

# **EAGLE LANDING**

*Survey Results and Management Recommendations*

*10-2016*

**LOCHOW RANCH**  
**POND AND LAKE MANAGEMENT**  
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## Introduction

Thank you for giving Lochow Ranch Pond and Lake Management Services the opportunity to manage your fishery resources this year. We are pleased to report the results of our annual survey and an overview of management recommendations for the coming year. As always, the goals of our recommendations are to manage for a well-balanced fishery.

As stated in previous conversations, Lochow Ranch Pond and Lake Management is providing general information needed to begin managing your water resources. Please remember that these are general recommendations and the slot sizes, stocking rates, harvest suggestions, feeding rates, and other parameters will change year by year. If you decide to manage the fishery in-house, we will be happy to provide any of the products, services, or advice necessary to make your management successful.

## General Lake Observations

This lake was measured using satellite maps at 230 acres at full water level. At the time of the survey, the lake was full. The average water depth was approximately 10 feet and the maximum depth was approximately 31 feet. The water visibility was 84 inches with a tannic color.

### *Vegetation Chart*

<b>SPECIES</b>	<b>TYPE</b>
Filamentous	Algae
Chara	Algae
Nitella	Algae
Duckweed	Floating
Bladderwort	Floating
Cattail	Emergent
Rush/Reed	Emergent
Water Primrose	Emergent
Lotus	Emergent
Floating Heart	Emergent
Pennywort	Emergent
Coontail	Submerged
Pondweed	Submerged
Milfoil	Submerged

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## **Survey Results**

Electro-fishing surveys are one of the most effective lake-management tools available today. This type of sampling is an accurate way to determine the species and amounts of fish in a lake. With the information gathered during our electro-fishing survey, we calculate the relative abundance and condition of all species. We also determine the overall health of the largemouth bass fishery by taking length and weight measurements on a sample of fish. While this sampling method does not measure and analyze every fish in your pond or lake, it is the best way to get an accurate snapshot of how the fishery as a whole is doing.

### **Largemouth Bass**

Because largemouth bass are the number one freshwater sport fish in the southern U.S., most of our management is geared toward quickly growing these bass to their greatest potential. When managed properly, bass in lakes managed by Lochow Ranch Pond and Lake Management grow, on average, 2 pounds per year. We have seen some bass grow up to 4 pounds in a single year. Bass have incredible appetites and require 10 pounds of live forage (fish) to grow 1 pound. For this reason, adequate forage diversity is important to maintain a healthy bass population. Not only are the number of forage species and number of individual fish important, but the size of the available forage is also important.

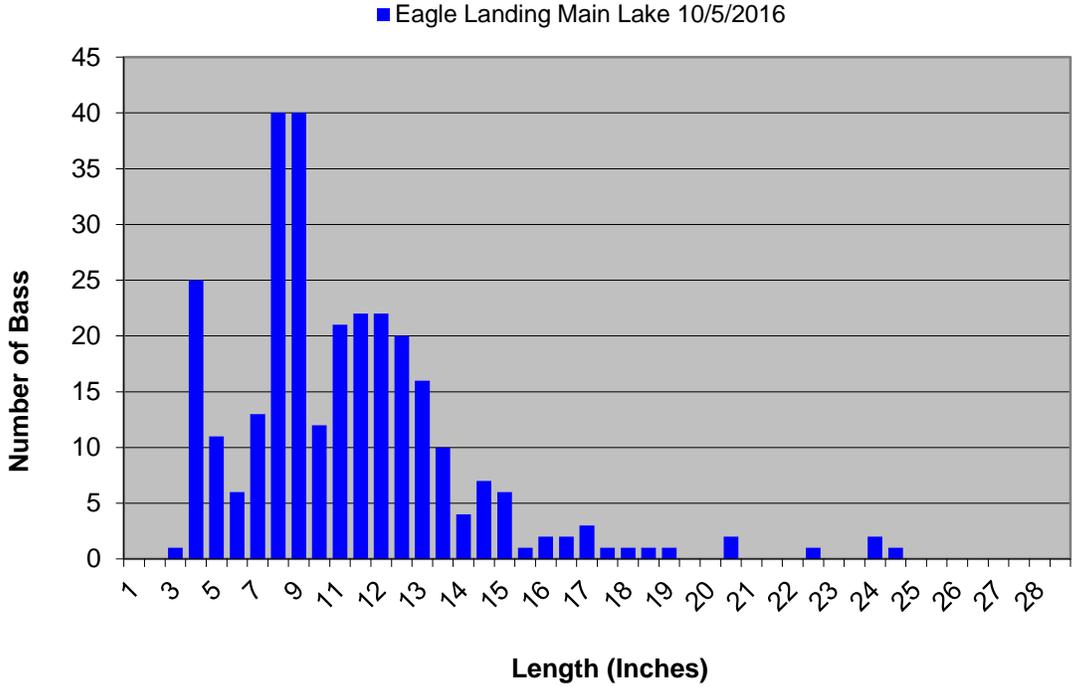
The first graph shows the number of bass sampled in each inch class. This information is important because it allows us to determine whether the bass population is well balanced or stunted at certain sizes.

