

Applications of GIS in management and planning

5th Interagency Social Science Roundtable
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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



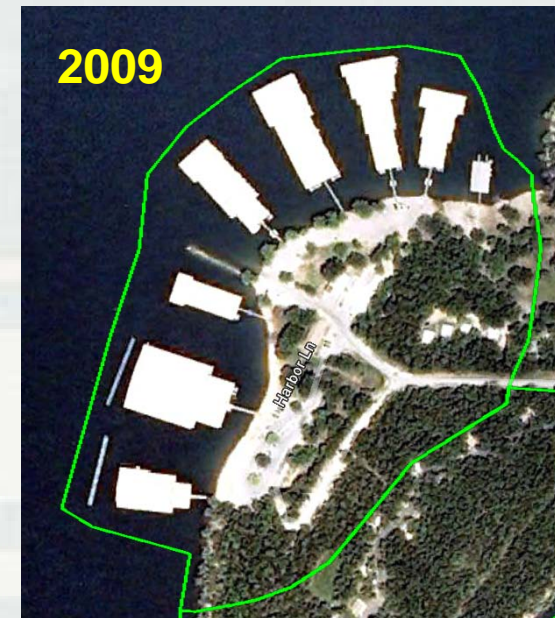
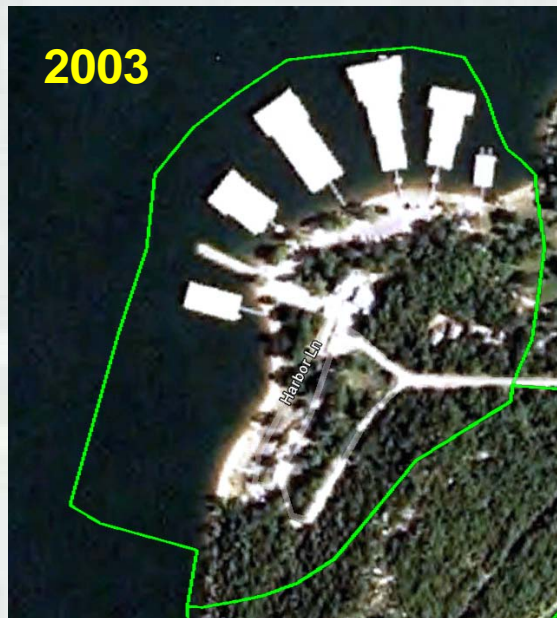
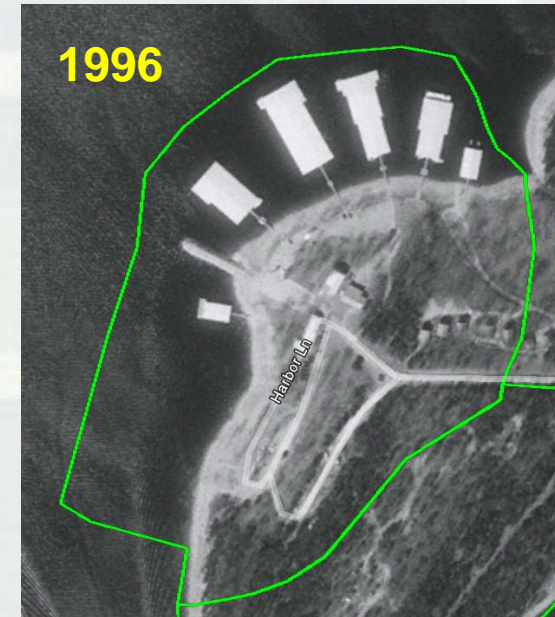
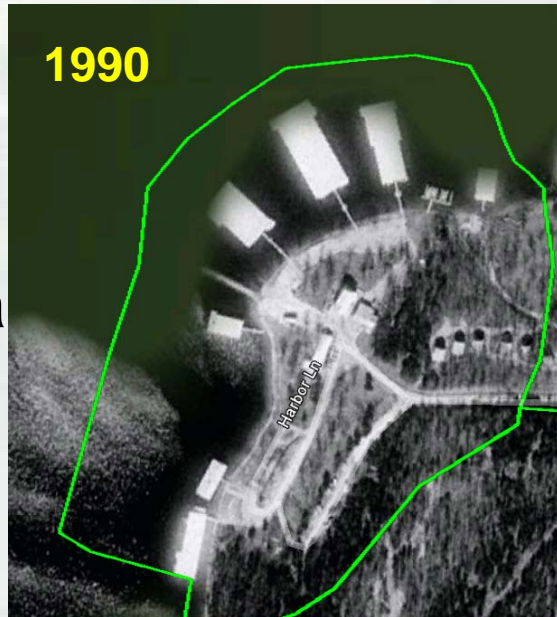
Longitudinal monitoring of changes in current USACE projects and areas

