

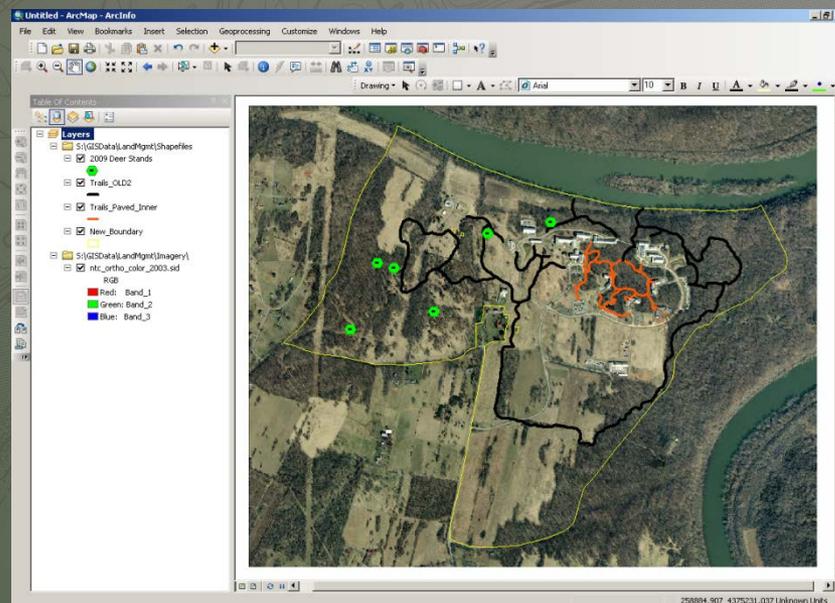
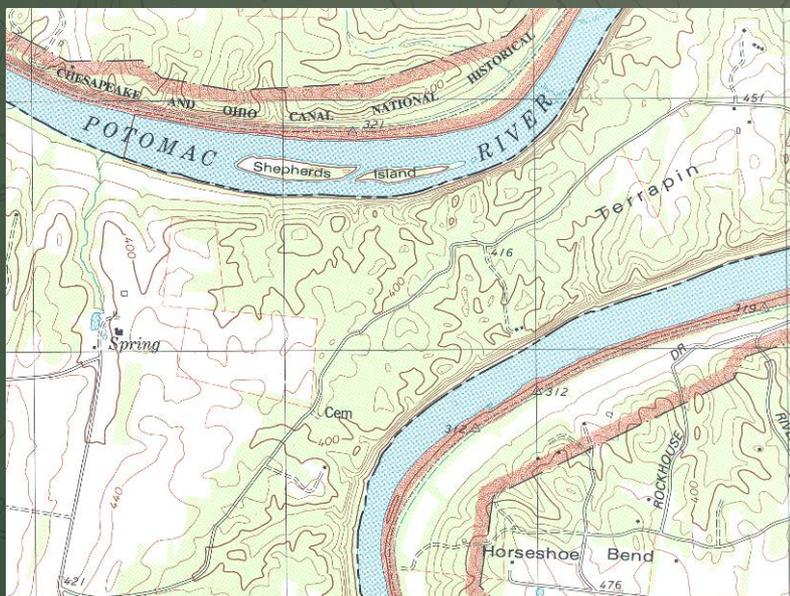


What is a Geographic Information System?

Power point developed by Mark Richardson (Rev March 2015)



Wikipedia: geographic information system (GIS) is a computer system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data.





A GIS can be VERY challenging

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 computer based GIS...

