



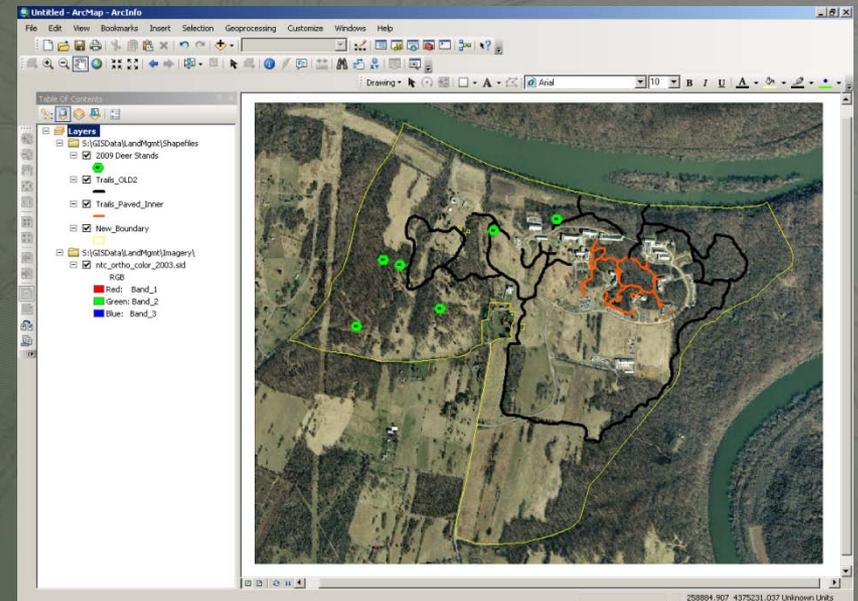
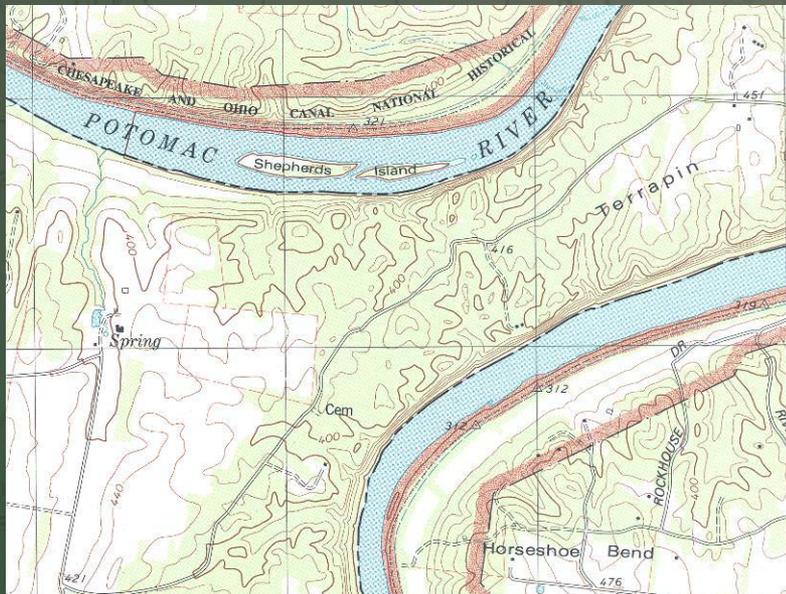
What is a Geographic Information System?



Power point developed by Mark Richardson (Rev December 2011)



A **GIS** is
any manual or computer based system
designed to store and manipulate spatially
referenced data.





A GIS can be VERY FRUSTRATING!



So have patience... We're here to help!!!

Please ask lots of questions!



There are two general categories of spatial data which can be manipulated and or displayed in a GIS...