- Campgrounds
- Marinas
- Boat ramps



Changes over time

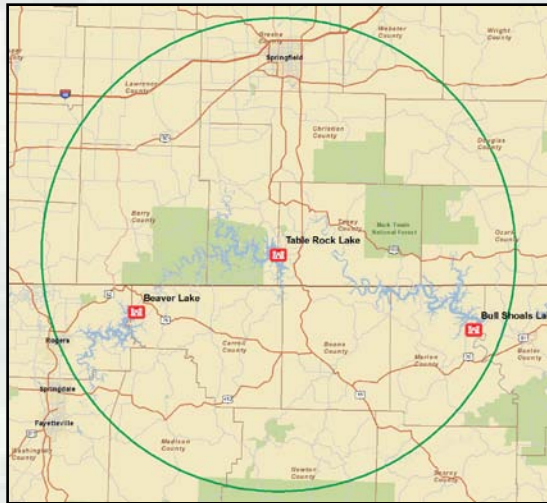
- Indian Point Marina
Table Rock Lake
(changes in distribution of boat slips)



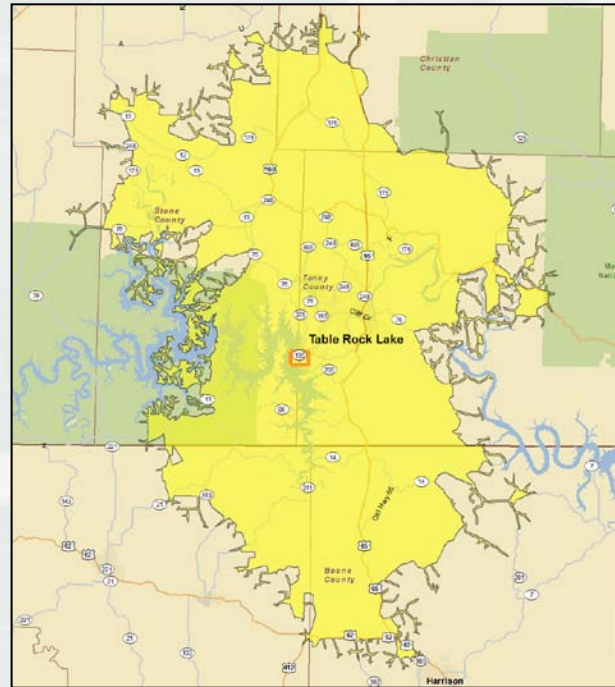
GIS USES IN DEFINING MARKET AREAS



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)





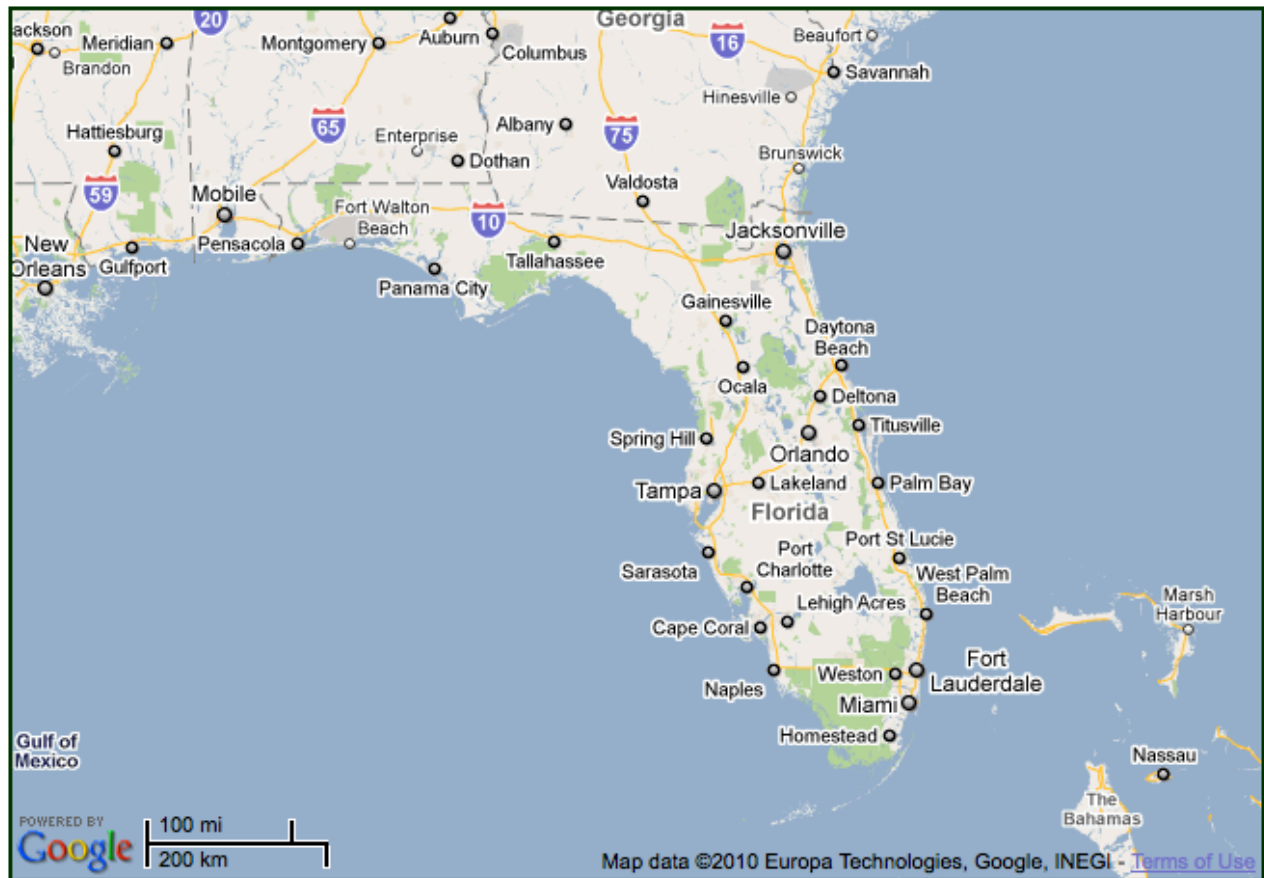
Florida Saltwater Fishing Survey

FSFS (1)

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

Click on the map as near as possible to the location from which you trailed/transported your boat on your last saltwater fishing trip. Most persons will leave from their permanent home, but some will leave from a second home or other location (e.g., a rented cottage).

