IOWA DEPARTMENT OF NATURAL RESOURCES

# Sport Fish Restoration Research Findings

## Hydroacoustic Assessment of Iowa Lakes

**Project Duration:** 2012-2019

**Location:** Significant Public Owned Lakes in Iowa


### Small Impoundments Fisheries Research Team:

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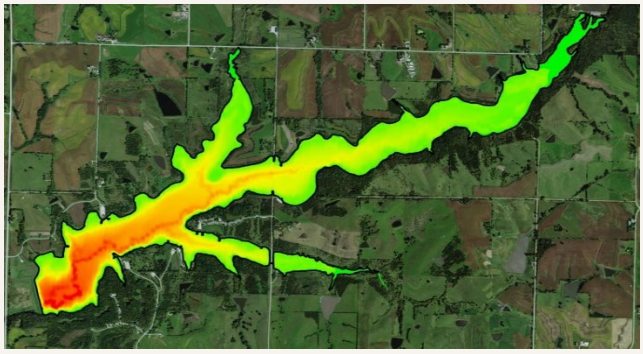
# Hydroacoustic Assessment of Iowa Lakes

Anglers are using technology to improve their chances of catching fish. Smart devices, Global Positioning Systems (GPS), and fish finders have changed the way people fish. In the 1970's, several lakes in Iowa were surveyed to produce bathymetric maps for anglers and managers. These maps were black and white with little detail about amenities around the lake or the location of fish structures. As lakes age the basin morphometry changes; reduced mean depth, shoreline erosion, and in some cases dredging operations deepen lakes. Fish population characteristics also change with basin morphology.

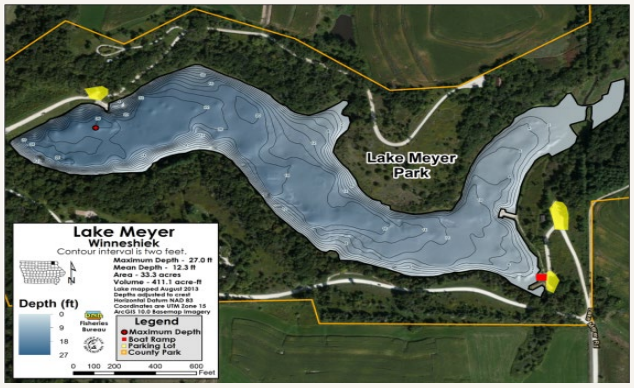
## Goals

- Provide lake managers and anglers with current, detailed maps of Iowa lakes and investigate relationships between sport fish population parameters and lake basin characteristics on a select number of these lakes.



## Results

- A PDF template was created to standardize the appearance of all lake maps that would be produced in the future. In order to do this, a manual was created to guide the survey setup, data processing, and map creation phase.
- It was found that 40 m transect spacing was adequate for most of our needs on impounded lakes and 60 m spacing was adequate for natural lake surveys.
- Anglers were provided locations of every fishing structure in Iowa that has been marked with GPS coordinates and an interactive map was created to plan fishing trips, https://www.iowadnr.gov/Fishing/Fishing-Maps.
- Mean secchi depth increased with mean depth, maximum depth, percent rise in basin slope, and relative depth. Bluegill PSD-P increased with mean secchi depth insinuating deeper lakes produce larger Bluegill.
- WHC PSD-P increased with shoreline development suggesting quality White Crappie populations are more likely to be found in larger lakes with more littoral area.
- Increases of grasslands found in the watershed were attributed to increases in BLC PSD and BLG CPUE FN.




## Conclusions

- Specific morphometry characteristics are necessary for established sport fish populations to produce PSD-P size individuals.
- Preferred size Bluegills in impoundments were found in lakes with larger mean and maximum depth values.
- Largemouth Bass populations with PSD-P size individuals were found in impoundments with larger WS:LA.
- Lake morphometry characteristics account for more of the variability in impoundments than water quality and watershed land use.
- Variability in natural lakes is found in a combination of morphometry, water quality and land use
- Preferred sizes of Yellow Perch were found in natural lakes with reduced maximum depth and increased water clarity.