Vector Data & Raster Data



Vector Data vs Raster Data

Points

Lines

Polygons



Cells

or

Pixels



Moosehorn National Wildlife Refuge



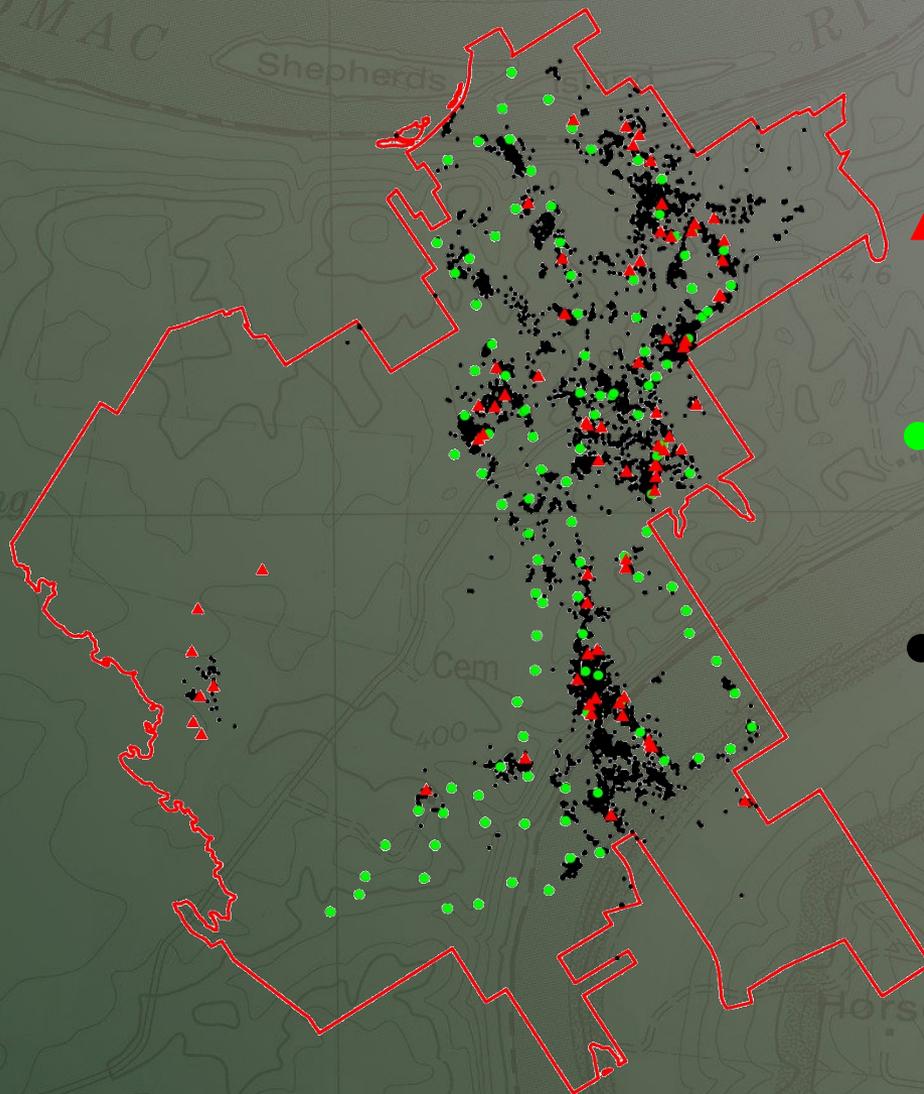
Vector Data - Points

Examples

▲ Woodcock Nests

● Survey Site Locations

● Singing Male Woodcock





Vector Data - Lines

Examples

Roads

Trails

Streams





Vector Data - Polygons