When you click on the map, you will automatically be brought to a more precise map of the location from which you trailed/transported your boat.







FSFS (2)


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

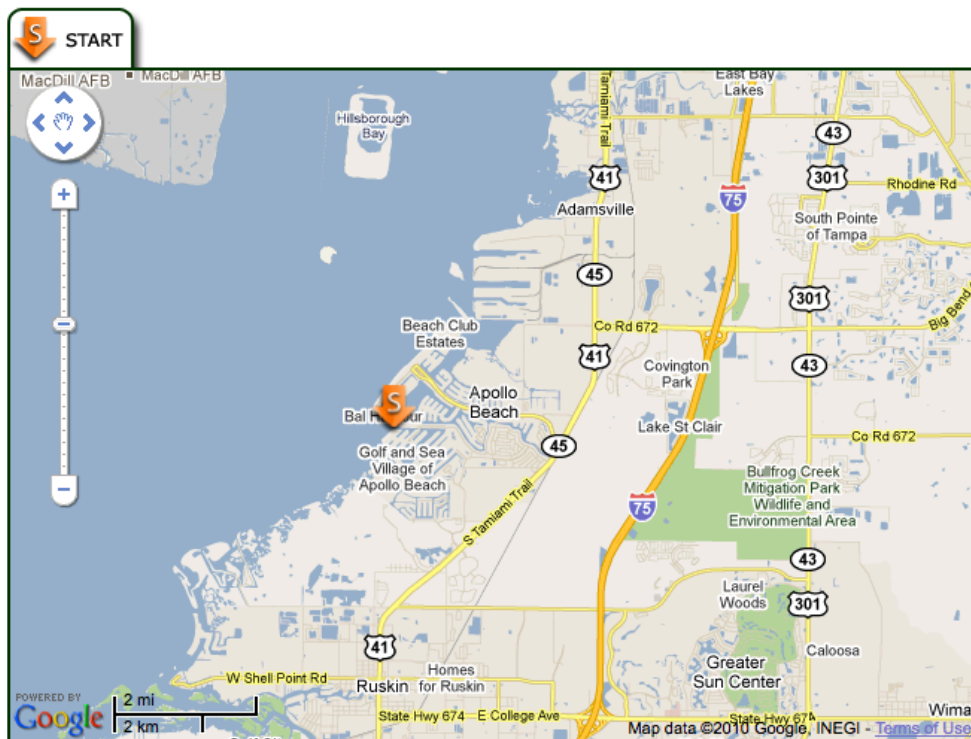
Now click on the map to indicate the exact location from which you trailered/transported your boat on your last saltwater fishing trip.

You can zoom in (for more precision) or zoom out (for a broader view) using the + and - scale, respectively, on the left side of the map. We recommend zooming in and out slowly to avoid becoming disoriented.

If the location from which you trailered/transported your boat is not visible on the map, use the tool with the four arrows and the hand in the center to reposition the map east, west, north and south. Using this tool will provide a different map.

When you click on the map, it will show more detail and a  marker (starting point) will appear. You can adjust the position of the marker by clicking again on the precise location on the map or by clicking on the  marker and dragging it to that location.

When you are satisfied with the position of the  marker, click on the button.







FSFS (3)


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

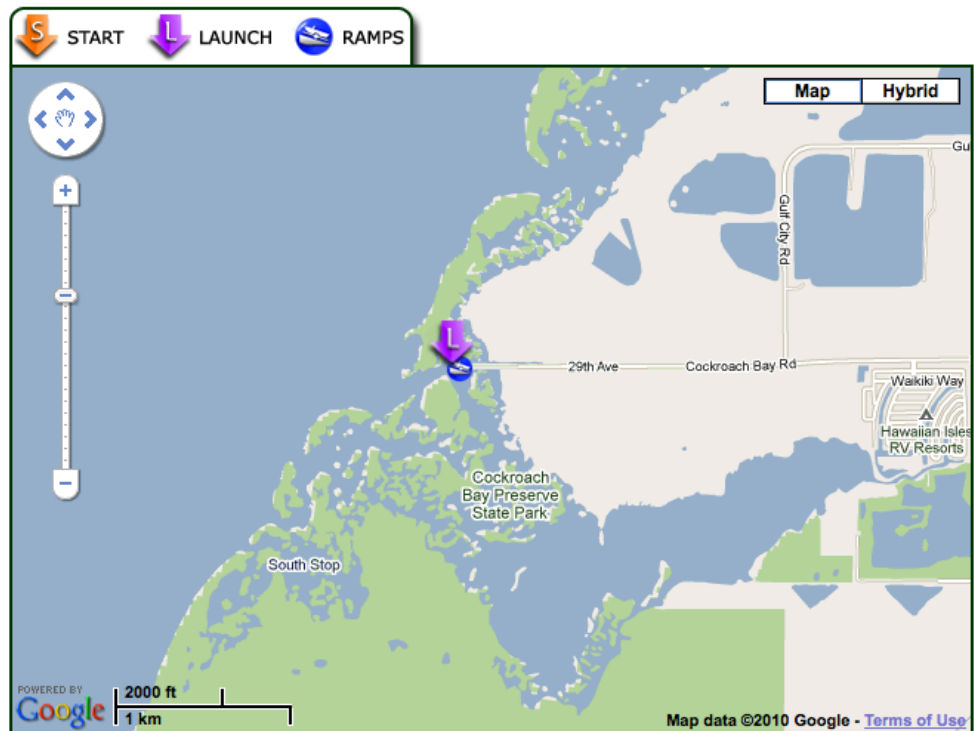
Click on the map to indicate the exact location from which you launched your boat on your last saltwater fishing trip. The map shows different features including most of the publicly accessible launch facilities in Florida. Private launch sites are not shown.

