LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

BAYOU D'ARBONNE LAKE

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

August, 2006 - Prepared by
Mike Wood, Biologist Manager, District II

February, 2013 – Updated by
Ryan Daniel, Biologist Manager, District II

TABLE OF CONTENTS

WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Sportfish species are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts. Bass anglers are afforded the opportunity to catch trophy fish through the introduction of Florida largemouth bass. Sunfish and crappie are managed under the maximum sustained yield design, which is expected to produce adequate forage for largemouth bass and adult fish for anglers.

Commercial

The physical characteristics of D'Arbonne Lake do not support the most large rough fish species that normally comprise a commercial fishery. The exception is flathead catfish which are managed to provide both recreational and commercial value.

Species of Special Concern

No threatened or endangered fish species are found in this waterbody.

EXISTING HARVEST REGULATIONS

Recreational

Statewide regulations are in effect for all fish species, with the exception of crappie. The 2013 recreational fishing regulations may be viewed at the link below:

http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/31743-2013-fishing-regulations/ldwf_fishing_low-res.pdf

Special Regulations

Title 76
WILDLIFE AND FISHERIES
Part VII. Fish and Other Aquatic Life
Chapter 1. Freshwater Sports and Commercial Fishing
§134.Lake D'Arbonne (Union Parish),

No more than 50 yo-yos, or trigger devices, shall be allowed per person. Each yo-yo, or trigger device, shall be clearly tagged with the name, address and telephone number of the owner or user. When used, each yo-yo or trigger device, shall be checked at least once every 24 hours, and all fish, and any other animal caught or hooked, shall be immediately removed from the device. Each yo-yo or trigger device must be re-baited at least once every 24 hours. When not being used in accordance to the above regulations, each yo-yo or trigger device shall be removed immediately from Lake D'Arbonne. No yo-yo or trigger device shall be attached to any metallic object. All trotlines must be marked, tagged, and dated with the owner or user's name, address, phone number and the date of placement. The trotline must be marked on each end with a floating object that is readily visible. No person shall set more than three trotlines with a

maximum of 50 hooks per trotline. All trotlines must be removed from Lake D'Arbonne when not in use. All trotlines must have an eight foot cotton leader on each end of the trotline to insure that if the trotline is left unattended, the cotton leader will deteriorate and the line will sink. All trotlines must be attended daily while in service.

Commercial

The 2013 commercial fishing regulations may be viewed at the link below:

http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/31745-commercial-fishing-regulations/2013_commercial_fishing_low-res.pdf

Use of gill nets, trammel nets and fish seines is prohibited.

SPECIES EVALUATION

Recreational

LDWF fish sampling was initiated in D'Arbonne Lake in 1964 with block-off net rotenone sampling. Rotenone sampling was conducted to gain insight into the overall fish population. Sampling sites were blocked off with large ¼" mesh nylon net. The net enclosed one acre areas and was deep enough to extend from the surface to the lake bottom. Eight to twelve of the one acre samples were conducted in a sample year, all during the summer months. D'Arbonne Lake rotenone sampling was conducted in the years of 1964-1974, 1976-1988, 1991, and 1995.

Standardized sampling was initiated in 1989 with electrofishing. As with any fish sampling technique, electrofishing is influenced by environmental factors that can create significant variance in results. Accordingly, LDWF sampling is standardized to the greatest extent possible and analyzed over long periods of time to establish population trends.

Largemouth bass are targeted as a species indicative of the overall fish population due to their high position in the food chain. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large bass. Gill net sampling is used to determine the status of large bass and other large fish species. Shoreline seining is used to collect information related to fish reproduction.

Largemouth Bass relative abundance and size distribution-

In the chart below (Figure 1), springtime electrofishing data is used as an indicator of largemouth bass abundance with total catch per unit effort (CPUE = *bass per hour*) indicated since 1993. Sampling is conducted in the spring and fall on a bi-annual basis. Annual sampling was conducted from 1999-2003 and also 2010 – 2012 for the special mortality study on largemouth bass. Greater sampling effort was made during the mortality study, thus the CPUE figures may be more precise during these years. Figure 1 shows that spring electrofishing sampling results from 1993 through 2011 indicate stable abundance for all size groups, with the exception of a significant peak in the years of 1999 and 2000. There is also a noticeable upward trend for stock- and quality-size bass since 2007, while preferred-size bass have remained stable.

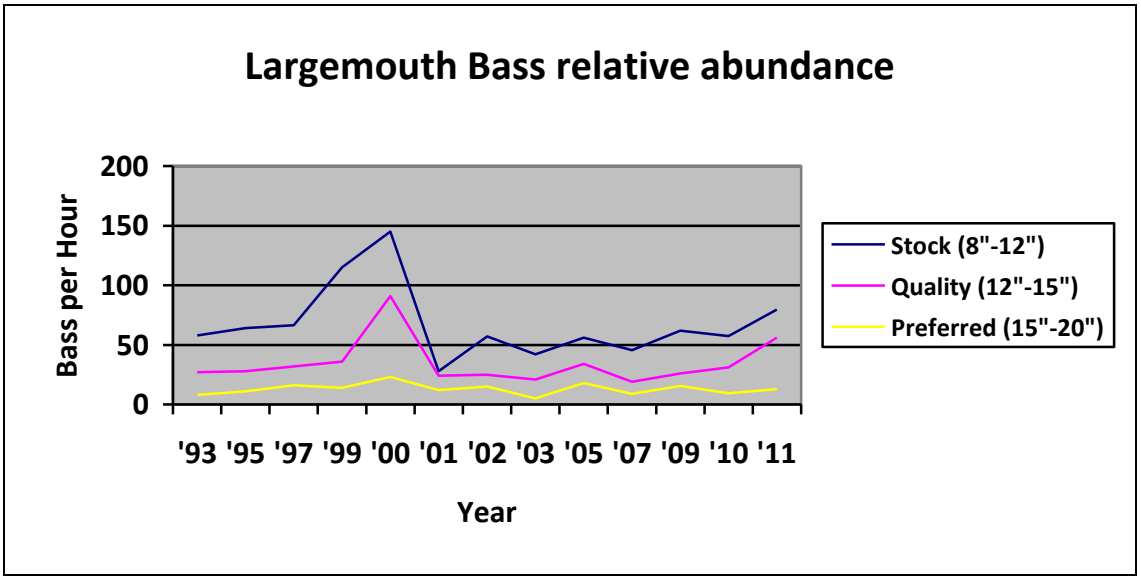


Figure 1. The CPUE (bass per hour) for stock-, quality- and preferred-size largemouth bass from Lake D'Arbonne spring electrofishing samples, 1993 – 2011.

A more detailed perspective is provided in the series of size distribution histograms taken from the years 2007 – 2012 (Figures 2, 3, 4, 5, and 6) of which years 2010 – 2012 will be analyzed for the mortality study. Exceptional recruitment cohorts are indicated from the years 2007 and 2009. The combination of factors contributing to the increase is unidentified at this time. The 2010 and 2011 size frequency charts show a more normally distributed population, with the most abundant size classes being near the middle of the distribution. The 2012 distribution also indicates exceptional recruitment.

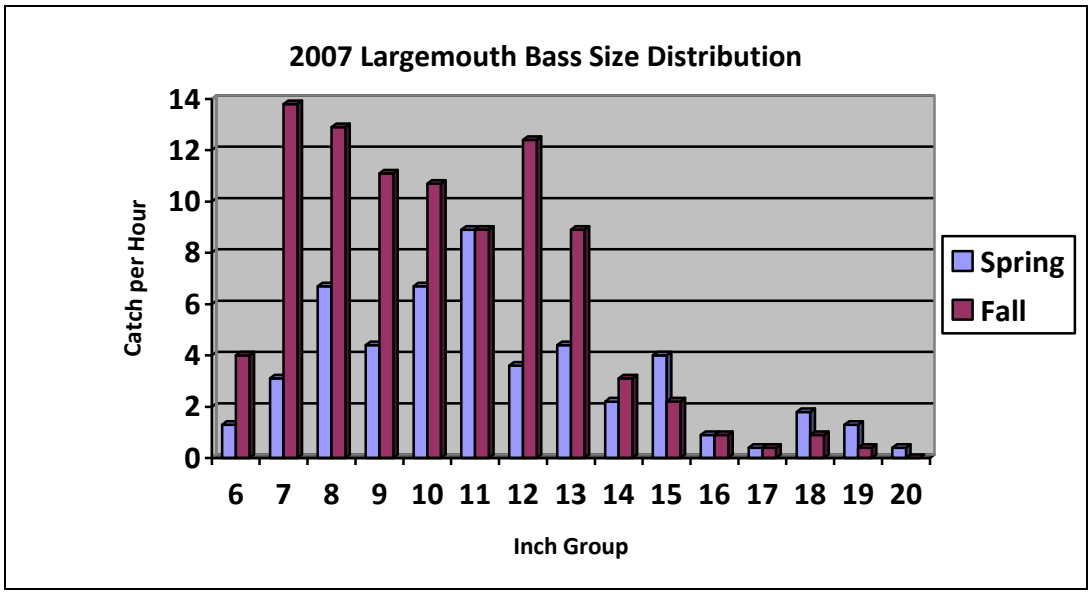


Figure 2. Size distribution of largemouth bass from Lake D'Arbonne, LA from spring (*n*=113) and fall (*n*=215) electrofishing samples, 2007.

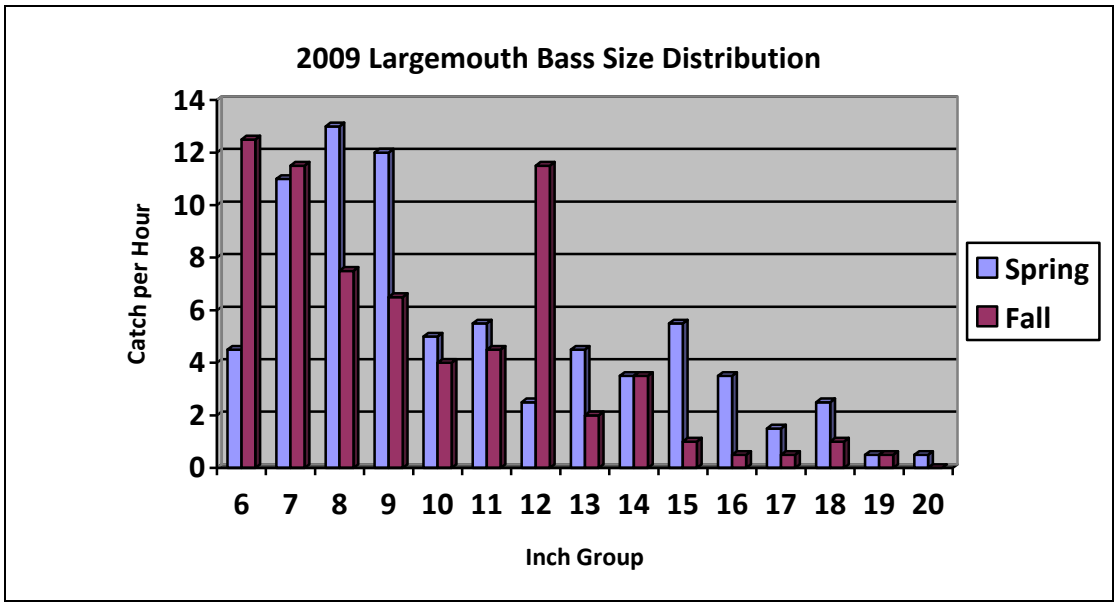


Figure 3. Size distribution of largemouth bass from Lake D'Arbonne, LA from spring (*n*=158) and fall (*n*=145) electrofishing samples, 2009.

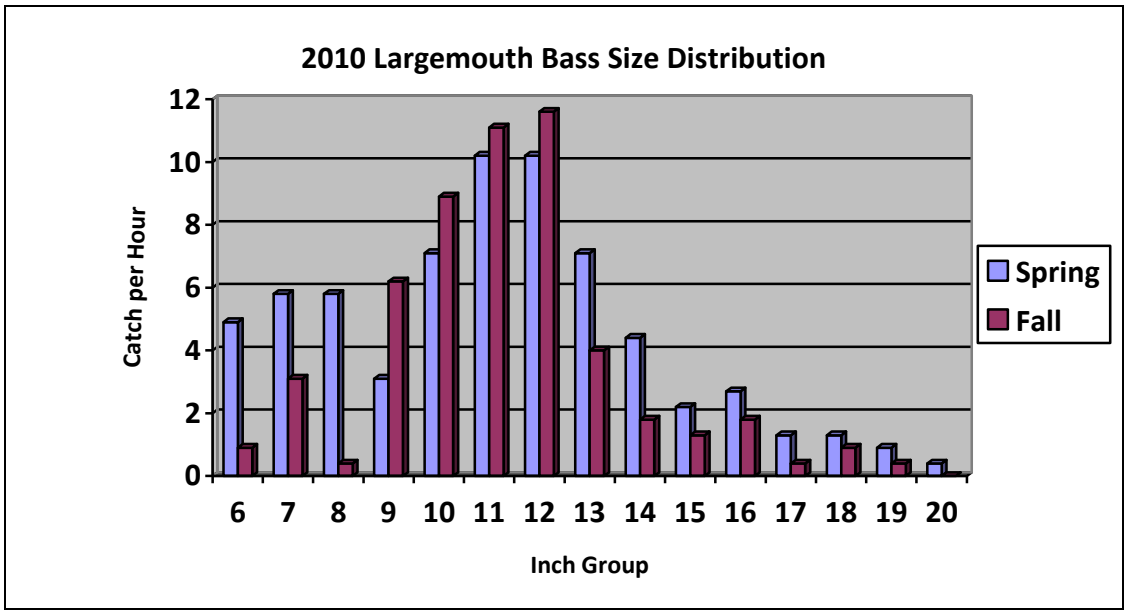


Figure 4. Size distribution of largemouth bass from Lake D'Arbonne, LA from spring (*n*=160) and fall (*n*=132) electrofishing samples, 2010.

