Fall 2019

Introduction:

Fisheries management is a dynamic process and continued monitoring and analysis is needed to maintain a level of fishing that is desired by the community. Lost Lake recognizes this, and JadEco, LLC was contacted to collect data on the fishery for Fall 2017 and again in 2019.

Daytime DC Electrofishing was conducted for a total of 65 minutes throughout much of the lake on October 28, 2019. A total of 532 fish were collected with 13 species being represented. Over 62% of the fish collected were desired game species consisting of largemouth bass (93), bluegill (103), black and white crappie (116), walleye (8), channel catfish (8), and yellow perch (6). The remainder consisted of un-desirable gizzard shad (84), common carp (55), and green sunfish (40). Non-game fishes such as golden shiners (7), and white suckers (9) comprised the remainder of the collection. While white suckers and golden shiners are not game species, their spawn do provide forage to other gamefish in the lake.

Water clarity readings were low the day of the survey, with visibility at 30 inches. Air temperature was at 44.8°F and water temperature was at 48.0°F. Sampling equipment appeared to be working well the day of the survey. We were assisted by volunteers on the front of the electrofishing boat, but the scheduled follow boat had motor issues, and therefore was not used during this survey.

To assess the fishery, we utilize several indices in fisheries management as tools to interpret the population structure and condition of the fishery. Data analysis tools such as Catch Per Unit Effort (CPUE) provide information on the abundance of species. The quantity of fish collected within a certain amount of time determines the CPUE. This is used for the collection as a whole, or per species comparisons. Proportional stock density (PSD) is also analyzed on important game species. This is a fisheries assessment tool used to determine the size distribution of the fish within a population. Relative weights (Wr) are calculated to provide insight into the condition of the fish in a population or fish community. They also provide an understanding of the size structure of game species within the lake, and provide information on length to weight relationships to better understand if your game fish are relatively fat, or relatively thin. Potential changes in the predator / prey relationships and available forage can be interpreted through these metrics. Combined, these metrics provide information on the gamefish community, species density and potential trends in the fishery.

Summary of Fisheries Data Collected in Fall 2019:

JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*

The following is a summary and interpretation of the data from the Fall 2019 fish survey and a comparison to the previous 2017 JadEco report.

Over all, the health and condition of the fish collected during the survey was good. We saw no visible signs of disease, stressors, or parasites. We collected a total of 93 largemouth bass that comprised approximately 17% of the overall collection. Bluegill comprised just over 19% of the collection with 103 fish collected, and the bluegill collection was lower than desired. Nearly 16% of the collection was gizzard shad and 10% was common carp.

Largemouth bass were well represented with all size classes of bass, and relative weights were excellent at 104. Relative weights for all game fish increased substantially since the 2017 survey and indicate a healthy and improving fishery.

Crappie represented nearly 22% of the total collection, and 35% of all gamefish collected. The crappie CPUE (over 2 crappie per minute) was so high we had to do a subsample of crappie on the second run since the catch tank was so full of fish.

The carp CPUE was above our objective range again in 2019 at 0.85 fish per minute (up from .55 in 2017) with 55 fish collected. The goal should be to manage carp at a level under 0.25 fish per minute electrofishing, and these numbers are still substantially high. The size range in the 2019 sample were all over 20" in length, where smaller carp (14") were represented in the 2017 sample. The average carp collected was 23.9" and 6.1 lbs. A total of 335 pounds was collected.

Largemouth Bass:

The largemouth bass CPUE was good at 1.43 fish per minute, and within our objective range at 1-2.5 fish per minute. Relative weights for bass have continued to improve with an increase from 101 in 2017 to 104 in 2019. This would indicate anglers are enjoying catching relatively fat bass at Lost Lake.

PSD or 'proportional stock density' metric to analyze the size structure of the bass population was used. This is a comparison of the stock (>8") to quality (>12") size bass in the sample. The objective range for largemouth bass PSD is 40-70. The PSD for Lost Lake was above our desired range at 76 (up from 70 in 2017). The RSD14 for largemouth bass was at 56 and is much higher than the objective range (10 to 20). The proportion of bass over 19" compared to all bass over 8" was at 9. This would indicate a high number of bass greater than 14" in the fishery. Average largemouth length in the survey was at 9" and ranged from 2.2" to over 20".

Looking at the size structure of the bass fishery, there is currently excellent recruitment of bass with 52% of the collection less than 8" stock size. This is substantially higher than 2017 at 19%. Bass between 8" and 14" represented 22%

of the fishery (33% in 2017) and 27% of the fishery was over 14" in length (48% in 2017). The bass fishery is very good for larger bass, and continues to be an excellent fishery in Northern Illinois.

Bluegill:

We collected 103 bluegill with a CPUE of only 1.58 fish per minute. This is below our objective range between 2 to 4.5 fish per minute. It is possible the cooler temperatures pushed some of the bluegill off shore. The PSD was within our objective range (20-60) at 56. This is much better than the 2017 at only 16. This would indicate that of the fish greater than 3" in length (stock size), 56% were larger than 6" in length (quality size). We collected a total of 50 bluegill over 6" and they comprised nearly 49% of the overall bluegill catch. Just over 19% of the entire catch was less than 3" in length, and is a concern for bluegill spawning and recruitment at Lost Lake. This will need to be monitored to better understand what is happening. The Relative stock density (RSD) for 7" bluegill was at 76 (up from 2 in 2017). Bluegill Wr averages were excellent at 114 (up from 94 in 2017). The low collection of bluegill and lack of bluegill over 8" both are concerning. A spring electrofishing survey may provide data on the larger bluegill that would be present in shallow water spawning.

Crappie:

The crappie collection was excellent in 2019 with 35% of the game fish collection being represented by black and white crappie. A total of 116 crappie were collected with 88 represented by white crappie and 28 represented by black crappie. Crappie ranged in size from 2.4" to over 13" in length. White crappie averaged 10" and black crappie were averaging 8.9". Visual observations, and personal opinion, is that this is the best crappie fishery I've seen on any of my lakes in quite some time. The condition of the crappie was good with relative weights averaging 89 for white crappie and 91 for black crappie. Field observation for white crappie was that they were much heavier than the majority of other lakes where we sample white crappie. Generally, white crappie are thinner than what was observed at Lost Lake. The CPUE for crappie was at 0.59 fish per minute (black and white combined) and we were able to subsample crappie due to the high numbers we were observing in the down trees along the banks.