You can zoom in (for more precision) or zoom out (for a broader view) using the + and - scale, respectively, on the left side of the map. Again, we recommend zooming in and out slowly to avoid becoming disoriented.

If the location which you launched your boat on the trip is not visible on the map, use the tool with the four arrows and the hand in the center to reposition the map east, west, north and south. Using this tool will provide a different map.

When you click on the map, it will show more detail and a  marker will appear. You can adjust the position of the  marker by clicking again on the precise location on the map or by clicking on the marker and dragging to that location.

When you are satisfied with the position of the  marker, click on the button.





FSFS (4)

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

This map shows where you launched your boat (📍).

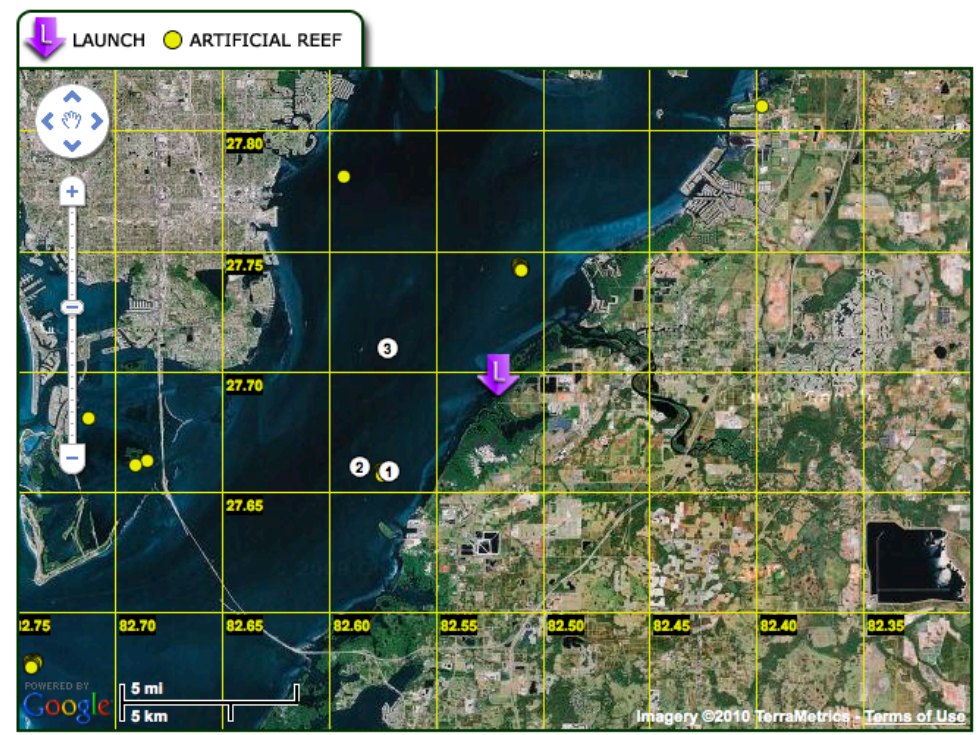
Now click on all locations where you fished in the order that you fished them. The first location you click should be the first place you fished, the last location you click should be the last place you fished. Each time you click on the map a small white numbered dot will appear indicating your fishing spot.

Latitude and longitude grids are shown to help you pinpoint the fishing location(s), especially if you can retrieve this information from your GPS device.

If you are not satisfied with the position of the dots, you can click on the button and click on the map again to indicate your fishing locations in the order you fished there.

When you have added all the locations where you fished click on the button to continue.

Coordinates of this Fishing Location:
 Latitude: 27° 42' 26.79" Longitude: -82° 34' 11.3118"



FSFS (5)

- Collecting specific data on the fishing route on the trip

Now we would like you to indicate the route that you took to your first fishing location, between fishing locations (if you fished at more than one location), and then from your last (or the only) fishing location back to the dock or launch site.