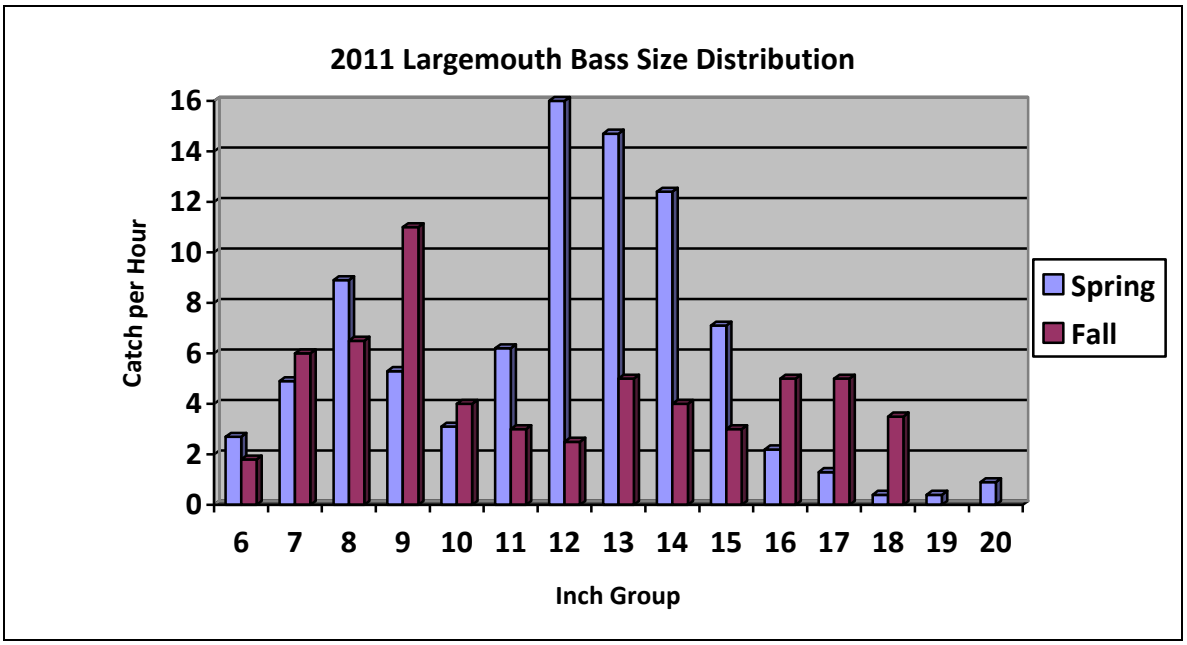


Figure 5. Size distribution of largemouth bass from Lake D'Arbonne, LA from spring (*n*=205) and fall (*n*=186) electrofishing samples, 2011.

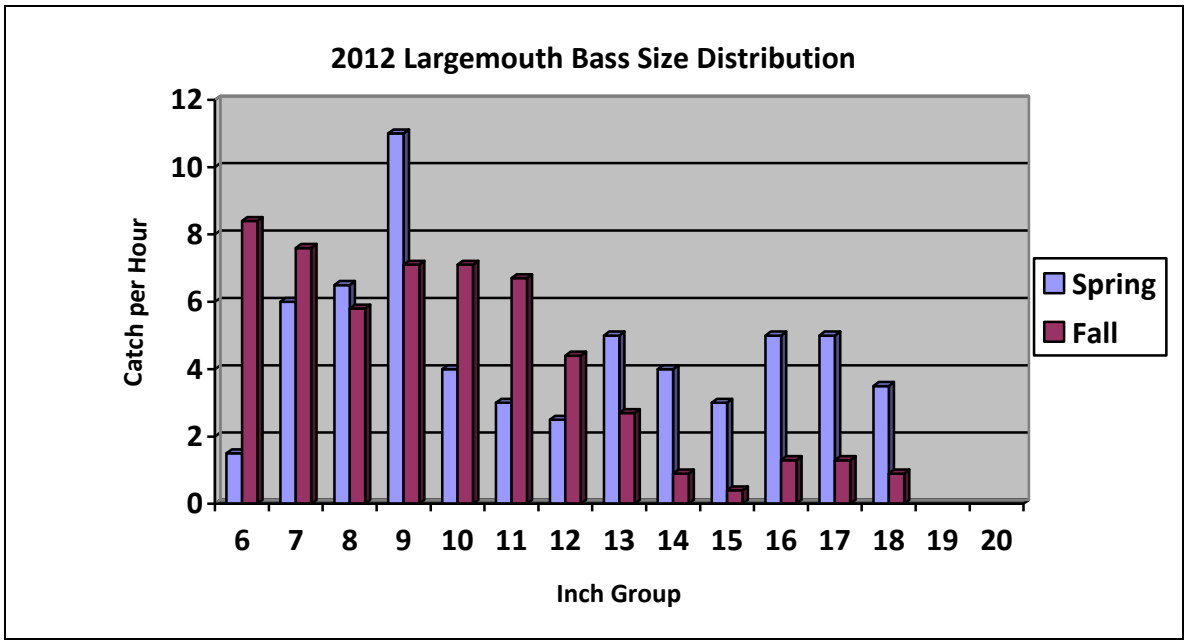


Figure 6. Size distribution of largemouth bass from Lake D'Arbonne, LA from spring (*n*=129) and fall (*n*=132) electrofishing samples, 2012.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data. Proportional stock density compares the number of fish of quality size (greater than 12 inches for largemouth bass) to the number of bass of stock size (greater that 8 inches in length). The PSD is expressed as a percent. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists

mainly of smaller fish. A value between 40 and 70 generally indicates a balanced bass population. For example, the chart below (Figure 7) indicates a PSD of 70 for 2011. The number 70 indicates that 70% of the bass stock (fish over 8 inches) in the sample was at least 12 inches or longer.

$$PSD = \frac{\text{Number of bass>12 inches}}{\text{Number of bass>8 inches}} \text{ x100}$$

Relative stock density (RSD_{15}) is the proportion of largemouth bass in a stock (fish over 8 inches) that are 15 inches or longer. A value between 10 and 40 indicates a proportionate number of bass greater than 15 inches in the population. The chart below indicates a RSD_{15} of 16 for 2011. The number 16 indicates that 16% of bass over 8 inches in the sample were at least 15 inches or longer.

$$RSD_{15} = \frac{\text{Number of bass>15 inches}}{\text{Number of bass>8 inches}} \text{ x100}$$

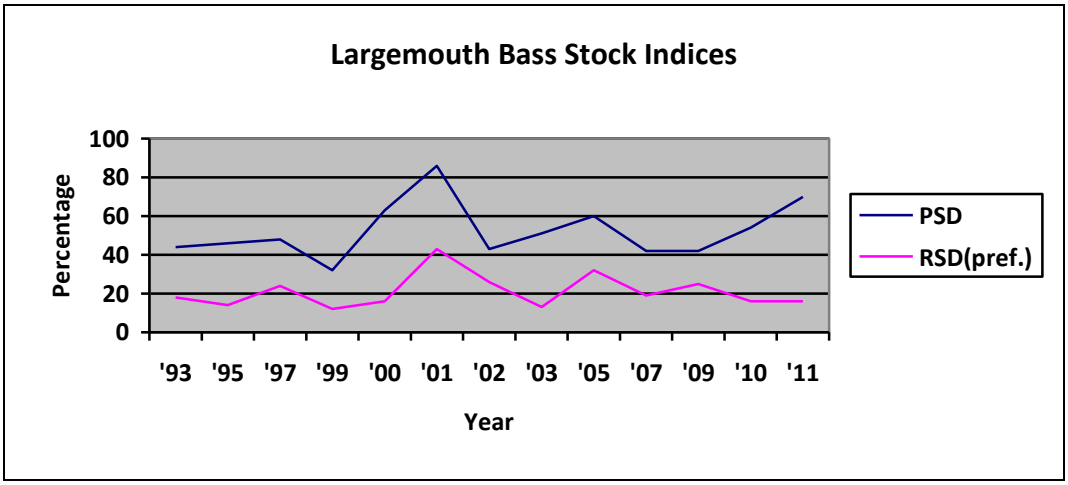


Figure 7. Proportional stock density and relative stock density (preferred) for largemouth bass from Lake D'Arbonne, LA in spring electrofishing results, 1993 – 2011.

Largemouth bass genetics-

Introductions of Florida bass into D'Arbonne Lake began in 1985. The early stockings were primarily made in response to request from anglers for increased trophy potential. In 1992, proceeds from a local bass tournament were dedicated to the purchase of Florida bass fingerlings for D'Arbonne Lake. Because of the small number of fish involved, increased efforts were made to achieve maximum stocking efficiency. The fingerlings were divided into smaller groups and stocked throughout the impoundment in sites that afforded protective cover. The technique was successful and has been adopted for all subsequent D'Arbonne stockings. Table 1 shows the history of Florida bass stockings into Lake D'Arbonne.

Table 1. History of Florida largemouth bass stocking and largemouth bass genetic analyses in

Lake D'Arbonne, Louisiana from 1985 – 2012.

D'ARBONNE LAKE							
FLMB STOCKING			LARGEMOUTH BASS GENETICS SAMPLING				
YEAR	NUMBER STOCKED		SAMPLE SIZE	GENOTYPE			% BASS WITH FLORIDA GENETICS
1985	75,000		N	NORTHERN	FLORIDA	HYBRID	
1987	75,000						
1992	4,000						
1995	138,143						
1999	140,728						
2000	158,476		81	68	2	11	13
2001	163,239						
2002	75,456		84	74	0	10	10
2003	135,841		69	61	2	6	8
2004	135,841						
2005	149,481		100	84	0	16	16
2007	151,024						
2008	87,142						
2009	85,142						
2010	17,141		145	80	18	2	20
2011	151,734		229	84	14	2	16
2012	150,990						

Largemouth bass age & growth-

Largemouth bass collected during fall sampling are used for age and growth analysis. Sagittal otoliths are removed from at least 10 individuals from each inch group and cut in transverse sections to reveal annuli. Comparison of length and age are used to determine growth rate.

Largemouth bass age and growth data have been collected and analyzed by district personnel in the years 1995, 1999, 2002, 2005, and 2009. Statewide age and growth analysis became centralized when the mortality studies were initiated 2010. Otoliths for this study are collected during spring sampling. This information is expected to be available later in 2013. Largemouth bass growth data collected during fall 2005 and 2009 are presented below (Figure 8). Lengths at age are very similar to the statewide average.

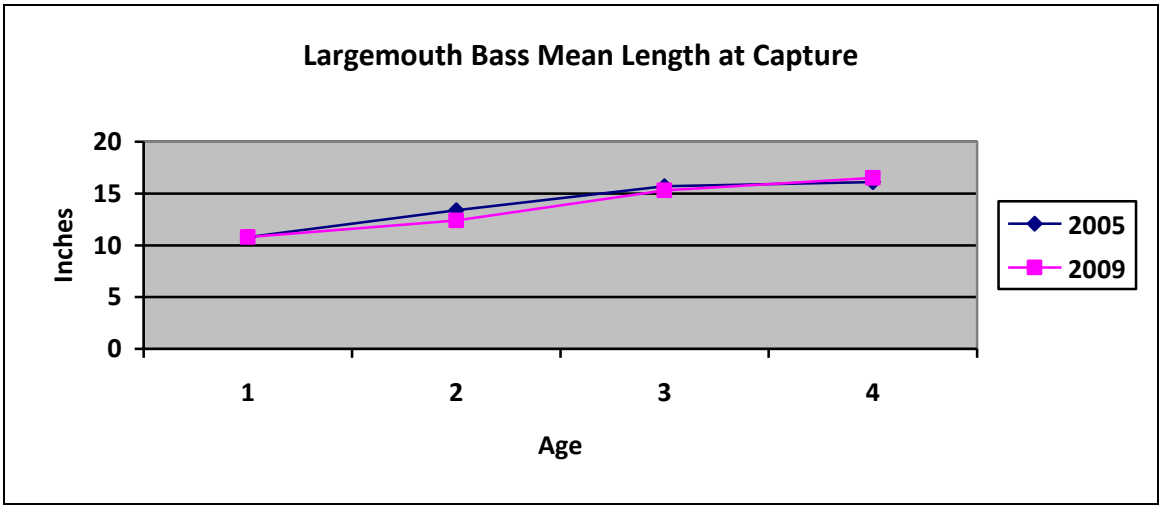


Figure 8. The mean length at capture for largemouth bass from Lake D'Arbonne, LA in fall electrofishing results 2005 and 2009.

Forage

Sunfish, threadfin shad, inland silversides, bullhead minnows, taillight shiners, and crawfish have been identified as primary bass forage items in D'Arbonne Lake. Forage availability is measured through shoreline seine sampling, special electrofishing samples conducted during the fall, and indirectly through measurement of largemouth bass body condition or relative weight. Relative weight (Wr) is the ratio of a fish's weight to the weight of a ''standard'' fish of the same length (Table 2).

