Engaging Anglers in Missouri using GIS & Mobile Apps

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Missouri Department of Conservation
Missouri Department of Conservation
Who we are!
Presentation Overview

- Fisheries Division’s Work
- GIS Data Development
- Application Development
- Application Demos
- Advanced Angler Resources
Fishing Resources & Access
What we do!

- ~1,000 Managed Public Waterbodies
  - 378,000+ acres
- 4,100+ habitat structures
- 1000+ Fishing Resources
  - Boat Ramps
  - Docks
  - Jetties
  - Bait Shops

- Fishing Prospectus
- Weekly Reports
- Regulations
Fishing Prospects & Weekly Reports

• **Annual Fishing Prospects**
  - 69 Lakes
  - 46 Rivers & Streams

• **Weekly Reports**
  - April-September

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**Lake of the Ozarks (Glaize)**

- Information: 573-346-2210
- Water Surface Temp: 84°
- Water Level (Range): falling
- Water Type: dingy
- Fish Reported:
  - Catfish: Fair
  - Crappie: Slow
  - Black Bass: Slow
  - White Bass: Slow
  (Reported on: 4/20/17)

- Catfish fair using cut shad, cut bluegill, worms, and chicken livers; crappie slow, try using minnows or crappie jigs; black bass slow, try using dark-colored soft plastics or buzzbaits; white bass slow, try using light-colored soft plastics, spoons, Rooster Tails, or crankbaits.
Fishing Regulations

Think spatially!

• Waterbodies are regulated at 5 spatial scales
  - Statewide
  - County
  - Unique Zone
  - Conservation Area
  - Special Management Areas
Building the foundation
Developing data to drive apps
Fisheries Division Enterprise GIS

Fisheries Versioned GDBs

- Test services in apps, test schema changes
- Multi-user, QAQC, schema modifications

Internal Applications

ArcGIS Online Apps
Mobile Apps
Spatial Data Development

- **Existing data**
  - Shapefiles to SDE Feature Class
    - Data steward
    - Metadata
    - Improve workflows and processes
    - Source Record

- **New data**
  - Tabular $\rightarrow$ Spatial
  - SQL $\rightarrow$ SDE Views
Application & Resource Development

Finding the right features, user experience, and security
Understanding the options

• ESRI Suite of Applications
  - Build and maintain focused applications in house
    - App Templates
      - Story Maps
      - GeoForms
    - WebApp Builder
    - Survey123

• Custom Applications
Data Collection Apps

- **Hydrilla Reporting**
  - Internal and External users
  - Varying schemas (security)
    - Landowner info
  - Varying scope
    - Statewide and focus area

- **Show-Me Muskie Project**
  - Public participants sign-up
  - Journal/report type entries
  - Efficient UI
  - Mobile and Desktop entry

Survey123
Data Communication Apps

• Web AppBuilder
  - MO Fishing Interactive Map: *The one-stop-shop for fishing resources in Missouri!*
    - Managed Public Waterbodies
    - Fish Attractor structures (and heatmap)
    - Boat Ramps
    - Docks
    - Jetties
    - Fish Cleaning Stations
    - Trout Lakes
    - Trout Streams
    - Live Bait Dealers
    - Conservation Areas
Hydrilla Reporting

Public invasive species
(\textit{Hydrilla verticillata})
inspection app
MO Fishing Interactive Map

Comprehensive fishing resource application
Missouri Lakes
Fishing Prospects
Story Map
Highlights exceptional fishing opportunities with the MO Fishing map
Missouri Trout Fishing

Highlights trout fishing opportunities & links to other resources
MO Fishing Mobile App (iOS & Android)

All-inclusive native mobile application for fishing in Missouri
Objective: To connect anglers in Missouri to close-to-home fishing resources and provide tools to help them get the most out of their fishing trip.

- Waterbody centric mobile app
- Location driven
- Integrated with other systems
  - Reports
  - Prospects
  - Regulations
  - Permits/Licenses
- Expandable user interface
Jefferson City (McKay Park Lake)

Contact
573-815-7900

Facilities
- Restrooms
- Boat Ramps
- Parking Lots

Special Regulations
You must have a trout permit to keep trout during other times of the year.

Trout may be taken by pole and line using all types of lures and baits under statewide limits, except during the dates listed below.

November 1 - January 31:
- Catch and release only for trout.
- Only flies, artificial lures and unscented soft plastic baits are allowed.

