Applications of GIS in management and planning

5th Interagency Social Science Roundtable
Institute of Water Resources, U.S. Army Corps of Engineers
Alexandria VA, January 10, 2011

US Army Corps of Engineers
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Examples and benefits of using GIS in management and planning

- GIS provides great support in:
- Resource management (e.g., inventory, maintenance management, capital budgeting)
- Defining market areas
- Assessing visitors' participation patterns and profiling consumer behavior
- Estimating economic impact of projects
- Research design and implementation (e.g., selection of a survey site)

Application of GIS in current projects

- Wildlife and facilities inventories
- Integrated part of online surveys collecting spatial information (e.g., trip origin or destination, location of spending)
- Tool in evaluation of changes in the number and location of recreation areas and facilities (e.g., boating access)
- Market and feasibility studies
- Part of economic impact assessment tool

Digitization of information on projects and areas

- Creation of maps for current USACE projects:
  - Recreation areas
  - Facilities
  - Road configuration
  - Traffic counters

Example: Identification and digitization of information on recreation areas

- Lake Lanier project:
- Bald Ridge Marina
- YMCA
- Mary Alice

Example: Identification and digitization of information on facilities

- Table Rock Lake:
- Campbell Point

Example: Identification and digitization of information on traffic counters

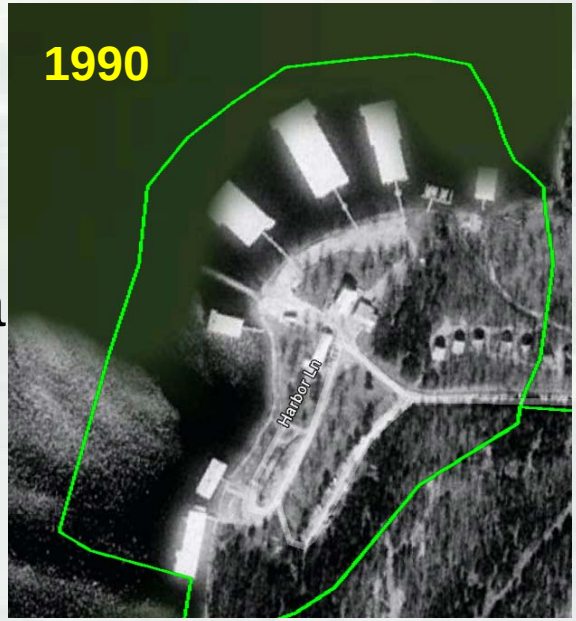
- Table Rock Lake:
- Baxter

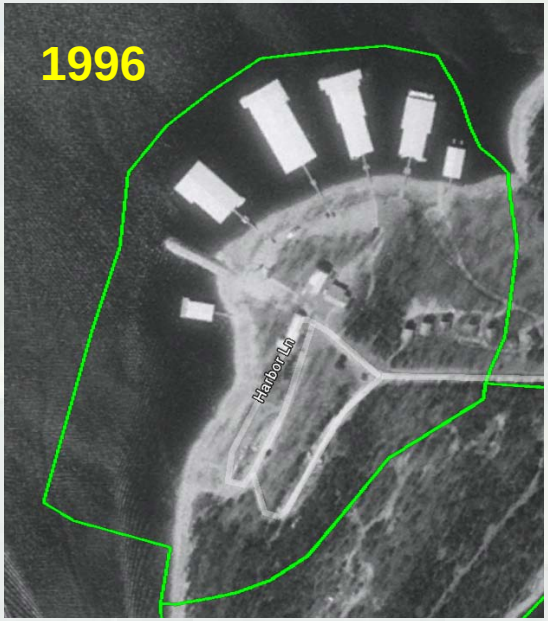
Longitudinal monitoring of changes in current USACE projects and areas

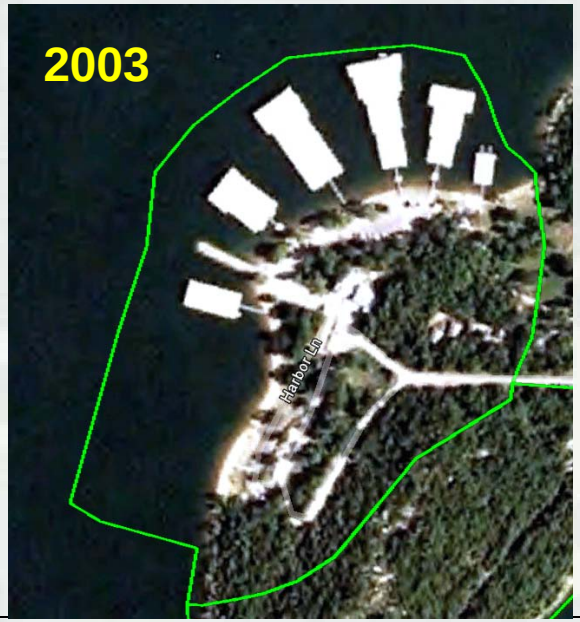
- Campgrounds
- Marinas
- Boat ramps

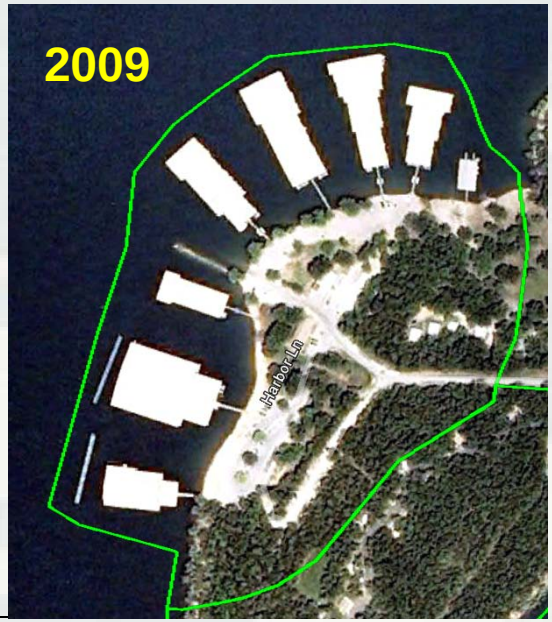
Changes over time

- Indian Point Marina Table Rock Lake (changes in distribution of boat slips)