Table 2. Standard weights for various length largemouth bass

Length (inches)	Standard Weight (lbs)
10	0.5
11	0.7
12	0.9
13	1.1
14	1.5
15	1.8
16	2.2
17	2.7
18	3.2
19	3.9
20	4.5
21	5.3

The index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. As an example, the Wr of a 15 inch, 1.5 pound bass would be calculated as per the following:

Standard weight for a 15" bass = 1.8 lbs
Relative weight = 1.5 / 1.8 = 0.83

Low largemouth bass relative weights below 80 indicate a potential problem with forage availability. Relative weights for D'Arbonne Lake largemouth bass typically measure around 100 in all size groups indicating ample available forage and a healthy population (Fig. 9).

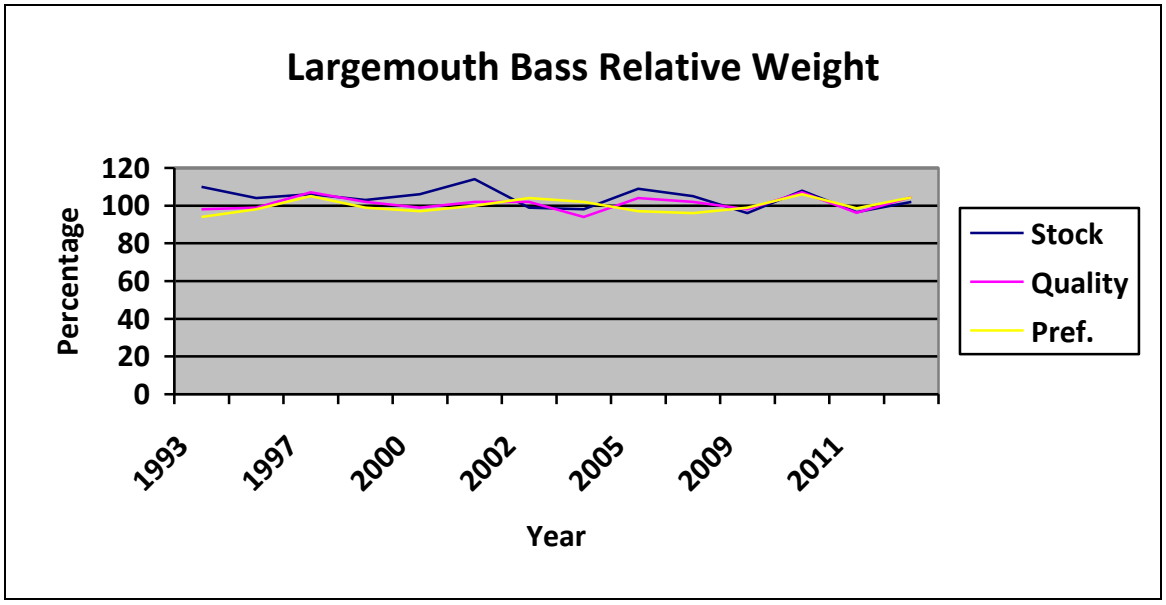


Figure 9. Relative weights for stock- (8-12in.), quality- (12-15in.), and preferred-size (15-20in.) largemouth bass from D'Arbonne Lake, LA in fall samples 1993 – 2012.

Crappie

From 1964 through 1995, rotenone sampling was used to indicate status of crappie and sunfish populations in D'Arbonne Lake. Number of crappie over 7 inches in length from 1980-1991 were estimated to be approximately 5 per acre. Number of bluegill over 5 inches in length from 1980-1991 were estimated to be approximately 50 per acre.

In 1991, frame nets were adopted in LDWF Standardized Sampling Procedures as gear to be used to collect data related to relative abundance and length frequencies of crappie and sunfish populations. Unfortunately, data collected through the use of frame nets was questionable, in that it was not believed to be representative of the sampled population. Those concerns lead to testing and development of a new gear as described below in several North Louisiana water bodies, including D'Arbonne Lake.

Comparison of Frame Nets with Hoop Nets with Lead Lets

Questions: With the gear types currently used to assess fish populations (frame nets, gill nets, electrofishing, and rotenone), is the CPUE of crappie high enough to provide an accurate appraisal of population characteristics? Are the current gear types creating bias for certain length groups within a population?

Need: A sampling technique is needed that will provide maximum CPUE for man-hours expended and will provide unbiased data for at least some length groups of crappie.

Hypothesis: When set correctly, lead nets have the potential to provide adequate catches of crappie, and would be more efficient than frame nets in providing data needed to assess crappie populations.

Study Design:

The sampling design will compare crappie harvests between two frame nets (connected by a mesh panel), which is the current standardized sampling method, and four lead nets (each composed of two nets connected by a mesh panel) of different mesh sizes. All nets will be fished at the same time, for the same duration, in the same habitat (depth, substrate, structure, vegetation, etc.). This sampling design should eliminate as much as possible all variables except gear type for comparing crappie abundance and size structure. The location in the lake where the six gears (four lead nets and two frame nets) are fished will be defined as a station. At each station, it would be preferable that the lead nets and frame nets are located at sufficient intervals along the lake shoreline to preclude catch interference between nets, i.e., during the course of normal daily movements, each fish would encounter only one net. However, biotelemetry studies of crappie movements in South Dakota lakes (D. Willis, South Dakota State University, personal communication) indicate that home ranges of these species may average 15 ha (up to several hundred ha for black crappie); spacing nets far apart will likely increase the chances of habitat differences among net sets. We prefer to minimize habitat differences among net locations by locating nets about 50-m apart along the shoreline; any bias resulting from net interference (e.g., the nets on each end catch the most fish) should be minimized by randomly ordering the nets along the shoreline during each sampling period (the ordering of the nets will be recorded during each sampling period to test for net location effects).

Gears:

As prescribed by standardized sampling methods, the two frame nets will be constructed of ½" bar (1" stretched) mesh. Each will have a 65'lead constructed of 0.5"mesh. Each lead net will be made up of two hoop nets separated by a 30' lead of the same mesh size. The four lead nets will be constructed from ½" bar (1" stretched), 1" bar (2" stretched), 1 ½ bar (3" stretched), and 2" bar (4" stretched) mesh. The hoop nets at either end of the lead net will have two throats and will be 16 feet long with 6 steel hoops (the diameter of the front hoop in each net will be 3 ½ feet); all nets will be tied with #9 nylon twine and treated with netcoat. .

Field Methods:

All nets will be fished during the same time period for approximately 72 hours at one station in the lake. All captured fish will be weighed (g) and measured (mm), with data recorded for each gear by lake, station, net order, date and sample time in hours. If all nets are fished for a similar 72-hour period, catch data will be used as is. If sample times vary, catch will be expressed as CPUE (per hour, 24-hour period, etc.) for statistical comparisons.

Statistical design:

In order to simplify comparisons among gears, all fish within a species will be grouped into stock, quality, preferred, memorable, and trophy size groups. Catch will be compared between gear configurations with a series of paired t-tests for each size group:

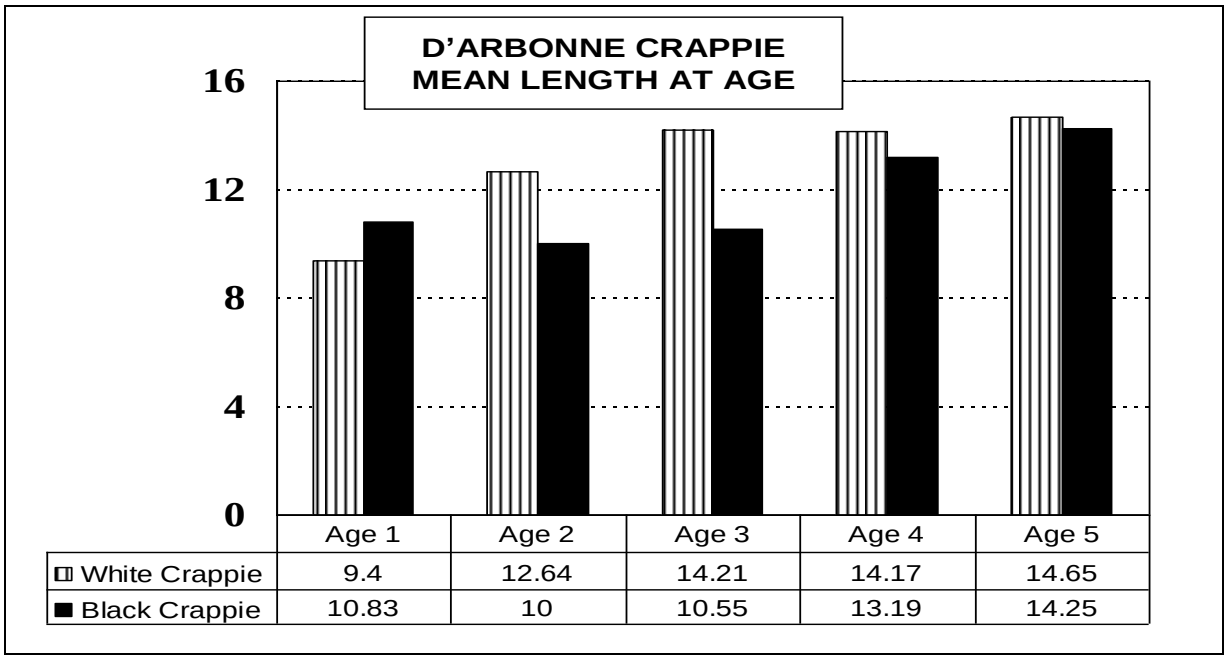
1. The combined catch from both frame nets versus the combined catch from the four lead nets;
2. All pairwise comparisons of the four lead nets;
3. Pairwise comparisons of the combined catch from frame nets versus each of the four lead nets.

The above comparisons should permit determination of the relative effectiveness of the various net configurations in catching crappie, the size classes of crappie that are most effectively captured by the various gear types, and the most cost effective and efficient gear type for routine standardized sampling of Louisiana crappie populations.

Expressed as the number of crappie (by size groups, if desired) captured per man-hour of effort (deployment and retrieval times for frame or lead nets), these data could also be compared (at least qualitatively) with crappie catch data collected with electrofishing gear (number captured per man-hour of electrofishing time), gill nets (number captured per man-hour of net deployment and retrieval), and rotenone (number captured per man-hour of block net deployment, rotenone application, and fish pick-up). These comparisons would provide additional information concerning personnel management and the most efficient way to obtain representative data for development of crappie management plans.

The comparisons documented that lead nets are a more effective gear for sampling crappie and sunfish and are an efficient alternative to frame nets. Results of the study are pending publication. Future crappie and sunfish sampling will be conducted with the use of standardized lead nets.

In the period, November 2002–January 2003, D'Arbonne Lake crappies were captured in frame nets and various size lead nets for age and growth analysis. Age of 142 fish was determined through sagittal otolith analysis (Figure 10). The oldest crappie in the sample was determined to be 9 years of age. The largest individual was 15.4" and 2.31 pounds.



	Age 1	Age 2	Age 3	Age 4	Age 5
White Crappie	9.4	12.64	14.21	14.17	14.65
Black Crappie	10.83	10	10.55	13.19	14.25

Figure 10. Mean length at age of D'Arbonne Lake white and black crappie captured in frame and lead nets, Nov. 2002 – Jan. 2003.

Lead nets became the standardized sampling gear for crappie in D'Arbonne Lake during 2006. Modifications to the sampling method were made in 2009 and have remained in effect since. Currently (2) 1.0 inch square mesh lead nets are fished together at each sample station for a period of approximately 48 hours. The lead nets have also been used to collect crappie for the mortality study initiated in 2010. The following chart (Fig. 11) shows catch per hour rates for crappie samples from 2009 – 2011. Figure 12 shows the catch rate for each inch group from 2011 samples. A normal population distribution is represented, with mid-size fish being the most abundant and all other size classes represented.

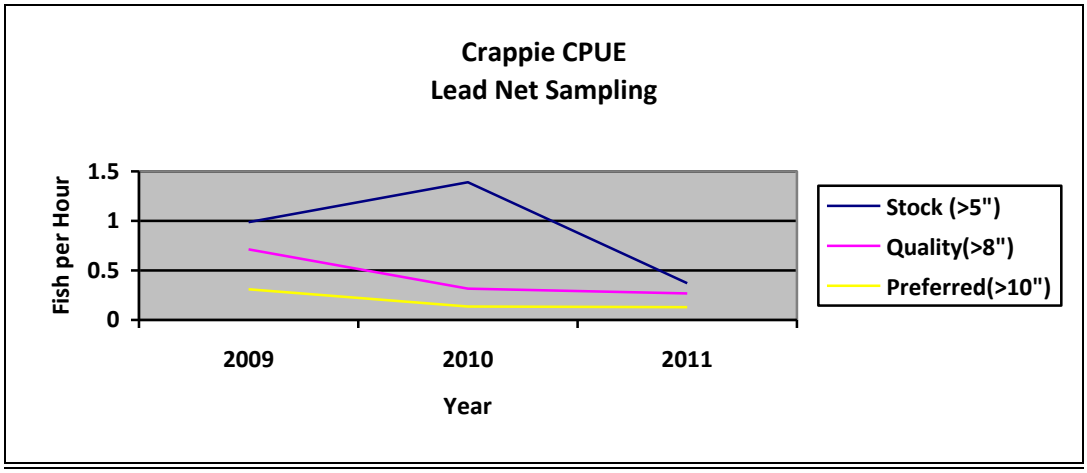


Figure 11. The catch per unit of effort (fish per hour) for three size classes of crappie from D'Arbonne Lake, LA in lead net samples for 2009 – 2011.