Examples

Soils

Land Cover

Management Units



Land Cover - South Florida

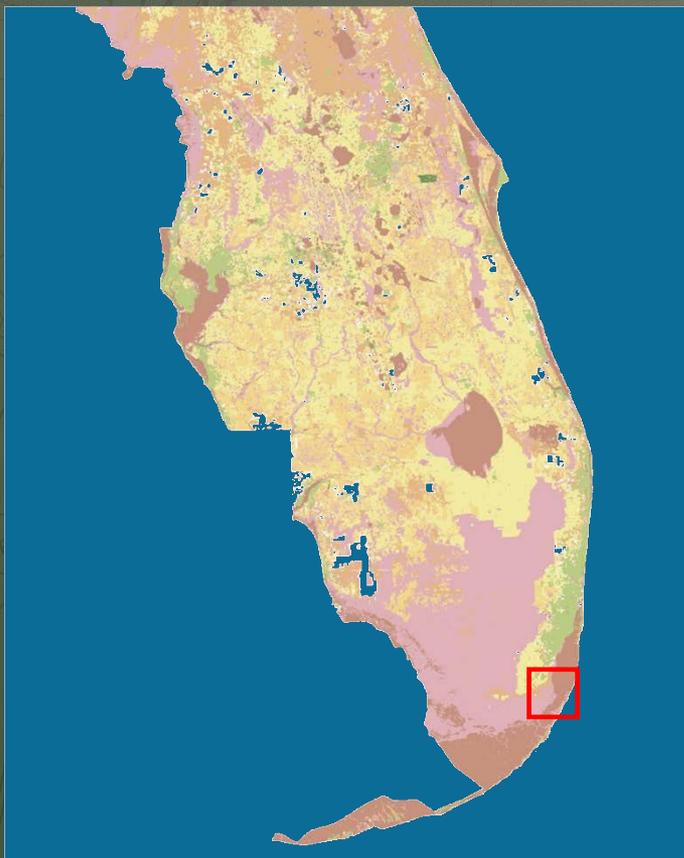


Image from www.fgdl.org

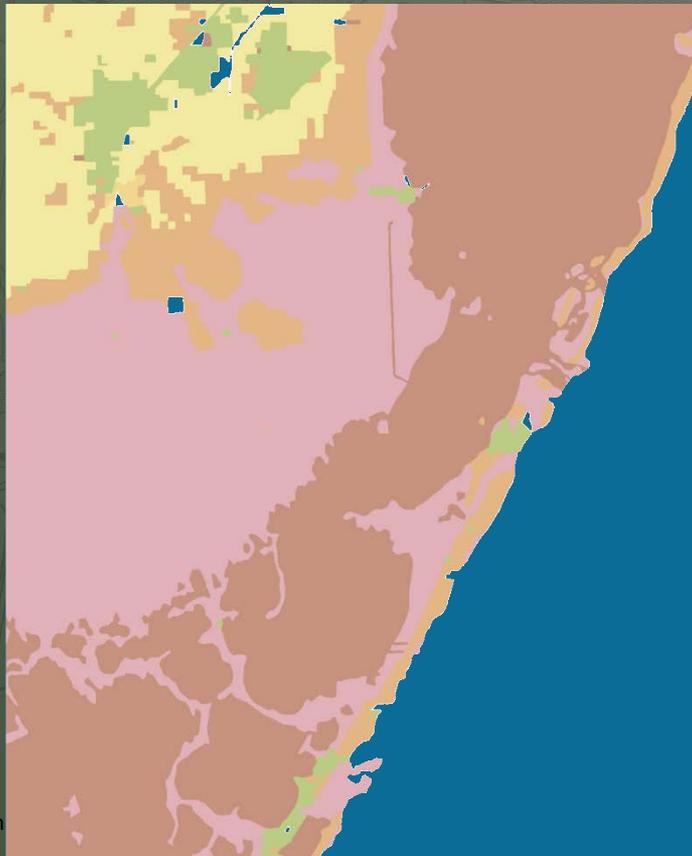
Vector



Raster



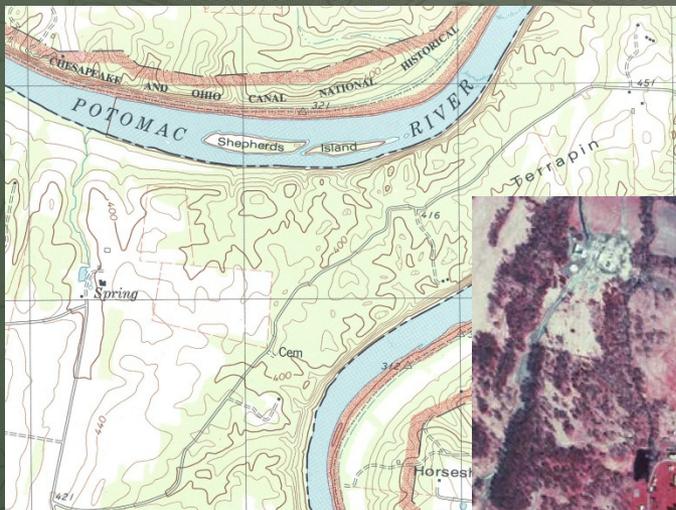
Land Cover - South Florida



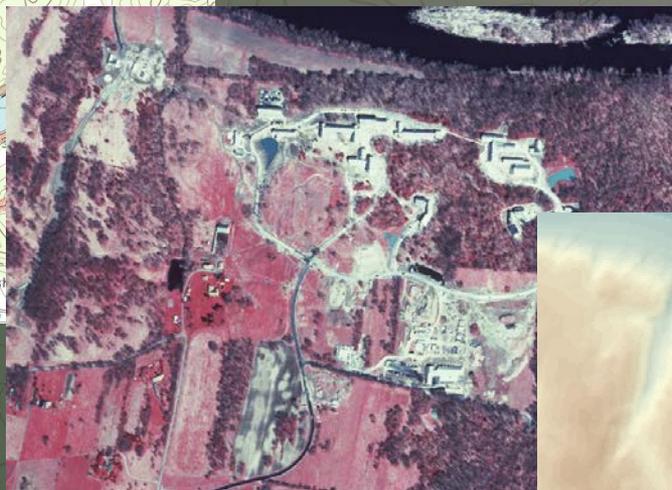
Zoomed-In