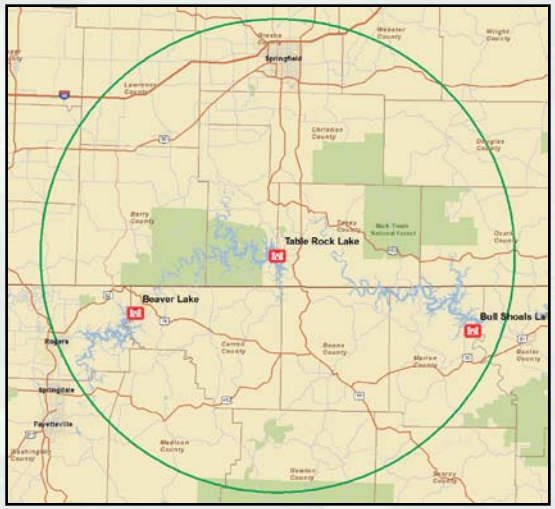




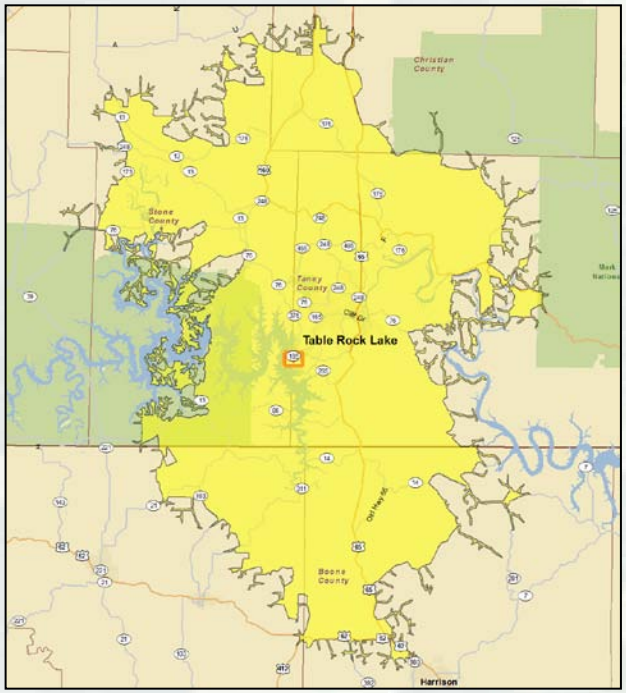


GIS USES IN DEFINING MARKET AREAS

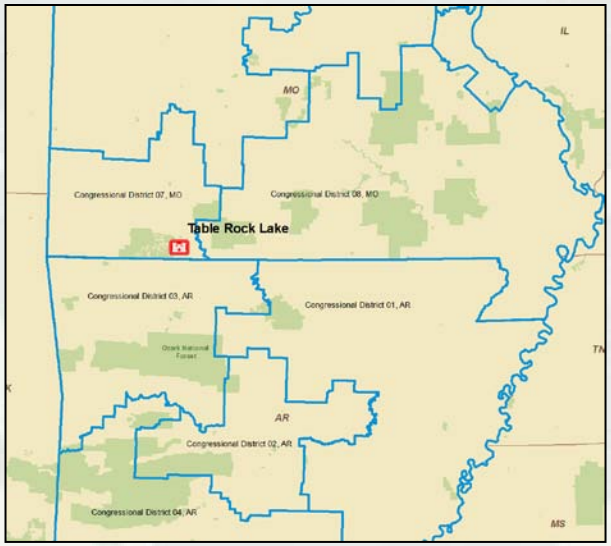
Example: delineation of market and political areas



50-mile radius
around Table Rock Lake



30-mile driving distance
around Table Rock Lake



Congressional districts
around Table Rock Lake

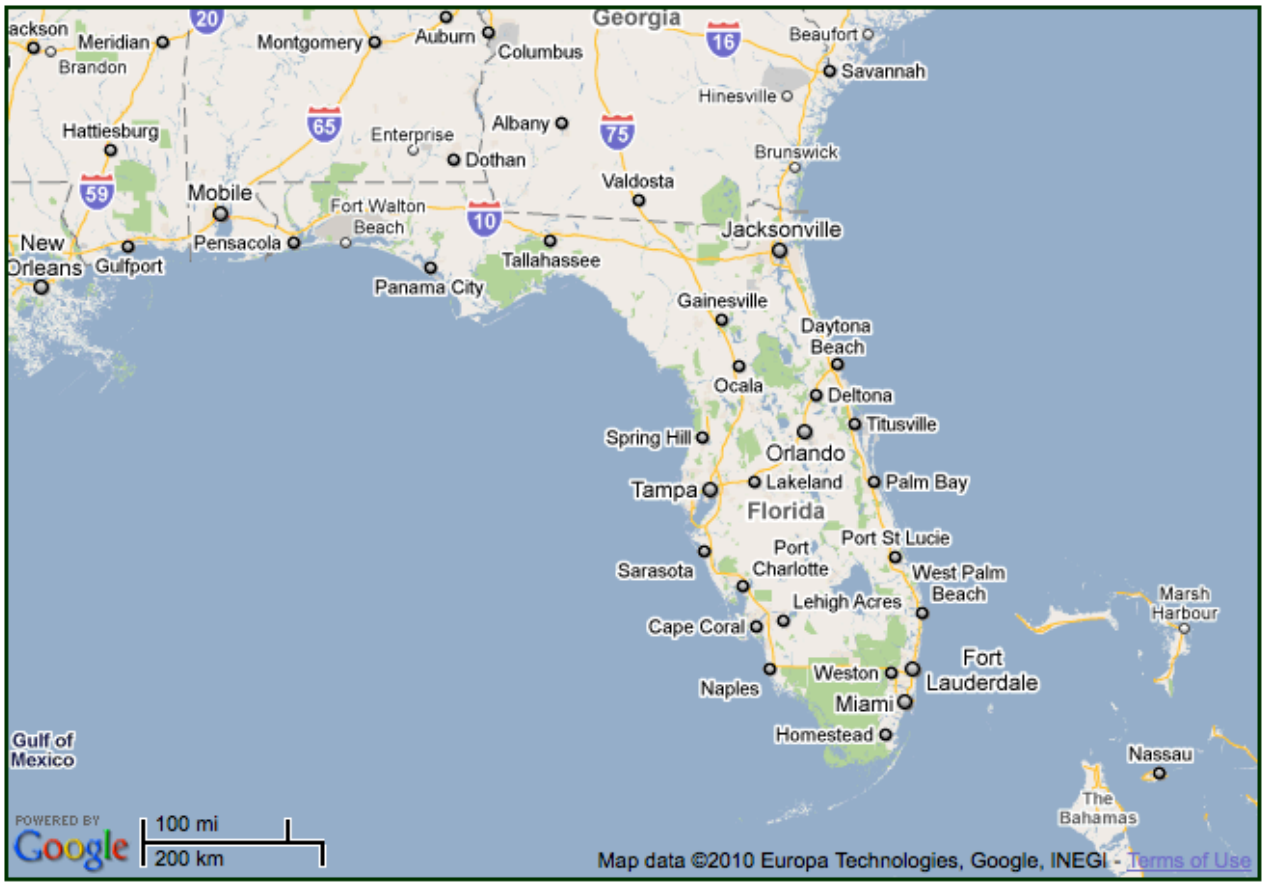
GIS uses in assessing visitors' participation patterns and profiling consumer behavior

- Incorporating GIS features to collect location-specific data provided by survey respondents

- An example:
  - ►Florida Saltwater Fishing Survey (FSFS)