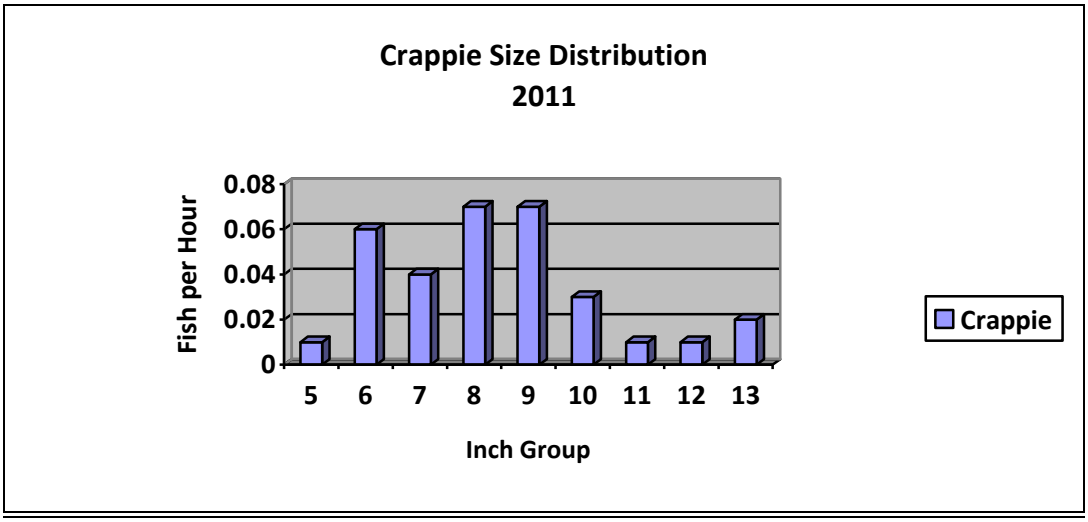


Figure 12. Size distribution in catch per hour of crappie from D'Arbonne Lake, LA in lead net samples for fall, 2011 (*n*=186).

Crappie Restrictions

In 2008, concerned anglers approached the BDWD seeking an experimental 10 inch minimum size limit for crappie in an effort to increase their abundance and average size. In April 2008, LDWF presented information based on yield per recruit models from actual sampling data that concluded there would be no significant benefit to the population from the proposed changes. The following are excerpts included in an informational handout created by District 2 personnel: *Statistical analysis and modeling was performed on D'Arbonne Lake crappie data to predict the results of a 10 inch length restriction. Assumptions were made using a range of reasonable estimates of natural mortality and release mortality. No significant increase in total yield or average crappie size is predicted. The proportion of age 2 and older fish (over 12") in the population is predicted to increase by 3%. Angler catch would be constant, but legal harvest is predicted to decrease an average of 45%.* The following conclusion was given by LDWF in the handout: *Implementation of a 10 inch minimum length restriction on D'Arbonne Lake crappie may increase the survival of age 2 fish slightly. Unfortunately, those benefits will not result in an increase in older and larger crappie. A reduction in the daily creel limit from 50 to 25 crappie per person has the potential to distribute the total harvest more evenly in periods of high angler success, but not to the extent that could provide benefit to the crappie population. No*

significant effect in abundance or average size of D'Arbonne Lake crappie is predicted from either proposal or the combination thereof.

In 2009, LDWF agreed to conduct a survey of D'Arbonne Lake crappie anglers to gather opinions of crappie management on the lake (**Appendix A**). Random surveys were conducted by boat to gather the following information from anglers: whether they lived on lake or not, how far they drove to fish at D'Arbonne, average number of crappie trips per year, and whether they were satisfied with the current regulations for crappie (if not, what they would recommend). Appendix A summarizes the results of this survey. Overall, 65% of crappie anglers were satisfied with current regulations.

In 2012, anglers requested the LDWF Commission to reduce the daily creel limit to 25 crappie/day. The Commission issued a Notice of Intent at its April meeting, which required a 100 day public comment period. LDWF biologists stated at this time that the proposed regulation would not have a beneficial impact to the population, nor would there be a negative consequence. This statement was partly based on the fact that the recreational creel survey of 2011 revealed that less than 3% of anglers harvested 25 or more crappie in a day.

In November, 2012, a creel limit of 25 crappie per day was imposed on D'Arbonne Lake. The boundaries of this regulation are from the D'Arbonne Lake Spillway to the Hog Pen and Gill's Ferry boat launches.

Other Sunfish

Relative abundance of bluegill *Lepomis macrochirus* and redear sunfish *L. microlophus* is also measured with the use of lead nets. Both species are abundant in D'Arbonne Lake and comprise an important component of the fishery. Bluegill were captured at a rate of 0.25 fish per hour, whereas redear sunfish were caught at a rate of 0.03 fish per hour during 2011 lead net sampling. Catch per hour rates of various size bluegill and redear from 2011 sampling are shown in figure 13. It should be noted that 1.0 inch square mesh lead nets may not accurately reflect the total size distribution of the population, with possible bias against smaller size fish.

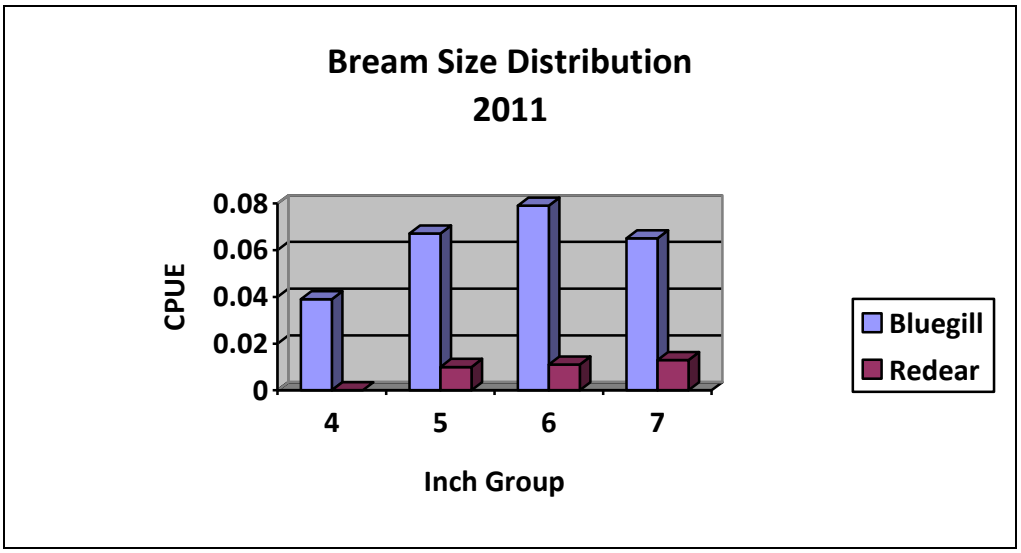
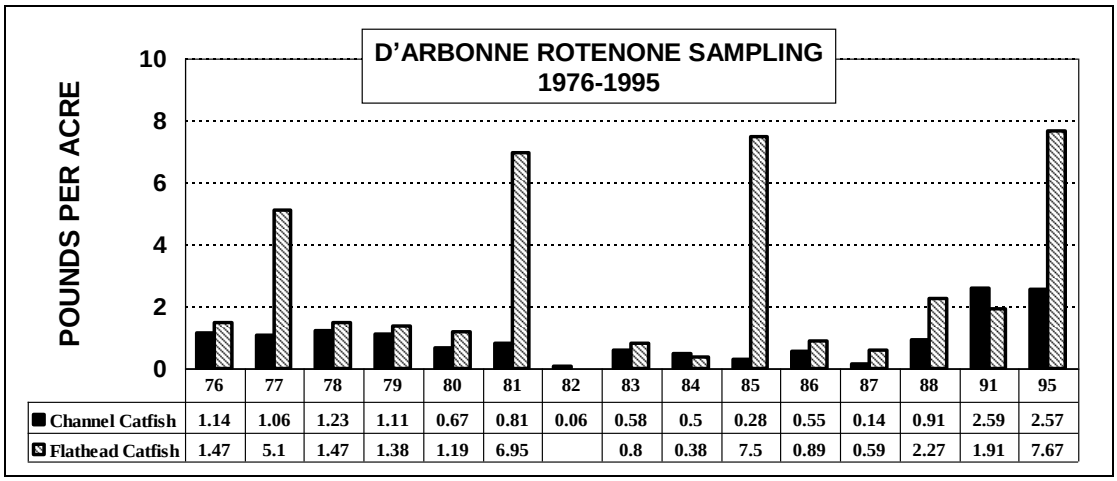


Figure 13. The catch per unit of effort for bluegill (*n*=129) and redear sunfish (*n*=4) from lead net sampling on D'Arbonne Lake, LA in fall, 2011.

Commercial

Commercial fish species are generally not abundant in D'Arbonne Lake. However, the impoundment supports abundant populations of both channel catfish *Ictalurus punctatus* and flathead catfish *Pylodictis olivaris.* Catfish are harvested commercially in D'Arbonne Lake. Sport and commercial user group conflicts resulted in the removal of all forms of webbing in 1984. Hoop nets, slat traps, trotlines, limb lines and stump hooks remain legal. No nets, including hoop nets are allowed during drawdowns. From impoundment through 1995, biomass sampling with rotenone was used to determine status of standing fish crop, including catfish (Figure 14).



	76	77	78	79	80	81	82	83	84	85	86	87	88	91	95
Channel Catfish	1.14	1.06	1.23	1.11	0.67	0.81	0.06	0.58	0.5	0.28	0.55	0.14	0.91	2.59	2.57
Flathead Catfish	1.47	5.1	1.47	1.38	1.19	6.95		0.8	0.38	7.5	0.89	0.59	2.27	1.91	7.67

Figure 14. Pounds per acre of channel and flathead catfish from rotenone sampling conducted in D'Arbonne Lake from 1976 – 1995.

Biomass sampling with rotenone was discontinued in 1995 and standardized gill webbing is now used to collect population data on large fish species. Actual catch data presented below indicates length frequency for flathead catfish in the years 1993, 1996, 2000, and 2006 (Fig. 15). The samples are comparable except that eight sites were sampled in 1993 and 2000, and 9 sites were sampled in 1996 and 2006. Though sample size is small for all years, no recruitment problems are indicated and the current population is well represented by all size groups. More recent gill net samples reveal very similar catches to those shown below. Flathead and channel catfish are also routinely captured in lead nets.

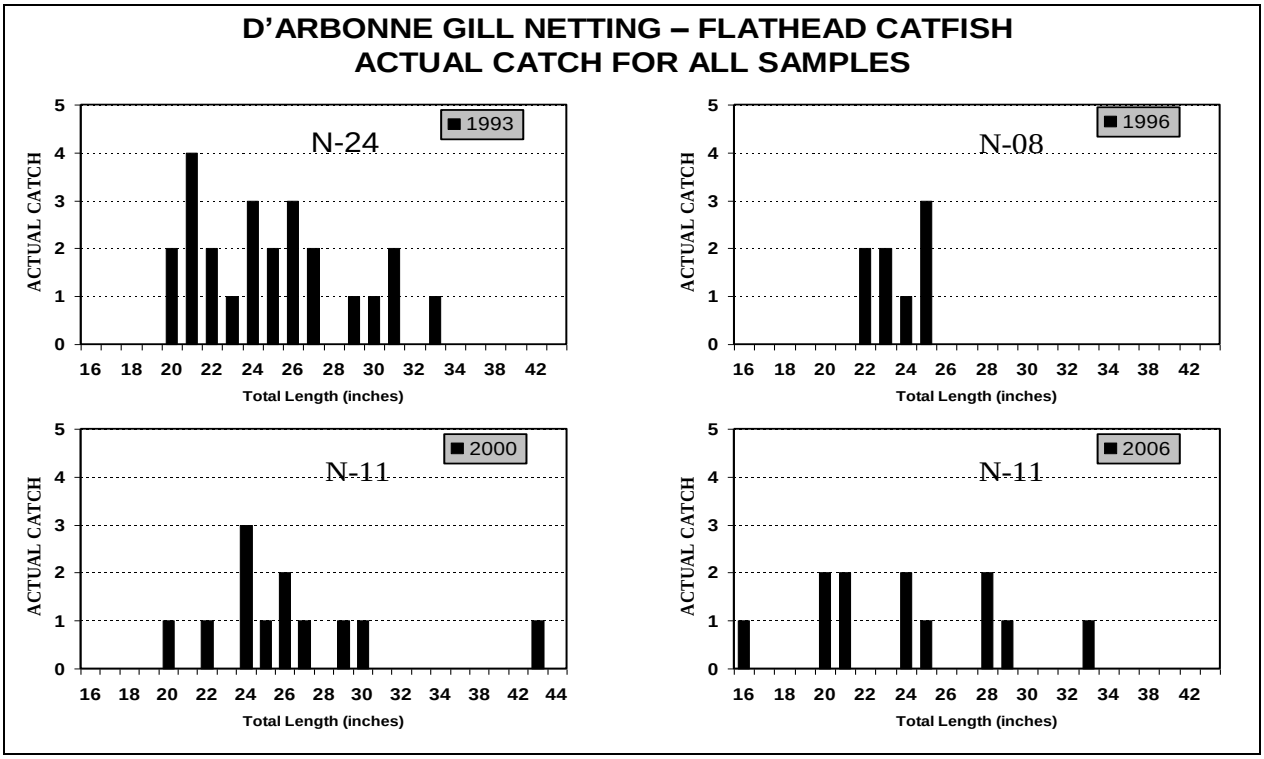


Figure 15. Size distribution of flathead catfish captured during gill net sampling on Lake D'Arbonne, LA in 1993, 1996, 2000, and 2006.

