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Best Public Fishing Lakes in Oakland County Michigan

2014 Student Geospatial Paper Competition
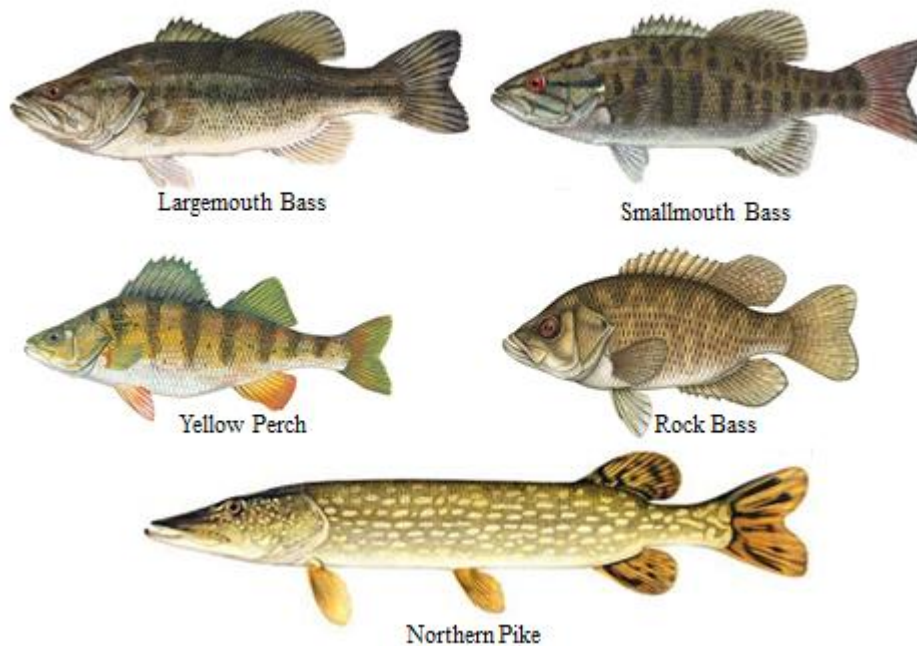
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Introduction:

Oakland County is home to over 2000 bodies of water making it an excellent home for a variety of watersports including fishing. I have grown up fishing in Oakland County. However, the majority of my fishing has been done from shore or off of the docks of friends and family. Occasionally, I borrowed a canoe or was invited out in someone's boat but, until my recent investment in a canoe, I have had very little opportunity to explore the many waters Oakland County has to offer. Oakland County is also home to a large range of fish species. I am only a recreational fisherman, meaning I catch and release. Therefore, I am only interested in the larger and more exciting to catch fish that are found in lakes. Like most fisherman I am not interested in learning by experience. I just want to get to where the fish are biting. So with a new found ability to fish waters I have never had an opportunity to fish, I want to make my time count. I want to find the best lakes right from the get go.

In this study I am going to investigate the best public fishing lakes in Oakland County, Michigan. I suspect there are many anglers that are in a similar situation as I am in because with over 2000 bodies of water to fish an angler's decision of where to fish can become challenging. In addition, Oakland County has a very large variety of freshwater fish. Therefore, a lake that is real active for one species could be completely dead for the species the angler is looking for. So, an angler looking for a particular species of fish also has to consider where to go for the fish he enjoys catching. For this study I will be focusing on lakes which contain the species of fish that I enjoy catching which include: largemouth and smallmouth bass, pike, perch, and rock bass. These fish are pictured in figure 1 on the next page. The study will be focusing only on lakes that have public boat launches since most people do not know an individual willing to let them put their boat in on every lake. I would like to further narrow my search by eliminating lakes that have the potential to be overfished.

Figure 1: Fish Chart

Largemouth Bass
Smallmouth Bass
Yellow Perch
Rock Bass
Northern Pike

Procedure:

I began this project by coming up with a plan of attack. My first step was to look back at a previous project about the Clarkston Mill Pond and its claims of improper dam operation being the cause for low water levels. In my previous project I was unable to produce any worthwhile results because of improper planning and the availability of data. In an attempt to learn from my previous project I first wanted to compile all of my data. Once I was able to locate sufficient data for my project I began by creating a flow chart. The flow chart was essentially a list of all of the tasks that needed to be completed in a logical order.

