

## **Performance Report**

State: Oklahoma

Project Title: Fisheries Management Survey

Southwest Region Fisheries Management

### **Ellsworth**

#### **Abstract**

Ellsworth was surveyed in 2025 via gill netting for all sportfish to determine population structure and dynamics to evaluate the fishery for needs and possible improvements to the lake to enhance the system as a whole. It had been 5 years since a previous gill netting survey for sportfish were conducted at Ellsworth Lake so the need for current data was important to southwest region fisheries.

Ellsworth Lake has long been a quality Saugeye, Blue Catfish, and White Bass fishery to many anglers southwest Oklahoma. Gill netting surveys for White Bass and Saugeye have been conducted on a routine basis due to other priority fisheries needs, with previous samples being conducted in 2019. Having sampled this lake in 2019 and a significant catfish project being completed the plan forward is to routinely sample to access stock base needs. Although sampling methods are conducted on the lake on a rotational basis it has provided some idea to the fishery as a whole.

#### **Introduction**

Ellsworth Lake is one of the larger impoundments (5600 acres) located in southwest Oklahoma and is owned by the City of Lawton for water storage and recreational use, with water being allocated to cities of Lawton and Ft. Sill. This highly used recreational lake is managed for Saugeye, Crappie, White Bass, Largemouth Bass, and Catfish. This reservoir consists of agricultural runoff areas and supports a balance amount of nutrients which supports a balanced fishery in turn. This highly sought after destination is encompassed by a larger metro area with several adjoining towns which is a high use area for sportsman (hunting and fishing) and recreational users.

Management issues that seem to be present is the lack of usable habitat to an aging reservoir. In past years Ellsworth was subjected to an aquatic vegetation planting regime with the goal to provide usable native habitat to fish present; this project was marginal in providing usable habitat. Conversely, deep water habitat such as cedar trees used for thermal cover and predation avoidance is lacking within the lake, although there are cedar trees in shallow areas which are being utilized by Bass and baitfish species. In the past 3 years SWR staff has placed over 300 cedar trees, 180 hardwoods, 3 artificial structures, and currently there is a dam renovation project where the lake is 8-10 feet below normal.

## Results

Our gill net samples were conducted in October-November 2025 when water temperatures were 58°F which fall with bounds of fall gill netting standard sampling protocols (SSP). Being a larger lake, we needed ample sample sites to incorporate all available habitats and within SSP methodology, samples consisted of 20 sites with each timed site being 24-hour units of effort that included bare bank/cobble, vegetation/shallow, drops, and near the dam in waters consistent of 4-18 feet deep. In the duration of the 480 hours of sample we collected a total of 189 saugeye, 132 white bass, 28 crappie, along with catfish, shad, and forage/rough fish.

Gill netting samples are measured in catch per unit effort (CPUE) and are comparable to previous surveys based off abundance (Figure 1), but we did see a slight decrease in saugeye with a higher abundance of white bass and gizzard shad. When measuring fish body condition (body mass/length), relative weight (Wr) is the metric that is used to describe how fit the population is, the relative weight for sportfish at Ellsworth were on average white bass 89, saugeye 97, and crappie 99 respectively (Table 1) which is lower than previous samples but abundance overall has increased since 2019 gill netting samples. The length frequency of fish (Figure 2) was normally distributed between hybrids, saugeye, and white bass with overall size structure showing good growth of larger fish when paired with relative weight body condition. Age and growth data was collected from this sample set along with length, weight, sex, and age of each individual collected; our results (Figure 3) show exceptional growth of saugeye from age 0-2 reaching a harvestable size on average by age 1. This rapid age growth comparison shows the fishery is sustainable for continued growth due to a balanced combination of resources in Ellsworth.