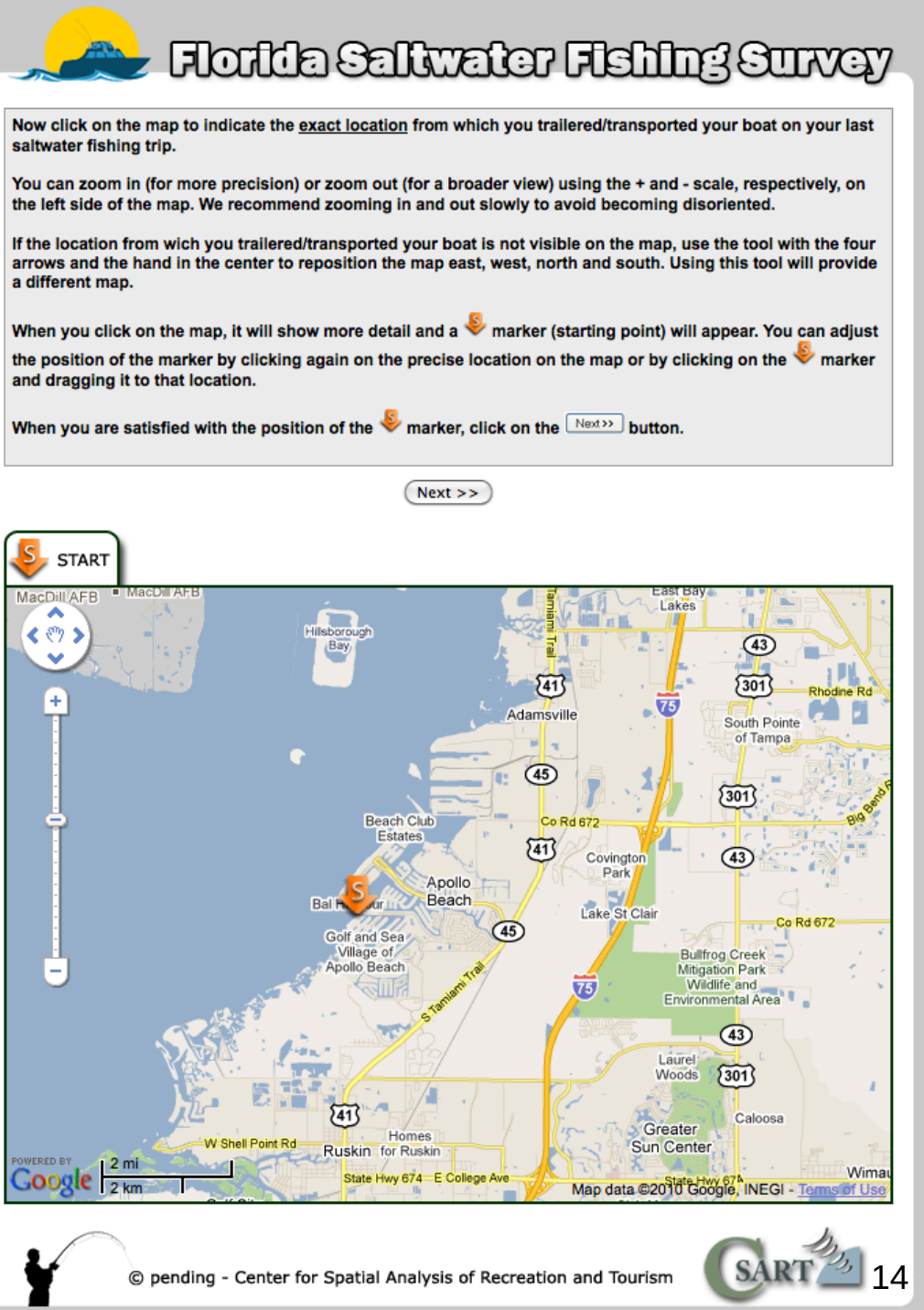
FSFS (1)

- Collecting general data on the location from which the boat was taken on the trip



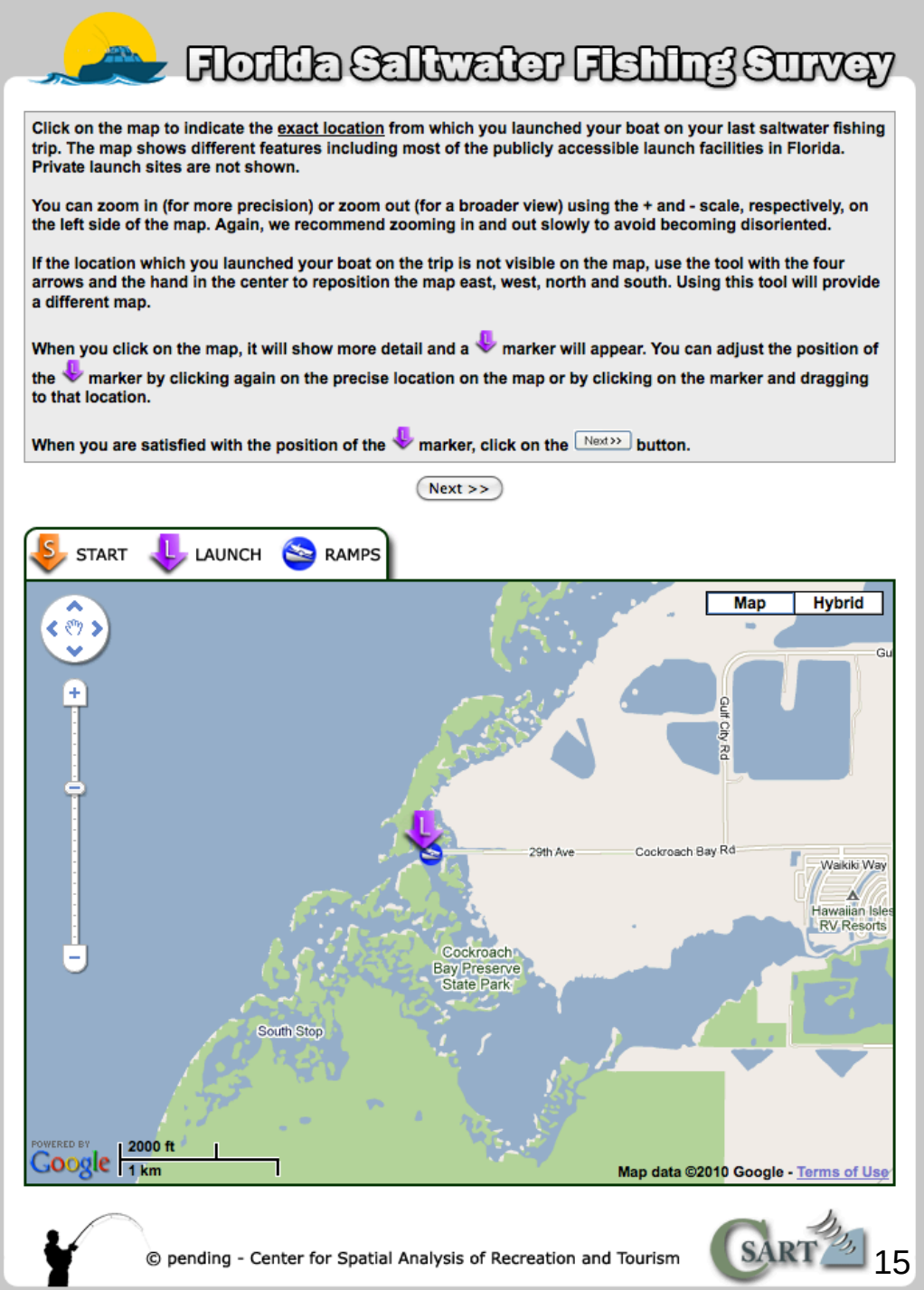
FSFS (2)