The first piece of data that I accumulated was hydrographic data for Oakland County. Next I wanted to find a roads layer for Oakland County which would act as a reference point for the location of all of the lakes. I knew that I also needed a distinct outline of Oakland County so that I could clip future files that covered a larger extent. Therefore, I also added the census tract shapefile for Oakland County. Once all of the essential Oakland County elements were located, I

switched my focus to fish data. I needed to find out which fish species were prevalent in what regions. Fortunately, the Institute for Fisheries Research GIS Group had a fish atlas which listed the types of fish and located them on the Michigan map using the same datum and projection as all of the files I had found on the Michigan.gov GIS data website. In addition to the fish atlas, the Institute for Fisheries Research GIS Group had a list of Department of Natural Resources fish stocking sites. Lastly, I was able to find a pdf listing of public boat launches by county.

Next I added all of my data onto a common ArcMap document. Since the roads layer, tract layer, and hydrographic data were all from the Michigan.gov website and were specifically for Oakland County there was no need to clip these files. However, both the fish atlas and fish stocking sites were for the entire state of Michigan. Therefore, I clipped both of these files using the Oakland County tract shapefile as the clip extent. Since the Michigan public boat launch list was in a pdf format I had to manually input the data into a Microsoft Excel document. Next I was able to perform a join of the new Excel document to the Oakland County hydrographic data using the shared name column. This join enabled me to create a new layer which displayed all of the bodies of water which also had a public boat launch.

However, upon investigation of the new layer I discovered that there were still several lakes that were not added to this new layer which had a public boat launch. After investigating I determined that the lakes were given different names. Therefore, when the join was performed using the name column there were no matching pieces in the hydropoly files. This problem was quickly fixed by turning on the labels for the hydropoly file and determining what the names on the boat launch file needed to be changed to. Once the changes were made a new map layer was created and all of the lakes with public boat launches were now accounted for.
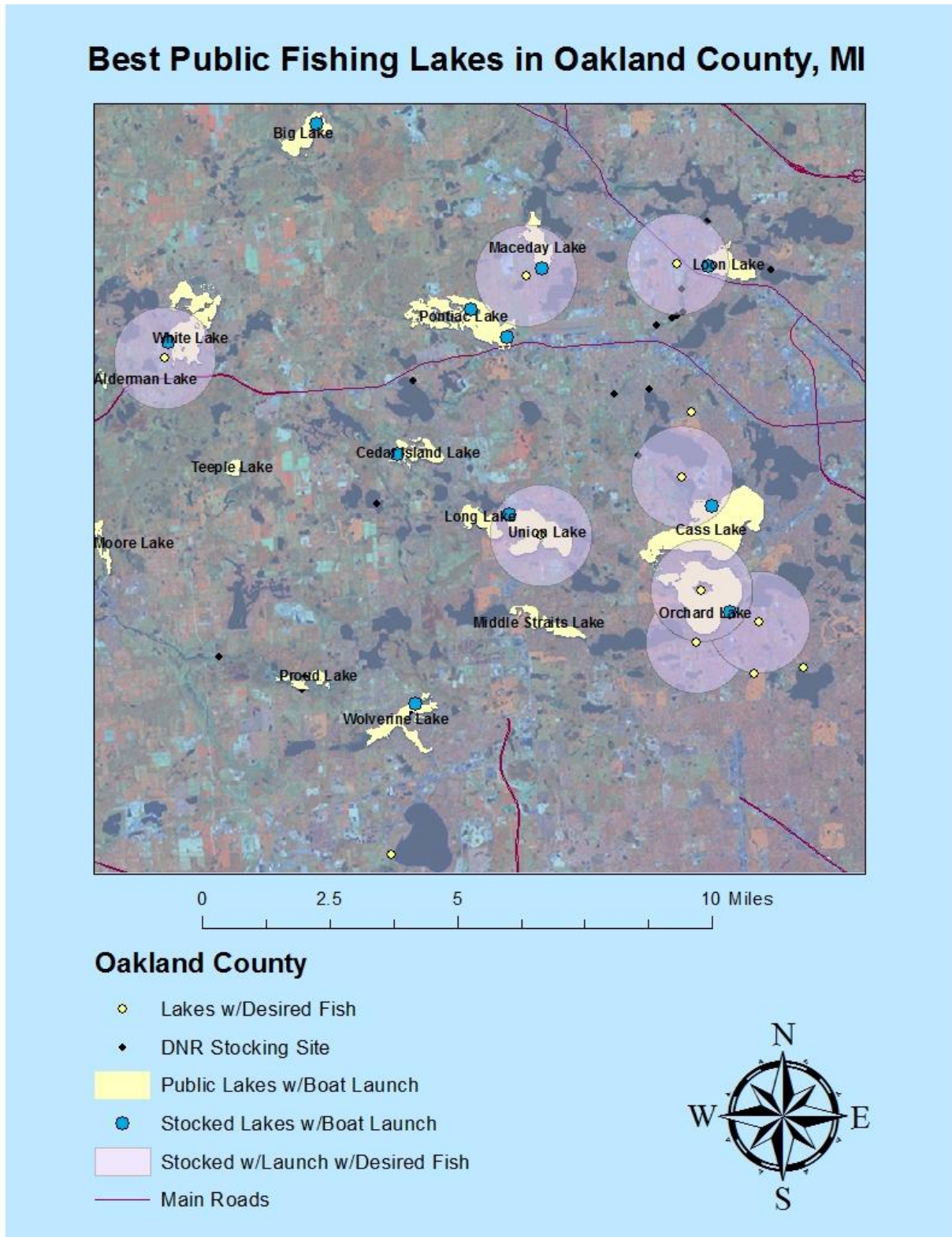
The next step was to perform a join between the lakes with boat launches and the lakes which were stocked. The resulting layer showed only the lakes that were stocked by the