The PSD was above our objective range for both black (79) and white crappie at (92). I suspect the high PSD is due the high collection of crappie greater than 8" in length. Nearly 76% of the crappie collected were the minimum creel size of 10", however, the majority were the white crappie. For white crappie, nearly 80% collected were over 10" and 64% of black crappie were over 10". Crappie can be cyclical in its population with good year classes and several years with gaps. Based on the data from 2017 and 2019, multiple year classes were observed and the crappie fishery should be good for a while.

Smallmouth bass:
Only two smallmouth bass were collected again in 2019 at a rate of 0.03 fish per minute. The average smallmouth collected was higher in 2019 (14.2“) than 2017 (9.6”). The 2019 collection ranged from 10.6” to 17.9” with the larger bass weighing over 3 ¼ pounds. The relative weights for the two collected were good at 92 and 100 (average 96) and were within our objective range. The PSD for smallmouth bass was at 50 again. This indicates that of the fish sampled, 50% of the bass over 7” were 11” or larger. The collection of smallmouth bass may indicate the recent smallmouth stocking (450 fish in 2016) was successful.

Walleye:
We collected 8 walleyes during this survey. We had a CPUE of 0.12 fish per minute and walleye ranged from 16.4” to 29.3” and over 10.6 pounds. Relative weights were good at 93 with a range from 87 to 101.

Recommendations:
Carp are a non-native species that can have negative consequences for not only the fishery, but lake water quality as well. With the high collection of carp, a carp removal effort should continue. The CPUE for carp increased since the 2017 survey.

The gizzard shad population structure was actually good this survey with the majority of shad collected being within a size range to make them available forage for bass, walleye, and even crappie. This may be some of the reason relative weights were much higher in 2019.

Continue to monitor the fishery for largemouth bass population structure and bluegill size distribution through electrofishing efforts. The dredging program that is being developed would also benefit the fishery. Currently, much of the upper reach of the lake is inundated with sediments which, in turn, reduce the amount of spawning habitat available to the sportfish population. Dredging would also improve water quality and clarity.

Fish Habitat:
As stated in previous reports, even though Lost Lake does have natural shorelines with fallen trees and structure, effort should still be made to place quality fish habitat throughout the lake. Placement of shallow structure would benefit the fishery, and in particular the bass and bluegill. These shallow structures would allow young of the year fish a place to hide, grow, and recruit.

Multiple material types can be used to create successful habitat. Many fishing clubs use Christmas trees and cinder blocks to place structure. While these materials are readily available and easy to handle, there are better structures that can be built by

the volunteers, or purchased through suppliers. Use of hard wood treetops, wooden pallets, or even PVC can provide long-term structures. We could assist you with developing these structures, as well as placement recommendations, if needed.

Lost Lake should continue working to establish a native aquatic plant community within the lake. Along with structure, the aquatic plant management program is important to the fishery. Aquatic plants provide oxygen to living organisms, nurseries to young fish, and a food supply of aquatic invertebrates to bolster the food chain for these growing fish. They also utilize nutrients that could otherwise be used by planktonic algae. An aquatic plant management program is needed to ensure the establishment of quality native aquatic plants. This plant management program or strategy should consider the types of plants to introduce, how to protect them from predation and by uprooting by the dense carp population while they get established.

Size and Creel Limits:

If you are trying to establish a sustainable smallmouth bass fishery, catch and release should be implemented until the smallmouth population begins to show signs of natural recruitment. Currently, the limit is still one per day over 16".

With the low collection of larger bluegills, consideration should be given to reducing bluegill harvest to 25 per day with only 5 over 8". This will improve the size structure for the fishery.

Stocking:

Stocking is always subjective to budgetary constraints, and all recommendations may not be able to be met. Stocking recommendations should *always be re-evaluated based on subsequent fish population sampling*.

1) Once again, we had a high collection of gizzard shad and therefore, stocking of muskie or hybrid stripers can continue. While hybrid stripers are less expensive, they are more prone to spillway escapement. Past studies on muskie diet have indicated that they prefer gizzard shad, when available as a primary forage. If muskie are a desired species by anglers, periodic stocking is necessary.

   I recommend stocking muskie at a rate no more than 1 fish per acre. To maintain consistent size classes, stockings should be done every other year. Generally, you can purchase muskie at 12" and larger. Larger fish have better survival rates. These are being stocked to help convert the biomass of gizzard shad into a desired sport species.

2) I would recommend continuation of annual walleye stocking rate at no more than 5 per acre. Continued periodic stockings will most likely be necessary to maintain a viable fishery for anglers. Walleye should be stocked at 6”-8”.

3) Smallmouth bass will need to be stocked temporarily until the population improves and natural spawning and recruitment occurs. Stocking will be budget driven, but stock no more than 10 per acres every other year.

If budgetary constraints are a problem, stocking every other year may be an option, keeping in mind limited year-class strength and size gaps in the fish that may be observed by fisherman and their creel.

JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*

Table 1: Catch Per Unit Effort (CPUE) by species

Species:	***Number***		***Fish/Minute***		***Objective***
	'19	*('17)*	*19'*	*('17)*	
Largemouth Bass:	93	(69)	1.43	(0.86)	1.0 – 2.5
Bluegill:	103	(226)	1.58	(2.83)	2.0 – 4.5
Black Crappie:	28	(6)	0.47	(0.08)	0.2 -0.8
White Crappie:	88	(12)	1.48	(0.15)	0.2 -0.8
Walleye:	8	(2)	0.12	(0.03)	- - - - -
White Bass (hybrid):	(- -)	(1)	(- - -)	(0.01)	- - - - -
Channel Catfish:	8	(10)	0.12	(0.13)	- - - - -
Smallmouth Bass:	2	(2)	0.03	(0.03)	- - - - -
White Sucker:	9	(3)	0.14	(0.04)	- - - - -
Green Sunfish:	40	(28)	0.62	(0.35)	- - - - -
Hybrid Sunfish:	(- -)	(- -)	(- - -)	(- - -)	- - - - -
Pumpkinseed Sunfish:	(- -)	(- -)	(- - -)	(- - -)	- - - - -
Yellow Perch:	6	(- -)	0.09	(- - -)	- - - - -
Yellow Bullhead:	(- -)	(5)	(- - -)	(0.06)	- - - - -
Bluntnose Minnow:	(- -)	(3)	(- - -)	(0.04)	- - - - -
Golden Shiner:	7	(10)	0.11	(0.13)	- - - - -
Gizzard Shad:	84	(168)	2.10	(2.10)	- - - - -
Common Carp:	55	(42)	0.85	(0.53)	< 0.25
Total	531	(587)	9.14	(7.34)	6.00 +

Table 2: Proportional Stock Density (PSD)