- Collecting specific data on the location from which the boat was taken on the trip



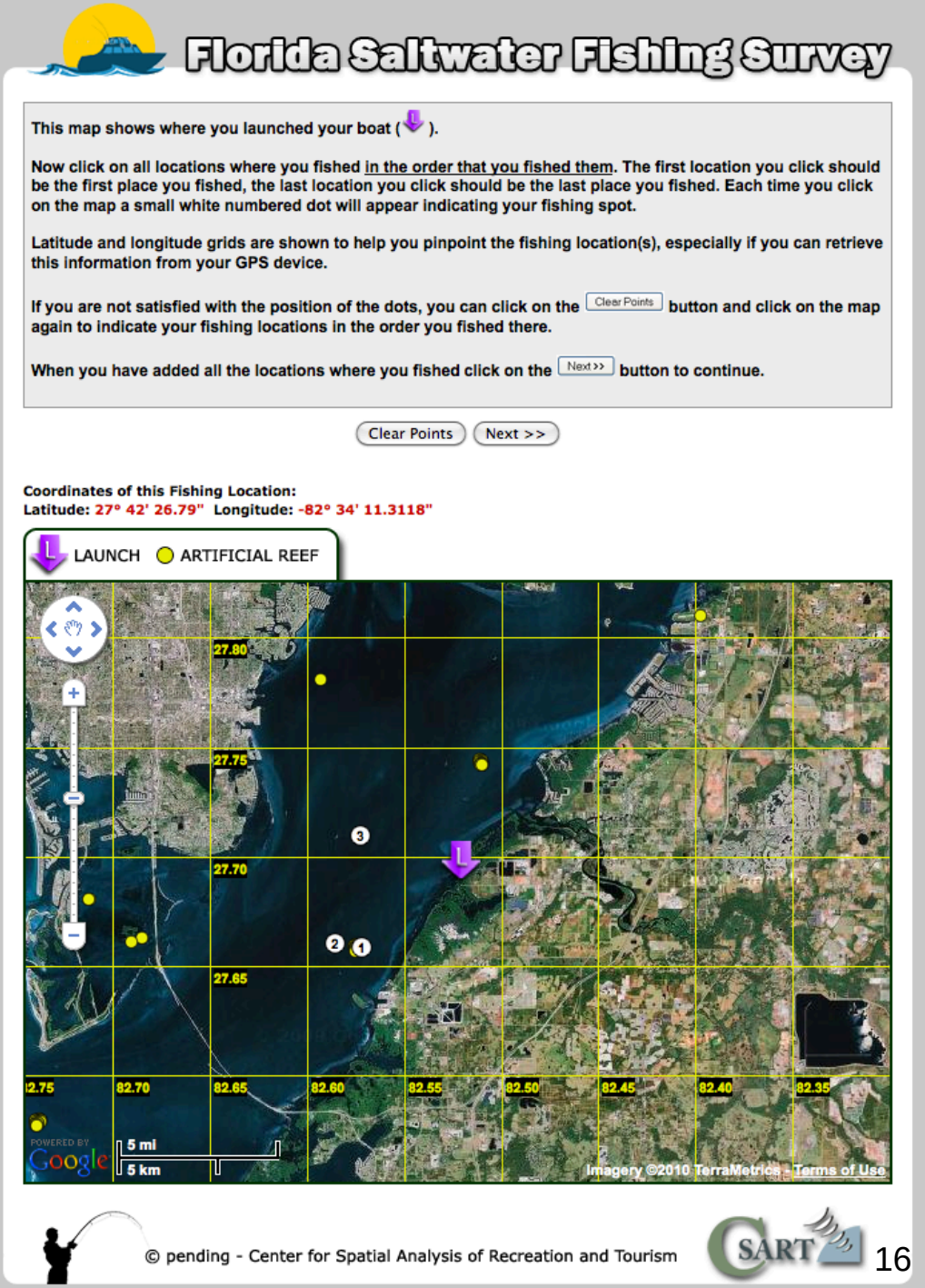
FSFS (3)

- Collecting specific data on the location from which the boat was launched on the trip



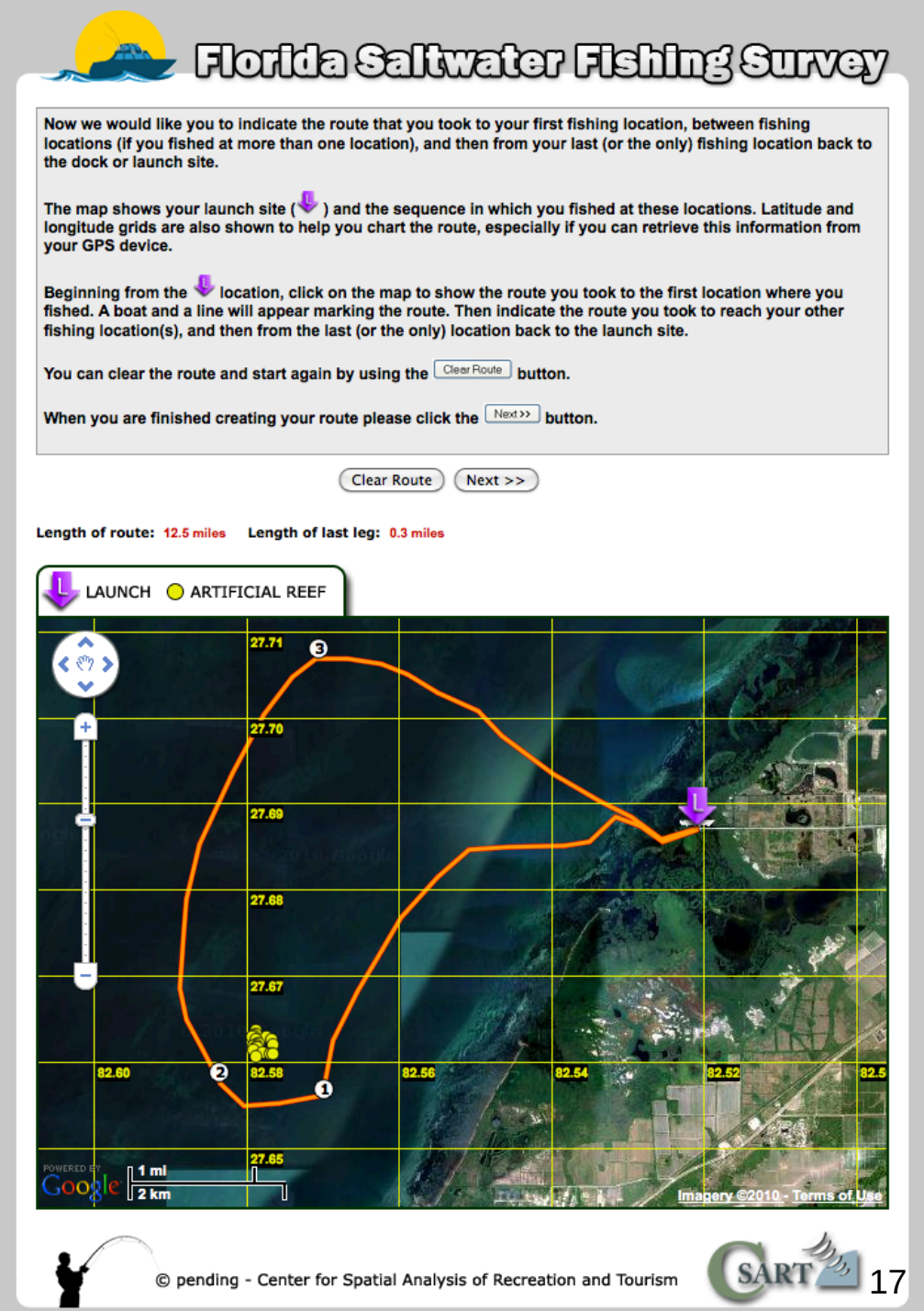
FSFS (4)