Flathead Catfish Hogging

The term varies by region, but the practice involves the capture of catfish in spawning cavities (natural or man made). Some anglers feel into cavities that may be in shoreline banks or under washed out boat ramps. Others construct and place structures as indicated in the photo and description below (Fig. 16).

Flathead Catfish Hogging – The term varies by region, but the practice involves the capture of catfish in spawning cavities (natural or man made). Some anglers feel into cavities that may be in shoreline banks or under washed out boat ramps. Others place structures as indicated in the background photo. The sport has grown significantly in the past 5 years in this area and has spread to other lakes with flathead catfish populations such as Bistineau and even Caney. The sport is "visible" because of the different gear that is used and especially at boat ramps when a good catch is made. In addition, catfish hogging has been the focus of several television and print media stories, attracting both converts and concern.

Recently, the question has been raised that recreational harvest of catfish during the spawn may be increasing to the point of causing damage to the fishery. The D'Arbonne Lake Watershed District has formed a committee to look into it. The following concerns have been cited:

1.People were putting out and running hundreds of large spawning receptacles

2.Conflicts were occurring when catfish anglers were operating along the shoreline of private property (under private boat ramps and in other cavities)

3.The catfish population was down according to the reports of catfish anglers using other gear.

D'Arbonne Lake during 5 foot drawdown. ,

Boxes as in the above photo, old bath tubs, and hot water heaters are placed in water from 4-8 feet deep. Anglers using SCUBA equipment position themselves in a way to block the escape of the catfish. Catfish are caught by hand or sometimes with the use of a gaff or hook.

Figure 16. Description and photo of catfish hogging device in D'Arbonne Lake.

Boxes, old bath tubs, and hot water heaters are placed in water from 4-8 feet deep. Anglers using SCUBA equipment position themselves in a way to block the escape of the catfish. Catfish are caught by hand or sometimes with the use of a gaff or hook.

Catfish hogging has become popular in D'Arbonne Lake with some anglers reported to have placed dozens of receptacles out. The sport has grown significantly in the past 5 years in this area and has spread to other lakes with flathead catfish populations. Catfish hogging has been the focus of several television and print media stories. Recently, the question has been raised that recreational harvest of catfish during the spawn may be increasing to the point of causing damage to the fishery. The D'Arbonne Lake Watershed District has formed a committee to look into it. The following concerns have been cited:

1. People were putting out and running hundreds of large spawning receptacles
2. Conflicts were occurring when catfish anglers were operating along the shoreline of private property (under private boat ramps and in other cavities)
3. The catfish population was down according to the reports of catfish anglers using other gear.

An opinion was requested of LDWF District II fisheries personnel. The following was presented to the Bayou D'Arbonne Watershed District at their February, 2006 meeting:

1. Catfish hogging is one of several legal means of harvest for flathead catfish in D'Arbonne Lake (others include hook & line, and hoop nets – both recreational and commercial).
2. As are the other legal means, catfish hogging is currently regulated under LDWF

regulations. Those regulations include a separate license requirement and a limit of 5 structures (pipes) per person.

3. No decline in flathead catfish is indicated by LDWF Standardized sampling data for D'Arbonne Lake. No additional restriction for catfish hogging or any of the other legal methods of take is appropriate from a biological standpoint.

HABITAT EVALUATION

Aquatic Vegetation

Because of large areas of shallow water in D'Arbonne Lake, especially north of the Hwy. 33 Bridge, aquatic vegetation has maintained significant coverage since impoundment. As a result, complaints of vegetation levels considered to be overabundant have been expressed for the same period of time, though only a small percentage of lakeside residences are impacted. Lake drawdowns for the purpose of weed control have been conducted as indicated below (Table 3). Subsequent drawdowns have been made since 1994, though they have primarily been scheduled for maintenance of shoreline properties. D'Arbonne Lake is currently on a four year drawdown schedule, with water levels lowered to five feet below pool stage immediately after Labor Day and lasting until at least November 15th. The scheduled drawdowns also serve as a means of vegetation control. A scheduled drawdown in 2008 was extended until mid-January for the additional purpose of hydrilla *Hydrilla verticillata* control.

Table 3. List of drawdowns conducted on D'Arbonne lake for aquatic vegetation control.

D'ARBONNE LAKE WEED CONTROL DRAWDOWNS			
DATE	LOWEST LEVEL	GATES OPENED	POOL STAGE
1965	5.2'	09/11/65	02/09/66
1966	4.9'	09/13/66	02/22/67
1968	5.3'	09/10/68	12/13/68
1969	5.1'	07/31/69	01/09/70
1970	8.8'	09/09/70	03/12/71
1971	7.9'	09/05/72	12/16/72
1972	7.9'	09/05/72	12/16/72
1984	8.4'	09/10/84	10/26/84
1985	12.7'	09/05/85	02/10/86

Results of D'Arbonne Lake drawdowns conducted for weed control have been inconsistent, partially due to the influence of additional factors. Examples include rainfall during the scheduled drawdown period and exposure time of dewatered areas to cold weather. Often ignored is the considerable influence of post-drawdown water levels. The extent and duration of springtime water levels is a key factor for subsequent aquatic vegetation coverage. High water levels are common in D'Arbonne Lake due to its large watershed (67:1).

A correlation has been documented between the level of drawdowns below pool stage and resulting effects to D'Arbonne Lake fish populations. Largemouth bass and sunfish displayed

consistent declines following drawdowns greater than 5' below pool stage. Increased angler harvest is suspected for the decline in adult size largemouth bass. The combined effects of increased angler harvest and predation are suspected for declines in young bass and all sizes of sunfish.

Herbicide Treatment

Herbicide treatment of aquatic vegetation in D'Arbonne Lake has been conducted on an "as needed" basis. Alligator weed *Alternanthera philoxeroides* and water primrose *Ludwigia spp.* have been treated in areas which are impacting shoreline residents. Control has been provided by LDWF spray crews using the liquid herbicides glyphosate (0.75 gal/acre) and 2,4-D (0.5 gal/acre). Common salvinia was discovered in the lake in 2009 and treated with diquat dibromide at a rate of 1 gal/acre. A total of eight acres were treated in 2009. This infestation was limited to close proximity of the Hwy. 2 boat ramp, and although it was observed in small amounts in 2010, never posed any significant threats and is currently no longer found in the lake. In 2005, a large field of American lotus *Nelumbo lutea* in the D'Arbonne Bayou arm of the lake had expanded to the point where it was impacting several residences and also a nearby boat lane. It was initially treated in 2005 with granular 2,4-D at a rate of 100 lbs/acre. Herbicide applications have been made in subsequent years with granular 2,4-D and also glyphosate (0.75 gal/acre) in an effort to prevent this field from expanding further. Hydrilla was first observed in the lake in 2005 and was immediately treated with Cutrine Plus (chelated copper) at a rate of 1 gal/acre for a total area of six acres. Recent herbicide control has been provided with diquat (1 gal/acre) primarily around impacted public boat launches and the State Park fishing piers. Hydrilla control has thus far been adequately provided by the scheduled five foot drawdowns.

Recent herbicide applications have been made primarily for the control of emergent species in shallow coves where shoreline property owners were impacted. Primrose and alligator weed are the most problematic species in these areas. Glyphosate and Imazapyr are commonly used. American lotus has been treated with 2,4-D to reduce coverage near developed shorelines. Hydrilla is treated with subsurface applications of diquat dibromide, sometimes mixed with a copper chelate (Cutrine Plus), in the vicinity of public boat ramps and where it is impeding navigation. A small amount of water hyacinth *Eichhornia crassipes* also requires regular treatments on D'Arbonne, with 2,4-D also being used since no waiver is required in Union Parish. A summary of acres sprayed from 2005 – 2012 for the most common nuisance species is given in D'Arbonne MP-A. Table 4 below shows total acres sprayed on D'Arbonne Lake in 2012.

Table 4. Total acres of nuisance aquatic vegetation treated with herbicide on D'Arbonne Lake in 2012.

Species	Alligatorweed	Hydrilla	Water hyacinth	Primrose	American Lotus
Acres	12	13	16	12	16

Current Status and Coverage

Currently (February, 2013), there is very little vegetation that would be considered nuisance on D'Arbonne. The fall/winter drawdown of 2012 was successful at reducing coverage of submerged and emergent species. The lake remained nearly five feet below pool stage for much of the time between September 5 – December 28, during which there was sufficient drying of the

lake bottom and numerous hard frosts. It is predicted that hydrilla and nuisance emergent species will reappear in the lake, though they should not reach nuisance conditions during 2013. Hydrilla has been the species of most concern on D'Arbonne since it was first documented here in 2005. Coverage has steadily expanded throughout the two major creek arms (D'Arbonne and Corney). The shallow "flats" areas in these creek arms continue to be infested with vegetation, mostly exotic emergent species. Vegetation south of the Hwy. 33 Bridge is limited to shallow coves, whereas it has been abundant in the shallow flats north of the bridge, especially in the major creek arms. Thus far, no hydrilla has been found south of the Hwy. 33 Bridge.

Coverage and Status of Problem Plant Species Prior to 2012 Drawdown (estimated from 2011 type map)

-American Lotus – several large "fields" of lotus are found mostly throughout the D'Arbonne arm of the lake, including some areas near shoreline residences, which require herbicide control

-Alligator weed– common throughout the lake, mostly confined to shallow coves, undeveloped shorelines, and the shallow flats on the northern end of the lake.

-Hydrilla– abundant in D'Arbonne and Corney arms of the lake, dense stands in some areas, growing to depths of six ft. Estimated coverage prior to 2012 drawdown was approximately 1,000 acres.

-Water Hyacinth – will form surface mats in protected areas, though not normally a serious problem on L. D'Arbonne.

-Water Primrose - common throughout the lake, mostly confined to shallow coves, undeveloped shorelines, and the shallow flats on the northern end of the lake.

Coverage and Status of Beneficial Plant Species as of 12/31/12

-Coontail *Ceratophyllum demersum* - common in depths up to 3 ft., mostly north of Hwy. 33 bridge and Hwy. 15 bridge at Stowe Creek.

Herbicide Control Recommendations

Hydrilla located in the vicinity of public boat launches should be treated with a subsurface application of a tank mixture of Cutrine®-Plus (chelated copper) and Tribune™ (diquat dibromide) at a ratio of 3:2, respectively. The mixture will be applied at the rate of 5.5 gallons per surface acre of hydrilla,. An alternative mixture will be to apply only diquat dibromide on the surface and by subsurface injection at a rate of 2.0 gallons/acre. These areas should be inspected monthly for the presence of hydrilla. Coverage of American Lotus should be reduced where it is impacting shoreline residential areas or boat navigation. An application of liquid 2,4-D at 0.5 gal./acre should be made in these areas on an as needed basis. Glyphosate, 2,4-D or Imazapyr will be used for treatment of most other emergent vegetation with rates used as recommended on the label for particular species.

The most recent type map survey was conducted in 2011 and is included in Appendix B. The type map conducted in 2009 is also included in the appendix. Type maps were also conducted in 2005 and 2007 and can be viewed in D'Arbonne MP-C (archives).

Artificial Structure

Complex cover can be defined any type of underwater structure that affords protection to small fish. Rather than objects such as a single log or stick, complex cover is normally referred to as "thick cover." Many of our Louisiana impoundments have lost their available complex cover.

To that end, LDWF is now in the process of developing guidelines to address construction and deployment of artificial reefs. Our primary concern is that materials or methods used under the new guidelines initiate no environmental consequences. Consideration of all reef types has been secondary to this basic premise. Other considerations are:

1. Materials used must be readily available and inexpensive.
2. They should have negative buoyancy so that the reef stays in place.
3. They should be made of non-toxic materials that do not deteriorate in a short period of time.
4. They should provide maximum structural complexity and attachment surfaces for algae.
5. They must be of a unit size that can be handled without the aid of mechanical lifting devices.
6. They must not require a large time investment for construction or deployment.

Polyethylene feed pallets have recently become available as a construction material. The pallets were offered, free of charge, to LDWF by Cargill, Nutrena Feeds of Lecompte, Louisiana. Used to stack feed sacks, the pallets that become bent or broken over the course of time are unsuitable for their automated system. As a result, the company must dispose of several hundred pallets per month.

As illustrated below (Fig.17), the various openings in the top surface of the pallet qualify as complex in nature. Dimensions are small as compared to traditional wooden pallets. The large round hold in the center of all of the pallets is a key feature for construction of reefs with the pallets.