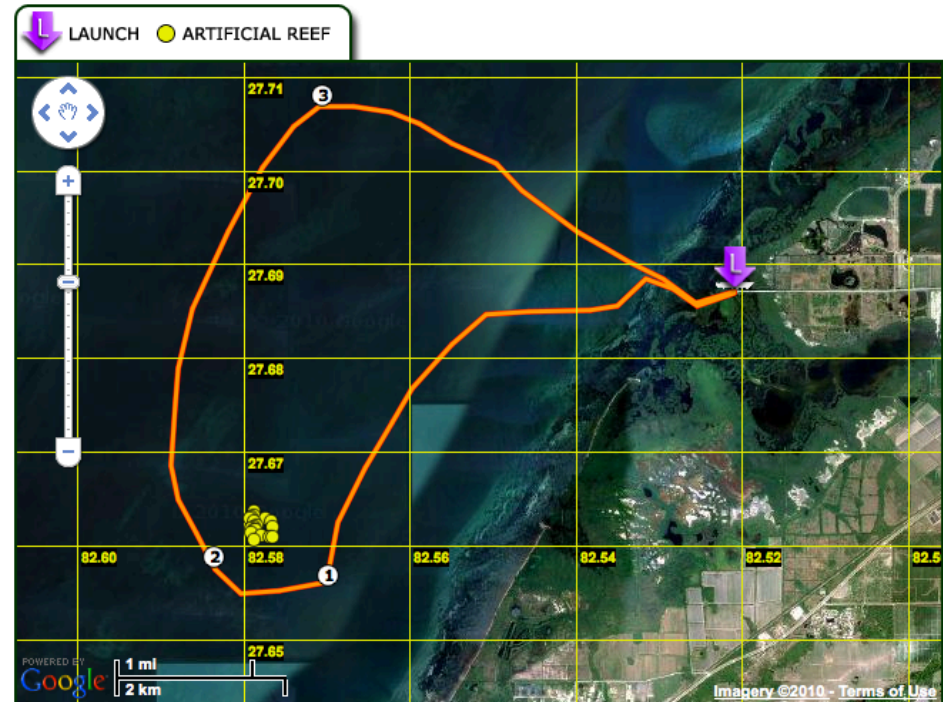
The map shows your launch site (📍) and the sequence in which you fished at these locations. Latitude and longitude grids are also shown to help you chart the route, especially if you can retrieve this information from your GPS device.

Beginning from the 📍 location, click on the map to show the route you took to the first location where you fished. A boat and a line will appear marking the route. Then indicate the route you took to reach your other fishing location(s), and then from the last (or the only) location back to the launch site.

You can clear the route and start again by using the button.

When you are finished creating your route please click the button.

Length of route: 12.5 miles Length of last leg: 0.3 miles





FSFS (6)

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



How much time did you spend fishing at each of these locations?

- How much time did you spend fishing at location ① ? hours minutes
- How much time did you spend fishing at location ② ? hours minutes
- How much time did you spend fishing at location ③ ? hours minutes

Next >>



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 >>



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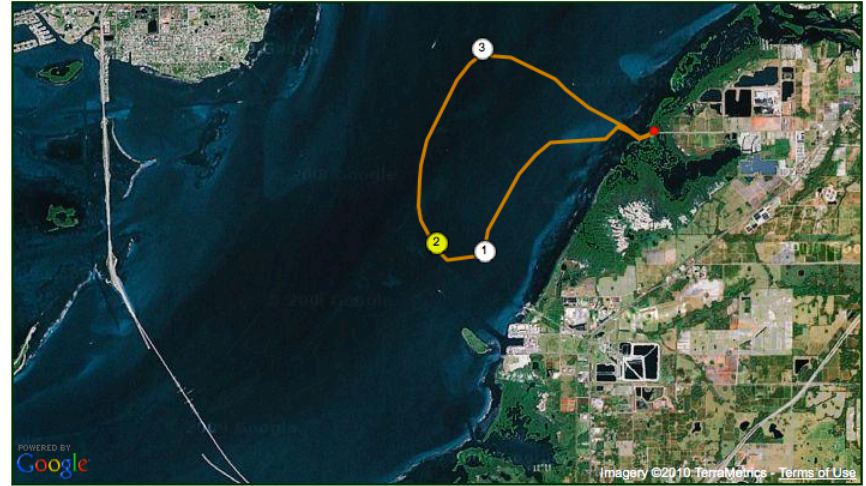


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FSFS (8)

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



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.