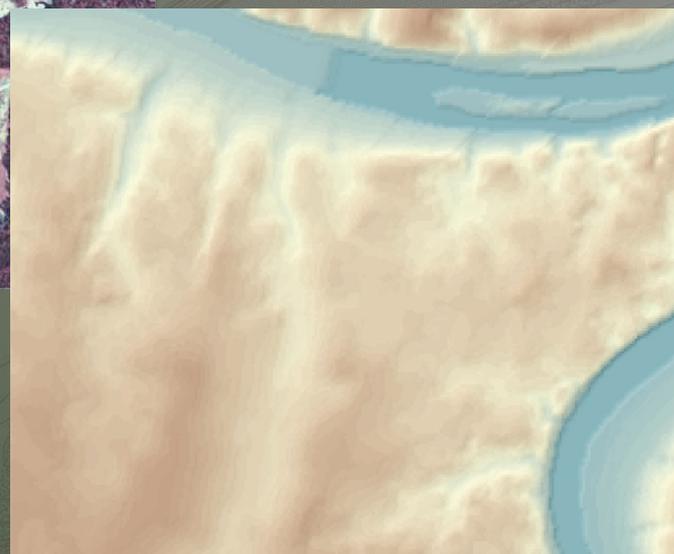
Other Raster Data – NCTC Examples



DRG



DOQQ



DEM



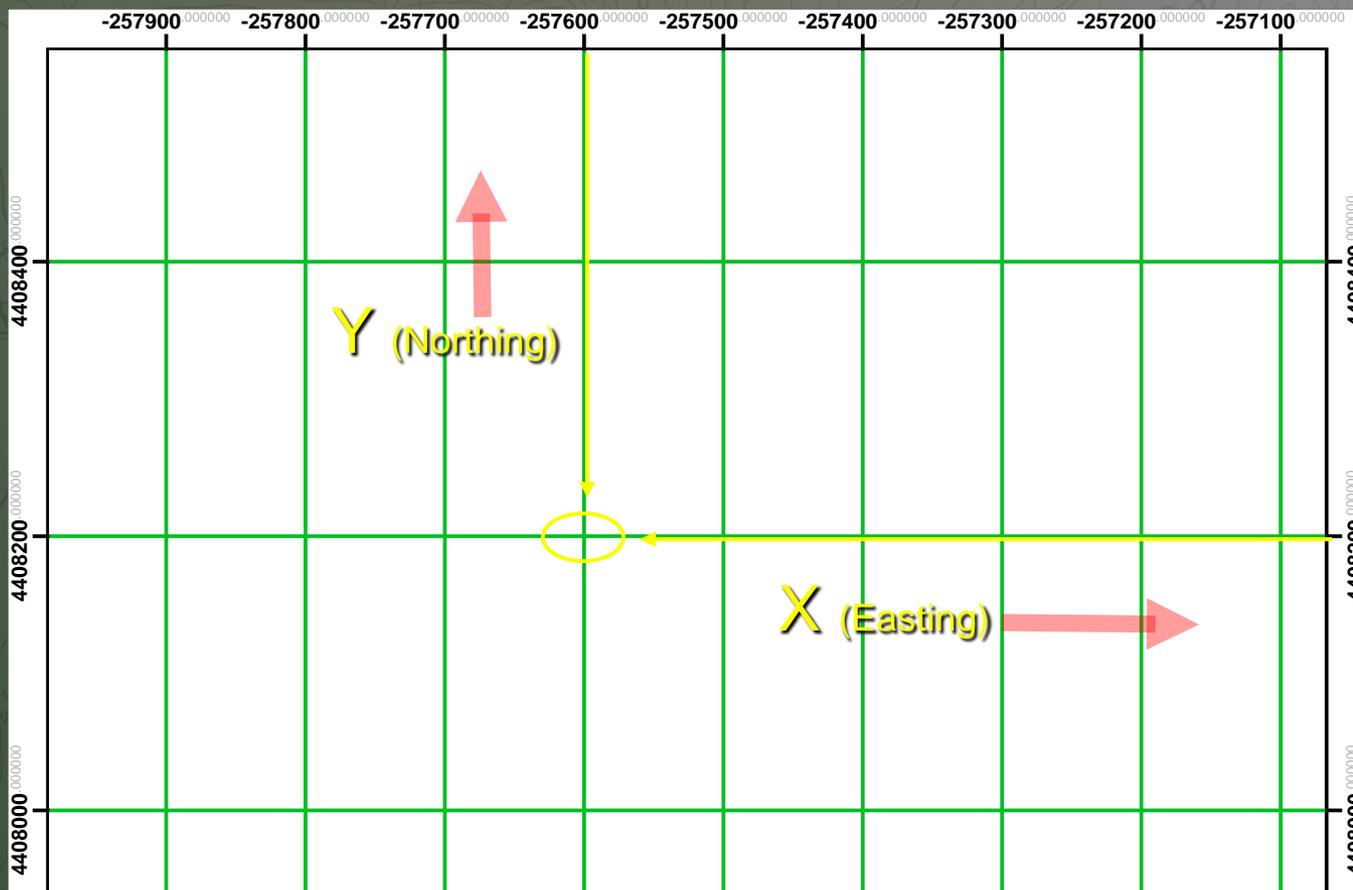
To use spatial data in a GIS you need to know:

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



Coordinates

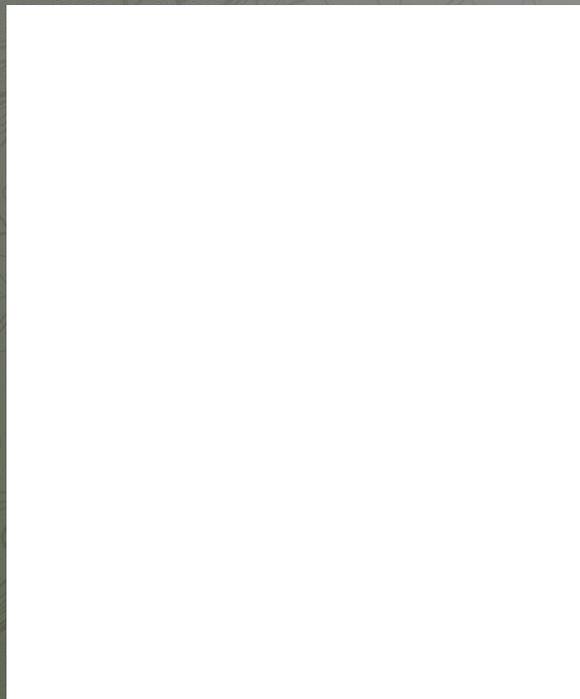
- The x, y (and z) values that define a position in a spatial reference.