Species:	***2019***	***('17)***	***Objective***
Largemouth Bass:	76	(70)	40-70
Bluegill:	56	(16)	20-60
White Crappie:	92	(100)	30-60
Black Crappie:	79	(67)	30-60
Walleye:	100	(100)	30-60

Table 3: Relative Weight (Wr)

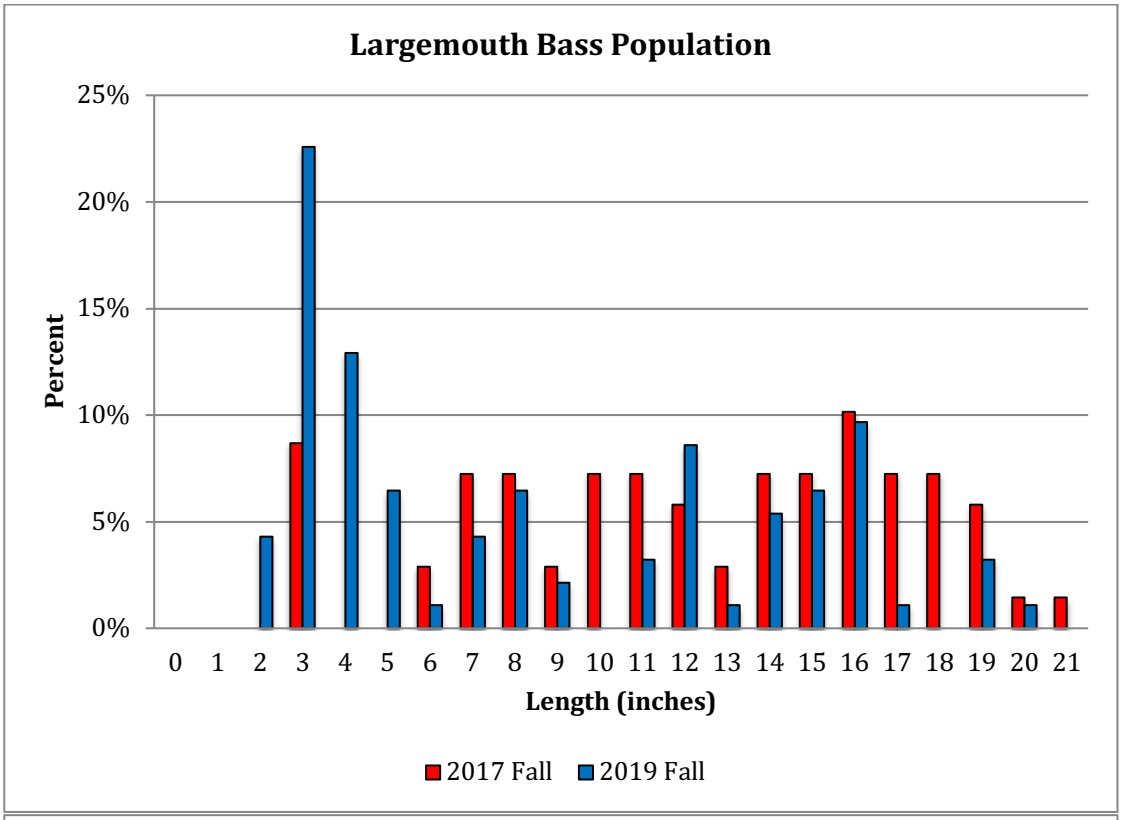
Species:	***Wr (Ave)***		***Range***		***Objective***
	19'	*'17*	*19'*	*'17*	
Largemouth Bass:	104	101	93-116	(86-124)	90-110
Bluegill:	114	94	70-93	(74-114)	90-110
White Crappie:	89	82	65-151	(64-89)	90-110
Black Crappie:	91	82	80-103	(77-89)	90-110
Walleye:	93	91	87-101	(89-93)	90-100
Smallmouth bass:	96	81	92-100	(80-82)	90-110
Channel Catfish:	110	108	95-123	(90-120)	90-110

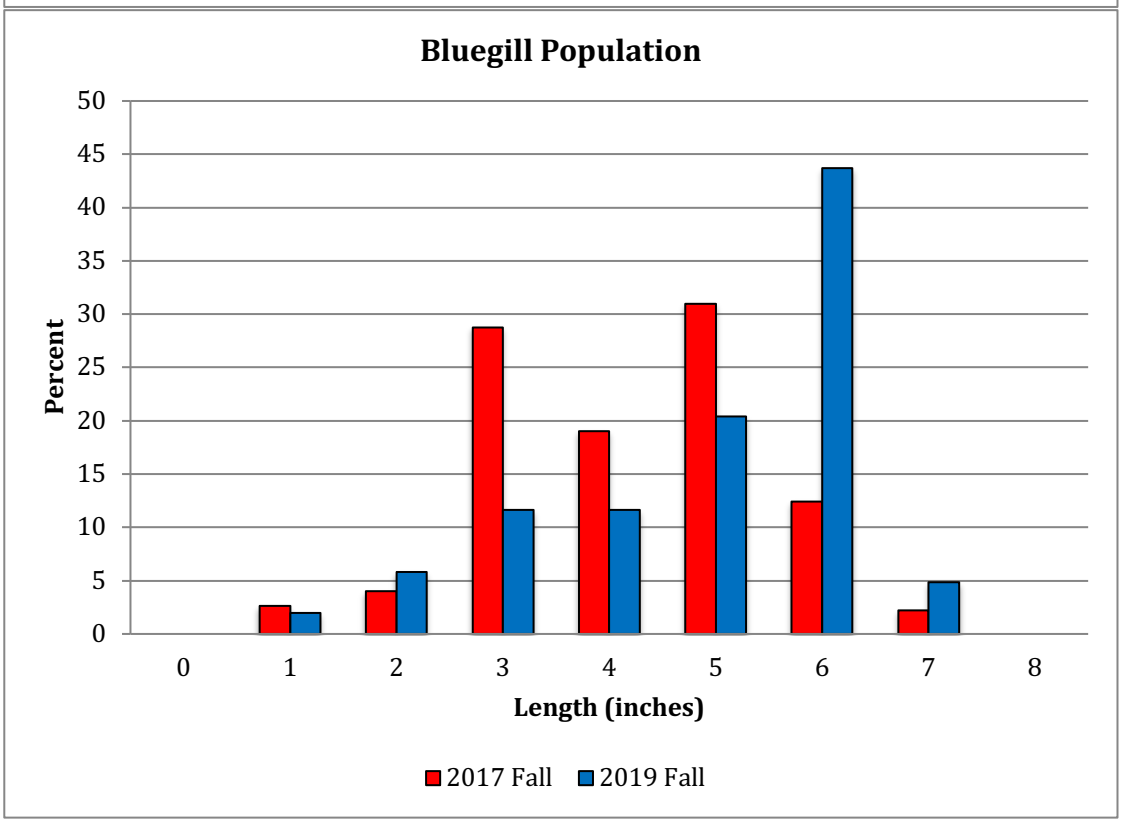
JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*

