



Inklings

Bulletin of Interpretive Ideas

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Current/Recent Project List

- Interpretive Panel Design, LaPorte County Parks, LaPorte, IN
- Arboretum Brochure Design, Carmel-Clay Parks and Recreation, Carmel, IN
- Interpretive Brochure Design, Michigan Natural Features Inventory, Lansing, MI
- Interpretive Panel Design, Carmel-Clay Parks and Recreation, Carmel, IN
- Interpretive Panel Design, Pattison Park, Clermont County Park District, Batavia, OH

GIS 101: A Tool for Management

A Geographic Information System (GIS) is a system of hardware and software that can be used to analyze and display spatial information. Spatial information is any information with a geographic attribute. This could be a property boundary, land cover, soil types, roads, rivers and streams, street addresses, and population information.

Closely linked to GIS is the Global Positioning System (GPS). This is a system of satellites and receivers that one can use to locate their position anywhere on earth. Depending on the quality of the receiver and some environmental variables, positions can be fairly precise. Some GPS receivers, including inexpensive recreation grade receivers, can input information into a GIS system.

The first impression many people have is that GIS is simply a way to make nice maps. In fact, GIS gives one the capability to combine layers of spatial data to answer questions. Possible questions might include:

- where should I put in a wetland restoration?
- how many miles of trail do I have, and what kind of surface is on each one?
- what part of my park has the best soils for a septic system?
- what part of my park was originally prairie or savanna?

Let's look at one example of how to apply GIS to a property management decision. A donor wants to fund a wetland restoration. This particular donor knows

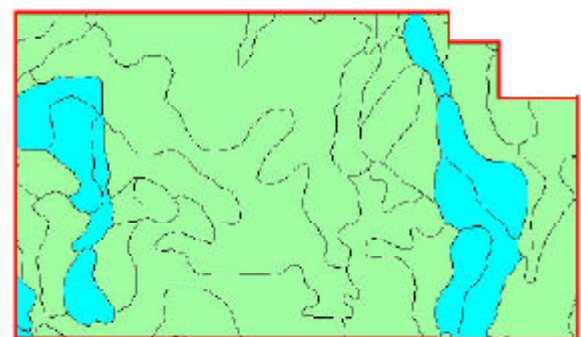
you can't simply build a berm around a low spot to have a successful wetland restoration. So before we fire up the Bobcats, how can we be assured that we will be getting the most bang for the buck? We use our GIS and some existing data to find the best location for a wetland restoration.

We need three things for a functioning wetland; water during the growing season, wetland plants, and hydric soils.

Wetland plants can be planted once we figure out the best place to put them. If we pick the right spot there may even be wetland plants in the seed bank, just waiting to sprout. We can get water by moving some earth or blocking drain tiles. That leaves us with finding hydric soils.

For this we will turn to the SSURGO soil data available from the Natural Resources Conservation Service (NRCS). This is a digital version of the County Soils Manual. By overlaying the boundaries of our parks and the soils data we can see which parks contain hydric soils (Figure 1).

Hydric and Non-hydric Soils



□ Park boundary ■ Hydric soils ■ Non-hydric soils

Figure 1

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The GIS software can make this selection without having to manually look at each park boundary. In this example, one of our parks has two large areas and one small area of hydric soils. If needed, the GIS software can easily calculate the area of each soil polygon. The largest area is 43.31 acres, the other large area is 31.72 acres and the small area is 2.57 acres.

With two potential areas, how do we pick the most suitable one? We can look at existing wetlands to see if there is something we can build on. For this we turn to the National Wetland Inventory (NWI) data set available from the U.S. Fish and Wildlife Service. When we overlay the soil data and the NWI data we see that one area has some existing wetlands (Figure 2). We could use our wetland restoration money to connect these two areas, increasing the effectiveness of our money. We can also overlay our

Hydric Soils and NWI Wetlands

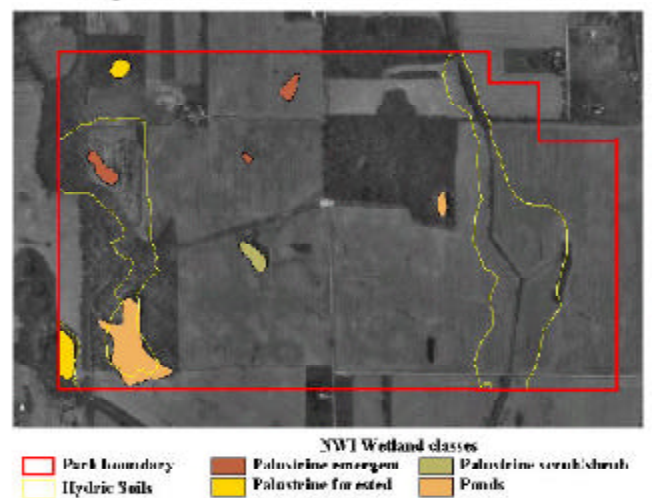


Figure 3

Hydric Soils and NWI Wetlands

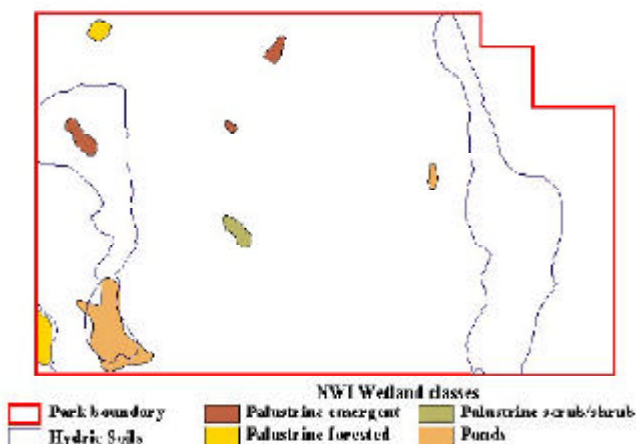


Figure 2

information on a georeferenced aerial photo or USGS topographic map to make a map to aid construction (Figure 3).

This was a fairly simple exercise to demonstrate GIS capabilities. The power of GIS is the ability to combine different data sets to answer management questions. There is an almost endless number of possibilities for its use. More uses will come out in future mailings.

If you would like to discuss a GIS project, please contact Interpretive Ideas.