- Collecting specific data on the fishing locations and their order on the trip



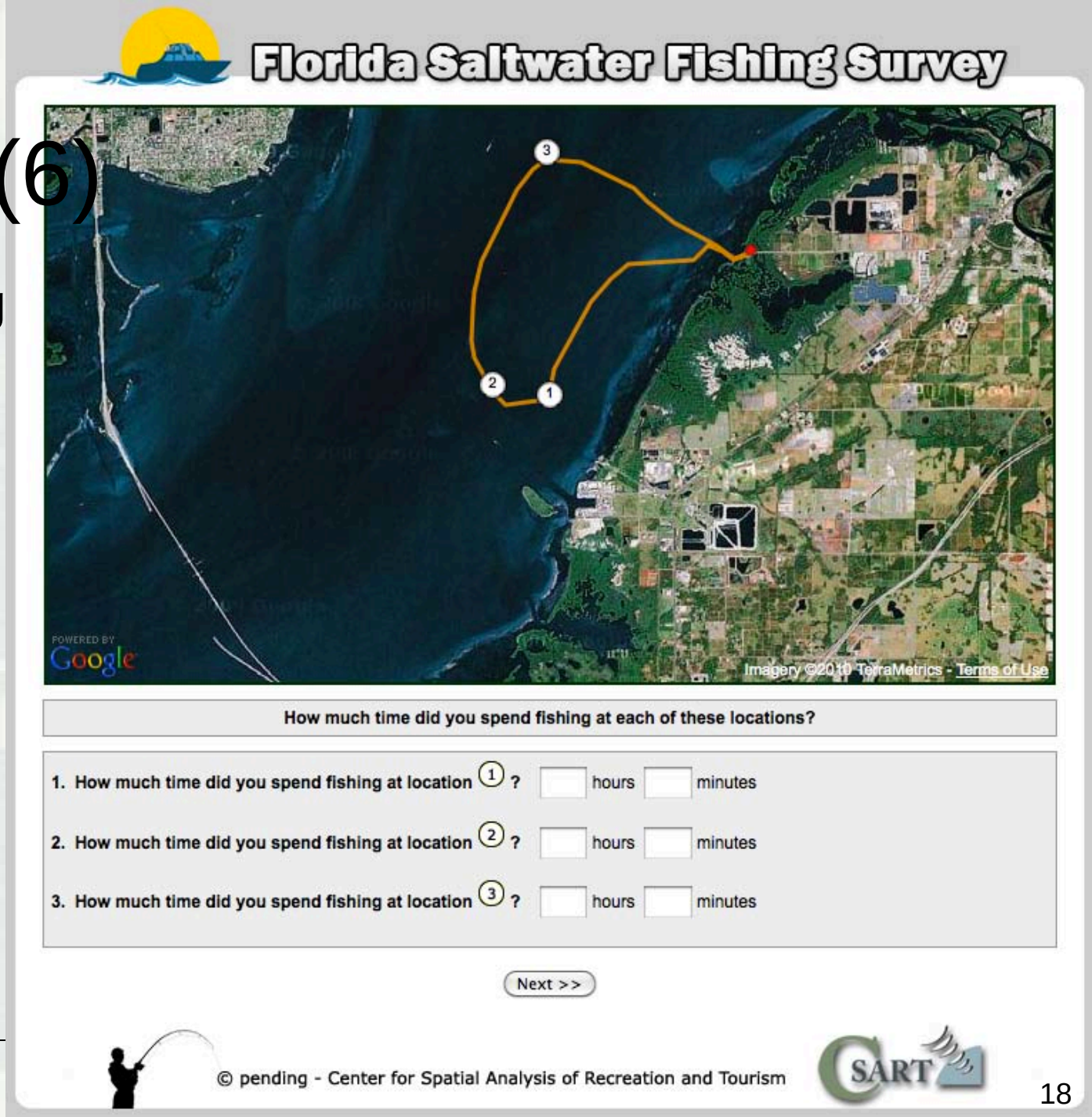
FSFS (5)

- Collecting specific data on the fishing route on the trip



FSFS (6)

- Collecting specific data on the time spent fishing at each location on the trip



FSFS (7)

- Collecting specific data on about conditions at a fishing location on the trip

3. Were there any other boats fishing at this location while you were fishing there?

- ○ Yes >> If yes, how many? [ ]
- ○ No

4. Why did you leave to go to the next location?

- ○ Fish were not biting.
- ○ Too many other fishers.
- ○ Heard from other anglers that fish were biting at that location.
- ○ To catch a different species of fish.
- ○ Change of scenery.
- ○ Usually fish at that location when in the area.

Next >>

FSFS (8)

- Collecting specific data on targeted, caught, and released fish at indicated location on the trip

Florida Saltwater Fishing Survey

You indicated that you fished at location (2).

1. How much time did it take to travel here from the previous location that you fished?
hours minutes

2. When fishing at this LOCATION:

A. Which species of fish, if any, did you target while fishing at this location?
B. How many fish of each species did you catch, whether or not you targeted them? Only fill in the box if you caught any fish of that species. Leave the others blank.
C. How many fish of different species that you caught did you release?
D. For only the species that you targeted at this location, how many additional minutes would you be willing to spend fishing at this location to catch one additional fish of that species?
E. For only the species that you targeted at this location how many additional minutes would you be willing to travel to a different location to catch ONE MORE of the fish of the species that you targeted.