Vector Data & Raster Data



Vector Data vs Raster Data

Points

Lines

Polygons



Cells

or

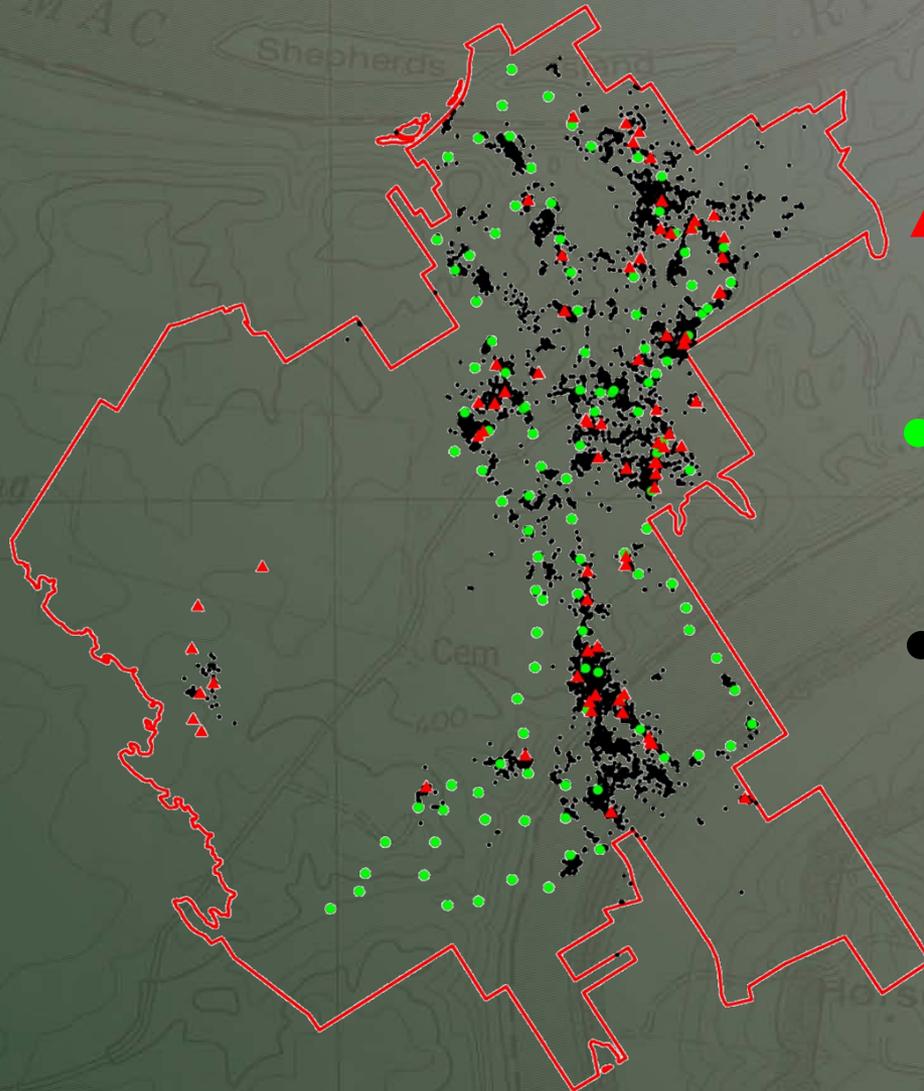
Pixels



Moosehorn National Wildlife Refuge



Vector Data - Points

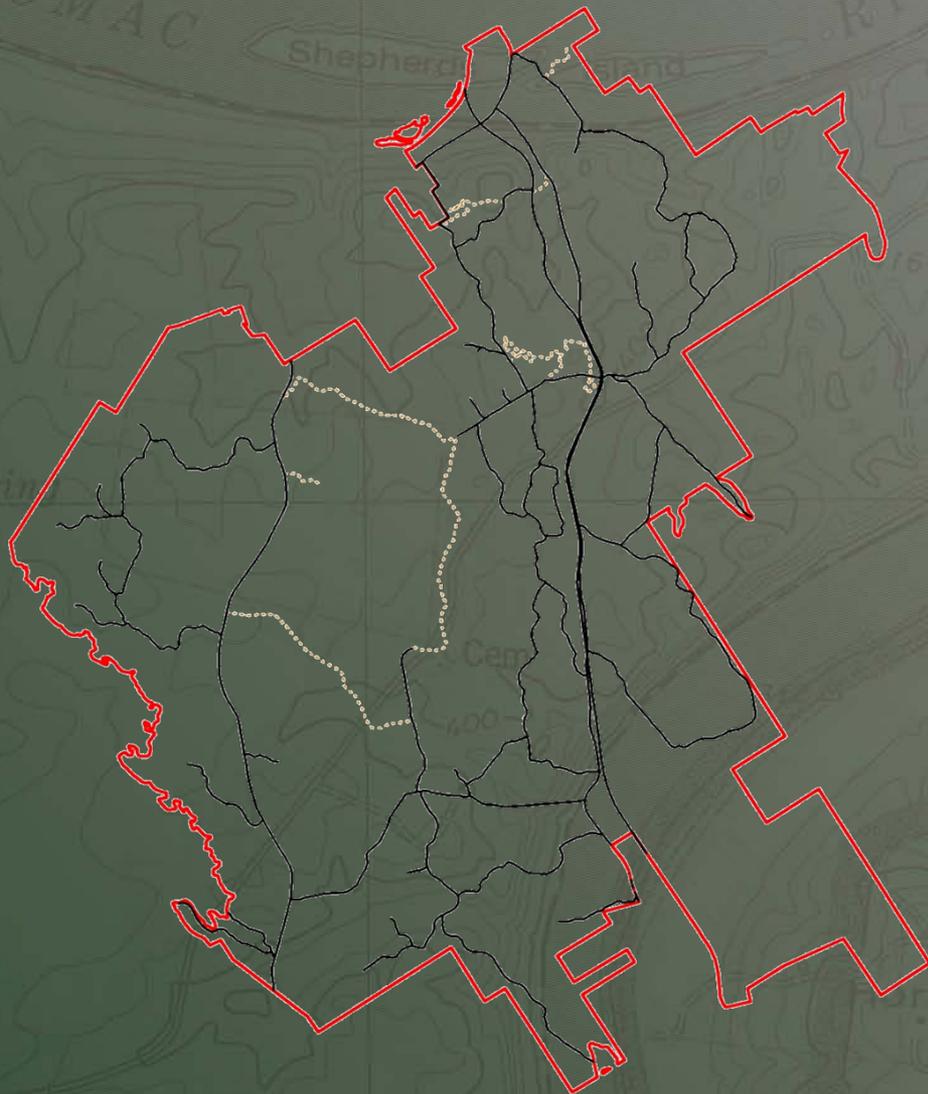


Examples

- ▲ Woodcock Nests