The second graph shows the relative weight of the sampled bass. These data are found by comparing the weight of the sampled bass to the weight of a healthy, well-fed bass of the same length. These data are significant because they show the relative health of the sampled fish as a percentage. With this information, we can determine which sizes of bass lack forage or are overpopulated. These two graphs are shown for all lakes that were surveyed and in which bass were weighed and measured.

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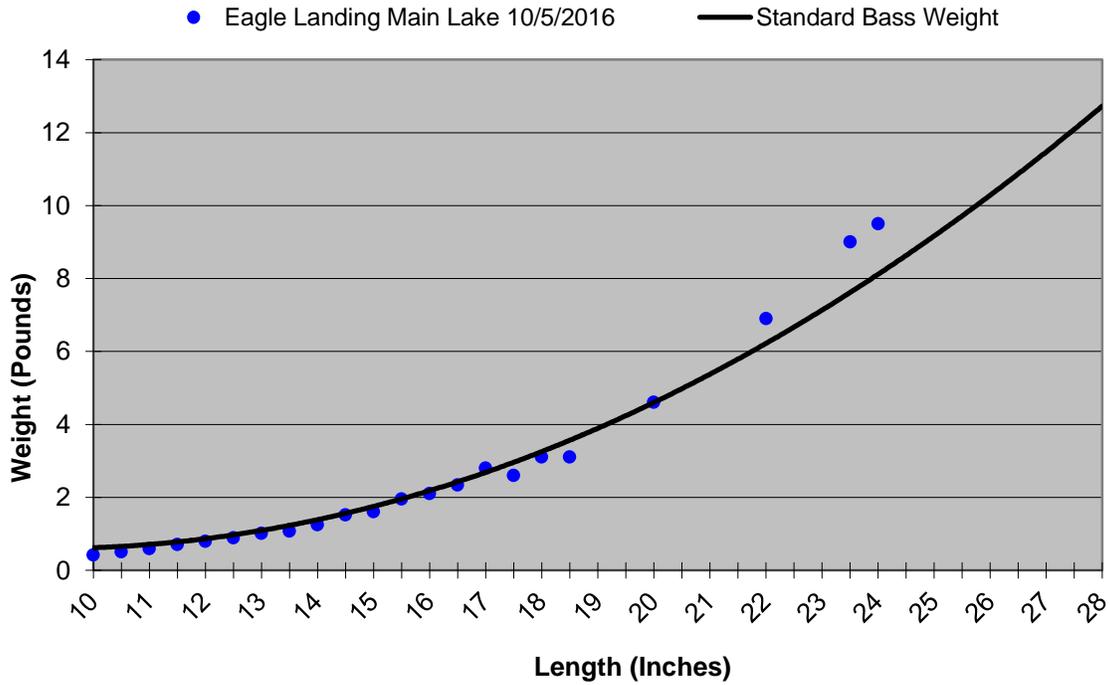
*Length Distribution*

### Bass Distribution by Length



*Relative Weight*

### Bass Relative Weight



**Forage**

Keep in mind that when managing a pond or lake for largemouth bass, we are actually managing for the forage fish the bass will eat to provide the greatest amount of forage possible with the greatest range of sizes. Bass should eat the largest meal they can and will expend less energy when chasing one large forage fish than when chasing many small forage fish. The energy saved is converted directly to growth. The following charts show the types of forage fish found and comparative sizes.

**Forage Chart**

<b>FORAGE SPECIES RELATIVE ABUNDANCE</b>					
<i>Species</i>	<i>Fry</i>	<i>Small</i>	<i>Medium</i>	<i>Large</i>	<i>Jumbo</i>
Coppernose Bluegill		Occasional	Occasional	Occasional	
Redear Sunfish		Occasional	Occasional	Occasional	Occasional
Warmouth Sunfish		Occasional	Occasional	Occasional	
Gizzard Shad			Occasional		Occasional
Silverside Minnow		Occasional	Occasional		

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*Coppernose Bluegill*



Coppernose bluegills are the backbone of the largemouth bass fishery. They are important as bass forage because they reproduce several times during the warm months; this provides a constant supply of different-size forage year-round for the bass.