Conservation Area Regulations
Table Rock Lake (James River Arm)

Contact
417-895-6880

Facilities
- Restrooms
- Boat Ramps
- Parking Lots

Special Regulations
Lakewide:

Daily limit: Catfish (channel, blue and flathead)—10, combined total of these species Crappie—15

Size limit:
Black bass—minimum 15"
Crappie—minimum 10"
Walleye and sauger—minimum 18"

On the lake and its tributaries:

Size limit: Paddlefish—34" minimum body length, measured from eye to fork of tail

No conservation area regulations
Little Dixie Lake

Missouri River (Middle)

Lake of the Ozarks

Truman (Harry S) Lake

Hunnewell Lake

Missouri River (Lower)

Long Branch Lake

Mississippi River (Upper)

Lever (Harry) Lake

Contact

573-815-7900

Facilities

Restrooms
Boat Ramps
Parking Lots

Conservation Area Regulations
<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Distance</th>
<th>Fish</th>
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<tbody>
<tr>
<td><strong>Little Dixie Lake</strong></td>
<td>~23mi</td>
<td>Bluegill (Centrarchidae (sunfishes) in the order Perciformes)</td>
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<td></td>
<td></td>
<td>Redear Sunfish (Centrarchidae (sunfishes) in the order Perciformes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Largemouth Bass (Centrarchidae (sunfishes) in the order Perciformes)</td>
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<tr>
<td></td>
<td></td>
<td>Blue Catfish (Ictaluridae (bullhead catfishes) in the order Siluriformes)</td>
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<tr>
<td><strong>Missouri River (Middle)</strong></td>
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<td><strong>Lake of the Ozarks</strong></td>
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<td><strong>Truman (Harry S) Lake</strong></td>
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<tr>
<td><strong>Missouri River (Lower)</strong></td>
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<tr>
<td><strong>Long Branch Lake</strong></td>
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<td><strong>Mississippi River (Upper)</strong></td>
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Prospects

Largemouth bass fishing should be good according to recent surveys. The density of bass continues to slowly increase due to good recruitment over the last few years. As a result, there are good numbers of bass in the 8-12 inch range available to anglers. There will also be good numbers of bass in the 12-15 inch protected slot length range providing some excellent catch and release fishing. A fair number of bass over 18 inches (4 lbs. or larger) will be present including a few close to 22 inches (8 lbs.); bass up to 9 lbs. were sampled at the lake again this year during a spring electrofishing survey. Anglers can help improve the density of larger bass by practicing catch-and-release fishing for those bass greater than 15 inches. The upper end of the lake, rock jetties, and along the dam are the spots that usually provide the best fishing. Fishing around structure like creek channel drop-offs, brush piles and fallen trees are also very productive. Crappie fishing should be fair. Surveys show large numbers of 7-9 inch crappie. Bigger fish (greater than 10 inches) will not be as abundant as they have been in the past few years. Bluegill fishing will be good this year. Most fish will average 7-8 inches and some will be caught in excess of 8 inches. Catfish fishing will be better than it has been for the last few years due to an increase in the number of fish stocked. Surveys last summer showed good numbers of 15-22 inches channel and blue catfish will be available to anglers. Last year, one lucky angler caught a 55-pound blue catfish. Many of the 18-22 inch catfish caught by anglers last year were taken during the spring and early summer months. Fishing off the jetties and dam, around cover, and near creek channels is the most productive. Good catfish baits include worms, liver, shrimp, cut shad, prepared baits, and live sunfish. Redear sunfish fishing continues to be outstanding. As in previous years, anglers will have the opportunity to catch large numbers of 8-10 inch redear. Chances of catching a 10 inch redear sunfish (Master Angler size) are excellent. Try fishing near woody cover and tree stumps in shallow water, especially in May and early June during spawning. Worms and crickets fished on or near the bottom work well. There is an overabundance of common carp in Little Dixie Lake, and they compete with game species for resources and
Parking at Little Dixie Lake Conservation Area
Tap for directions
To Unknown Location
From 2901 W Truman Blvd

35 min
32 mi · State Road J
Fastest route

Details

GO

36 min
36 mi · US-54 E
Alternate route

Details

GO

42 min
42 mi · US Highway 63 S
Alternate route

Details

GO

Driving Options

Drive  Walk  Transit
Fish Guide

- American Eel
- Arkansas Darter
- Banded Sculpin
- Bighead Carp
- Bigmouth Buffalo
- Black Bullhead
- Black Carp
- Black Crappie
- Blackspotted Topminnow
- Blackstripe Topminnow
- Bleeding Shiner
- Blue Catfish
- Bluegill
- Bowfin
- Brook Silverside
Black Crappie

Family: Centrarchidae (sunfishes) in the order Perciformes (perch-like fishes)

Description: The black crappie is silvery with a color pattern that is mainly irregularly arranged speckles and blotches (not vertical bars). The dorsal fin has 7 or 8 spines. Crappies, as a group, are popular panfish that are deep bodied and strongly compressed laterally (slab sided). The upper jaw is long, reaching well past the middle of eye. The two sections of the dorsal fin (spiny forepart and soft-rayed rear part) are broadly connected, without a notch between. The anal fin is nearly as long and large as the dorsal fin, and it has 6 spines. The upper surface of the head and forward part of the back are strongly concave.

Similar species: White crappie have faint vertical bars instead of irregularly arranged speckles and blotches as the color pattern. They also have 6 dorsal fin spines instead of 7 or 8.