- Survey Site Locations
- Singing Male Woodcock



Vector Data - Lines



Examples

Roads

Trails



Vector Data - Polygons



Example

Soils

Approved Boundary



Vector Data, Land Cover Data of South FL

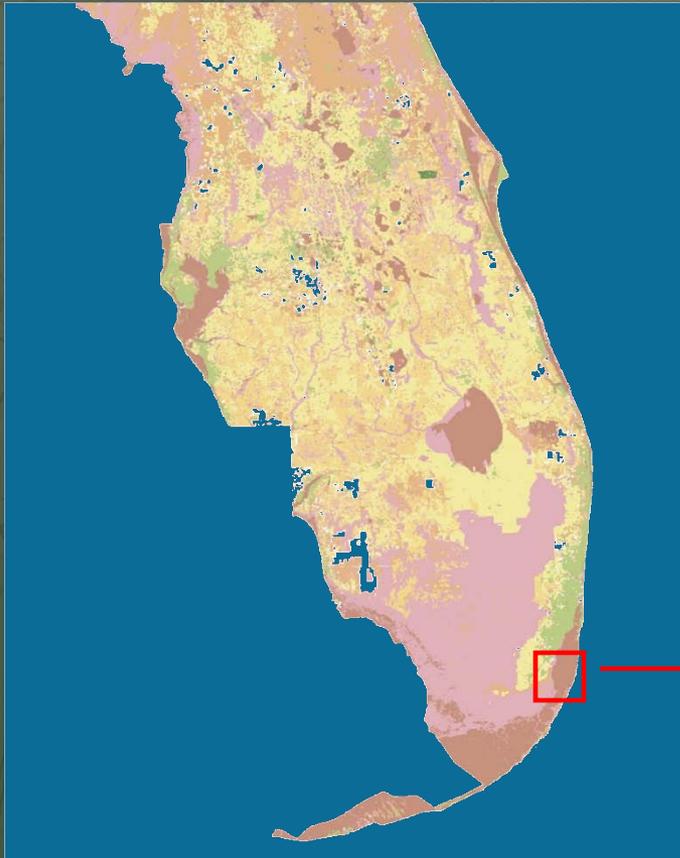
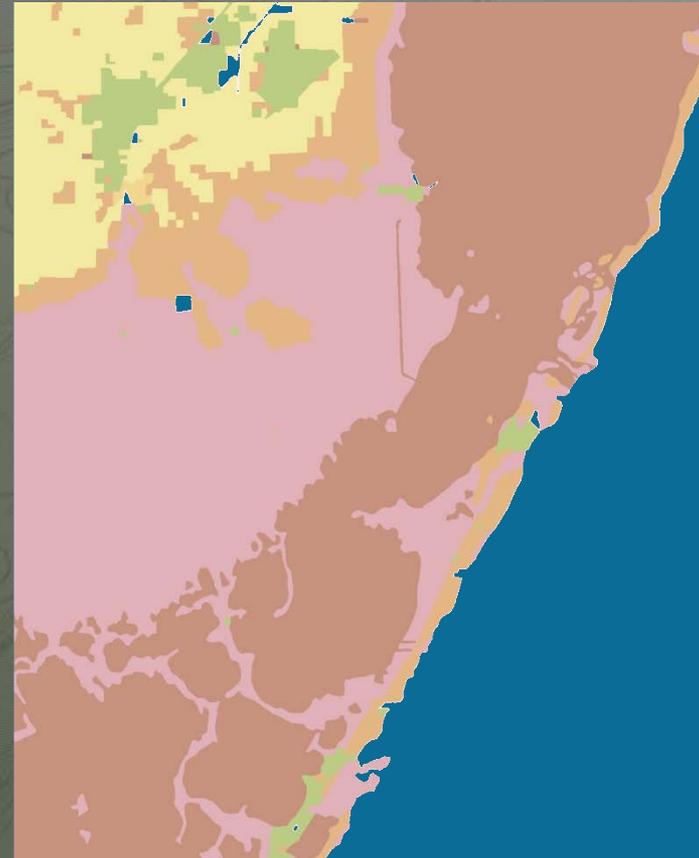