Coppernose bluegills frequent ponds and lakes with docks, logs, and weeds that provide shelter for these fish. Large bluegills stay in deep water during the day and move to near-shore areas in mornings and evenings to feed. Bluegills feed on natural foods, especially small crustaceans, insects, and plant material. On high-protein fish feed they can grow to 2 pounds in just two years. They are spunky, spectacular fighters when hooked. Their flesh is delicious, making them one of the most sought-after sunfish. They are originally from the southeastern U.S., very close to the original range of the Florida largemouth bass.

While the coppernose and native bluegills are similar, coppernose are known for growing much larger than both the native and hybrid bluegills and also for bearing more offspring in a spawning season.

*Redear Sunfish*



Redear sunfish spawning habits are similar to those of the bluegill although this species does not have as long a prolonged spawning period. The redear prefer feeding on aquatic snails; hence, the name “shellcracker” is often associated with this species. Redear are stocked not only as sport fish, but also to solve worm infestations commonly found in sport fish. Redear eat the snails that are a host to a part of the life cycle of worms found in fish flesh and in doing so promote a healthy fish population.

*Warmouth Sunfish*



Warmouth sunfish, being closely related to the green sunfish, share many similarities. They are native to Texas and are found throughout the southern U.S. They especially like to find cover in rock piles where they can hide and wait for food. They can survive in polluted, low-oxygenated waters where other sunfish cannot.

Several characteristics make the warmouth an undesirable species in lakes. First, warmouth have larger mouths than most other sunfish,

which allows them to not only compete with largemouth bass for food, but also to eat bass spawn. Second, because they are bottom feeders like catfish, their flesh can have a strong, unsavory flavor. Warmouth have the ability to cross with other sunfish, including bluegills, which means their undesirable characteristics can “pollute” bluegill populations. While small populations do not raise management concerns, abundant populations may require severe management action to preserve the bass population.

*Gizzard Shad*



Gizzard shad are closely related to threadfin shad, but grow much larger. Adult gizzard shad can grow to more than 14 inches and can weigh more than 2 pounds. Unless the existing bass population averages more than 5 pounds, we do not recommend gizzard shad because they can harm the bluegill and threadfin populations by competing for zooplankton (small microscopic animals such as protozoan). Because gizzard shad grow larger than other species, they have an advantage when feeding. Often when present in lakes that do not have adequate bass populations, gizzard shad will overpopulate and become the dominate species.

*Silverside Minnow*



Silverside minnows are also known as glass minnows or inland silversides. They are very common in southern rivers, creeks, and even large public reservoirs. Normally not intentionally stocked, they can be introduced by flooding or stocked with other species. Silversides are fair forage for smaller bass but because they do not grow larger than about 6 inches, they do not provide much for larger bass.

***Other Species***

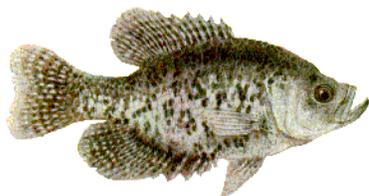
When managing for largemouth bass, the bass and forage fish are not the only important items. Other species can have a positive or negative impact depending on types of certain fish, abundance of certain fish and combination of certain fish. In most cases, occasional occurrences of other species in lakes do not affect the management greatly. Only when certain species are extremely abundant are drastic management actions required to ensure the success of the bass fishery.

***Other Species Chart***

<b>OTHER SPECIES RELATIVE ABUNDANCE</b>					
<b><i>Species</i></b>	<b><i>Fry</i></b>	<b><i>Small</i></b>	<b><i>Medium</i></b>	<b><i>Large</i></b>	<b><i>Jumbo</i></b>
Crappie		Occasional			
Mud Cat		Occasional			
Carp sucker			Occasional	Occasional	
Spotted Gar		Common	Common	Common	Occasional

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*Crappie*



We do not recommend crappie in lakes smaller than 25 acres because crappie often spawn earlier than largemouth bass, which gives them a competitive advantage over small bass. With an early start, numerous crappie will survive and easily overpopulate and then become stunted when they are overpopulated without enough food to support the population. In larger lakes and in small lakes with intensive management; however, crappie can be both fun to catch and delicious to eat. The black crappie and white crappie are easily confused with one another but can often be distinguished by the distinct vertical bars on white crappie. These bars are plainly visible

on the side of the fish. The best way to differentiate the two species is by counting the dorsal fin spines. White crappies have a maximum of six hard spines while the black crappie has seven or more.