Department of Natural Resources (DNR) and also had boat launches. I found it interesting that the fish were added at the same place as the public boat launches. Whether or not this was just the easiest way for the DNR to depict the stocking of the fish or this was the actual place that the fish were added I do not know for sure.

Now that I had a layer which contained only lakes which were stocked and had public boat access I wanted to determine which lakes were home to the largemouth and smallmouth bass, pike, perch, and rock bass. To do this I opened the attribute table for the fish atlas and selected only the points which contained the five species of fish listed above. I then exported the selected data to a new shapefile. Since these points were for a general area and not specific to each body of water, it was necessary to create a buffer around these points in order to depict specific lakes which contain these species. Because there are so many bodies of water in Oakland County, I established a one mile buffer around the fish atlas data points to ensure that only lakes within a close proximity to the actual data point were included. Lastly, I created a new shapefile for the buffer which only displayed the buffer ring and not the fish atlas data point.

Next, I displayed my results in an easy to read manner. I began by turning only the main roads on which included the US and state roads in addition to the expressways. I then added an orthographic photograph of Oakland County. I turned on the layer which included only lakes with public boat access. I also turned on the layer which had all of the stocked lakes with boat launches. Lastly, I turned on the new buffer layer. I adjusted the transparency for several of the layers to create a more visually appealing and effective map. The end result depicts eight lakes that meet all of the requirements of being stocked, having the right fish species, and having a public boat launch. The eight lakes are primarily clustered in central Oakland County near Waterford, MI. The map also displays other fishing lakes which contain at least one of the requirements. The final map is displayed on the next page.

Map 1: Best Public Fishing Lakes in Oakland County, MI

Results:

I am very pleased with the results of this study. I have successfully narrowed down my list of possible fishing spots from over 2000 bodies of water to 36 lakes with public boat access. From the 36 possible lakes that boaters can access via public boat launches I have further reduced down to 15 lakes which are also stocked. Then from the 15 lakes that are both stocked and have boat launches I further reduced the selection down to 8 which also are guaranteed to have largemouth and smallmouth bass, pike, perch, and rock bass. Overall, that is a reduction of approximately 250 times the original amount. The lake names and public boat launch locations are listed in figure 2 below.