Table 4: Length Ranges by Species

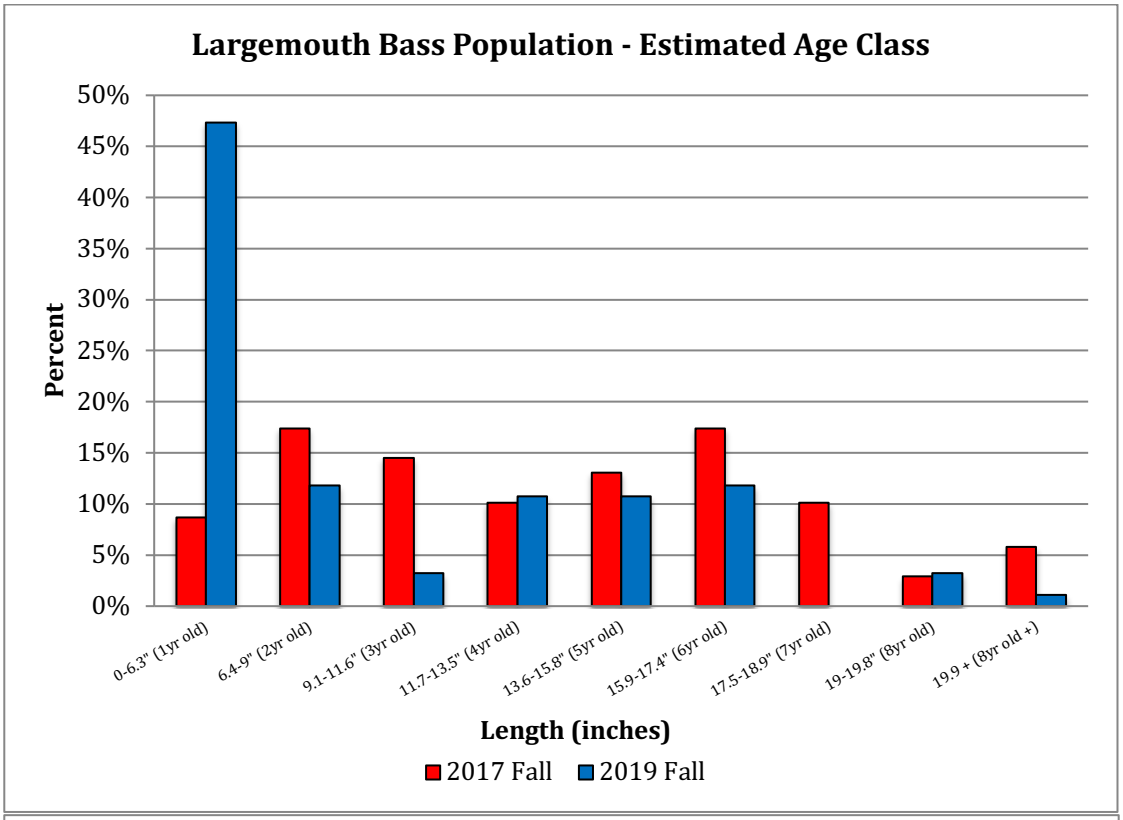
Species:	***Length:***			***Average***		
	'19	*'17*	*'15**	*'19*	*'17*	*'15**
Largemouth Bass:	2.2-20.1"	3.0-21.1"	(n/a)	9"	12.8"	(n/a)
Bluegill:	1.6-7.8"	1.5-7.4"	(n/a)	5.3"	4.7"	(n/a)
White Crappie:	2.4-13.4"	8.5-11.9"	(n/a)	10"	9.9"	(n/a)
Black Crappie:	5.4-11.1"	7.6-10.7"	(n/a)	8.9"	9.1"	(n/a)
Walleye:	16.4-29.3"	19.3-21.3"	(n/a)	20"	20.3"	(n/a)
White Bass (hybrid):	- - -	7.9"	(n/a)	- - -	7.9"	(n/a)
Channel Catfish:	17.8-23.4"	15.7-24.0"	(n/a)	19.6"	18.9"	(n/a)
Smallmouth Bass:	10.6-17.9"	8-11.2"	(n/a)	14.2"	9.6"	(n/a)
White Sucker:	10.5-16.7"	15.9-17.4"	(n/a)	15.6"	16.5"	(n/a)
Green Sunfish:	1.4-6.6"	1.8-6.5"	(n/a)	4.4"	4.3"	(n/a)
Yellow Bullhead:	- - -	11.3-11.5"	(n/a)	- - -	11.4"	(n/a)
Bluntnose Minnow:	- - -	2.2-2.7"	(n/a)	- - -	2.5"	(n/a)
Golden Shiner:	3.2-3.9"	3.1-8.3"	(n/a)	3.6"	5.1"	(n/a)
Gizzard Shad:	3-10"	3.3-13.2"	(n/a)	4.3"	8.1"	(n/a)
Common Carp:	20.1-35.8"	14.3-25.6"	(n/a)	23.9"	22.5"	(n/a)