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	UIIIT	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	WV	1.017	0.412
119	Polygon	5476.34375	411.82207	BARING	FOREST	ASPEN	1.353	0.548



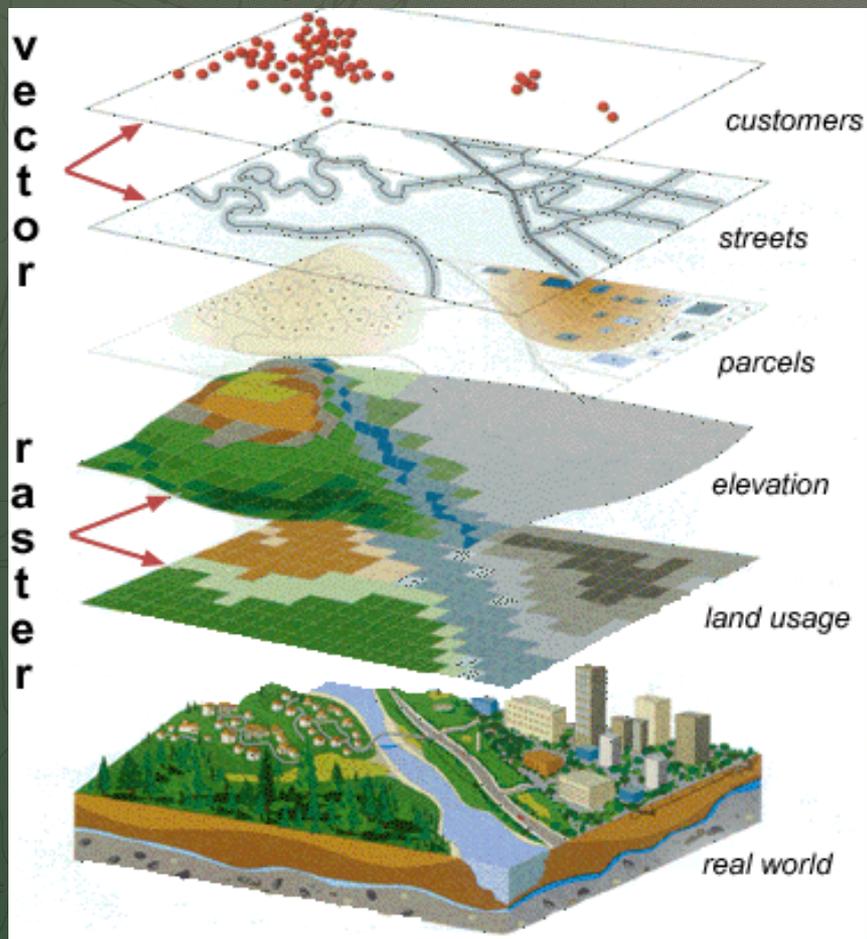
Topology

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