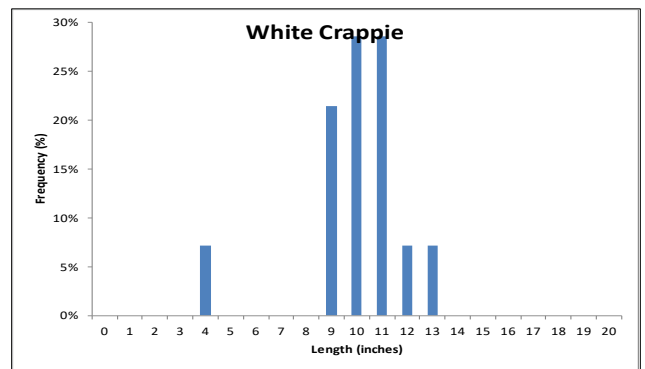
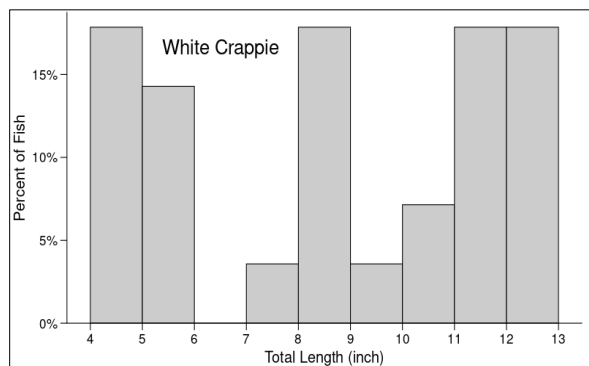
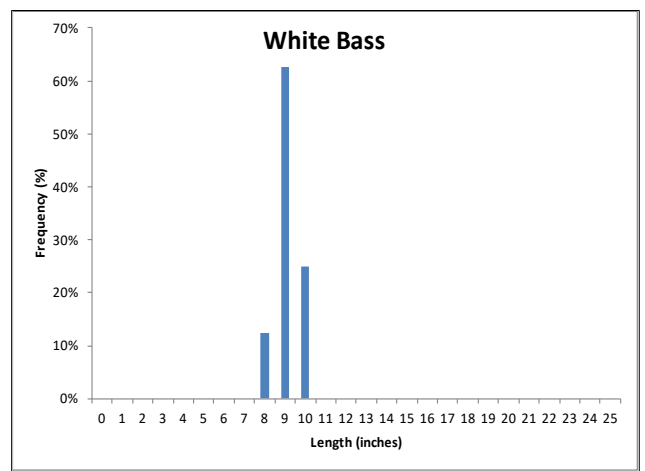
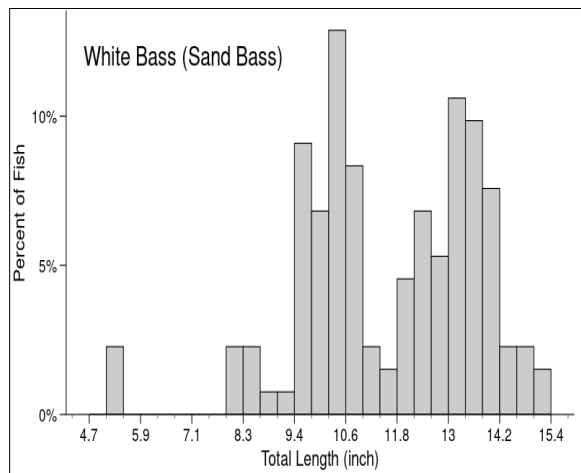
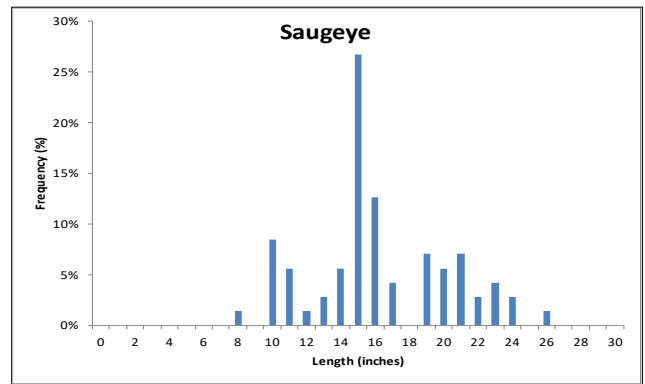
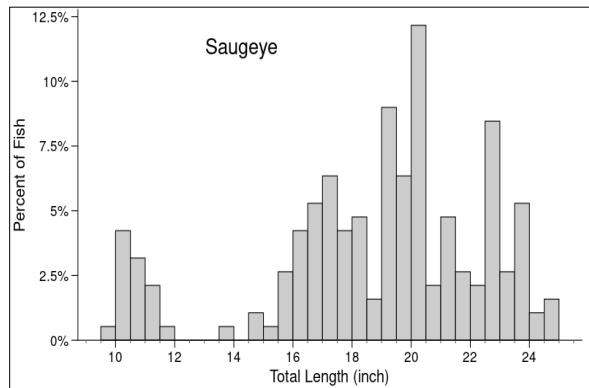
Based on the 2025 gill net survey, the abundance of all sportfish is relatively stable with past trends showing stocking regimes, forage present, and angler success is working. The quality metrics for all fish was high being compared to other lakes in southwest OK, with a fair abundance of larger saugeye over 16" range, and good distribution of among all size classes. The body condition of the fish was lower than previous years but still within acceptable bounds of a quality fishery. These metrics show a well-balanced population structure and not a typical stockpiling of smaller individuals and limited growth rates. The forage base of gizzard shad has remained high compared to other regional lakes relaying that stocking regimes of predatory fish are sufficient and not detrimental to other sportfish growth. The habitat and restocking efforts (white bass) have shown improvement to the lake with recruitment of individuals being a positive trend.