Species of Fish	A. Targeted (check box if targeted)	B. Number Caught	C. Number Released	D. Additional Minutes	E. Additional Travel (minutes)
Red drum	☐				
Snook	☐				
Tarpon	☐				
Spotted sea trout	☐				
Red grouper	☐				
Gag grouper	☐				
Red snapper	☐				
Yellowtail snapper	☐				
King mackerel	☐				
Greater amberjack	☐				
Dolphin	☐				
Swordfish	☐				
Atlantic sailfish	☐				
Other	☐				

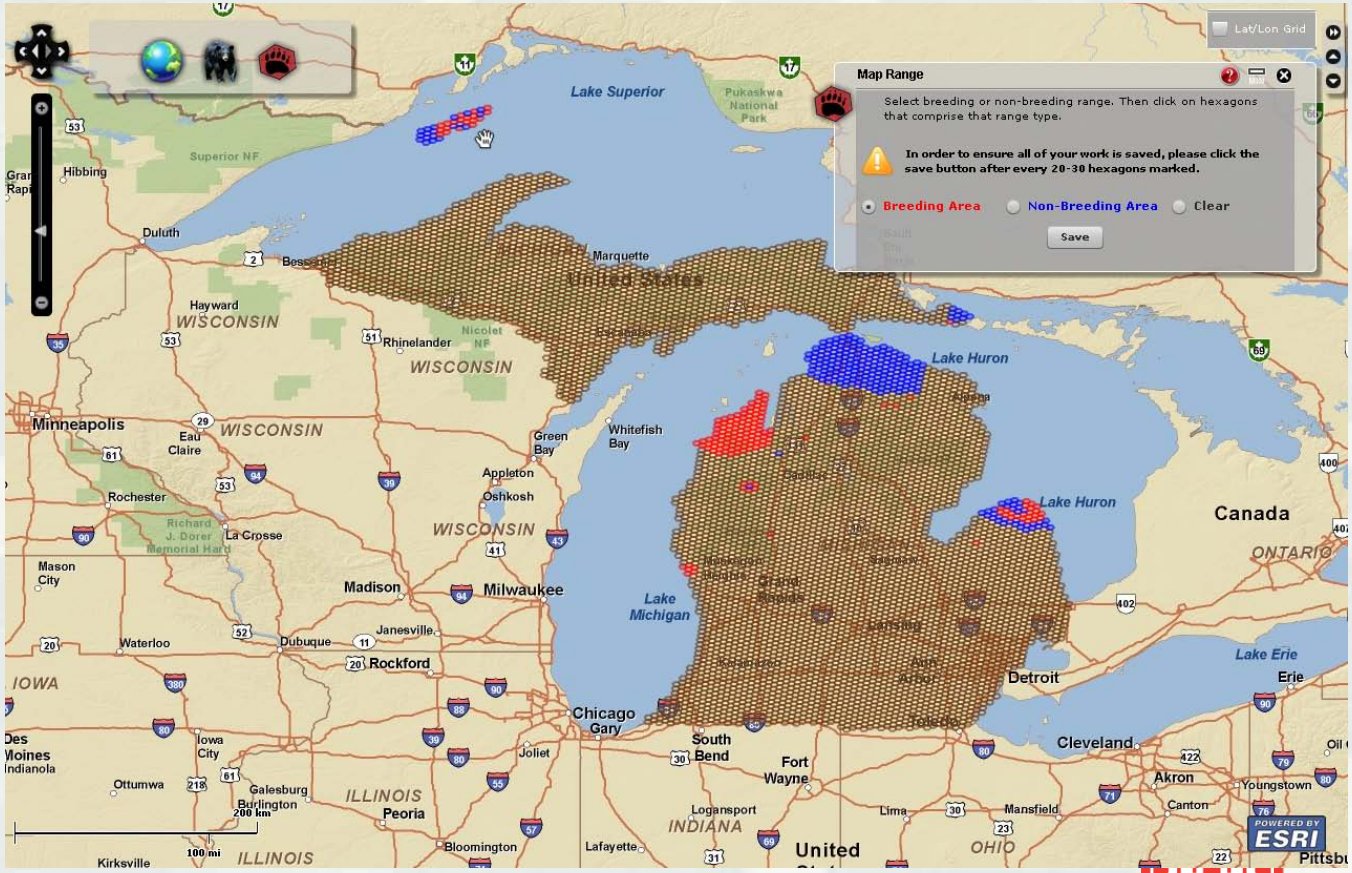
OTHER APPLICATIONS OF GIS IN RESEARCH PROJECTS: EXAMPLE - INVENTORYING WILDLIFE AND WILDLIFE HABITATS

Example:
Bear Habitat Project (1)

- Registration

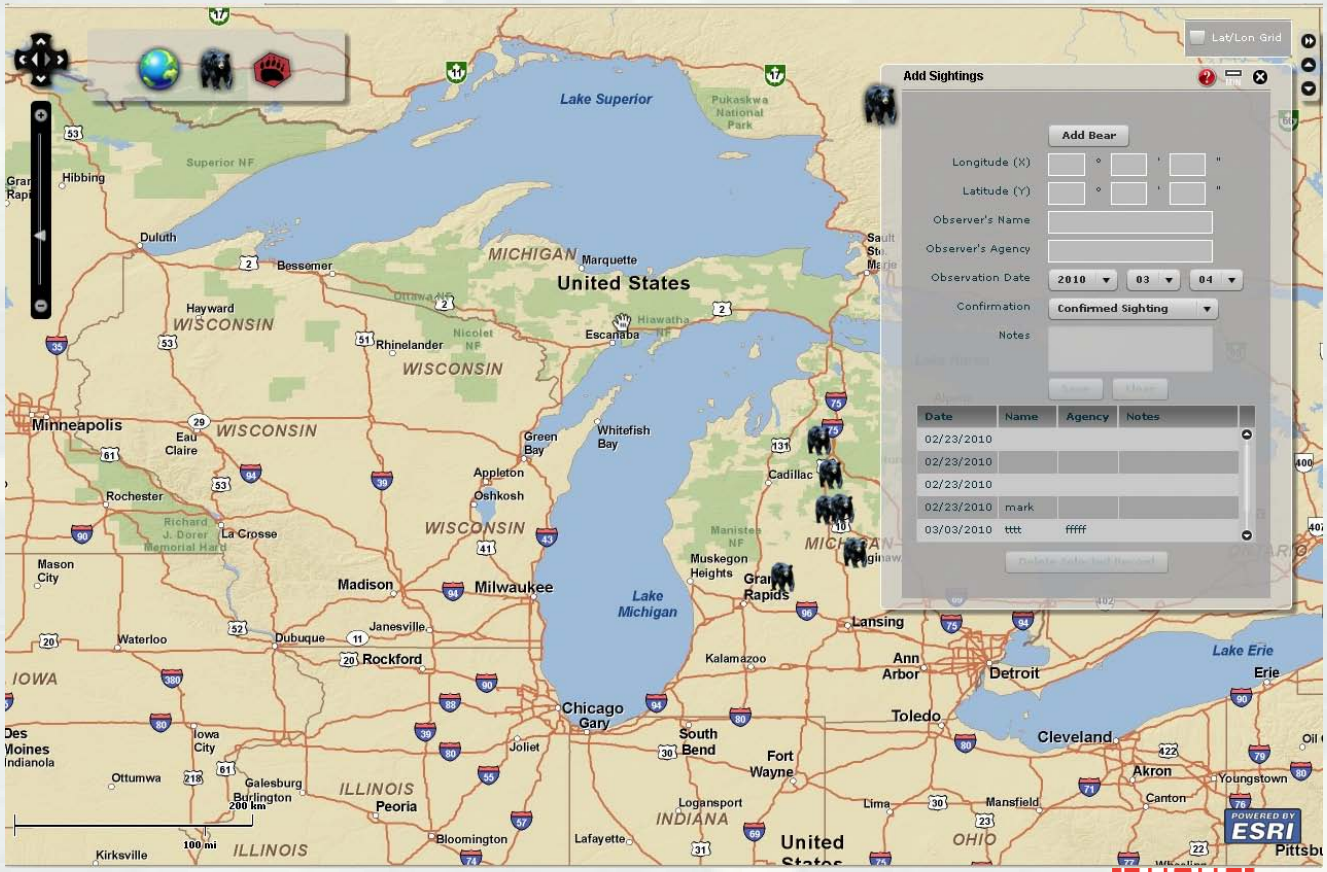
Example:
Bear Habitat Project (2)

