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Availability of an ArcGIS Wetland Restoration Spatial Decision Support System (SDSS) Tool

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PURPOSE: This technical note announces the availability of a tool developed by the U.S. Army Engineer Research and Development Center (ERDC). The tool and accompanying user's guide can be used to create an ArcGIS-based wetland restoration spatial decision support system (SDSS) tool. An SDSS is useful for evaluating and comparing multiple areas across a large study area, and works by scaling and combining multiple, spatially explicit data layers within a geographic information system (GIS). The purpose of this tool and user's guide is to help those involved in wetland restoration planning create their own area-specific, GIS-based wetland restoration SDSS, which can be used to identify and evaluate potential wetland restoration sites at a landscape or watershed scale. The tool and user's guide are available for download at <http://el.ercd.usace.army.mil/emrrp/gis.html>.

BACKGROUND: The tool was designed and is applied using ESRI's ArcGIS Desktop® ModelBuilder application. Use of the tool requires at minimum the ArcGIS/ArcView Desktop v.9.x software and Spatial Analyst extension, although using the core area ratio model requires the higher end ArcInfo license. With the user's guide, those with only minimal GIS experience should be able to utilize the tool. The background for the creation and application of this tool and the ecological or functional basis of the variables used in it is documented in a technical note by Lin et al. (2006). For a real-world example of how an SDSS can be used, see Lin and Kleiss (2007). This report describes how an SDSS (created using a preliminary version of this tool) was applied for the selection and evaluation of potential wetland restoration areas along the Mississippi Gulf Coast following Hurricane Katrina.

DESCRIPTION OF THE TOOL: The SDSS tool consists of a toolbox containing several individual ModelBuilder models. Several of these models create raster layers, which can be used in an SDSS. The raster layers that can be created using these models are:

- Distance to seed source
- Distance to protected areas
- Distance to roads
- Wetness index
- Depressions
- Block size
- Core area ratio (requires an ArcInfo level license)

The tool also consists of an SDSS creation template, which is designed to let users create their own SDSS using a number of suggested variables, or by adding additional variables that might be relevant to their particular study area. The template tool can be used to create maps depicting restoration rating scores for multiple potential restoration sites, as shown in Figure 1.

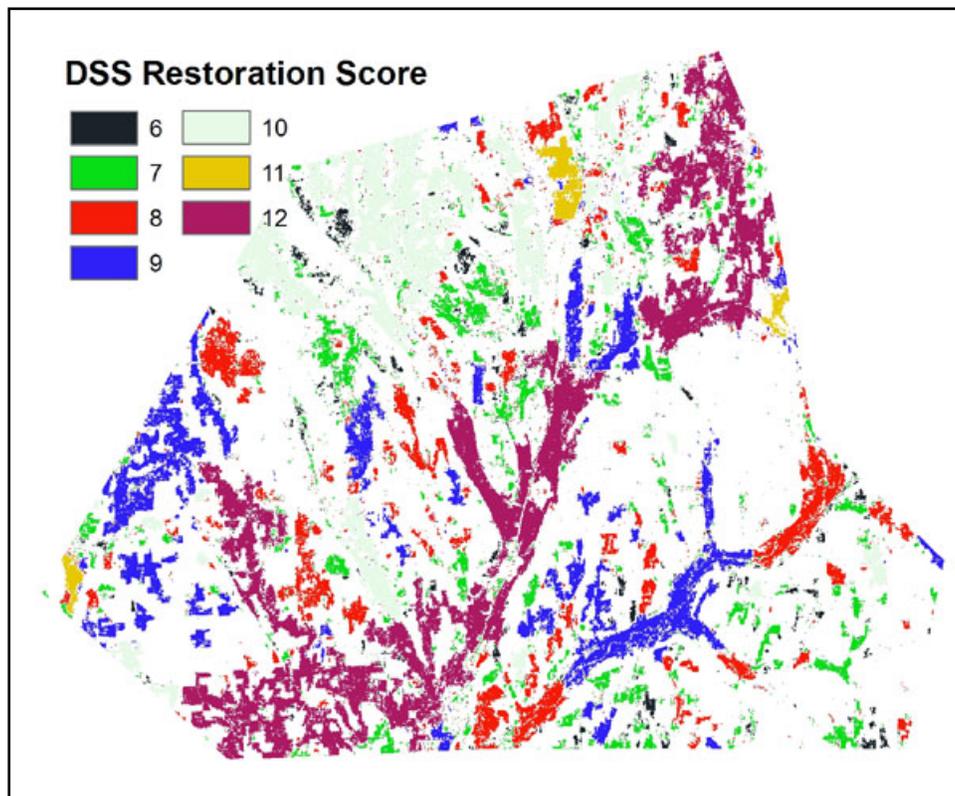


Figure 1. Example of the type of map output that can be created using the SDSS tool. The higher the restoration score, the more likely an area can be restored to a functioning wetland.

This is version 1.0 of the tool. Any comments or suggestions on the tool are welcomed and should be sent to Mr. Lin.

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REFERENCES

- Lin, J. P., S. G. Bourne, and B. A. Kleiss. 2006. *Creating a wetland restoration decision support system using GIS*. ERDC-TN-EMRRP-EM-05. Vicksburg, MS: U.S. Army Engineer Research and Development Center. <http://el.erdcl.usace.army.mil/elpubs/pdf/em05.pdf>
- Lin, J. P., and B. A. Kleiss. 2007. *A wetland restoration spatial decision support system for the Mississippi Gulf Coast*. ERDC-EL-TR-07-12. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

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