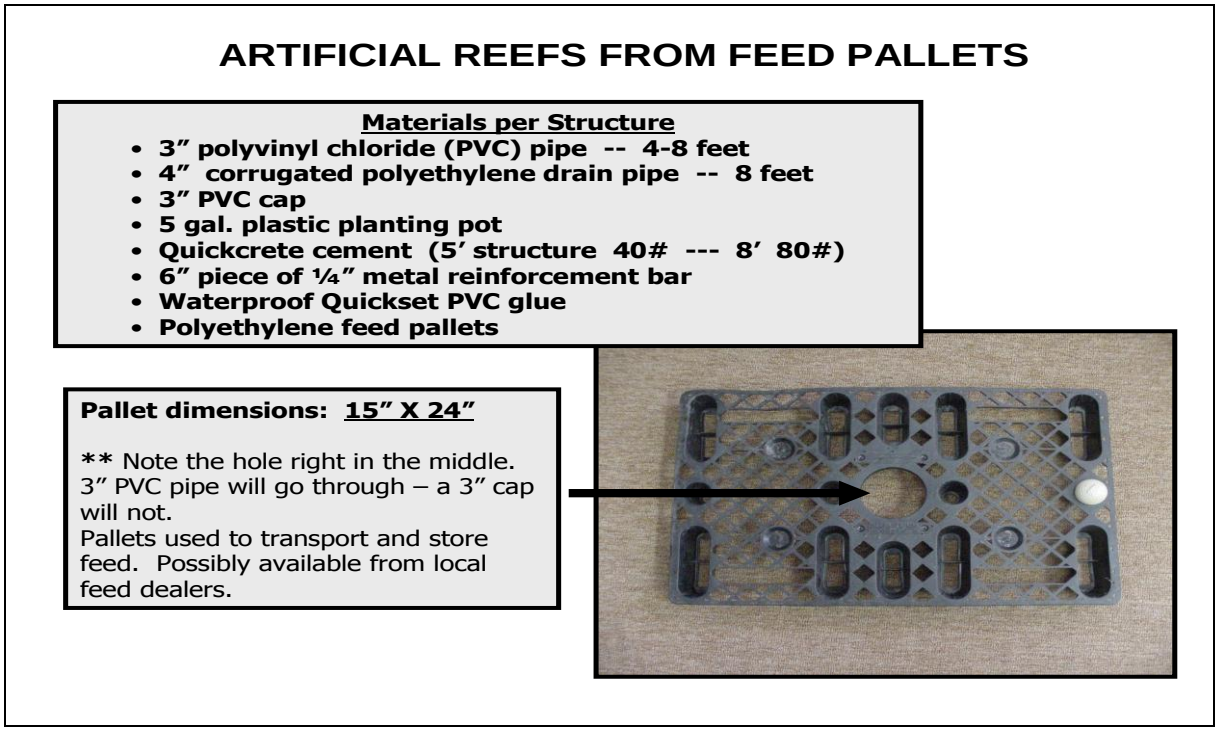


Figure 17. Photo of feed pallet and list of materials used in constructing artificial reefs that have been placed into D'Arbonne Lake by LDWF.

Lengths of 3 inch PVC are set in a bucket of concrete with pallets being placed over the PVC at desired intervals. Spacers (cut 3" PVC) are used to separate the pallets. A PVC cap is glued to the top. A completed structure is shown in Figure 18, below. Air trapped in the 3" pipe provides

enough buoyancy for the structure to self-right if necessary. In areas where adequate complex cover is not available, the structures are quite effective as fish attractors.

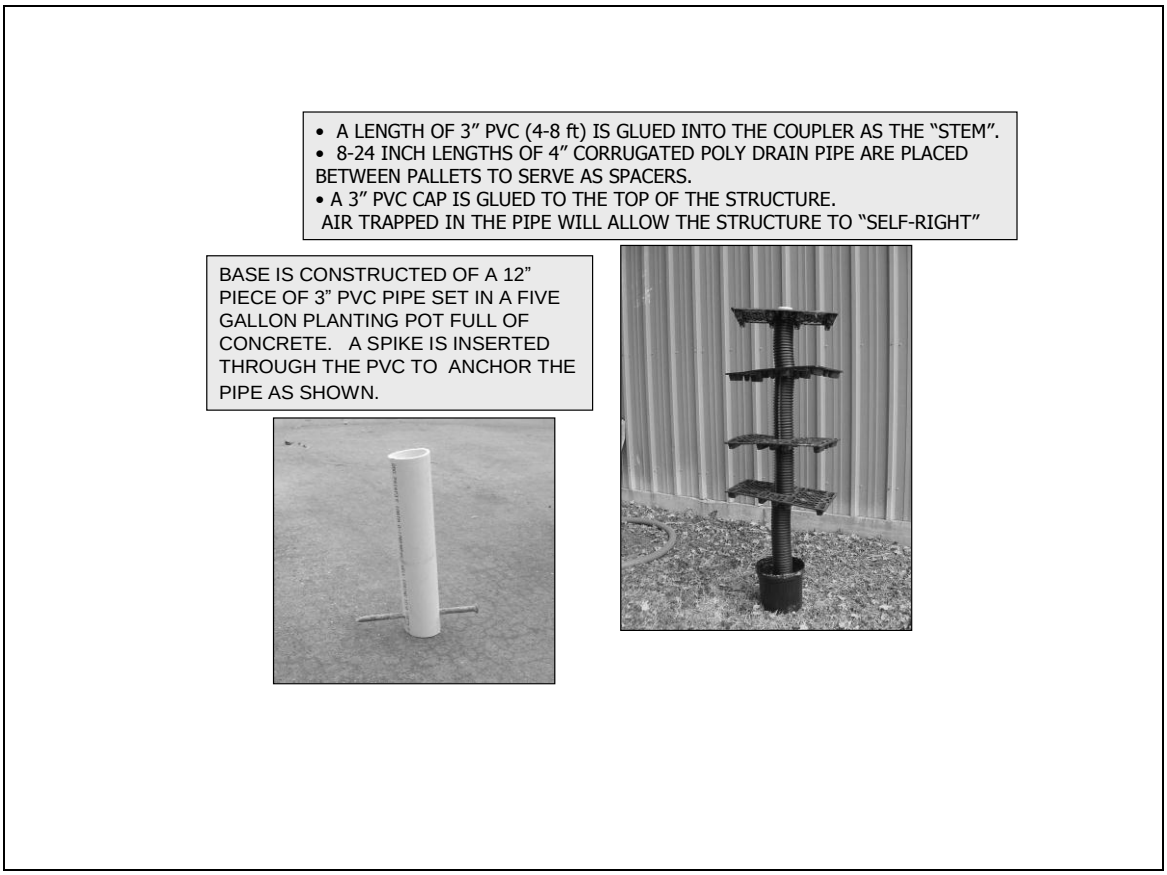


Figure 18. Photo of assembled structure used for attracting fish in D'Arbonne Lake.

Floating self-ballasted buoys (Fig. 19) were used to mark reef locations. Floating buoys require routine maintenance to ensure that they remain attached to anchors. Large nylon rope (0.5" braided) was used as mooring lines. Corrosion from the acidic waters of D'Arbonne Lake limits effective use of chain or wire rope to about two years.

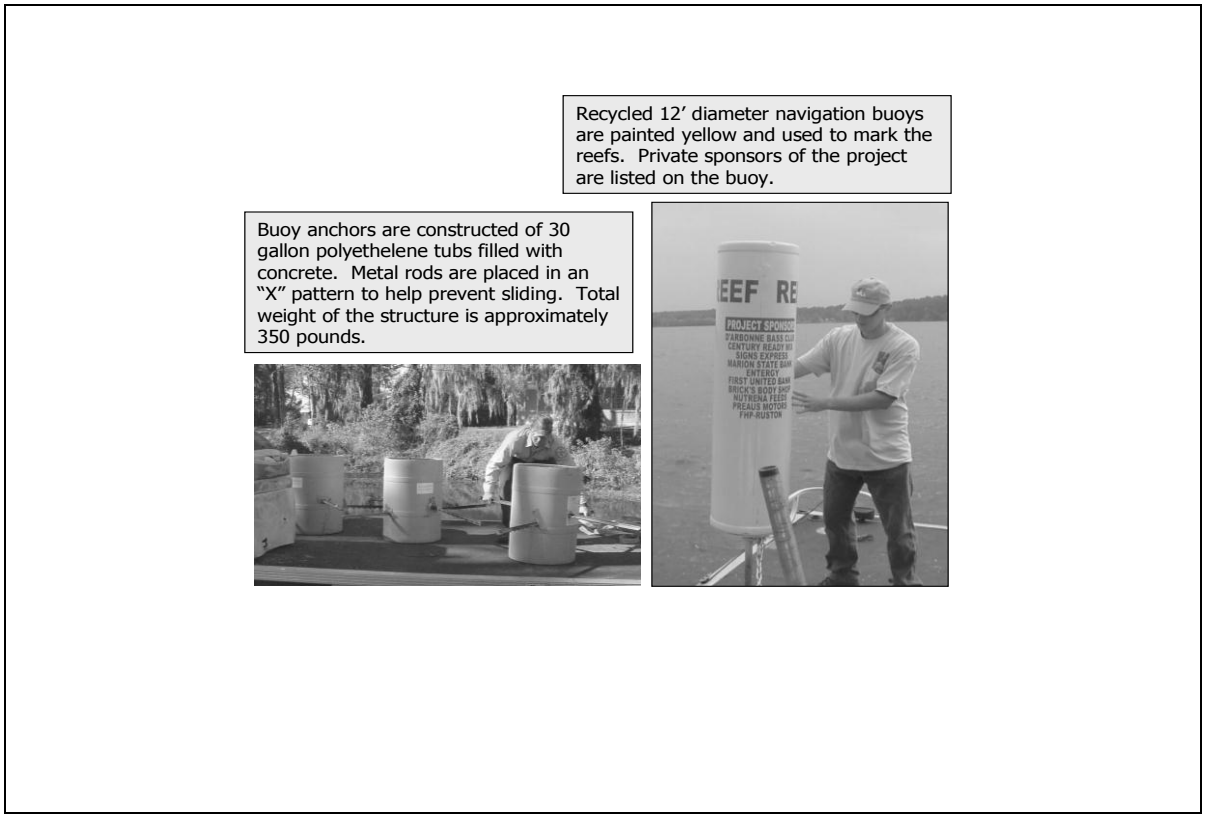


Figure 19. Photo of buoy used to mark artificial reef locations in D'Arbonne Lake, Louisiana.

Placement of the trees should be in a random manner, with the buoy being roughly in the middle. Reef locations should have enough variance in water depth to accommodate fish preferences throughout the year. Reef locations in areas without existing forms of cover are most likely to be effective as fish attractors. Locations with high frequency of non-resident or novice anglers should also be considered as potential sites. Reef size should be large enough allow utilization by several parties at one time. At least 100 units per reef are recommended.
In coordination with the Bayou D'Arbonne Watershed District, six artificial reefs were constructed in 2004 at coordinates as listed below (Table 4).

Table 4. Coordinates of artificial reefs placed into D'Arbonne Lake by LDWF.

D'ARBONNE ARTIFICIAL REEF STRUCTURES		
NAME	COORDINATES	
State Park Reef	32^0 46'15.36" N	-92^0 28'41.18" W
Horseshoe Reef	32^0 47'25.34" N	-92^0 27'17.66" W
Four Mile Creek	32^0 46'37.64" N	-92^0 25'34.22" W
Stowe Creek	32^0 43'54.09" N	-92^0 24'12.08" W
Piney Point	32^0 44'33.09" N	-92^0 22'31.04" W
Reef 5	32^0 43'52.09" N	-92^0 21'32.04" W

Substrate
The substrate in much of the lake bottom, especially shallow areas that have been dewatered

during drawdowns, is a hard composition of sand and clay. Sand is predominant along many of the creek channels. Fragments of iron ore rock form a significant component of the substrate in the lake Deeper substrate not subject to current or dewatering has accumulated organic material and silt on the surface. Gravel beds have been constructed in the vicinity of D'Arbonne State Park fishing piers in 2002, 2003, 2005, and 2006. Approximately 40 cubic yards of pea gravel were used each year. Angler success has improved as a result, particularly for sunfish. The photo below (Fig. 20) shows LDWF personnel spreading gravel into the water with a high volume water pump.

Figure 20. Gravel is displaced by a high volume water pump to enhance spawning substrate around fishing piers at D'Arbonne Lake State Park.

CONDITION IMBALANCE / PROBLEM

1. The large watershed of D'Arbonne Lake has flooded low lying properties and structures built below design storm elevation (90.0' MSL) since impoundment. It's important to note that the second highest water level (86.1'MSL) for D'Arbonne Creek at Farmerville was recorded in 1958, before construction of the D'Arbonne spillway. The flooding is not a problem from a biological perspective. However, efforts to mitigate high D'Arbonne Lake water levels through "flood control" spillway gate openings can be. The four 5'x5' spillway gates offer no significant increase in water that already flows over the 799' spillway. In fact, water flow through the gates is indirectly proportional to water flow over the spillway (as in times of high water). Less water can flow through the gates as more water overtops the spillway. The spillway structure was designed only for infrequent lake dewatering, not flood protection. Inappropriate spillway gate openings expose the structure to damage from logs and debris. The cast iron gates and the concrete structure can be damaged upon closure of the gates, resulting in partial to extensive dewatering of the lake. Currently, two 10 x 40 ft. tainter gates are being installed in the dam on the south side of the spillway. These gates are designed to alleviate flood conditions on the lake and will also be used for drawdowns. The implementation of these gates creates the potential of rapid dewatering and reduced high water periods that have existed in the past. There has been a correlation between high water levels during the spawning months and recruitment success. Figure 21 shows largemouth bass recruitment to be stimulated when water levels have reached or exceeded 83.0 ft. There is concern by fisheries managers that eliminating or significantly reducing past annual fluctuation patterns could potentially impact recruitment of nesting fish species.