- Marking the breeding range



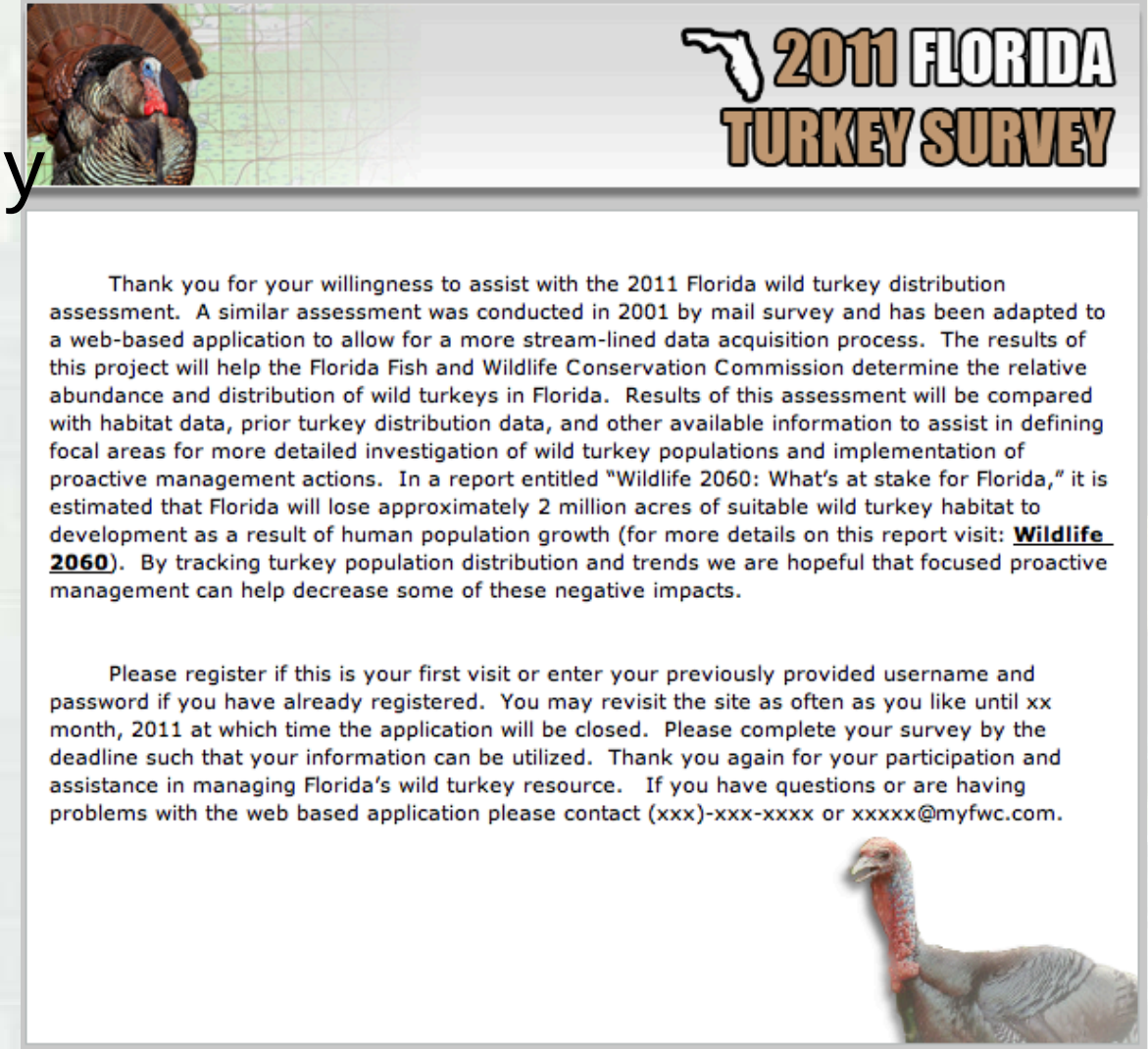
Example:
Bear Habitat Project (3)