Since we have sampled, a follow up sampling plan for every 3 years needs to be completed since it's a priority and trophy fishery. In 2018 we started routine sampling for all sportfish (saugeye, crappie, white bass, catfish) and baitfish to evaluate the fishery and impact of saugeye stocking rates. We have made large efforts to provide more suitable habitats for Bass, Crappie, and forage fish that are needed on a yearly basis to boost the potential of this lake. With current practices Ellsworth will remain a sought-after fishery in southwest Oklahoma with the continuation of stocking regimes and improvement on habitats available. The best management plan should utilize the forage present, provide various habitats, and sample routinely for stocking recommendations to maintain a quality fishery.

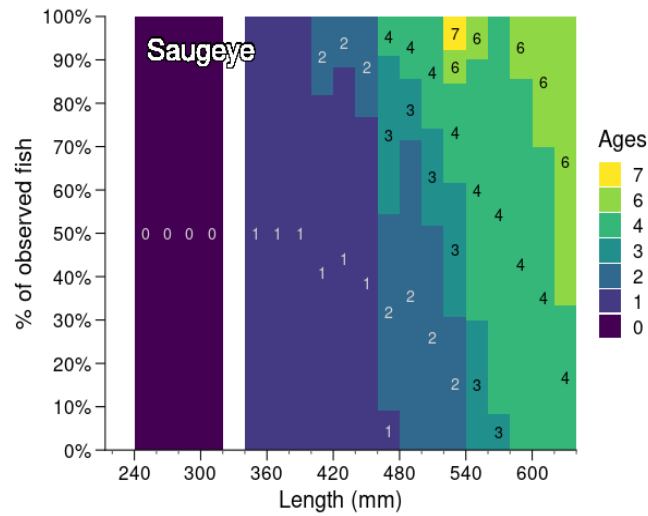
| Catch per Unit Effort     |                            |                 |       |      |             |             |                                |                              |
|---------------------------|----------------------------|-----------------|-------|------|-------------|-------------|--------------------------------|------------------------------|
| Total CPUE                |                            |                 |       |      |             |             |                                |                              |
| Species                   | Mean<br>(fish/24hr<br>set) | # of<br>Samples | RSE   | SE   | L 95%<br>CI | U 95%<br>CI | N RSE =<br>12.5 (25%<br>range) | N RSE = 20<br>(40%<br>range) |
| Blue Catfish              | 0.55                       | 20              | 76.32 | 0.42 | -0.27       | 1.37        | 746                            | 291                          |
| Channel<br>Catfish        | 0.40                       | 20              | 61.24 | 0.24 | -0.08       | 0.88        | 480                            | 187                          |
| Gizzard<br>Shad           | 17.50                      | 20              | 17.97 | 3.14 | 11.34       | 23.66       | 41                             | 16                           |
| Saugeye                   | 9.45                       | 20              | 16.00 | 1.51 | 6.49        | 12.41       | 33                             | 13                           |
| White Bass<br>(Sand Bass) | 6.60                       | 20              | 32.54 | 2.15 | 2.39        | 10.81       | 136                            | 53                           |
| White<br>Crappie          | 1.40                       | 20              | 23.41 | 0.33 | 0.76        | 2.04        | 70                             | 27                           |