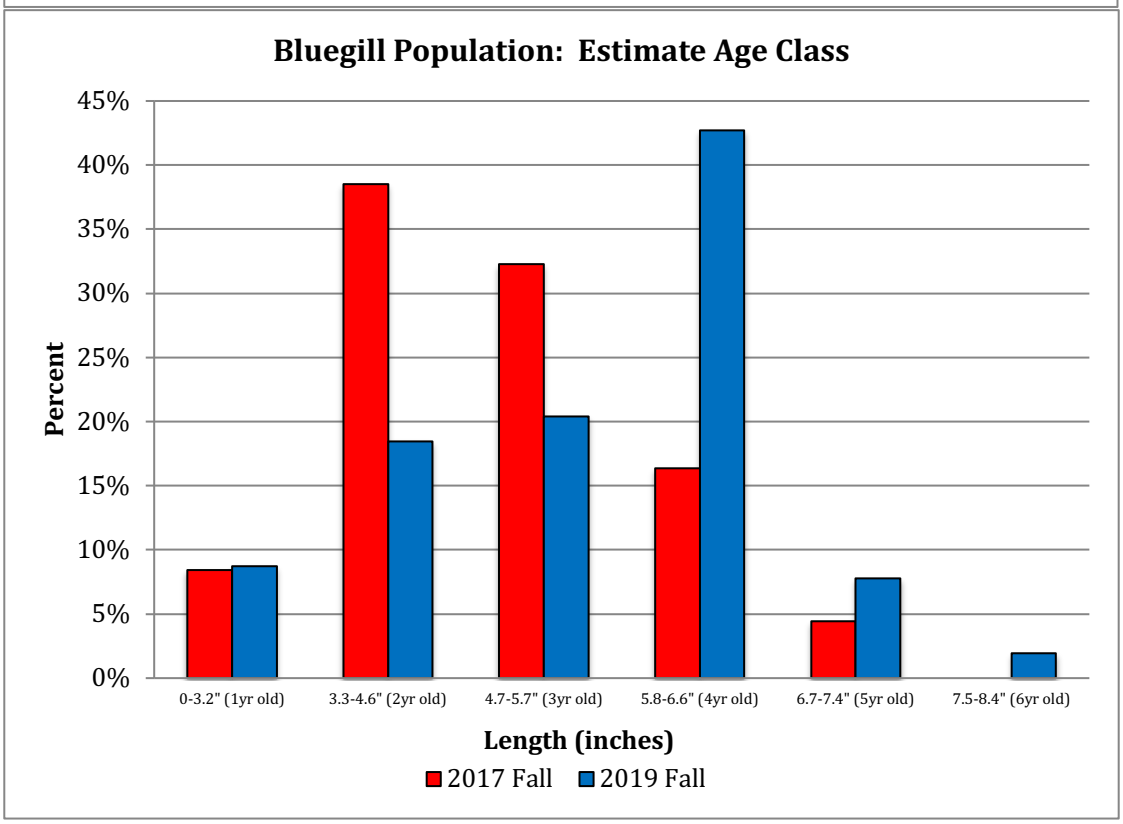
*IDNR Report:



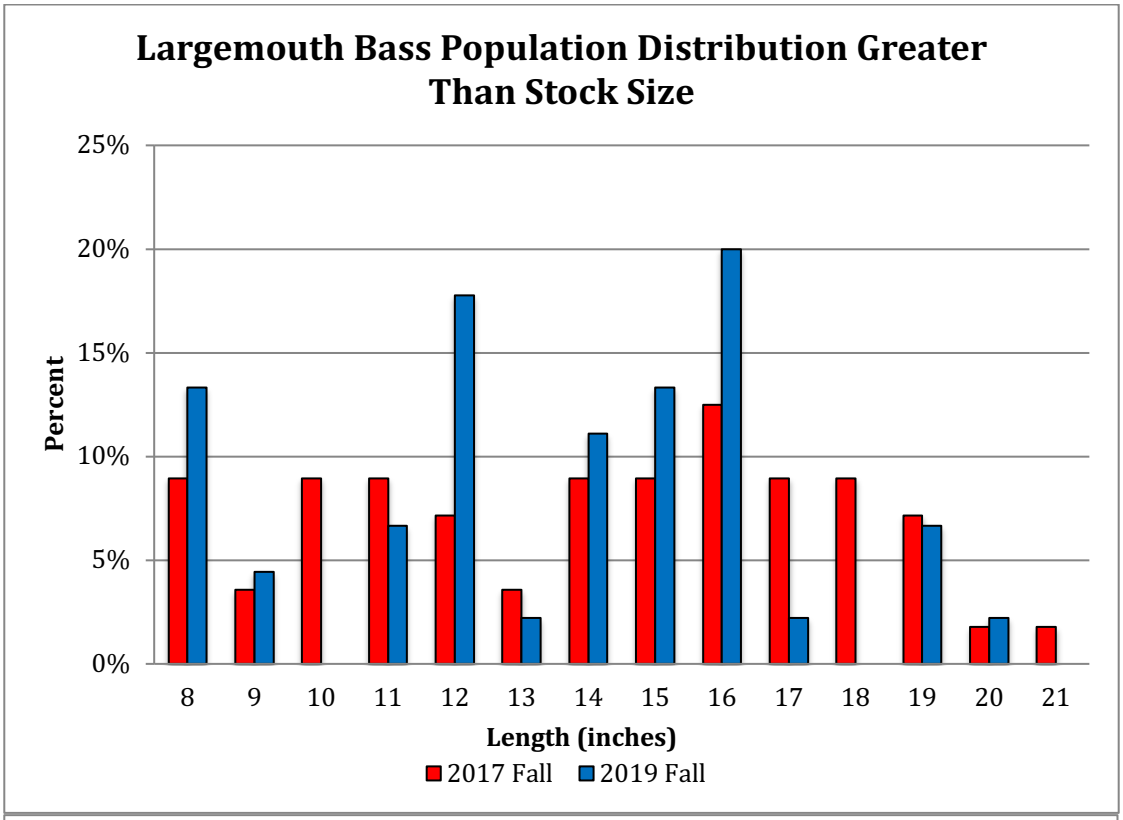


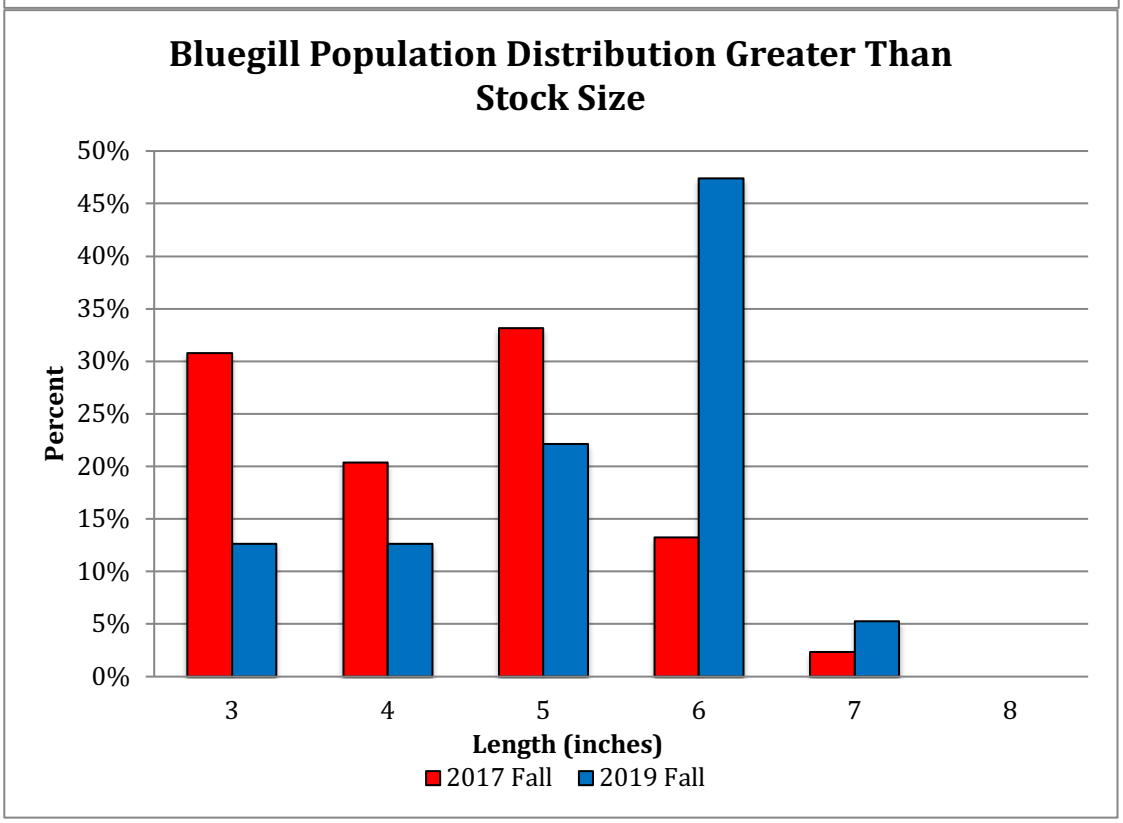
JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*