- Providing detailed information on specific bear sightings



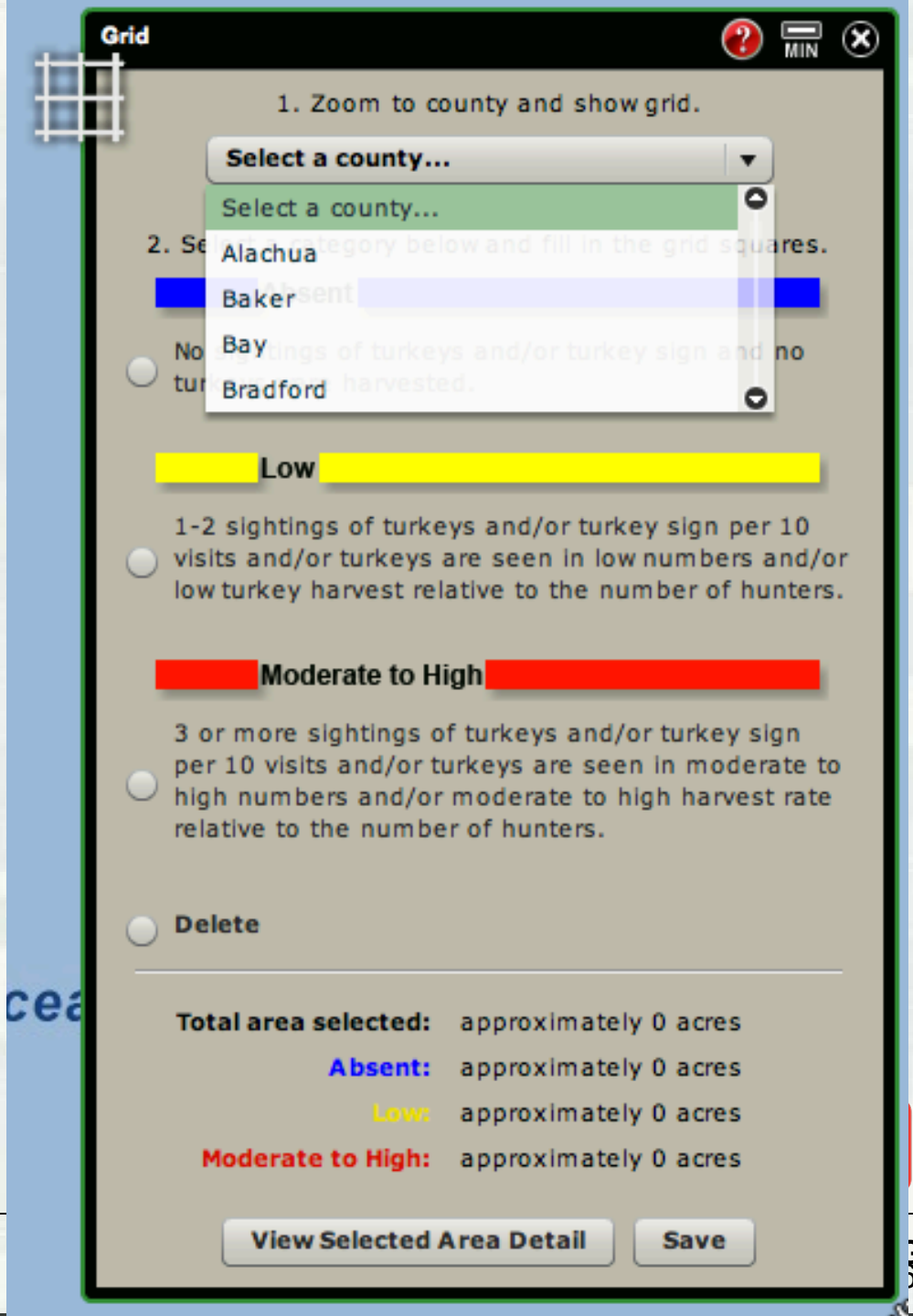
Example: Florida Turkey Project (1)

- Registration



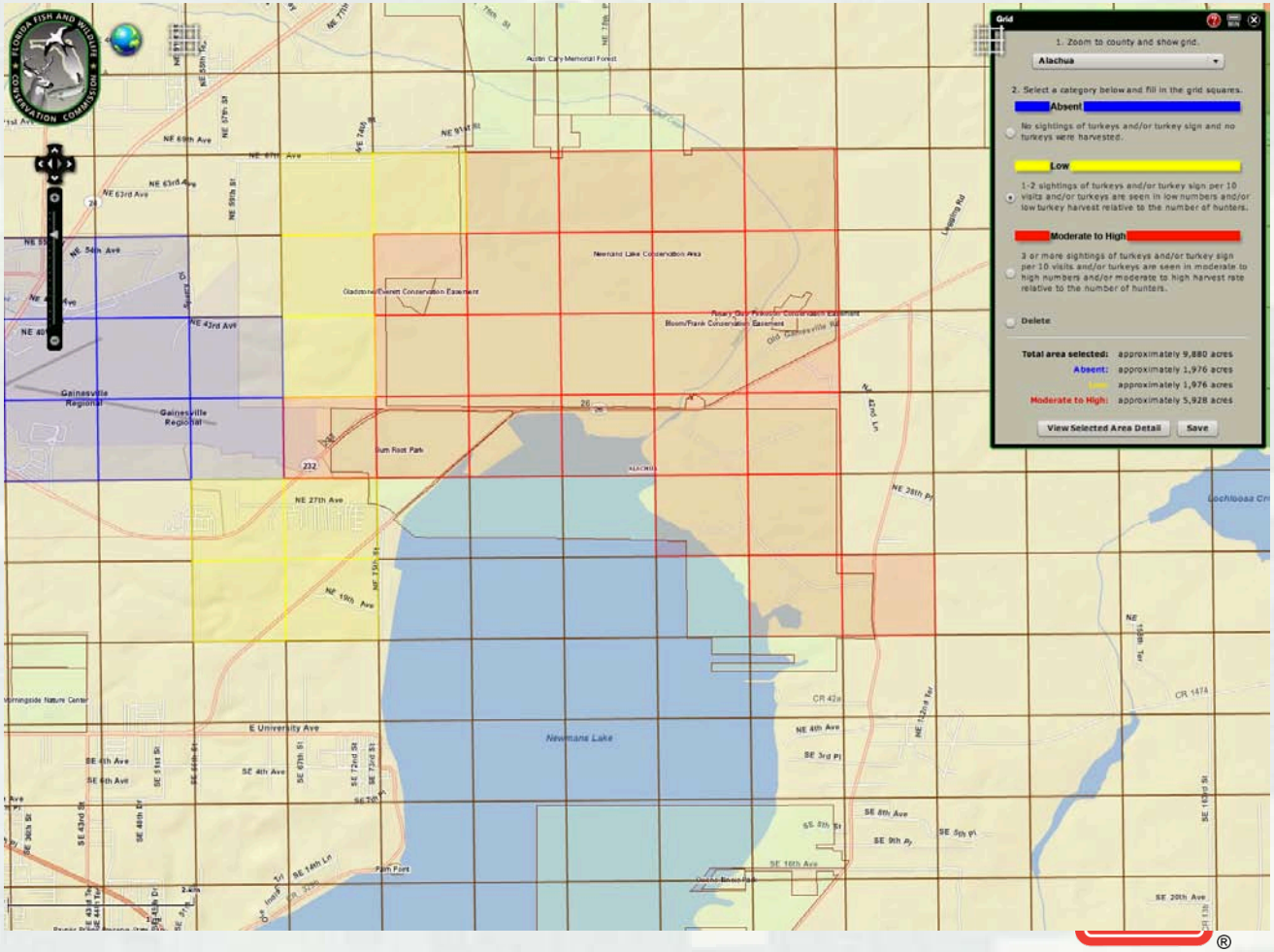
Example: Florida Turkey Project (2)

- Selecting an area



Example: Florida Turkey Project (3)

- Marking turkey sightings



Example: Florida Turkey Project (4)

- Background information on the area