A GIS Consists of Data Layers

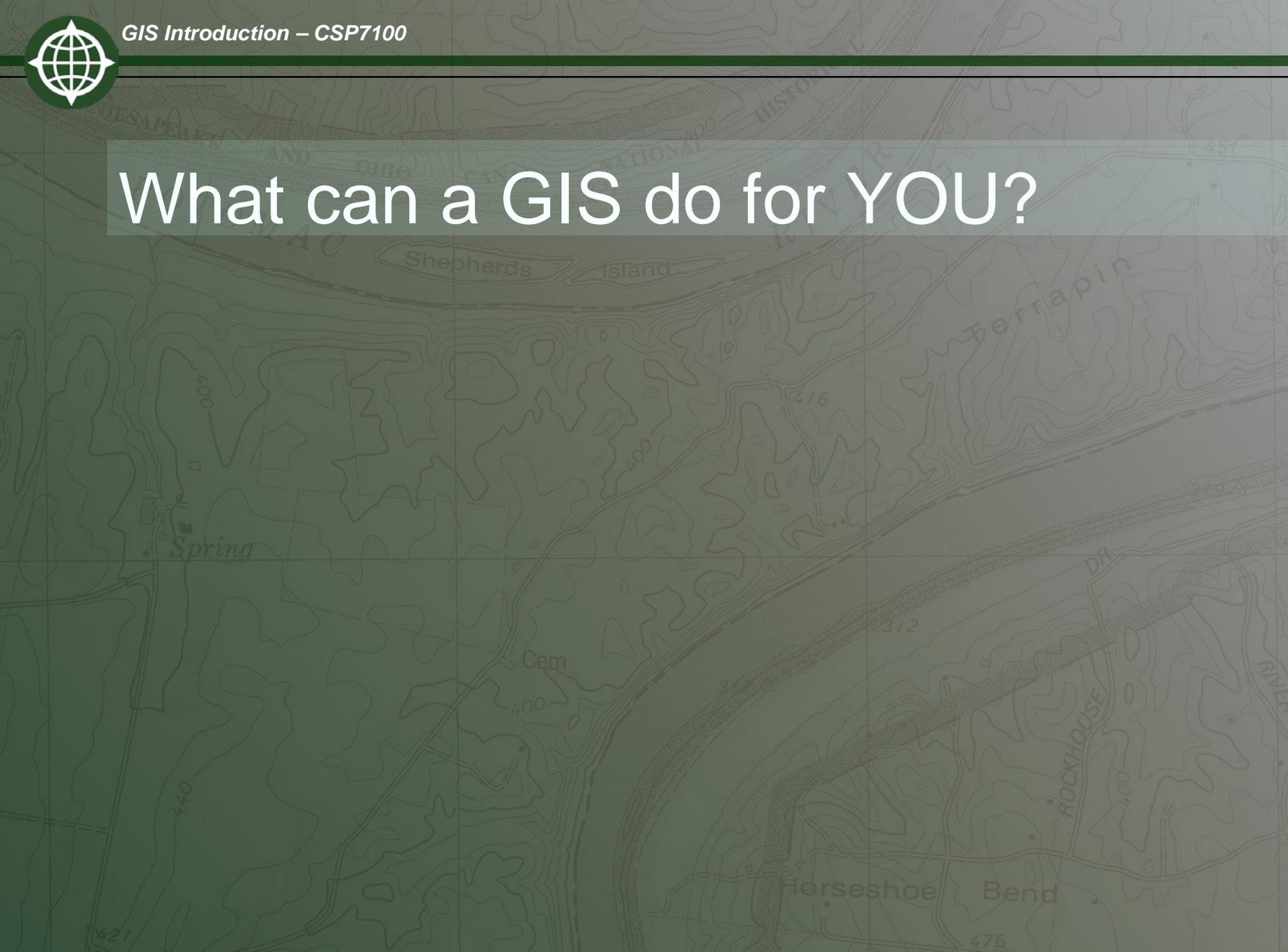


Spatial Data and its attributes must be arranged in a logical order to create a GIS

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



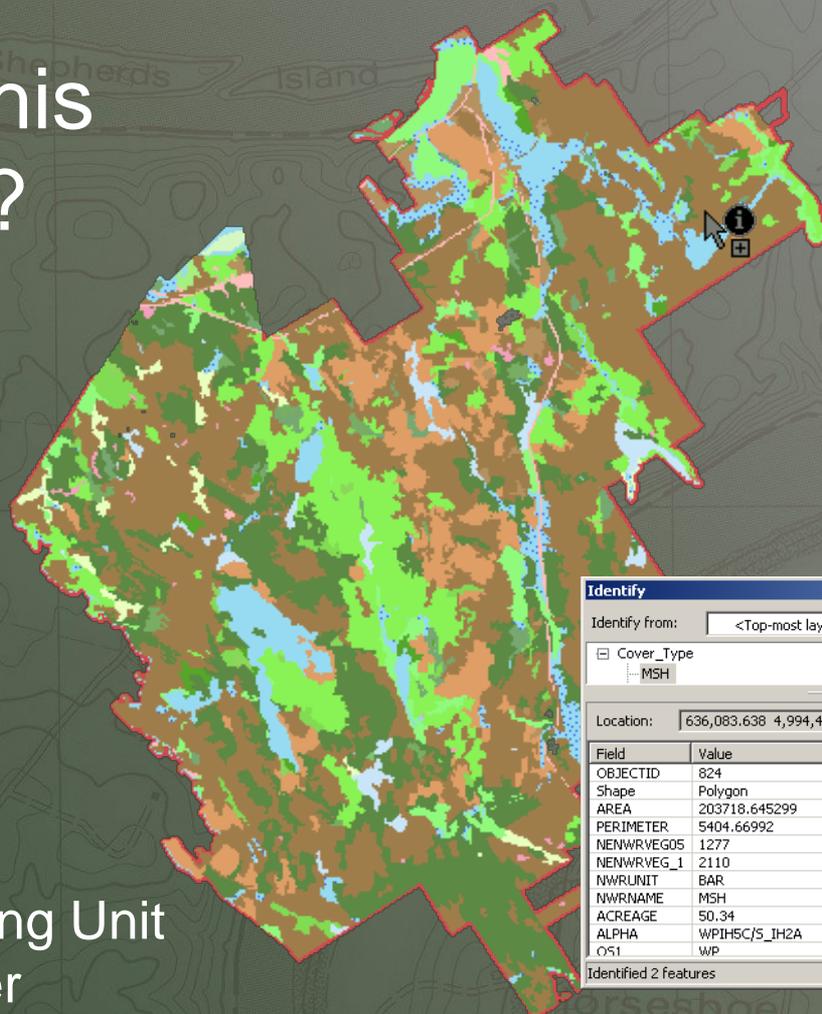
What can a GIS do for YOU?