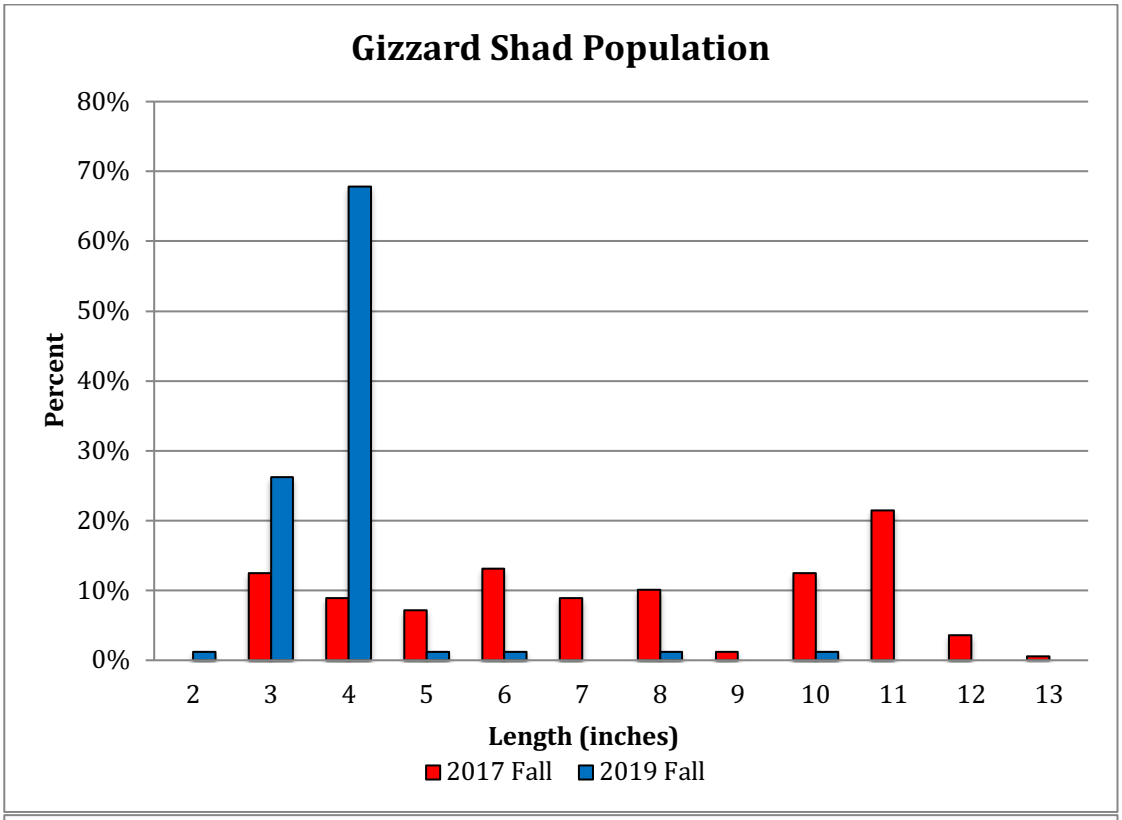


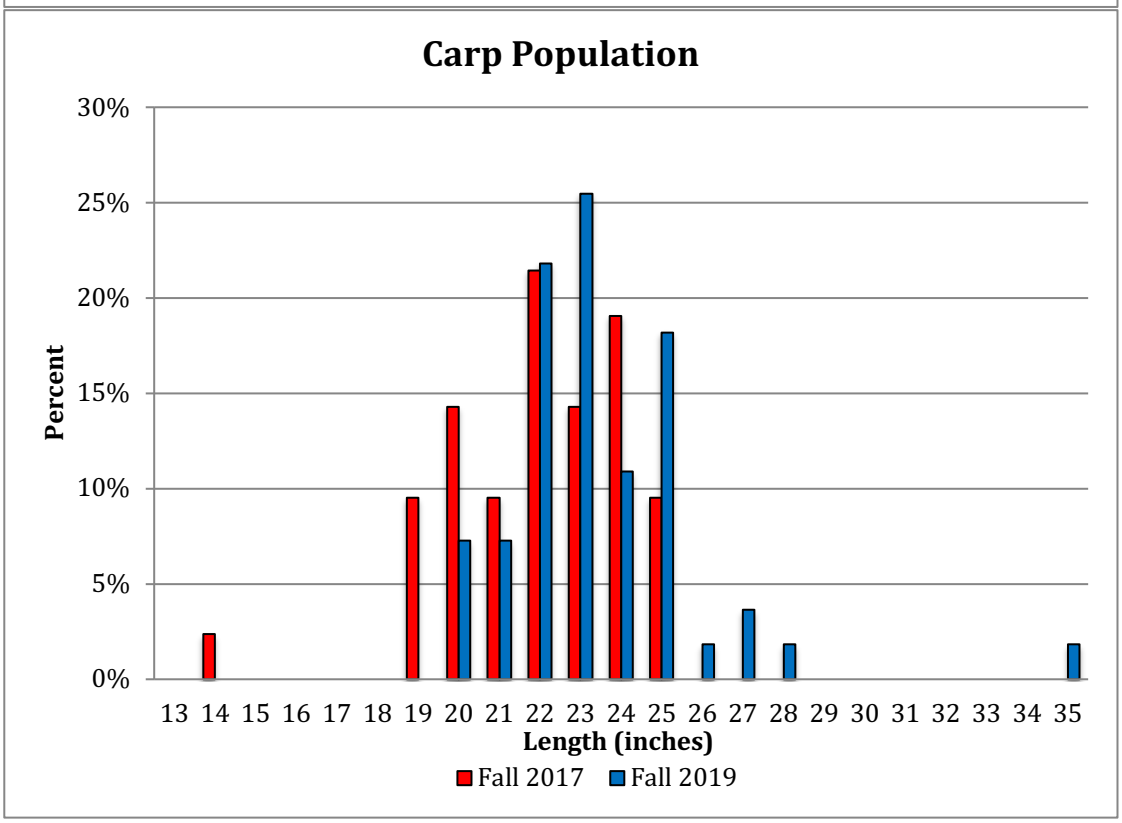
JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*