*Bullhead Catfish (Mud Cat)*



Bullhead catfish, or mudcats, are not recommended in managed lakes because they compete with other forage fish for pelleted feed and can also agitate the bottom of a lake, causing muddy water. Muddy water reduces the amount of sunlight that can penetrate the water, limiting the production of phytoplankton that is the primary food source for all fish fry. While small populations do not raise a management concern, very abundant populations may require severe management action.

*Creek Chubsucker*



Although this fish looks like a carp, it is not related. The creek chubsucker is in the Sucker family and can grow up to 12 to 14 inches but normally is much smaller — 6 to 8 inches. Not extremely abundant, they rarely inhabit lakes. They consume detritus, algae, zooplankton (small microscopic animals such as protozoans), and invertebrates (snails, worms and insects). Chubsuckers do not appear to have either positive or negative impact on a fishery.

*Spotted Gar*



Gar are easy to identify by their bodies, especially their elongated mouths. Spotted gar grow to approximately 3 feet, sometimes weighing as much as 8 pounds. These gar are well adapted in that they can gulp air into a swim bladder if oxygen in the water is too low. This adaptation, along with others, explains why gar have been known to live up to 18 years. Because young gar begin eating fish right away and are voracious predators, they are detrimental to sport-fish populations.

## **Fisheries Discussion**

Overall the fishery is in below average condition, there is an abundance of small bass and an insufficient amount of appropriately sized forage fish.

During our survey 294 bass were collected, on average these bass were eight percent below target weight when compared to state averages. The bass that were harvested were twelve percent under target weight. The abundance of bass less than twelve inches and the corresponding relative weights of this size class are a strong indication that this lake needs substantial bass harvest. It is recommended that multiple surveys be done each year to reduce the density of bass. The larger size classes of bass (22-24 inches) were actually over target weight. Reducing the bass density will allow more resources to be available to these fish and over time will increase the number of bass in this size class.

The spotted gar are negatively impacting the fishery by competing with the bass for resources, gar should be removed during electrofishing surveys. If frequent electrofishing surveys are conducted the population of gar can be substantially reduced.

The forage fish population density was lower than what is needed to support the population of bass in this lake. Bass harvest will be the most impactful management practice to help increase forage numbers, once the bass population is more desirable Coppernose Bluegill will need to be stocked.

To diversify the forage fish population it is recommended that Threadfin Shad be stocked next spring. Shad are schooling fish that inhabit open water areas of the lake. Shad provide good contrast when compared to Bluegill which primarily occur along the shoreline providing the bass with potential prey items throughout the lake. This will allow the lake as a whole to carry a greater number of forage fish per acre. Before

stocking the shad it is important that the lake be fertilized to stimulate a phytoplankton bloom. Considering the water chemistry in this region higher fertilization rates will be needed initially to establish the bloom but once it gets going less will be needed to maintain it throughout the growing season. The phytoplankton bloom will give the water a green hue and will help shade out vegetation in deeper water. Phytoplankton are microscopic plants and are the foundation of aquatic ecosystems. Shad are filter feeders that feed on phytoplankton so improving their food resource will promote growth and reproduction. Fish fry also feed on the phytoplankton so the recruitment of newly spawned fish will be greater.

We have not received results from the water quality analysis so any improvements made to water quality are contingent on the results. Lakes in this region of Texas often have undesirable levels of certain water quality parameters that will limit the productivity of the fishery. If the results indicate corrective measures are required we can improve water quality by adding Ag lime. Once lime is added the lake will need to be fertilized during the growing season. The lime and fertilizer will create the conditions necessary to produce a phytoplankton bloom and giving the water a green hue. Phytoplankton are microscopic plants that occur suspended in the water column and are the foundation of aquatic ecosystems. Filter feeding fish such as shad and fish fry of all species rely of phytoplankton as a food source. Assuming the water quality analysis results indicate the water quality is in fact poor, there will need to be 10-25 semi loads of lime added to the lake. This will have residual effect for some time due to the amount of drainage the lake has.

Several species of aquatic plants were observed during the visit that can be problematic and inconvenience anglers and boaters. To keep boat lanes and fishing areas open routine vegetation treatments will be needed.