Image from www.fgdl.org

Overview



Zoomed-In



Raster Data – Cells or Pixels

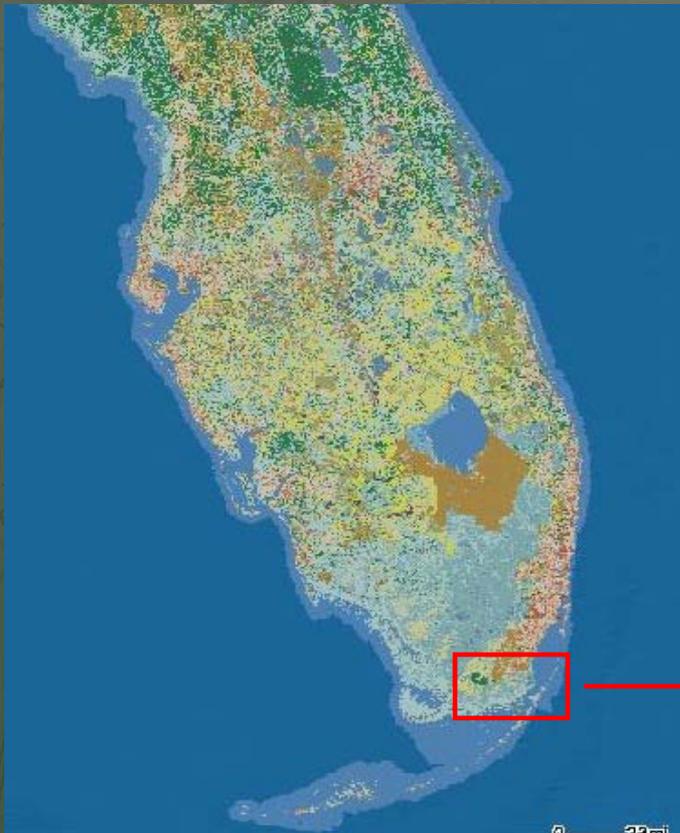


Image from gos2.geodata.gov/wps/portal/gos

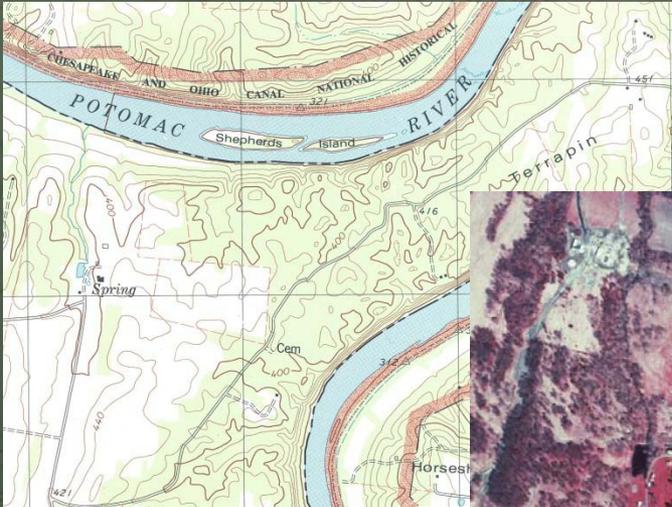
Zoomed-Out



Zoomed-In



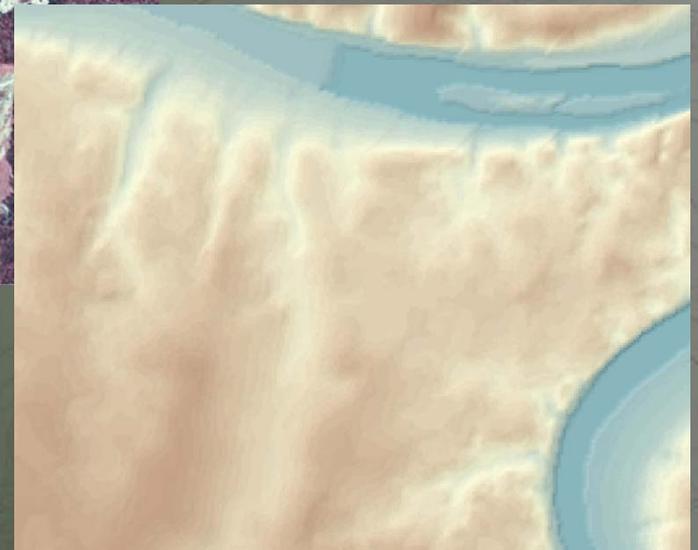
Other Raster Data – NCTC Examples



DRG



DOQQ



DEM



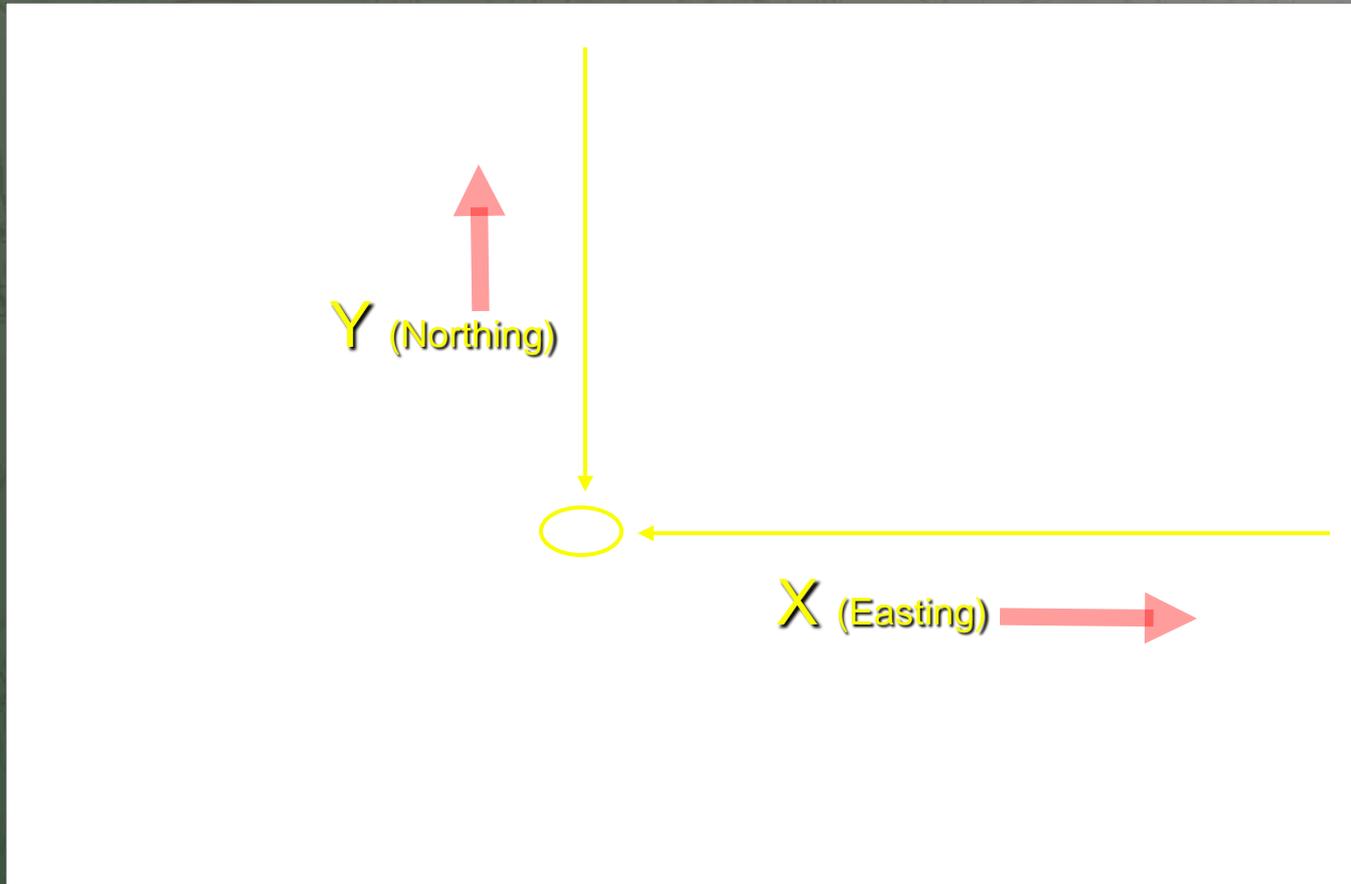
To use spatial data in a GIS you need to know:

- Where each feature is located (Coordinates)
- What each feature represents (Attributes)
- Relationships among features (Topology)



Coordinates

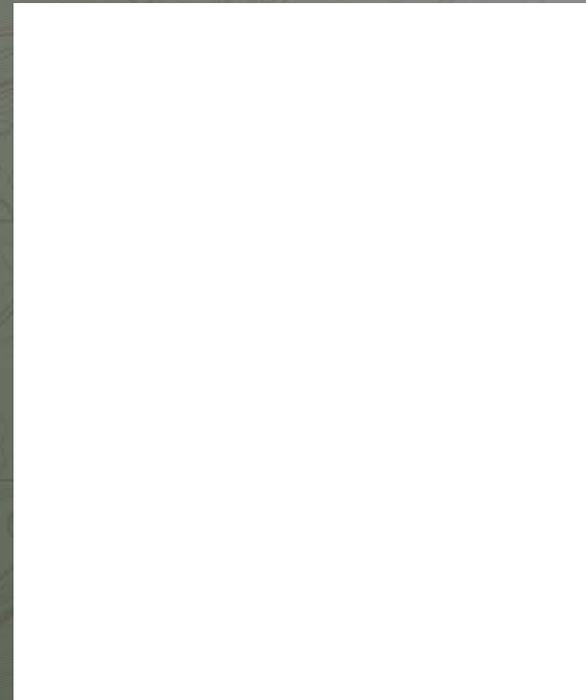
- The x, y (and z) values that define a position in a spatial reference.





Attributes

- Non-spatial information linked to a unique spatial feature
- Stored in a relational database
- Used to query, label and identify



FID	Shape *	AREA	PERIMETER	UIUIT	COVTYPE	SPECIES	ACRES	HECTARES
117	Polygon	93182.34375	1964.421726	BARING	FOREST	RED SPRUCE	23.026	9.318
118	Polygon	4115.828125	531.002135	BARING	WETLAND	W	1.017	0.412
119	Polygon	5476.34375	411.82207	BARING	FOREST	ASPEN	1.353	0.548



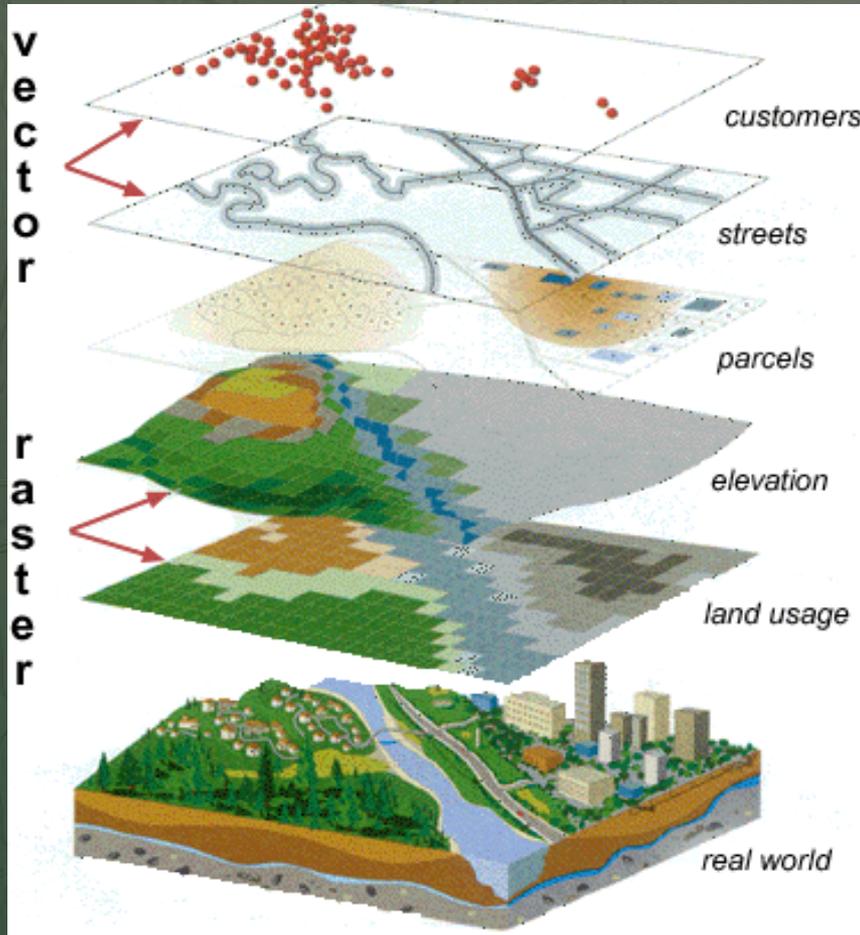
Topology

- Data management and integrity
- Points, lines and polygons share the same geometry