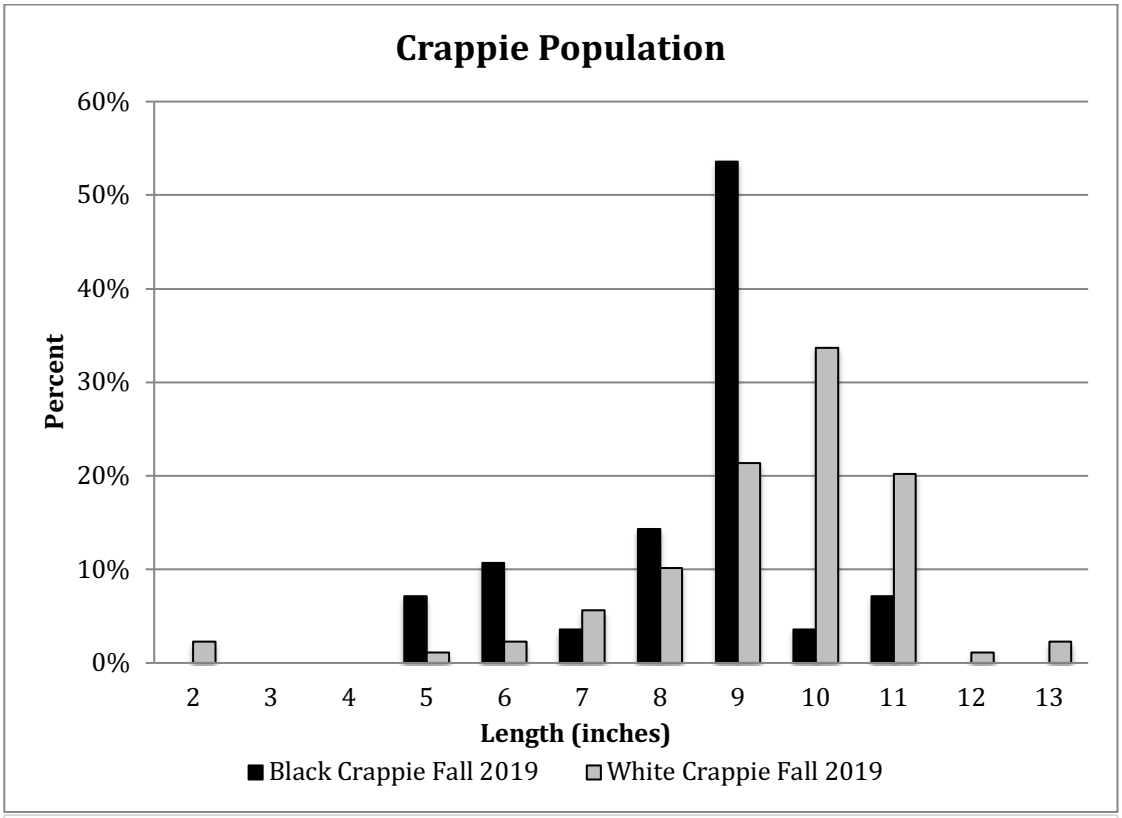


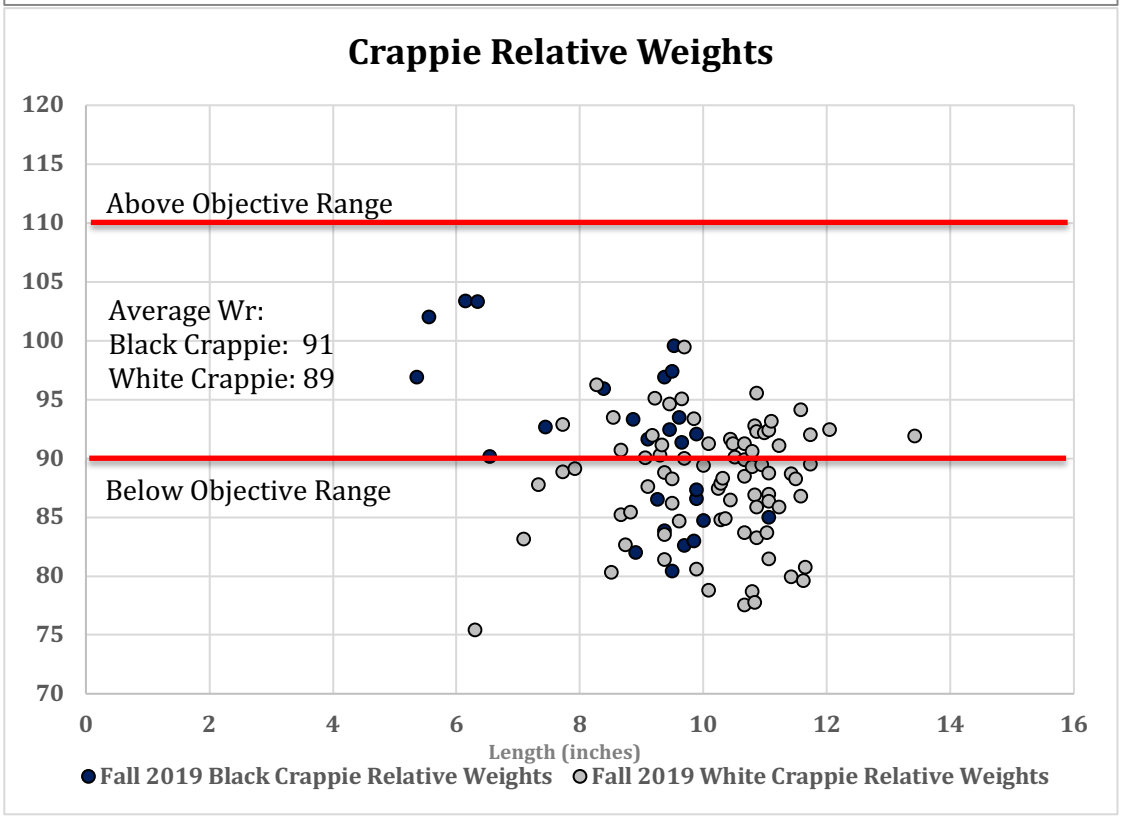
JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*