Figure 2: Eight Best Public Fishing Lakes in Oakland County

SITE NAME	LOCATION	PARKING SPOTS	TOWN	RANGE	SEC
ORCHARD LAKE	ORCHARD LAKE	63	2N	9E	14
UNION LAKE	UNION LAKE	33	2N	8E	1
PONTIAC LAKE (TACKLES DR)	3 MI N OF UNION LAKE	20	3N	8E	13
PONTIAC LAKE	4 MI N OF UNION LAKE	80	3N	9E	18
LONG LAKE	1 MI W OF UNION LAKE	15	2N	8E	1
LOON LAKE	WATERFORD TWP	15	3N	9E	11
MACEDAY LAKE	WATERFORD TWP	17	3N	9E	7
CASS LAKE	DODGE STATE PARK #4	50	2N	9E	3
WHITE LAKE	3 MI NE OF HIGHLAND	13	3N	7E	13

I feel much more confident going fishing on these lakes knowing that they have the fish I am looking for and that they are stocked by the Department of Natural Resources. I have recently taken a fishing trip to Pontiac Lake which made the list of 8 lakes and had very good success - catching a smallmouth bass and 2 largemouth bass in little over two hours. I also had a large rock bass and another largemouth bass on my line but was unable to land the fish at the boat. Needless to say, Pontiac Lake is certainly a good lake to fish on which helps verify that the results of this study are well founded.

I believe that the successes of this study were due to the availability of sufficient data and planning. I would have been interested to see bathymetric data for these 8 lakes so that I could plan future fishing outings based off of the typical water depths each of these fish thrive in. However, bathymetric data in Michigan is typically only used for erosion control on the coasts of the Great Lakes or wherever the private sector is willing to spend the money.

There were no real failures in this study only minor hick-ups that required rework and the additional creation of several layers and shapefiles. The main issue arose when the lakes from the Michigan.gov database did not match the names of lakes listed on the Department of Natural Resources public boat launch list. Initially, I checked the DNR list quickly and recognized all of the lake names with the exception of a few and I also checked the attribute table from the hydropoly layer to ensure that the majority of the names appeared on both. However, it was not until I created a new map layer that I noticed the conflict. The conflict was easy to correct since the lakes were labeled in the hydropoly layer. Also, when selecting the lakes which had public boat accesses I selected all of the polygons for all of the matching lakes. This created several repeat labels when I labeled the lakes for my final map. In order to fix this problem I had to go back and remove several of the smaller polygons that were used to draw some of the lakes. This was only an inconvenience and created even more layers and shapefiles.

In the future, I would look at the attribute table for the hydrographic data and select only the lake polygon which represented the largest area of the lake instead of selecting all of the polygons belonging to that lake. Since the point of this study was to see which lakes were the best for fishing it did not matter that a small portion of some lakes were not fully digitized. What mattered was that a clear and concise map was created denoting which lakes met all of the requirements. Therefore the repeat names only added to the cluster and confusion and needed to

be removed. The small polygons that were removed from the map were not even noticeable unless you really zoomed in and were therefore not essential for my final map.

Conclusion:

GIS is a very useful tool which has helped enable me to take one of my hobbies, fishing, and improve my approach. After a recent purchase of a canoe I have been able to fish on many new lakes. However, I was kind of clueless as to where to fish until performing this study. Fortunately for me this study was very successful and produced not only a list of lakes which have public boat launches and frequent stocking by the DNR but it also showed me that these lakes have all of the species of fish that I enjoy catching. I am also very pleased to see that the lakes that have met all of my requirements are within close proximity from my home. This study has only been analytical but, I plan to test the results and determine if there is anything behind these results or if they were just the result of chance.

I believe that this project has helped me become more independent collecting data and performing analysis on my own without much supervision. I feel that this project and the independent study as a whole has helped me understand GIS and its capabilities far more than during my initial time through the course and my previous project. I have learned to use the software and understand the thought process behind the steps better since there was no step by step packet leading me through the project or the majority of the labs. This has forced me to think about what is happening instead of just following a document without much thought. Overall, I would consider this study a great success in terms of both results and growth.