Considering the goals for the lake the following is the management plan that will provide the most improvement with the budget that is available. The majority of the budget should be spent on electrofishing surveys aimed to harvest out the Spotted Gar and undersized bass. Vegetation treatments can be offered on a per lot basis and the individual land owners will be responsible for the cost. This plan is the best value with the available budget and will improve the quality of the fishery incrementally each year.

**Management Recommendations**

Our recommendations are summarized and listed in priority of importance in the following table. Management activities marked with an asterisk are of utmost importance and should be addressed before any other management occurs. A description of all recommended management activities appears below the table.

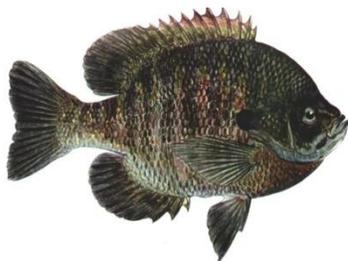
Harvest	Stock	Other Recommendations
3,000 Bass <13"	Coppnose Bluegill (57,500) (optional)	Add Lime (if needed)
All Spotted Gar	Threadfin Shad (optional)	Fertilize Spring 2017

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*Harvest Bass*

Harvesting bass is an effective tool for managing the size of both the largemouth bass and its prey. Currently, not enough small forage fish of any species are growing into large adults. This lack of growth is detrimental because it forces a large bass to expend more energy chasing and eating many small fish than it would eating one large fish. Harvesting bass will reduce competition for food among the remaining sport fish. Harvesting can be done by rod and reel or by electro fishing.

*Stock Coppnose Bluegill*



Bluegills are the backbone of the largemouth bass fishery. They are important as bass forage because they reproduce several times during the summer, providing a constant supply of different size forage year-round for the bass. We advise stocking coppnose bluegills to increase the size of this forage resource. Coppnose grow larger than native bluegills and spawn more often as well. They will grow to up to 2 pounds and breed with the native bluegill resulting, over time, in a larger overall bluegill population.

### *Threadfin Shad*



Threadfin shad are one of the most important forage species in many lakes in the south. Threadfin grow quickly, spawn early in their life cycle and reproduce prolifically which makes them great forage for bass. Threadfin school in open water and swim slowly, which makes them easy prey for bass. They tend to do best in fertile (green) water because they feed on the phytoplankton that causes the water to look green.

### *Treat Vegetation*

Aquatic vegetation is definitely the most expensive long-term cost in lake management. When dealing with aquatic vegetation, it is important to remember the word “management,” instead of “eradication.” Water and sunlight grow plants, so aquatic weeds will always be naturally present. We can control and manage the vegetation to the required level. Mechanical control is extremely labor-intensive and does not provide long-term results. Chemical control is the best option for quick results and gives the ability to choose treatment areas and control large crops of weeds. Long-term herbicide costs can be reduced once weeds are under control by stocking grass carp, which can provide some broad spectrum reduction in some species of submerged vegetation.

### *Lime*

Water tests showed that your lake has low alkalinity. Alkalinity helps to buffer the pH swings that occur naturally in lakes and cause water to be less suitable for plankton and fish. Agricultural lime, often available at feed stores, is added to increase alkalinity. Lime can be added to the lake with a spreader truck or by barge. We recommend applying lime by barge when possible to ensure that the lime is spread evenly throughout the entire lake.

### **Costs**

Lochow Ranch Pond and Lake Management offers a yearly management program that takes away all inconvenience for the landowner. Once a retainer client, we will come to the property once a month on average to service fish feeders, stock fish, clear ponds, fertilize and complete any other lake management chores including electro-fishing surveys and vegetation control. We can also provide services on a per-trip basis, which could be more economical if only a few visits per year are needed. Our current per-trip service rates and product prices mentioned are shown in the following tables.

<b>SERVICE TYPE</b>	<b>RATE</b>
Vegetation control	200.00 hour
Electro fishing	400.00 hour
Consulting	200.00 hour
Other management	200.00 hour
Mileage (one way)	4.00 per mile

<b>ITEM</b>	<b>DISCRIPTION</b>	<b>PRICE</b>
Coppernose Bluegill	Medium (2”-3”)	0.45/fish
Threadfin Shad	Adult (2”+)	25/pound

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### **Conclusion**

Thank you for choosing Lochow Ranch Pond and Lake Management. We strive to provide the best service and advice to manage your fishery to its full potential. We hope that you will follow our plan and run the course with our long-term trophy-growing strategies. If so, you will have a quality, well-balanced fishery that continues to add value to your property.