including fish and wildlife habitat, nutrient and sediment capture and storage, water storage to reduce flooding, carbon storage with resulting benefits for climate change mitigation, and microclimate regulation. The scope of these services may be significantly affected by surrounding land cover and associated management decisions.

CEAP wetland assessments quantify the effects of voluntary conservation efforts for wetlands located in agricultural and forested settings at both regional and national scales. The May 2023 Conservation Outcomes Webinar highlights recent findings on the influence of upland forest management on wetland and landscape-scale hydrologic functions and associated ecosystem services. Findings may be used to inform management practices that increase water yield, improve wetland functions including carbon sequestration, and support targeted forest and wetland restoration efforts.

Learn more about CEAP wetlands assessments at nrcs.usda.gov/ceap/wetlands.

May 2023 Webinar References

The below journal articles are referenced during the May 2023 Conservation Outcomes Webinar.

Acharya, S., Kaplan, D. A., McLaughlin, D. L., & Cohen, M. J. (2022). In-situ quantification and prediction of water yield from southern US pine forests. Water Resources Research, 58, e2021WR031020. https://doi.org/10.1029/2021WR031020

McLaughlin, D. L., D. A. Kaplan, and M.J. Cohen (2014). A significant nexus: Geographically isolated wetlands influence landscape hydrology. Water Resources Research, 50, 7153–7166. https://doi.org/10.1002/2013WR015002

J. M. Temminket al. (2022). Recovering wetland biogeomorphic feedbacks to restore the world's biotic carbon hotspots. Science, 376, eabn1479. https://doi.org/10.1126/science.abn1479

Li, J., Jiang, M., Pei, J., Fang, C., Li, B. & Nie, M. (2023) Convergence of carbon sink magnitude and water table depth in global wetlands. Ecology Letters, 26, 797–804. https://doi.org/10.1111/ele.14199

The Conservation Outcomes Webinar Series provides key findings, data, and tools to support producers and partners in pursuing voluntary conservation efforts across the nation.

You may access the slides presented by Dr. Lee and Dr. Glodzik on the Conservation Outcomes Webinar Series webpage.

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