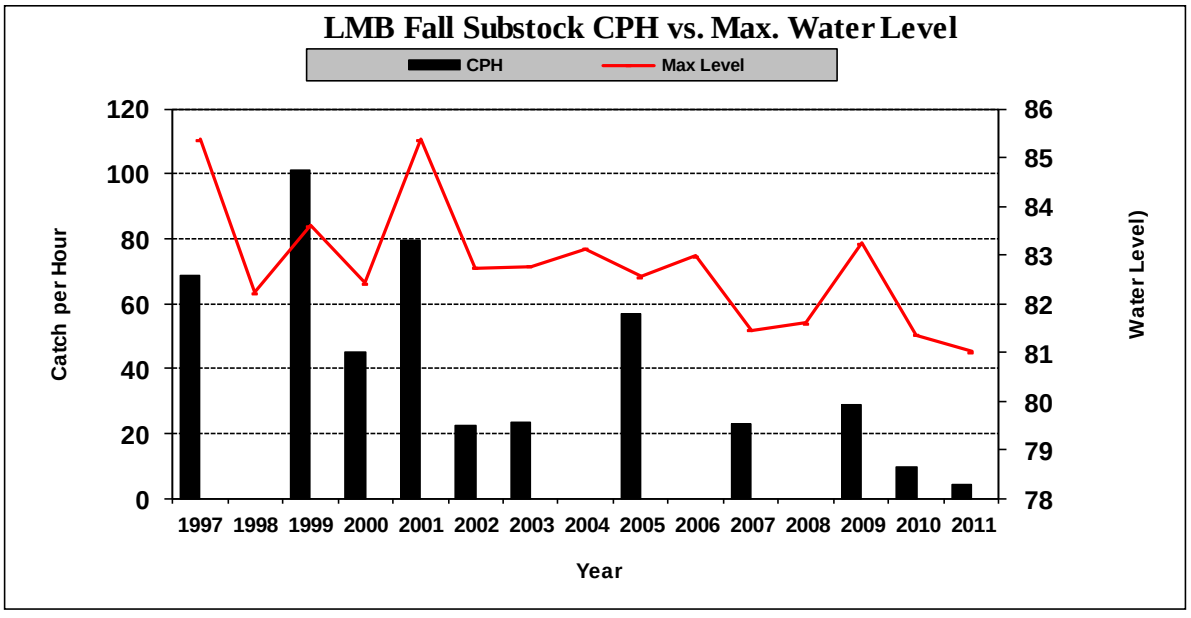


Figure 21. The CPUE (number per hour) of substock-size largemouth bass from fall electrofishing and maximum water levels from March – May for the years 1997 – 2011.

2. The recent occurrence and predicted expansion of hydrilla threatens to seriously impair utilization of D'Arbonne Lake. Hydrilla coverage is expanding and currently impacting shoreline access. Scheduled drawdowns (every four years – 5 foot below pool stage) have provided limited control and have slowed expansion of the invasive plant species.

CORRECTIVE ACTION NEEDED

1. Unfortunately, flooding is inevitable for D'Arbonne shoreline properties below the elevation of 90.0' MSL. Inherent risks to structures built below 90.0' MSL are assumed by owners and should be understood by all users. The tainter gates currently being installed will remediate flooding to some extent. Potential for flooding and related damage to low lying properties is still substantial.

2. Control measures for hydrilla in D'Arbonne Lake are effectively limited to water level fluctuation. Unfortunately, drawdowns can only provide temporary relief as a control measure. D'Arbonne Lake drawdowns have provided inconsistent benefits related to vegetation control. It is important to note that drawdowns more extensive than five feet have consistently produced negative impact to largemouth bass and sunfish populations.

RECOMMENDATIONS

1. Continue introductions of Florida bass at rate of 10/acre (150,000). Stocking will include transport to areas throughout the impoundment that offer protection for the young fish. Genetics sampling is to be conducted as a follow-up to determine recruitment of the Florida genome into the D'Arbonne population.

2. Continue existing recreational and commercial harvest regulations until such time as sampling results indicate that change is appropriate and necessary from a biological perspective or such time as a change in management goal is indicated by the collective opinion of D'Arbonne Lake anglers.

3. Continue scheduled standardized sampling of fish populations and aquatic vegetation to determine status over time.

4. Plan meetings with the Bayou D'Arbonne Watershed District on an annual basis to discuss management, share ideas, and information.

5. Investigate the use of water level fluctuations with the new tainter gates for management of sport fish populations The new tainter gate operation plan should allow the lake level to reach 83.0 ft. during the months of March – May to stimulate spawning and recruitment of sportfish species.

6. Investigate the use of water level fluctuations with new tainter gates for management of hydrilla and other nuisance plant species. A series of short term drawdowns of 2 – 4 ft. below pool during summer months may alleviate severe infestations along the shorelines in years when the scheduled drawdowns do not occur.

APPENDIX A

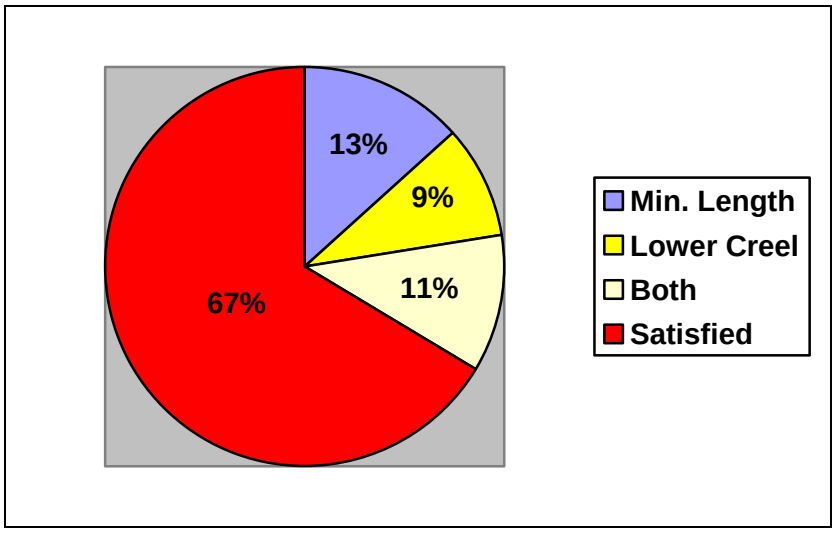
(return to crappie regulations)

SUMMARY OF 2009 CRAPPIE OPINION SURVEY

In 2009, LDWF Inland Fisheries personnel conducted on-the-water interviews of D'Arbonne Lake anglers to gather information about the crappie anglers and to compile opinions related to crappie fishing regulations on D'Arbonne Lake. Refer to the attached survey form for the questions asked of each angler. The attached survey protocol describes the sampling format.

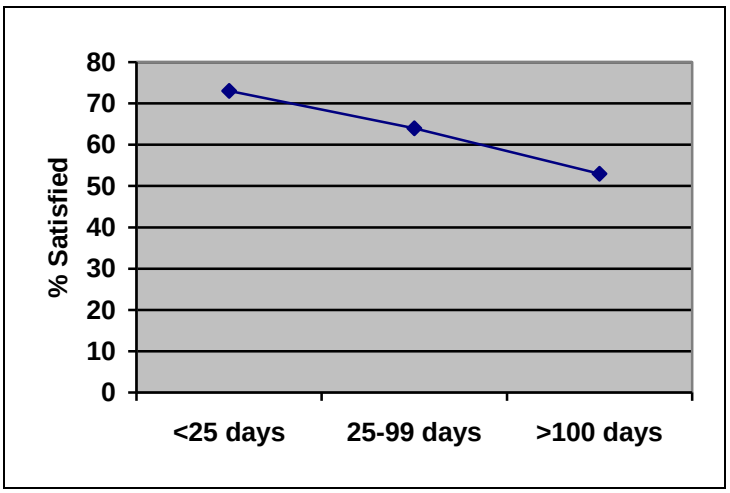
A total of 223 interviews were conducted on 18 different dates, with only 7 anglers having been previously interviewed, thus 216 original opinions were obtained. Not all of the 24 scheduled interviews were conducted due to the closure of the lake during high water in both spring and fall, and also because of inclement weather. Overall, 65% of the anglers interviewed were satisfied with the current statewide regulations in effect on D'Arbonne Lake. Of those wanting to see a regulation change, 40% recommended a minimum length, 27% wanted a reduced creel limit, and 33% wanted a combination of both.

Angler Recommendations



Of the anglers interviewed, 23% lived on or had a camp on the lake. Those that did not live or have a camp on the lake travel an average of 33.3 miles to reach D'Arbonne Lake. Mean number of crappie trips per year was 45 for all crappie anglers. This value was inflated substantially by those who lived on the lake, who reported to fish for crappie an average of 81 days each year. Also, only 54% of those living on the lake were satisfied with the current regulations. Satisfaction also decreased among anglers who fished more frequently, with 53% of those who fish over 100 days per year being satisfied. In contrast, 73% of anglers who fished less than 25 times per year were satisfied.

Satisfaction Rate
Anglers Grouped by # Days Fished per Year



Crappie anglers interviewed during the winter fishing season (Jan., Feb., Nov., Dec.) averaged slightly more (54) trips per year and are perceived as being "more serious" about crappie fishing. This group of anglers, though, had the same satisfaction rate as the overall group of crappie anglers.

Of the anglers who specified a preference for minimum length regulations, 79% (n=38) suggested a 10 inch minimum. Other recommendations were as follows:

Min. Length	# of Rec.'s	% of Rec.'s
7"	2	4%
8"	2	4%
9"	3	6%
10"	38	79%
11"	2	4%
12"	1	2%

Of the anglers who specified a lower creel limit, 80% (n=32) wanted a 25 fish limit. Other recommendations were as follows:

Creel Limit	# of Rec.'s	% of Rec.'s
25 fish	32	80%
25 – 30 fish	2	5%
30 fish	5	13%
35 fish	1	3%

Most of the anglers did not give a specific reason or expected benefit for their recommendation, but when prompted to, the most common response was that they believed a restriction would result in a larger average size of crappie. Many anglers also believed that a restriction would result in both larger and more crappie in the lake. Listed below are the different angler responses when asked why they requested a regulation change.

RESPONSES	# of Anglers
Larger average size	14
Larger average size and more fish in the lake	11
More fish will be in the lake	5
A creel limit of 50 is too many	3
Others are keeping too many small fish	2
Texas has a minimum length	2
Better quality fish	2
Protect smaller fish	2
Should be like Poverty Point	1
Should be like Toledo Bend	1
Improve the population	1

The number of original interviews obtained during each month of 2009 is listed below:

January	6
February	38
March	28
April	16
May	0
June	22
July	15
August	20
September	6
October	0
November	41
December	24

APPENDIX B. 2009 & 2011 D'Arbonne Lake Type Maps

(return to typemaps)

D'Arbonne Lake Type Map
2009
Summary of Aquatic Vegetation Survey

Prepared by Ryan Daniel

Inland Fisheries biologists Ryan Daniel and Kane Finkbeiner surveyed D'Arbonne Lake in Union Parish for all types of aquatic vegetation on Aug. 12 (Corney, Forks Ferry, Stowe Creek, and main lake) and Sept. 3 (Little D'Arbonne). Surveys were conducted by traveling the entire shoreline by boat and recording observations on the presence and abundance of all aquatic species onto a lake map. The lake level on Aug. 12 was 80.10 ft. (pool stage is 80') and on Sept. 3 was 79.90. D'Arbonne, being a large lake at approximately 16,000 acres, was divided into 4 distinct zones for this survey to better describe the vegetation communities in each of these major areas of the lake. Descriptions of the zones are as follows:

Little D'Arbonne: the western "arm" of the lake, from the point where Middle Fork Bayou and D'Arbonne Bayou converge at the far west end to where it opens up into the main lake area north of the Hwy. 33 bridge near the Tech Landing boat ramp.

Corney Creek: the north "arm" formed by Corney Creek, north of the Hwy. 2 bridge, extending northwest into the natural channel of Corney Creek to the Hog Pen Landing boat ramp.

Forks Ferry Area: the open water area immediately north of the Hwy. 33 bridge where Corney Creek and D'Arbonne Bayou converge, extending north to the Hwy. 2 Bridge and west to the area where D'Arbonne Bayou becomes constricted near the Tech Landing boat ramp.

Main Lake and Stowe Creek: all areas of the lake south of the Hwy. 33 bridge to the spillway and above the Hwy. 15 Bridge in Stowe Creek to the Millard Hill Rd. bridge.

Little D'Arbonne Survey (9/3/09)

Little D'Arbonne is the most vegetated area of D'Arbonne Lake. Submersed aquatic vegetation SAV and emergents are common. Hydrilla *Hydrilla verticillata*, coontail C*eratophyllum demersum*, and muskgrass *Chara sp.* were the most common submersed species in this arm of the lake. All 3 were most abundant from Cypress Island north to just above the Mixing Hole. Chara formed extensive mats on the shallower flats in the upper end, around islands, and in shallow coves. Coontail and/or hydrilla were growing around much of the shoreline in depths to nearly 5 feet. Hydrilla formed dense mats in a few locations, whereas the coontail was mostly scattered. Fanwort *Cabomba caroliniana* was only abundant near the Mixing Hole. Water willow *Justicia americana* was common along much of the immediate shoreline and around

islands. American lotus *Nelumbo lutea* and American pondweed *Potamogeton nodosus* were the most abundant emergent species. The lotus formed expansive mats in several locations, with the largest at Cypress Island, and the pondweed was most abundant in the shallows of the upper end. Water primrose *Ludwigia uruguayensis* was also found in some of the shallower areas, especially farther north.

Corney Creek Survey (8/12/09)

The majority of the vegetation in this arm was found around the numerous islands and on the shallow flats in the upper end. Chara was the dominant submerged species Coontail was also found in shallow water adjacent to the shoreline, but in only a few locations. Primrose was the dominant emersed species, forming large mats in the upper end and growing along much of the shoreline and in the backs of coves. It covered approximately 20 acres in the north end of Boatright Creek. Waterwillow was also common in the upper end. A small amount of common salvinia was found floating in the open water near the east shore just north of Hwy. 2, although no significant source was observed.