A GIS Consists of Data Layers

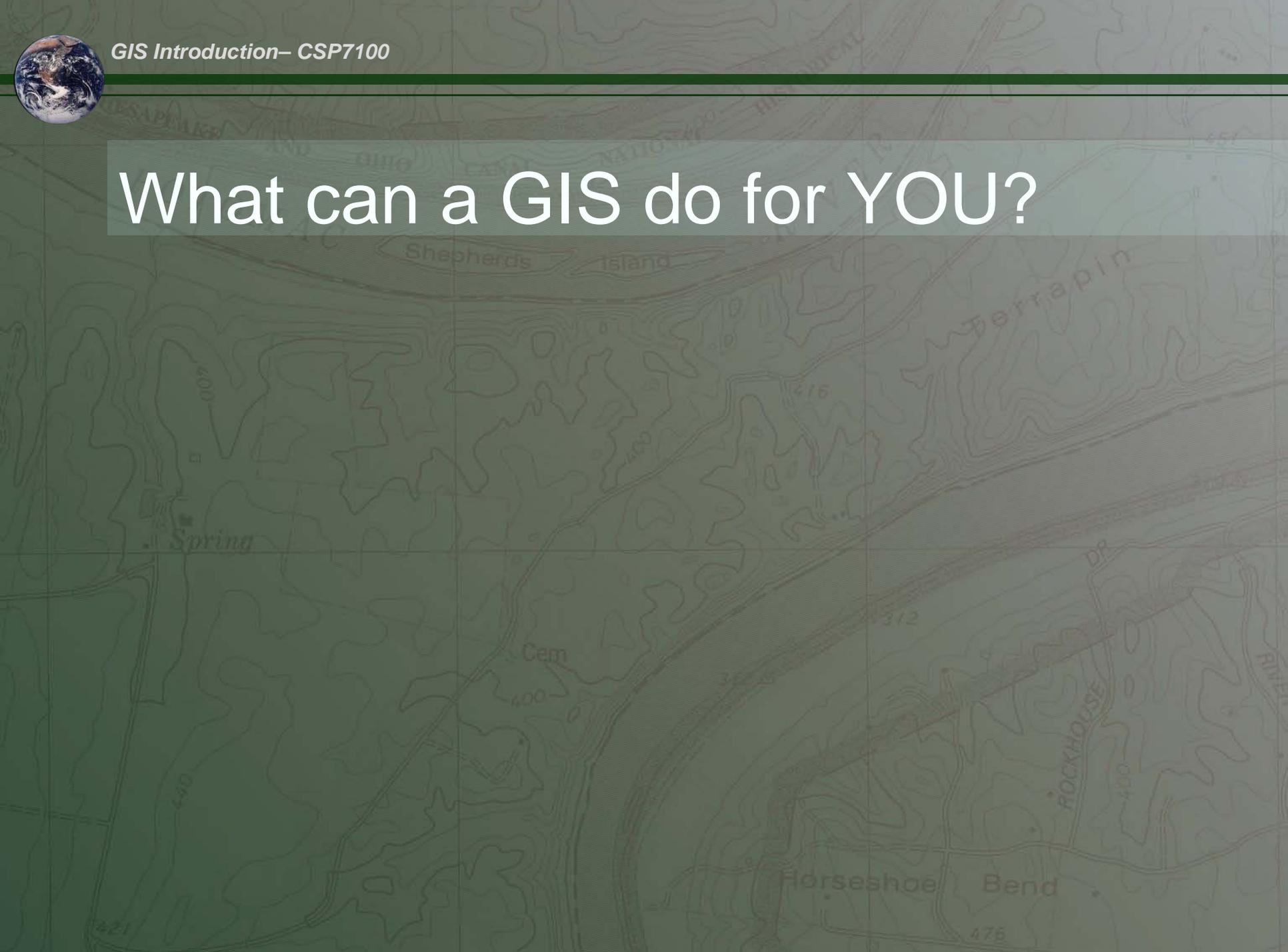


Spatial Data and its attributes must be arranged in a logical order to create a GIS

This arrangement is a series of layers, which share a common theme.



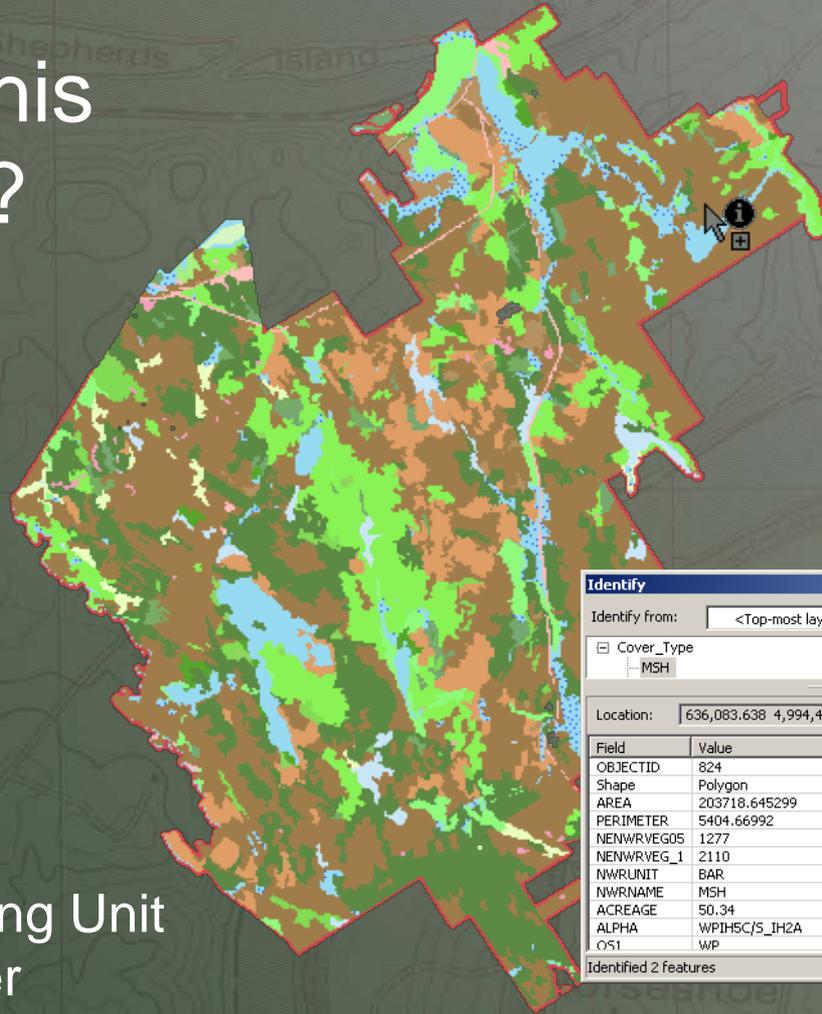
What can a GIS do for YOU?