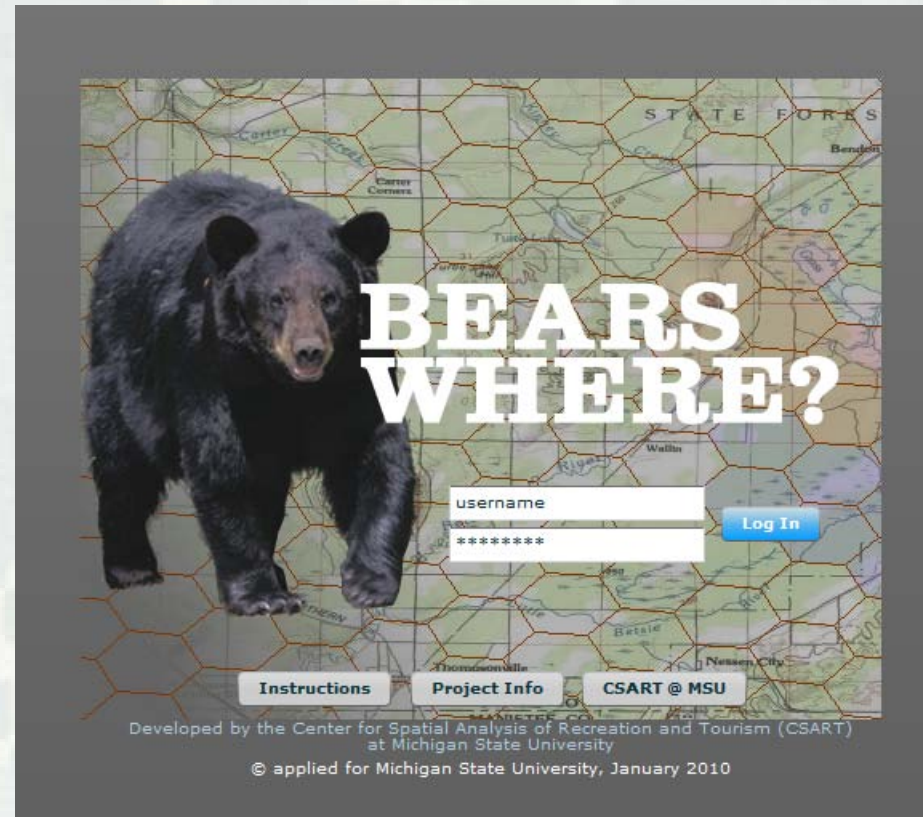
Species of Fish	A. Targeted (check box if targeted)	B. Number Caught	C. Number Released	D. Additional Minutes	E. Additional Travel (minutes)
Red drum	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Snook	<input type="checkbox"/>	<input type="text"/>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

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



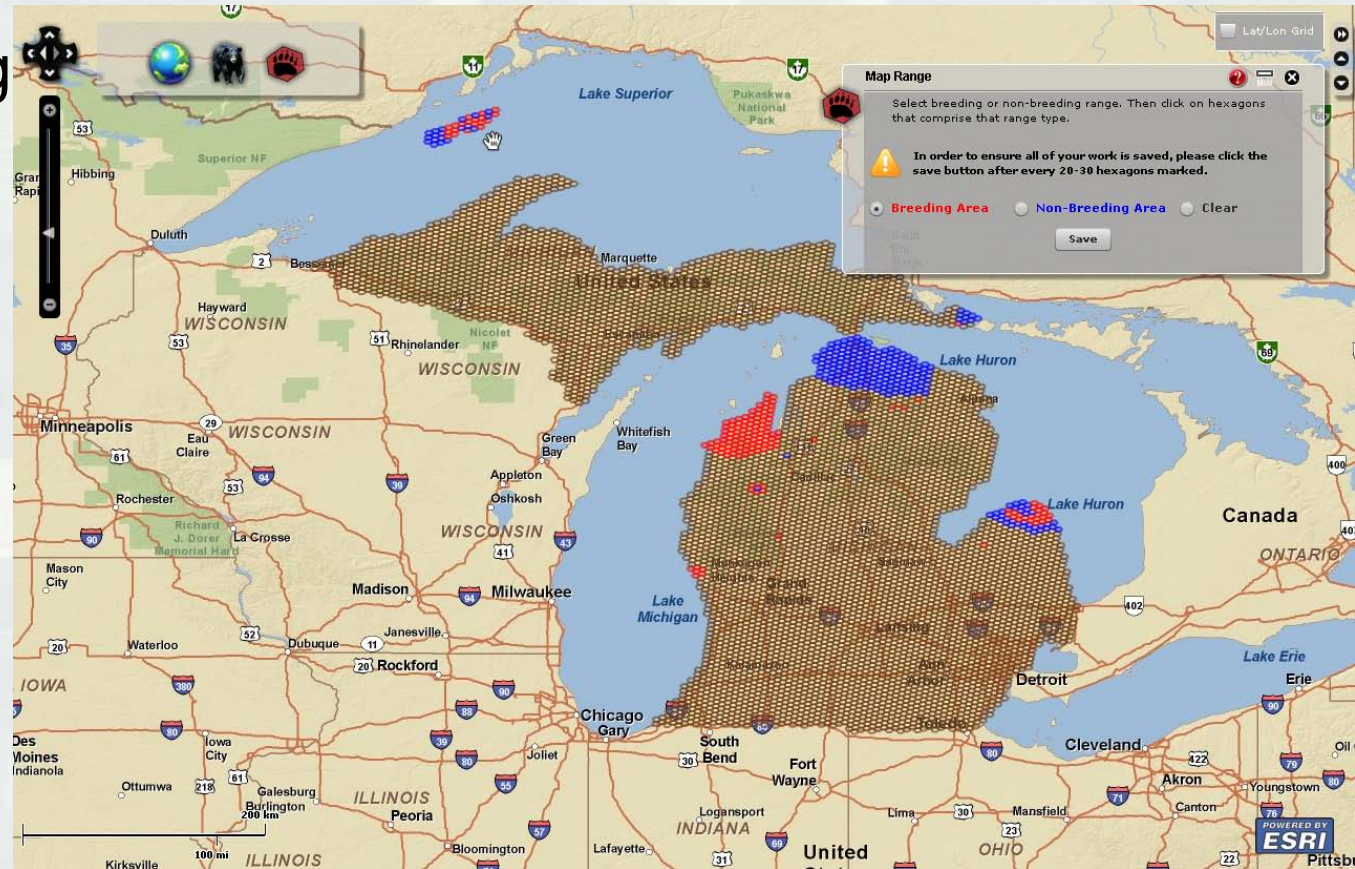
Example: Bear Habitat Project (1)