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

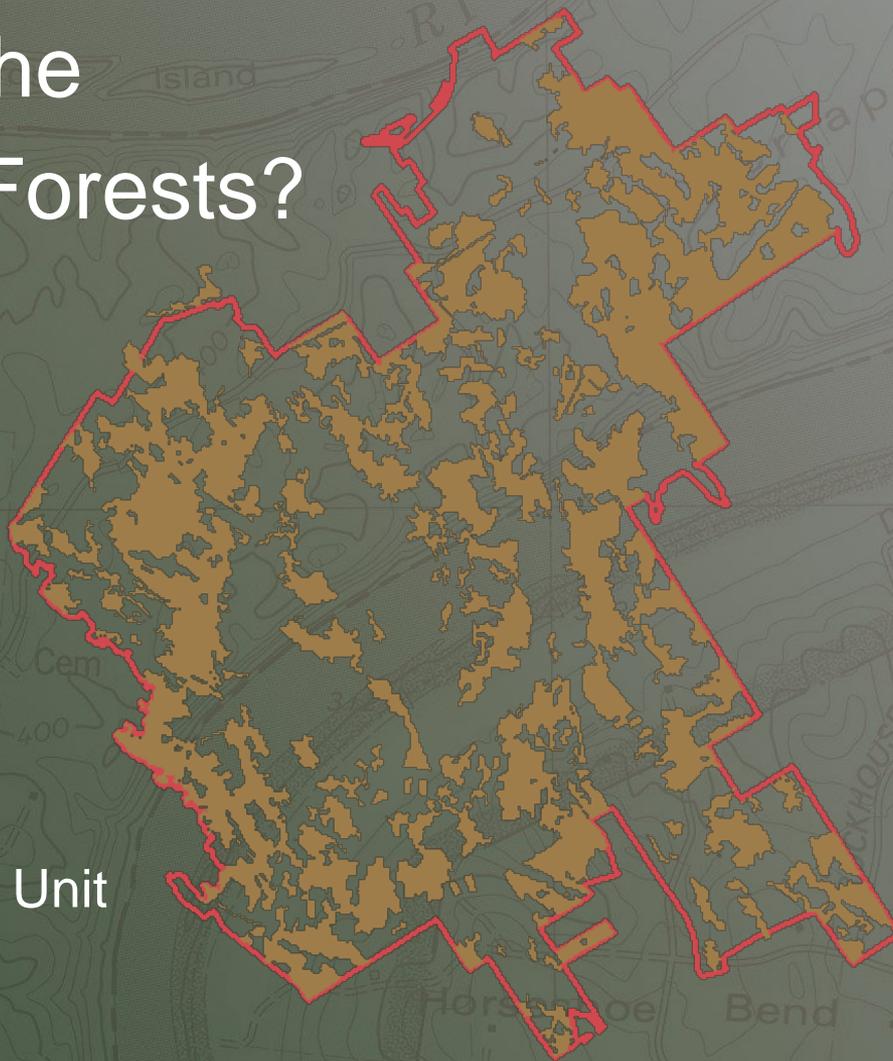
Moosehorn NWR - Baring Unit
Cover Type Layer



Typical questions include:

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

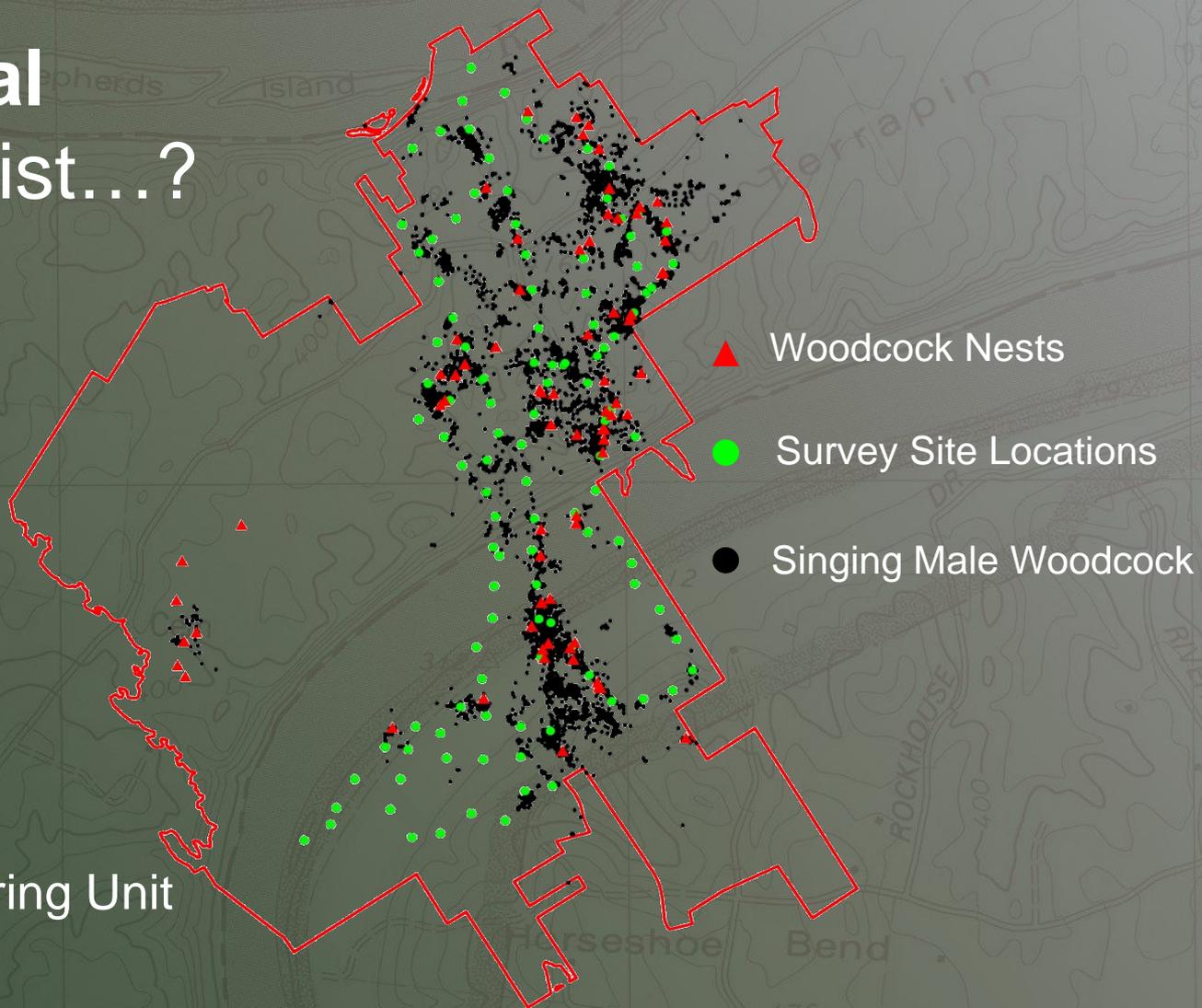
Moosehorn NWR - Baring Unit
Cover Type Layer





