

# Wetland Ecosystem Services from USDA Conservation Practices

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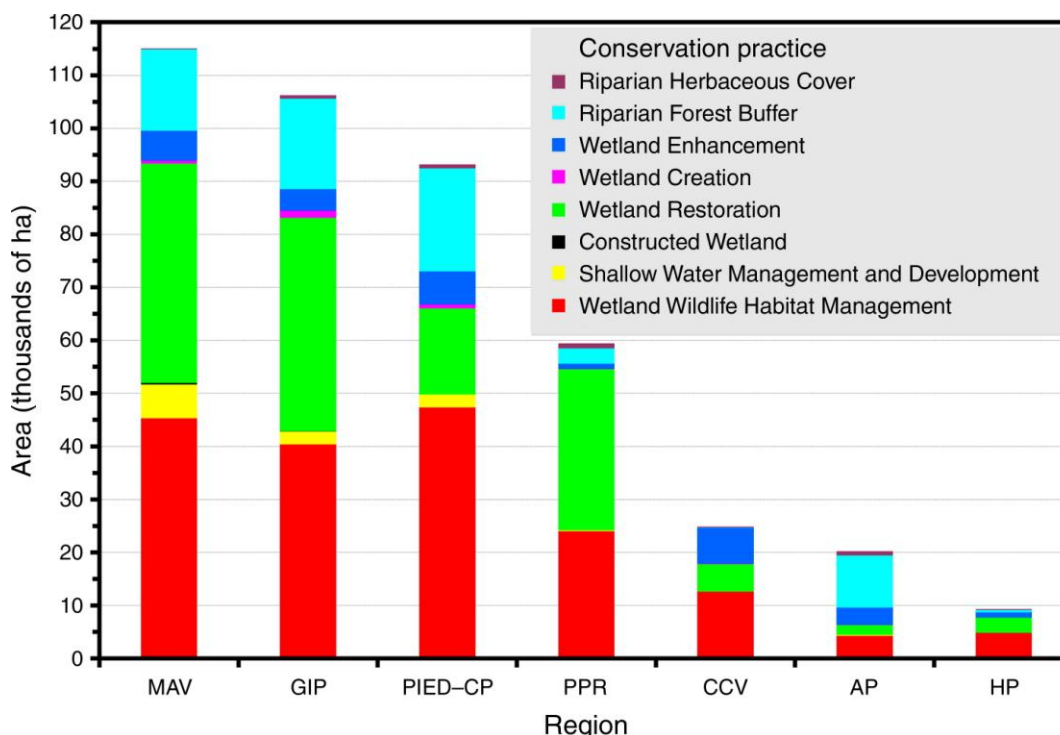
The conversion of wetlands in the United States for agricultural development is well-documented. Approximately 221 million acres of wetlands existed in the lower 48 states before European settlement and about 103 million acres remained by the mid-1980s. The loss was much higher in some states with six Mid-West states losing more than 85% of their wetlands, primarily to agricultural drainage. (Dahl, 2006). A map of artificially drained lands shows a pattern which is consistent with some of the most productive agricultural land.

The history of agricultural wetland management in the United States is essentially drainage and filling (leveling) from the 1700s to 1985. Much of this loss was recent with loss of large amounts of the southern bottomland hardwoods, particularly Mississippi River Alluvial Valley (bottomland hardwoods) to clear-cutting, draining and filling in the 1960s and 1970s. (Turner et al., 1980). From 1960 to 1975, the average net loss of southern BLH was 175,000 ha over 2.6 Million ha in just 15 years. The reason for this massive and relatively recent land use conversion was economic gain by increasing agricultural acreage, especially for soybeans (Turner et al., 1980). In 1985, the U.S. Congress acted to restrict draining and filling of wetlands for agricultural uses through the "Swamp buster" provisions of the 1985 Farm Bill legislation. This watershed event stemmed the tide of wetland loss and later policies of the U.S. government were to have "non net loss" of wetlands. Although some wetland loss still occurs, a net gain in wetlands occurred for the first time for the time period 1998-2004 with an annual estimated net gain of 12,900 ha (Dahl, 2006).

Much of this gain in wetlands can be attributed to USDA programs designed to increase wetland area in agricultural landscapes to achieve multiple objectives. As of 2005, wetlands and riparian zones under USDA conservation programs totaled about 1.66 M ha. These lands were enrolled in two main programs – the Conservation Reserve Program (CRP) and the Wetland Reserve Program (WRP). The CRP lands are generally on 10-20 year contracts so can be converted back to agriculture. The WRP lands are generally permanent easements so it is much less likely that the land would be re-converted to agriculture. In many states, Conservation Reserve Enhancement Programs (CREP), a unique federal/state partnership set up in the 1996 Farm bill legislation focuses on wetlands and riparian zones. All of these programs have tended to be concentrated in the areas of the most wetland loss including the Mississippi Alluvial Valley and the Glaciated Interior Plains (Figure 1).

The Conservation Effects Assessment Project (CEAP) is an effort by USDA agencies (Natural Resources Conservation Service and Farm Service Agency) to determine the environmental benefits of conservation programs applied to U.S. crop land and range land. Wetlands-CEAP is part of the overall effort. As part of Wetlands-CEAP, the USDA-NRCS assembled a team of wetland scientists to produce a review of the documented ecosystem services from these wetland conservation practices and to develop a conceptual model of how these ecosystem

service benefits could be quantified into the future. This Wetland-CEAP Synthesis was published as a supplement to the journal *Ecological Applications* in April, 2011. As part of the Wetlands-CEAP Synthesis, USDA-NRCS developed data on the extent of wetland practices installed in regions of the U.S. The practices by region are shown in Figure 1. Descriptions of all the practices are in the NRCS electronic Field Office Technical Guide (<http://www.nrcs.usda.gov/technical/efotg/>) and further details are found in Brinson and Eckles (2011).



**Figure 1.** Conservation practices applied by region. MAV=Mississippi Alluvial Valley; GIP = Glaciated Interior Plains; PIED-CP = Piedmont & Coastal Plain; PPR = Prairie Pothole Region; CCV = California Central Valley; AP = Appalachia; HP = High Plains (Brinson and Eckles, 2011).

The presentation based on this extended abstract will provide an overview of the findings of the Wetlands-CEAP Synthesis with a focus on the southeastern U.S. (DeSteven & Lowrance, 2011). The presentation will include results from simulation modeling to estimate the water quality impacts of CREP riparian forest buffer restoration in the Coastal Plain of North Carolina.

## References

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