- Registration



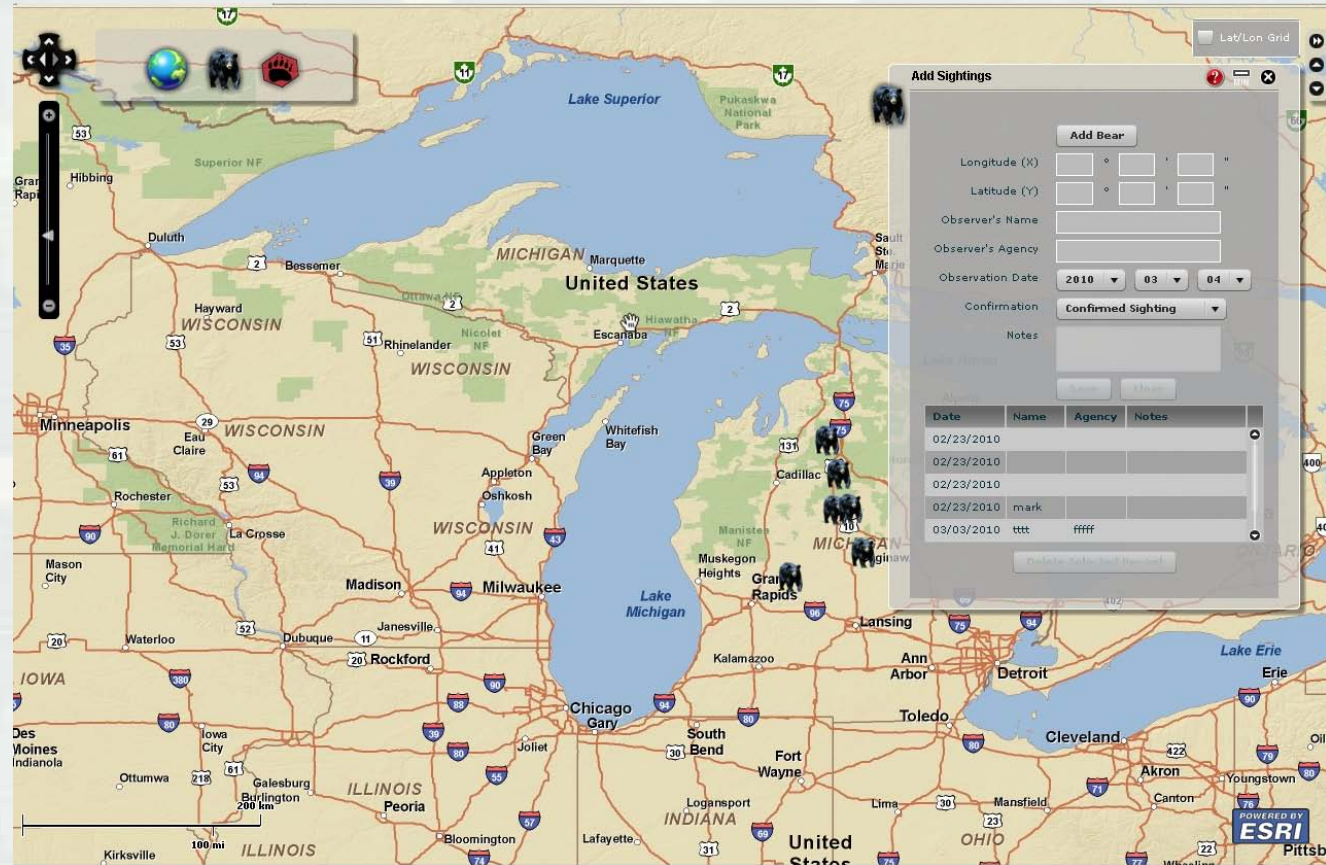
Example: Bear Habitat Project (2)

- Marking the breeding range



Example: Bear Habitat Project (3)

- Providing detailed information on specific bear sightings



Example: Florida Turkey Project (1)

- Registration



2011 FLORIDA TURKEY SURVEY

Thank you for your willingness to assist with the 2011 Florida wild turkey distribution assessment. A similar assessment was conducted in 2001 by mail survey and has been adapted to a web-based application to allow for a more stream-lined data acquisition process. The results of this project will help the Florida Fish and Wildlife Conservation Commission determine the relative abundance and distribution of wild turkeys in Florida. Results of this assessment will be compared with habitat data, prior turkey distribution data, and other available information to assist in defining focal areas for more detailed investigation of wild turkey populations and implementation of proactive management actions. In a report entitled "Wildlife 2060: What's at stake for Florida," it is estimated that Florida will lose approximately 2 million acres of suitable wild turkey habitat to development as a result of human population growth (for more details on this report visit: [Wildlife 2060](#)). By tracking turkey population distribution and trends we are hopeful that focused proactive management can help decrease some of these negative impacts.