Forks Ferry Area Survey (8/12/09)

This area of the lake was void of any significant vegetation. Waterwillow was present on the shoreline in a few locations.

Main Lake and Stowe Creek Survey (8/21/07)

This area comprises over half of the surface acreage of the lake, but contains very little vegetation with the exception of Stowe Creek west of the Hwy. 15 bridge. The vegetation in this area consisted primarily of primrose mats in the shallows. Primrose formed a near solid mat in the upper 1/5th of Stowe Creek and in the large cove on the south side of Stowe. The only submerged species observed was Chara in Stowe Creek. The main lake area was mostly void of any vegetation. Waterwillow was found along the shoreline in the upper end of Stowe and Bear Creeks and in the backs of some other coves.

Overall Summary

A 5 ft. drawdown was conducted in fall of 2008 from Sept. 1 – Nov. 10 for routine maintenance. Prior to the drawdown, hydrilla had become very abundant in many areas in Little D'Arbonne and was also found in Corney Creek. The drawdown successfully removed hydrilla from depths less than 5 ft., but allowed it to grow in deeper depths until the lake was refilled. Hydrilla has become re-established in much of Little D'Arbonne from Cypress Island to north of the Mixing Hole. Currently, two of the State Park fishing piers and some private boat houses across from the Mixing Hole are impacted by thick surface mats. It has grown at an alarming rate in some areas considering the recent drawdown. It was not found in any other areas of the lake. There are no current plans for control by herbicide, but it will be monitored in public access areas. Coontail, fanwort, and bladderwort were less abundant lakewide than in 2007, most likely due to the drawdown. Chara is currently the most abundant submerged species, forming dense mats in the depths less than 2 feet in parts of Corney, Little D'Arbonne, and Stowe Creek. The lotus field in the Cypress Island area is expansive but causes no problems to boaters or homeowners. Currently, there are no significant negative impacts to the fisheries or recreational users of D'Arbonne Lake due to aquatic vegetation. SAV coverage is less than 5% lakewide, while emergent coverage is 5 – 10% in the Stowe Creek, Little D'Arbonne, and Corney Creek areas.

Species List

Submersed Aquatic Vegetation (most to least abundant)
Coontail C*eratophyllum demersum*
Hydrilla *Hydrilla verticillata*
Fanwort *Cabomba caroliniana*
Chara *Chara spp.*
Filamentous Algae

Emersed Aquatic Vegetation
Water Primrose *Ludwigia uruguayensis*
Water Willow *Justicia americana*
American Lotus *Nelumbo lutea*
American Pondweed *Potamogeton nodosus*

Floating Aquatic Vegetation
Common Salvinia *Salvinia minima*

D'Arbonne Lake Type Map, 2011

D'Arbonne Lake Type Map
2011
Summary of Aquatic Vegetation Survey

Prepared by Kane Finkbeiner

Inland Fisheries biologists Ryan Daniel and Kane Finkbeiner surveyed D'Arbonne Lake in Union Parish for all types of aquatic vegetation on July 18 (Little D'Arbonne, Forks Ferry, Stowe Creek, and Bear Creek) and July 28 (Corney Creek and main lake). Surveys were conducted by traveling the entire shoreline by boat and recording observations on the presence and abundance of all aquatic species onto a lake map and also a GPS with boat-mounted antenna. The lake level on July 18 was 79.88 ft. (pool stage is 80') and on July 28 were 79.90. D'Arbonne, being a large lake at approximately 16,000 acres, was divided into 4 distinct zones for this survey to better describe the vegetation communities in each of these major areas of the lake. Descriptions of the zones are as follows:

Little D'Arbonne: the western "arm" of the lake, from the point where Middle Fork Bayou and D'Arbonne Bayou converge at the far west end to where it opens up into the main lake area north of the Hwy. 33 bridge near the Tech Landing boat ramp.

Corney Creek: the north tributary formed by Corney Creek, north of the Hwy. 2 Bridge, extending northwest into the natural channel of Corney Creek to the Hog Pen Landing boat ramp.

Forks Ferry Area: the open water area immediately north of the Hwy. 33 bridge where Corney Creek and D'Arbonne Bayou converge; extending north to the Hwy. 2 Bridge and west to the area where D'Arbonne Bayou becomes constricted near the Tech Landing boat ramp.

Main Lake and Stowe Creek: all areas of the lake south of the Hwy. 33 bridge to the spillway and above the Hwy. 15 Bridge in Stowe Creek to the Millard Hill Rd. bridge.

Little D'Arbonne Survey (7/18/11)

Little D'Arbonne is the most vegetated area of D'Arbonne Lake. Submersed aquatic vegetation SAV and emergents are common. Hydrilla *Hydrilla verticillata*, coontail C*eratophyllum demersum*, and muskgrass *Chara sp.* were the most common submersed species in this arm of the lake. All 3 were most abundant from Cypress Island north to above the Mixing Hole. Chara formed extensive mats on the shallower flats in the upper end, around islands, and in shallow coves. Coontail and/or hydrilla were growing around much of the shoreline in depths to nearly 5 feet. Hydrilla formed dense mats in many locations, whereas the coontail was mostly scattered. Hydrilla was also found growing across flats and on top of the natural levees along the creek channels. Fanwort *Cabomba caroliniana* was only abundant near the Mixing Hole. Water willow *Justicia americana* was common along much of the immediate shoreline and around islands. American lotus *Nelumbo lutea* and American pondweed *Potamogeton nodosus* were the most abundant emergent species. The lotus formed expansive mats in several locations, with the largest at Cypress Island, and the pondweed was most abundant in the shallows of the upper end. Water primrose *Ludwigia uruguayensis* was also found in some of the shallower areas, especially

farther north.

Corney Creek Survey (7/28/11)

The majority of the vegetation in this arm was found around the numerous islands and on the shallow flats in the upper end. Chara was the dominant submerged species. Coontail was also found in shallow water adjacent to the shoreline, but in only a few locations. Slender naiad *Najas minor* was also found in these areas being most concentrated on the eastern shore around Boatwright Creek. Hydrilla was found for the first time north of Hwy 2 with coverage extending along the eastern shoreline from Hwy 2 north to the cove adjacent to Lover's Lane (across from Hamilton Field). Primrose was the dominant emersed species, forming large mats in the upper end and growing along much of the shoreline and in the backs of coves. It covered approximately 20 acres in the north end of Boatwright Creek. Waterwillow was also common in the upper end.

Forks Ferry Area Survey (7/18/11)

This area of the lake was void of any significant vegetation. Waterwillow was present on the shoreline in a few locations. Hydrilla was present in the shallower areas on the western side of this open area.

Main Lake and Stowe Creek Survey (7/28/11)

This area comprises over half of the surface acreage of the lake, but contains very little vegetation with the exception of Stowe Creek west of the Hwy. 15 bridge. The vegetation in this area consisted primarily of primrose mats in the shallows. Primrose formed a near solid mat in the upper 1/5th of Stowe Creek and in the large cove on the south side of Stowe. Bladderwort was abundant beneath the primrose fringe west of Hwy 15. It was also found in conjunction with coontail amongst the scattered cypress at the western end of the arm. The main lake area was mostly void of any vegetation. Waterwillow was found along the shoreline in the upper end of Stowe and Bear Creeks and in the backs of some other coves. Bladderwort and coontail was also found growing sparsely in the upper portion of Bear Creek. No hydrilla was observed in this area of the lake.

Overall Summary

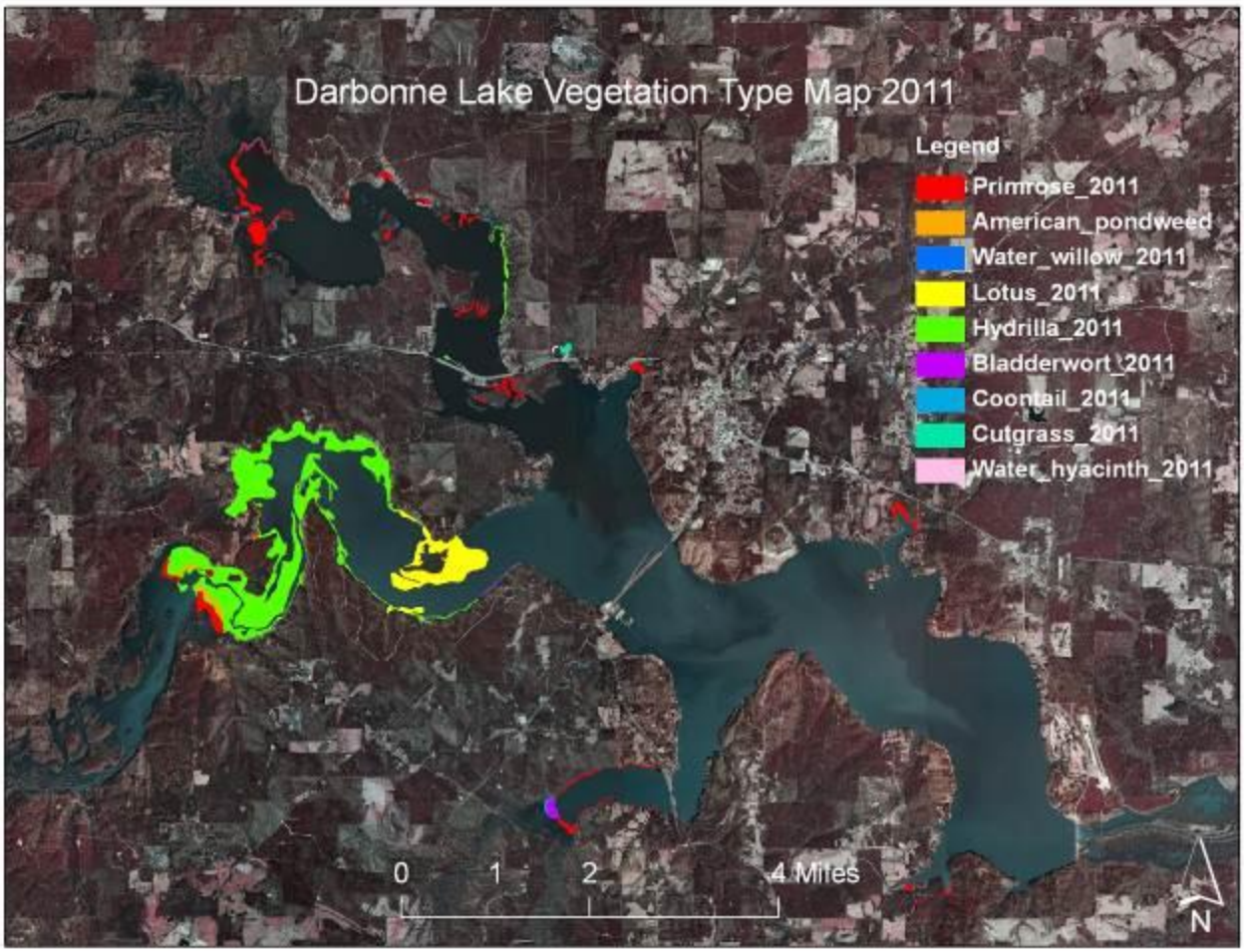
Hydrilla has become very abundant in many areas in Little D'Arbonne and was also found in Corney Creek. Currently, all of the State Park fishing piers and some private boat houses across from the Mixing Hole are impacted by thick surface mats. Other private piers near Cypress Island and Jakes are also being impacted. The portion of Corney Creek that was mentioned in the above description is reaching the nuisance threshold. Coontail, fanwort, and bladderwort were more abundant lakewide than in 2009. Behind hydrilla, Chara is currently the most abundant submerged species, forming dense mats in the depths less than 2 feet in parts of Corney, Little D'Arbonne, and Stowe Creek. The lotus field in the Cypress Island area is expansive but causes no problems to boaters or homeowners. LDWF has been treating nuisance patches of Lotus with herbicides for the past 3 years. Common salvinia *Salviniae minima*, which had been present in 2009, were not observed during this survey. SAV coverage is less than 10% lakewide, while emergent coverage is 5 – 10% in the Stowe Creek, Little D'Arbonne, and Corney Creek areas. A drawdown is scheduled for the fall of 2012 and should at least temporarily remove all hydrilla in depths up to 5 feet. There are no current plans for control of hydrilla by herbicide, with the exception of infestations in the close proximity of boat ramps.

Species List

Submersed Aquatic Vegetation (most to least abundant)
Hydrilla *Hydrilla verticillata*
Chara *Chara spp.*
Coontail C*eratophyllum demersum*
Slender Naiad *Najas minor*
Bladderwort *Utricularia spp*
Fanwort *Cabomba caroliniana*

Emersed Aquatic Vegetation
Water Primrose *Ludwigia uruguayensis*
Water Willow *Justicia americana*
American Lotus *Nelumbo lutea*
American Pondweed *Potamogeton nodosus*
Variable Leaf Pondweed *Potamogeton diversifolia*

Floating Aquatic Vegetation
Filamentous Algae *Pithophora spp.*
Water hyacinth *Eichhornia crassipes*


Darbonne Lake Vegetation Type Map 2011
Legend
Primrose_2011
American_pondweed
Water_willow_2011
Lotus_2011
Hydrilla_2011
Bladderwort_2011
Coontail_2011
Cutgrass_2011
Water_hyacinth_2011
0
1
2
4 Miles
N