Typical questions include:

What is at this location...?



Identify

Identify from: <Top-most layer>

Cover_Type

- MSH

Location: 636,083.638 4,994,438.333 Meters

Field	Value
OBJECTID	824
Shape	Polygon
AREA	203718.645299
PERIMETER	5404.66992
NENWRVEG05	1277
NENWRVEG_1	2110
NWRUNIT	BAR
NWRNAME	MSH
ACREAGE	50.34
ALPHA	WPIH5C/5_IH2A
OS1	WP

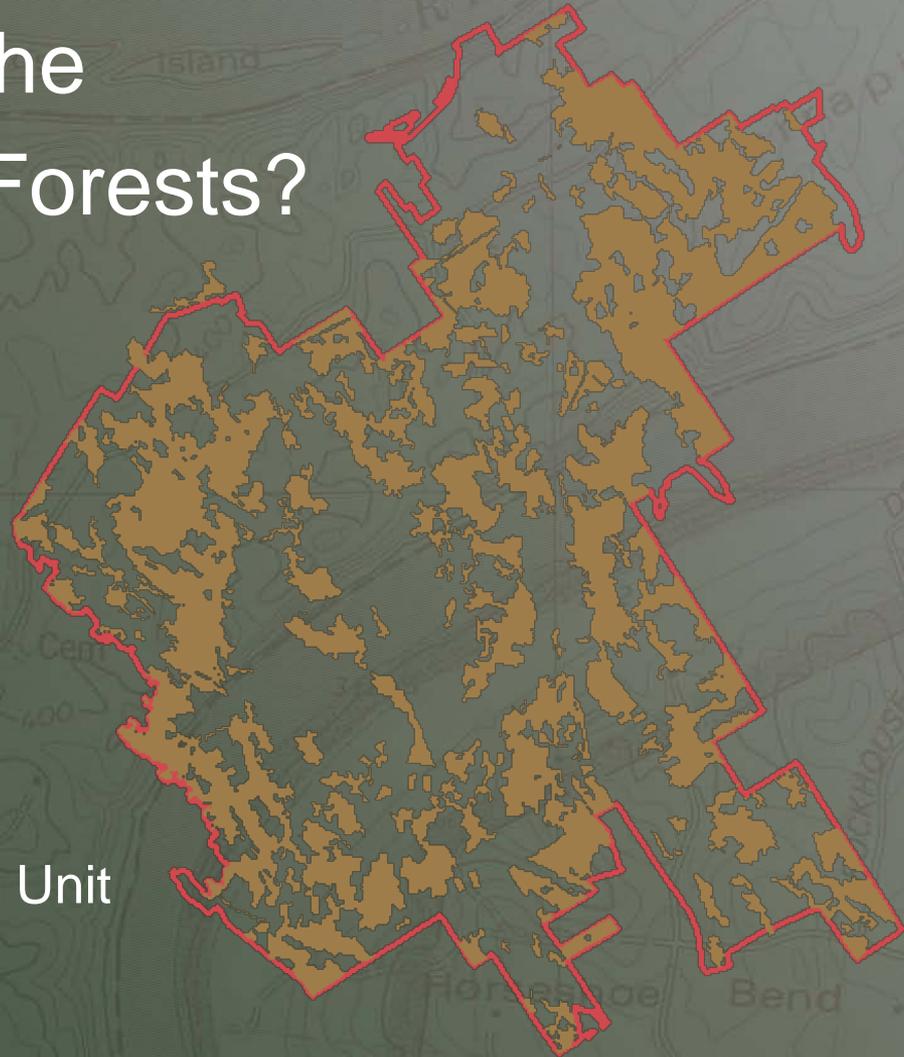
Identified 2 features

Moosehorn NWR - Baring Unit
Cover Type Layer



Typical questions include:

**Where are all the
Aspen – Birch Forests?**

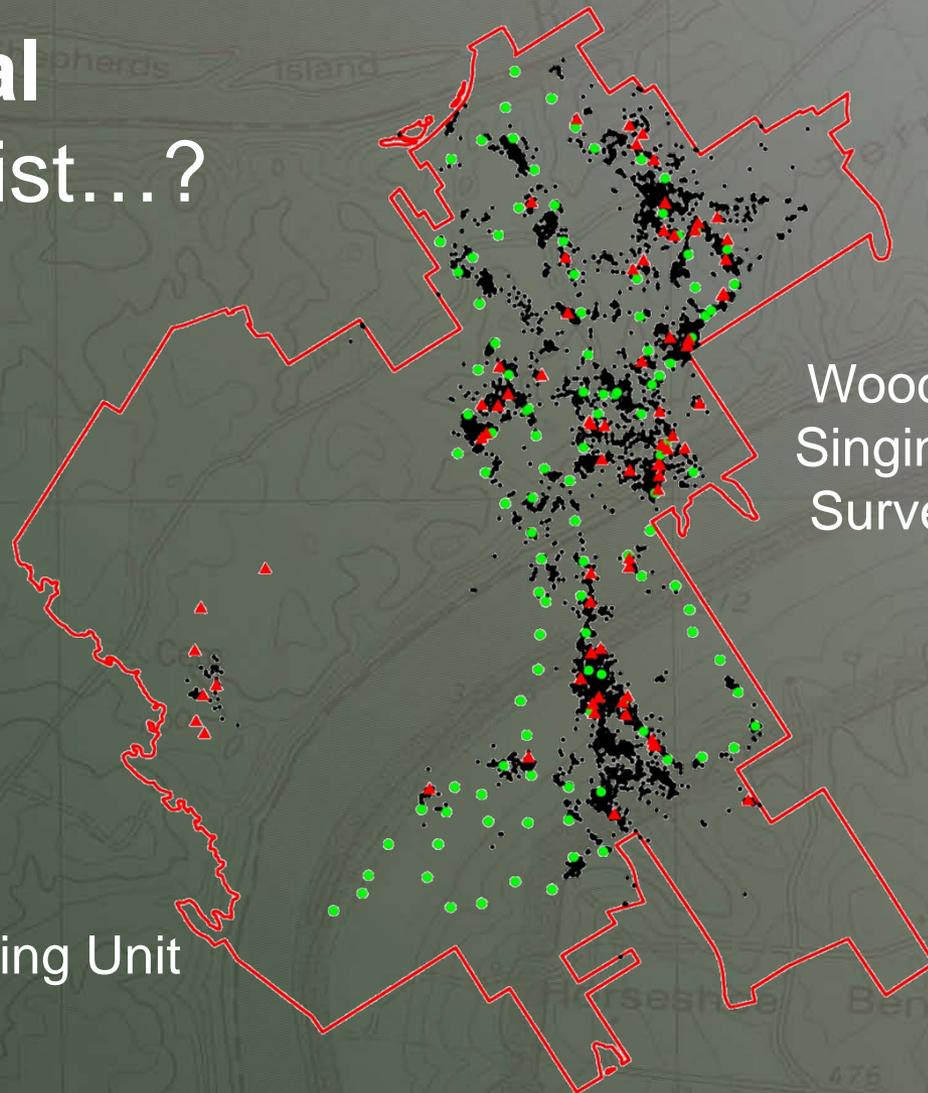


Moosehorn NWR - Baring Unit
Cover Type Layer



Typical questions include:

What spatial patterns exist...?



Woodcock Nests,
Singing Males and
Survey Locations

Moosehorn NWR - Baring Unit



Typical questions include:

What has **changed** at
NCTC since ...?



Image from terraserver_usa.com

1988

Hendrix Farm



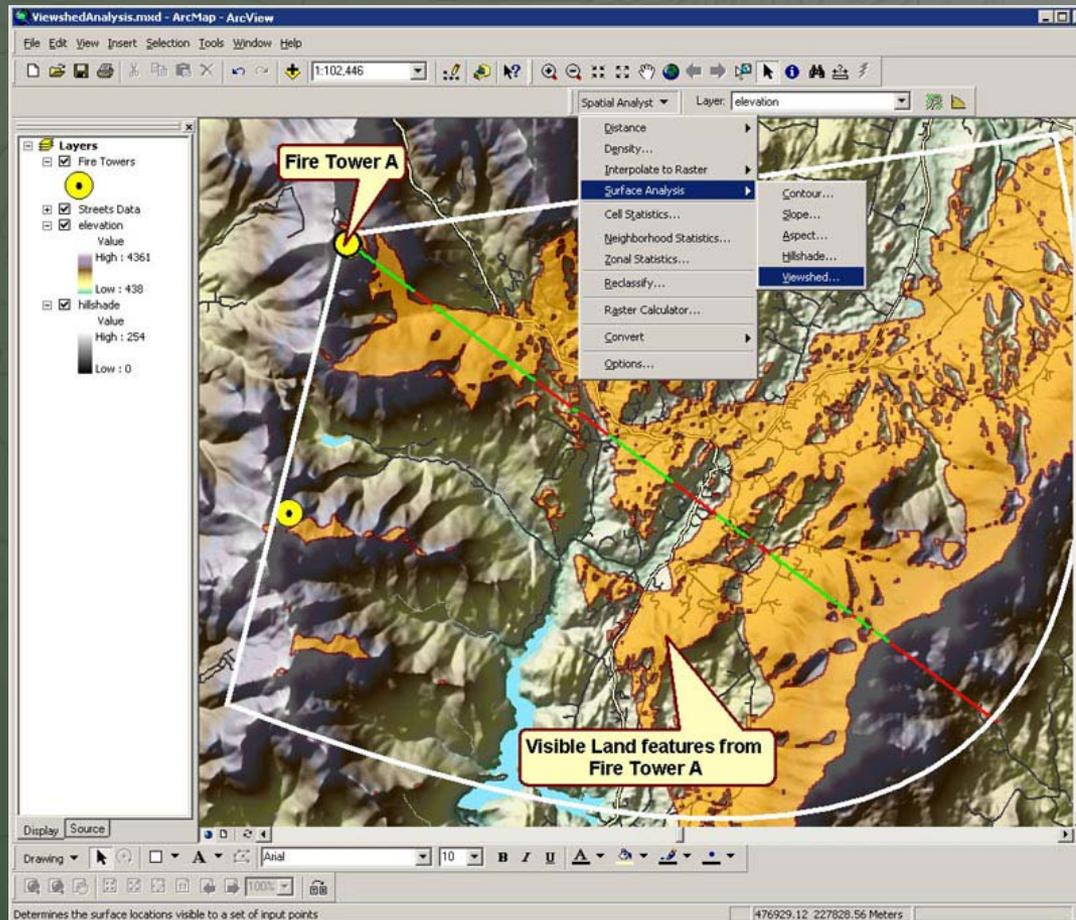
Image from wvgis.wvu.edu

2006

NCTC Campus



Typical questions include: What if...a Fire Tower was built?





The ultimate purpose of a **GIS** is to answer spatial questions...and help accomplish land management/conservation goals and objectives

A GIS is another **tool** in your tool bag