Please register if this is your first visit or enter your previously provided username and password if you have already registered. You may revisit the site as often as you like until xx month, 2011 at which time the application will be closed. Please complete your survey by the deadline such that your information can be utilized. Thank you again for your participation and assistance in managing Florida's wild turkey resource. If you have questions or are having problems with the web based application please contact (xxx)-xxx-xxxx or xxxxx@myfwc.com.



User Login

Username:
Password:

Log In

Registration

**You must be
registered before
you can log in.**

Register

Example: Florida Turkey Project (2)

- Selecting an area

Grid

1. Zoom to county and show grid.

Select a county...

Select a county...

Alachua

Baker

Bay

Bradford

2. Select a category below and fill in the grid squares.

Low

1-2 sightings of turkeys and/or turkey sign per 10 visits and/or turkeys are seen in low numbers and/or low turkey harvest relative to the number of hunters.

Moderate to High

3 or more sightings of turkeys and/or turkey sign per 10 visits and/or turkeys are seen in moderate to high numbers and/or moderate to high harvest rate relative to the number of hunters.

Delete

Total area selected: approximately 0 acres

Absent: approximately 0 acres

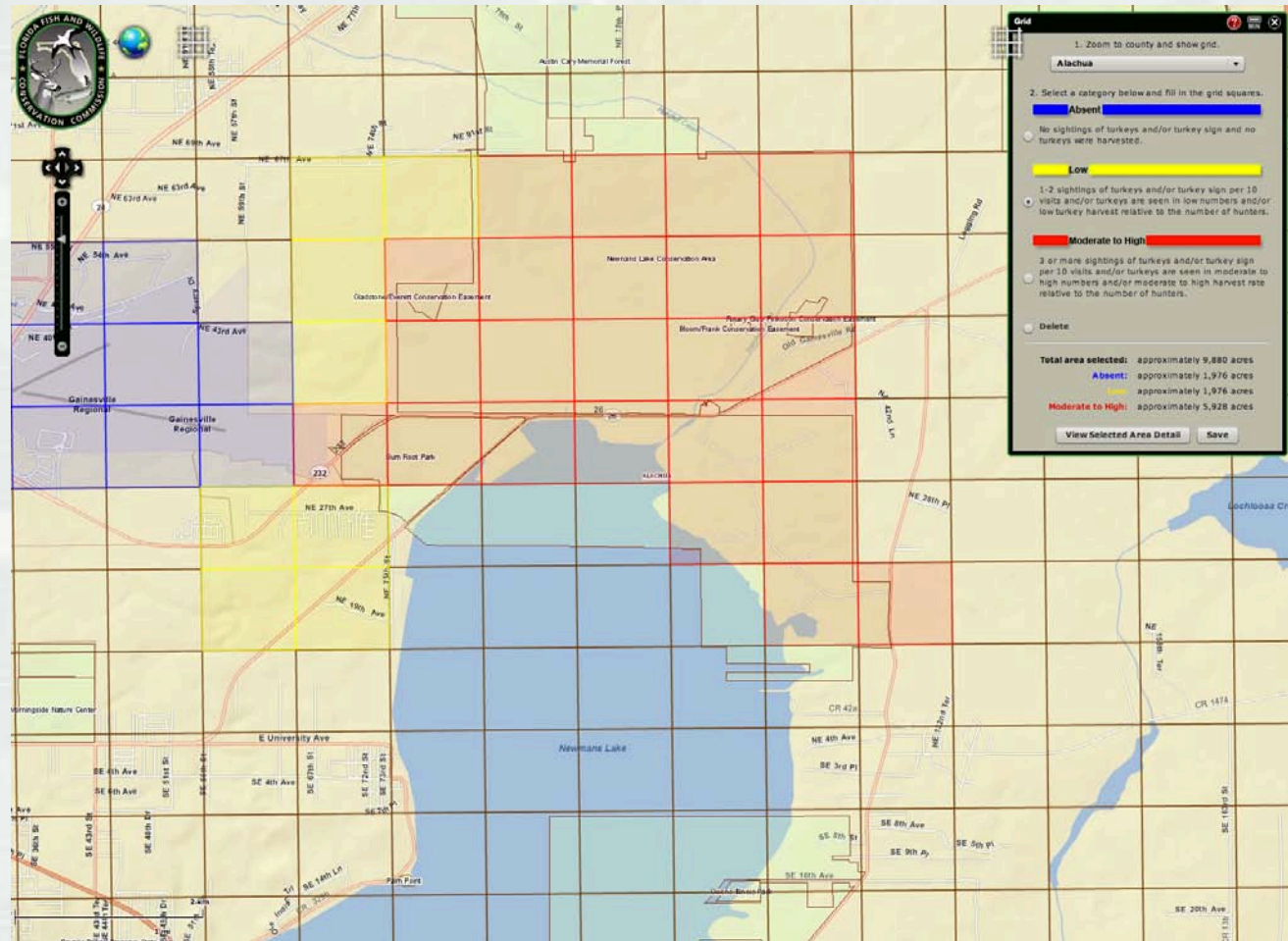
Low: approximately 0 acres

Moderate to High: approximately 0 acres

View Selected Area Detail **Save**

Example: Florida Turkey Project (3)

- Marking turkey sightings



Example: Florida Turkey Project (4)

- Background information on the area