| Ellsworth     | Gill Net Summary Statistics |                       |                   |                      |              |              |              |                                         |                                      | November                                                         | 2019                     |     |
|---------------|-----------------------------|-----------------------|-------------------|----------------------|--------------|--------------|--------------|-----------------------------------------|--------------------------------------|------------------------------------------------------------------|--------------------------|-----|
| Species       | # Samples = 5               |                       |                   | CONFIDENCE INTERVALS |              |              |              | NUMBER OF SAMPLES<br>NEEDED TO DETECT A |                                      |                                                                  | Relative<br>Weight $W_r$ |     |
|               | CPUE                        | Standard<br>Deviation | Standard<br>Error | Lower<br>80%         | Upper<br>80% | Lower<br>95% | Upper<br>95% | CV $\bar{x}$                            | 50%<br>change<br>(CV $\bar{x}$ =.25) | 25%<br>change<br>(CV $\bar{x}$ =.125) Target<br>CV $\bar{x}$ =.2 |                          |     |
| Saugeye       | 14.20                       | 5.50                  | 2.46              | 10                   | 18           | 7            | 21           | 0.17                                    | 2                                    | 10                                                               | 4                        | 105 |
| White Bass    | 6.40                        | 5.94                  | 2.66              | 2                    | 10           | 0            | 14           | 0.42                                    | 14                                   | 55                                                               | 22                       | 113 |
| White Crappie | 2.80                        | 2.28                  | 1.02              | 1                    | 4            | 0            | 6            | 0.36                                    | 11                                   | 42                                                               | 17                       | 111 |
| All Crappie   | 2.80                        | 2.28                  | 1.02              | 1                    | 4            | 0            | 6            | 0.36                                    | 11                                   | 42                                                               | 17                       | 104 |

**Figure 1:** Catch per unit effort of all sportfish and forage at Ellsworth 2025 (top) and 2019 (bottom) gill net samples.



**Figure 2.** Length frequency and size structure of, saugeye, white bass, and crappie at Ellsworth, 2025 (left graphs) and 2019 (right graphs) samples



**Figure 3.** Age and growth of Saugeye at Ellsworth Lake, each age class represented with an average length cohort converted to inches; Age 0= 10", Age 1=16.5", Age 2=18.8", Age 3=20.4", Age 4=21.2, Age6=22.8".

| Species      | 2025 | 2019 |
|--------------|------|------|
| White Bass   | 89   | 113  |
| Saugeye      | 97   | 105  |
| Crappie Spp. | 99   | 111  |

**Table 1.** Relative weights for sportfish at Ellsworth 2025 and 2019