Size: Total length: 9-10 inches (seldom exceeds 14 inches); weight: to about 4 pounds.
Seasons

Jefferson City (McKay Park Lake) ☆
~1mi

Conservation Commission Hq (Pond... ☆
~2mi

Jefferson City (Hough Park Lake) ☆
~3mi

Conservation Commission Hq (Pond... ☆
~3mi

Cole County (Jaycee Park Lake) ☆
~5mi

Binder Community Lake ☆
~6mi

Taos Countryside Park Lake ☆
~8mi

Hart Creek Lake

Contact
573-815-7900

Facilities
Restrooms
Boat Ramps
Parking Lots

Special Regulations
Trout permits are required if trout are kept.

November 1 - January 31:
Catch and release only for trout
Flies, artificial lures and unscented soft plastic baits

Conservation Area Reg
### Crappie, Black and White

<table>
<thead>
<tr>
<th>Season</th>
<th>Dates</th>
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<tr>
<td>Bass: White, Yellow, Striped &amp; Hybrids</td>
<td>1/01/16 - 12/31/16</td>
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<tr>
<td>Black Bass, From Impoundments</td>
<td>1/01/16 - 12/31/16</td>
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<tr>
<td>Black Bass, Non-Ozark Streams</td>
<td>1/01/16 - 12/31/16</td>
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<tr>
<td>Black Bass, Ozark Streams</td>
<td>5/28/16 - 2/28/17</td>
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<tr>
<td>Bullfrog and Green Frog</td>
<td>6/30/16 - 10/31/16</td>
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<tr>
<td>Catfish, Blue</td>
<td>1/01/16 - 12/31/16</td>
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<tr>
<td>Catfish, Channel</td>
<td>1/01/16 - 12/31/16</td>
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<tr>
<td>Catfish, Flathead</td>
<td>1/01/16 - 12/31/16</td>
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<tr>
<td>Common Snapping Turtles</td>
<td>1/01/16 - 12/31/16</td>
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</table>

#### Limits

- Daily limit: 30
- Possession limit: 60
- Size limit: None

#### Notes

Limits apply on all waters except on areas with special regulations. Check area regulations.

#### Fish

- Black Crappie, White Crappie
Permits

Jefferson City (McKay Park Lake) ★

Conservation Commission HQ (Pond... ★

Jefferson City (Hough Park Lake)

Conservation Commission HQ (Pond... ★

Cole County (Jaycee Park Lake)★

Binder Community Lake

Taos Countryside Park Lake ★

Hart Creek Lake

Contact
573-815-7900

Facilities
Restrooms
Boat Ramps
Parking Lots

Special Regulations
Trout permits are required if trout are kept.

November 1 - January 31:
Catch and release only for trout
Flies, artificial lures and unscented soft plastic baits
Enter your Conservation ID and DOB to securely download your permits.
Your Conservation ID number can be found next to the barcode on the back of your Heritage Card. It can also be found on any previous permit.

889173357

03/02/1966

Download Permits

Cancel

Remember Me: 

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<th>July</th>
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51213094
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TROUT PERMIT
Date Purchased
September 27, 2016 at 1:21 PM
Effective Date
9/27/2016
Expiration Date
02/28/2017
Accres Claimed
0
Hunter Education Number
MO 123456
Address
PO BOX 180 JEFFERSON CITY MO 65102
Date of Birth
March 2, 1966
Gender
Male
Eye Color
BLUE
Advanced Angler Resources

More control, more accuracy
Fish Attractor Structures GPX

• Some anglers do not want to rely on their smartphones or computers to find fish attractor structures.
  - Geospatial Exchange Files (GPX)
  - Printable maps
  - Tabular location information
Automated Processes

- Annual fish attractor updates
  - Labor intensive GPX conversion process

- Data Driven Pages and Python
  - Automate map and report production
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<th>Lake</th>
<th>ID</th>
<th>Type</th>
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Wrap-Up

• Implementation of an Enterprise GIS has improved our information management processes.

• Focused application development capabilities have improved data collection and communication.

• The MO Fishing mobile app and ArcGIS Online resources we provide makes fishing in Missouri more accessible for all anglers.
What’s next!

• Continue to build datasets and improve information management processes along the way.

• Collect feedback and implement user requested enhancements in our apps.

• Build gamification and journaling features into the MO Fishing app.
For more information about the Missouri Department of Conservation

Visit Us Online
https://mdc.mo.gov

Check out the MDC Map Gallery
https://mdcgis.maps.arcgis.com/home/index.html

Watch the MO Fishing webinar:
“Engaging Anglers Through Technology - The MDC Story”
https://youtu.be/wIrt0sx1AmQ

Download the MO Fishing App!
Find the best places to fish in Missouri!
Alex Prentice
Missouri Department of Conservation
Alex.Prentice@mdc.mo.gov