Typical questions include:

What spatial patterns exist...?



Moosehorn NWR - Baring Unit



Typical questions include:



Image from terraserver_usa.com

1988

Hendrix Farm

What has changed at NCTC since ...?



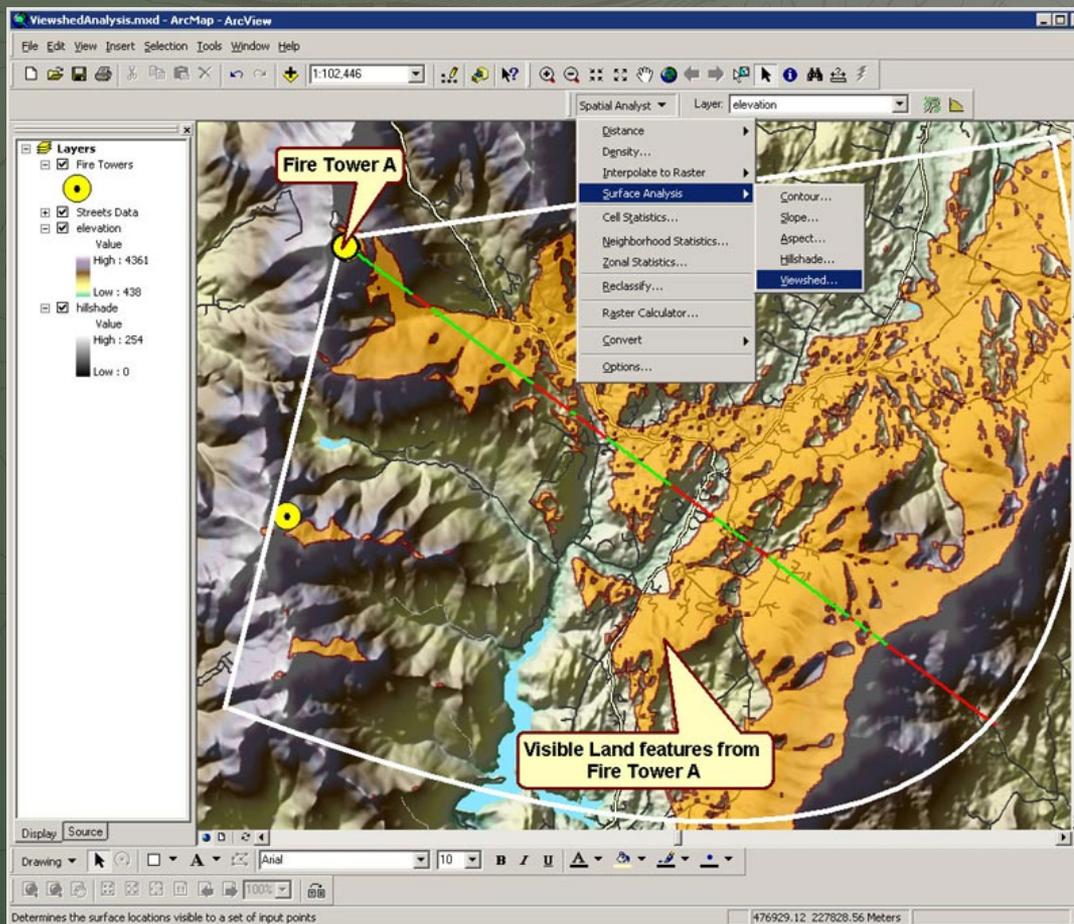
Image from wvgis.wvu.edu

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 achieve land management/conservation goals and objectives

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