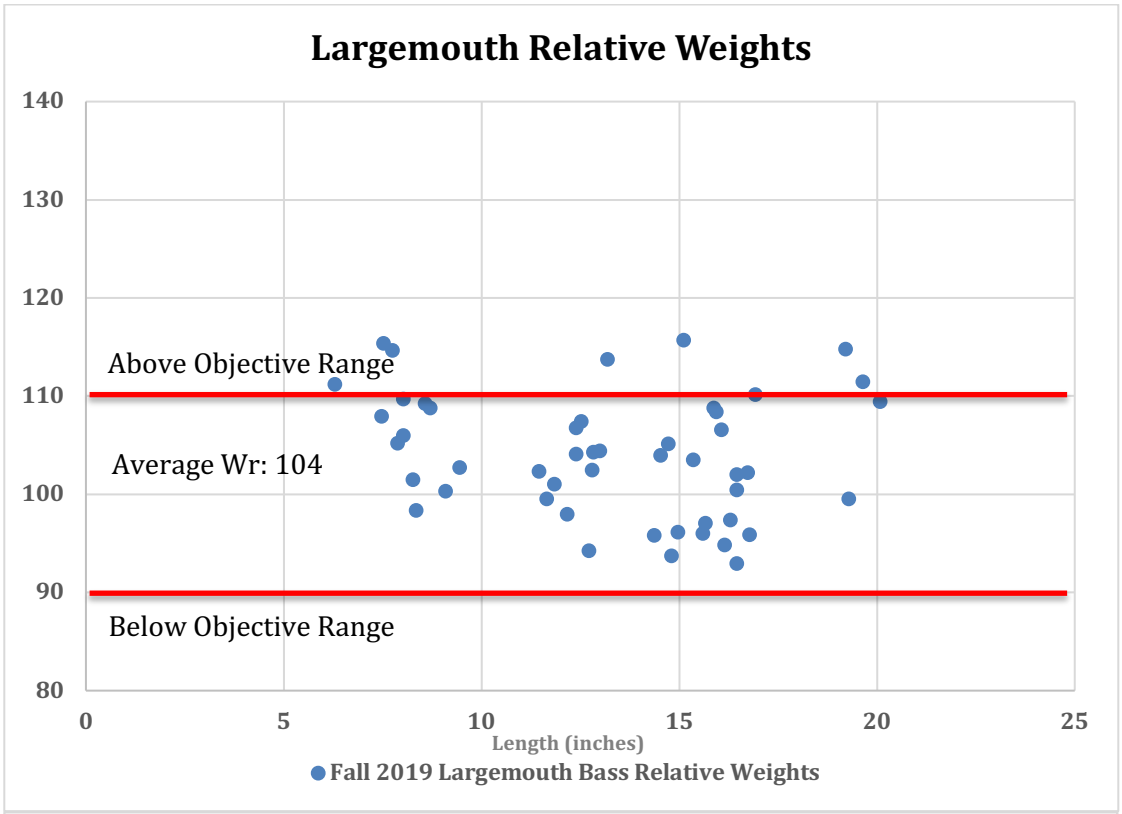


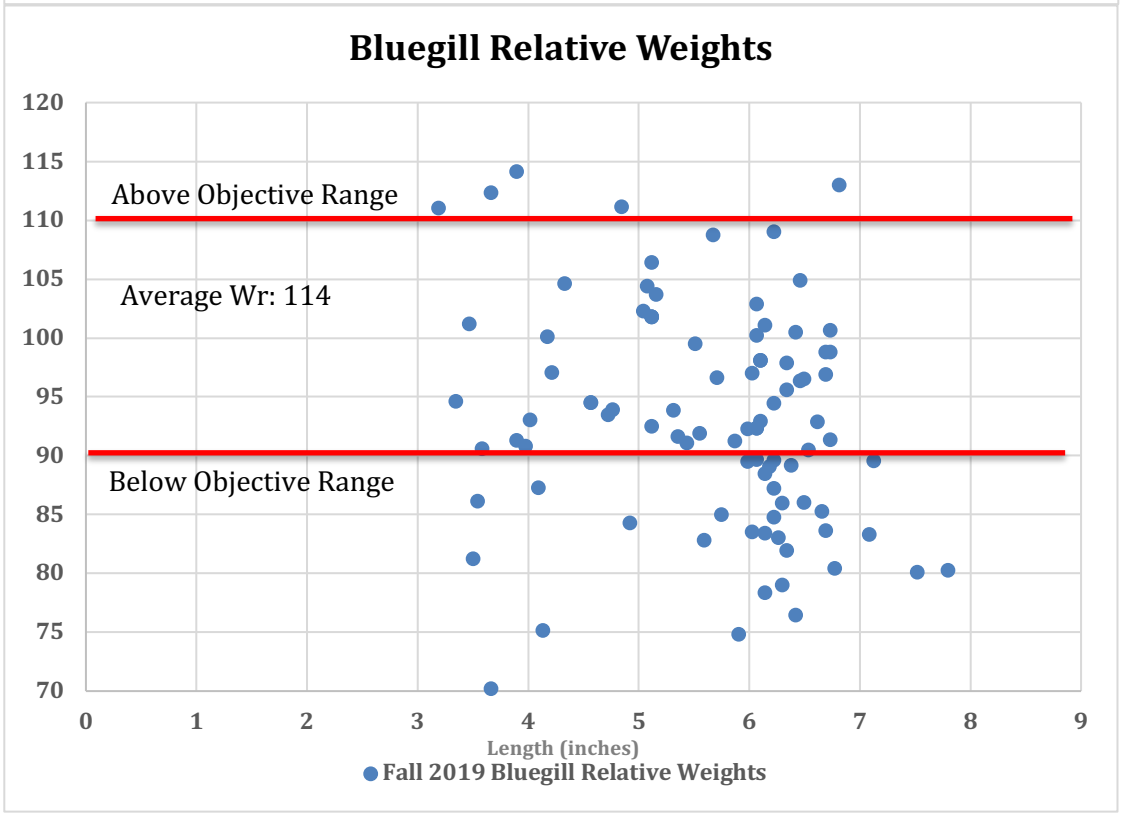
JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*





JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*





JadEco, LLC
PO BOX 445 Shannon, IL 61078
Phone: 815-543-5695 *Email: jrush@jadecoconsulting.com*