



Life in the Rocks



The Newsletter of the Arkansas Game and Fish Commission Nongame Aquatics Program

A Report of the Commercial Roe Harvest in Arkansas

November 2007 – May 2008

By Bill Posey, Malacologist/Commercial Fish Biologist

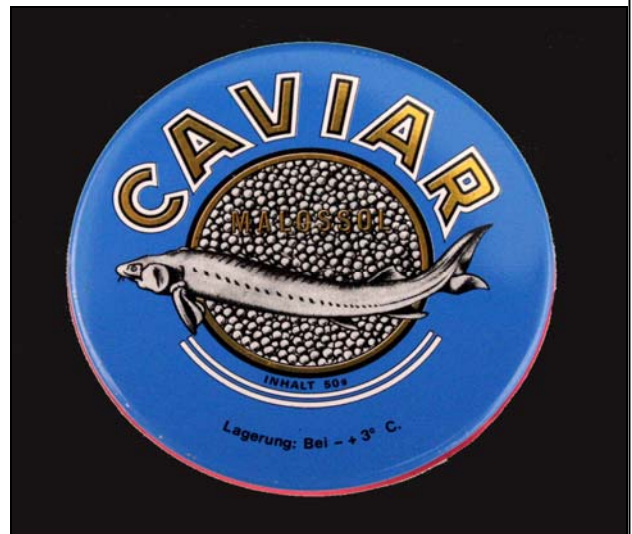
Introduction

Paddlefish and shovelnose sturgeon provide an important commercial fishery in Arkansas. The unfertilized eggs (roe) of paddlefish, sturgeon and bowfin are harvested for use in the food industry as caviar (sturgeon roe) and caviar substitutes (paddlefish and bowfin roe). The flesh from paddlefish and sturgeon is also sold to local fish markets, restaurants, or fish processing facilities where it is sold, either fresh or prepared. The markets for Arkansas' caviar have been growing since 2002 and, recently, at least half of each season's harvest is shipped to international markets.

Paddlefish were once found in 27 states, but their populations have declined throughout much of their former range. Of those 27 states, Arkansas is one of only six states that allow the commercial harvest of this species. Other states that still allow commercial harvest of paddlefish include: Tennessee, Missouri, Kentucky, Indiana and Illinois. Mississippi is expected to open in December 2008.

Methods

Each buyer of paddlefish, sturgeon or bowfin roe is required to report their transaction(s) with roe takers in order to retain their buying/exporter privileges. These data are entered into a database for electronic storage and analysis. This report summarizes those transactions submitted by roe buyers for the months of November 2007 through May 2008.



Results

License Sales

A total of 124 licenses were sold specifically for the harvest of paddlefish and sturgeon roe. Of these, nine were Roe Buyer/Exporter (RBE) Permits (\$1,000 each), 62 were Roe Taker/Seller (RTS) Permits (\$500 each) and 53 were Roe Helper Permits (RH) (\$100 each). Since all RBE and RTS permit holders are required to have a valid Commercial and Sport Fishing License (\$25), the combined value of license sales was \$47,075.00.

License sales declined from 181 during the 2006-07 season to 124 for the 2007-08 season. This represents a 31% reduction in overall roe related permit sales, and a 26% decline was seen in sales of Taker and Buyer permits.

Harvest

Roe Buyer/Exporter permittees reported transactions totaling 16,017 pounds of roe from 5,674 fish with a value of \$1-\$2M (million). Most fishers reported a value of \$50 per pound of processed eggs while some may have received over \$100 per pound. An additional 935 roe-less paddlefish were reported and were harvested as meat fish. The value of the flesh varies depending upon the intended use; up to \$0.50 per pound was paid for sale for human consumption, and as little as \$0.10 per pound was paid for whole fish to be used as turtle food.

Paddlefish roe comprised the largest proportion (97.6%) of the total harvest. Shovelnose sturgeon roe comprised 2% while bowfin roe contributed less than 1% of the total harvest.

The 2007-08 roe harvest was 10,212 pounds less than the previous season, a reduction of 36%. However, this is 82% of the average harvest (19,298 lbs) over the past five years. Several factors may have contributed to this observed harvest decline: 1) reduced season length, 2) decrease in the number of licensed fishers, 3) lack of a special season, 4) increased length limits, 5) flooding, and 6) overfishing of select waters.

While the 2007-08 paddlefish season was shortened by 15 days, the cumulative data (2002-2007) show that, on average, 10% of the total harvest occurred during the last 15 days of each season. This may explain a portion of the 36% decline as seen in this harvest season.

Another reason for decreased harvest could be the decline in the total number of fishers participating in the harvest. If the same number of fishers had fished the 2007-08 season as fished in the 2006-07 season (n=96), and each harvested the average of 226 lbs of roe during the 2007-08 season, then the decrease in harvest would have been only 17%. After accounting for the shorter season and reduced number of fishers, only 9% of the reduced harvest cannot be explained, but may be a result of not having a special harvest season, the effects of flooding or overfishing.

While “special harvest” seasons are expensive for AGFC to implement, their results have contributed a significant proportion to the total statewide harvest since 2002. Special season harvests contributed approximately 11% to 18% of the statewide total harvest during the 2002-03, 2003-04, 2005-06 and 2006-07 seasons. This information suggests the paddlefish fisheries that are open to the statewide harvest season are not maintaining stable populations each year, or the special harvest seasons would not be contributing such a significant proportion to the total statewide harvest.

Harvest by River

Harvest was reported from eight rivers and four lakes/backwater areas. Three rivers dominate the harvest each year: the Arkansas, Mississippi and White. Over 85% of the statewide harvest occurred in these three rivers. The Mississippi River roe harvest comprised almost 50% of the total harvest and 41% of the fish harvest. Over 7,953 pounds of roe and 2,721 fish were reported from the Mississippi River.

White River harvest comprised 25% (3,928 lbs) of the total roe harvest and 38.1% of the total fish harvested.

The Arkansas River harvest yielded 1,813 lbs of roe from 741 fish, comprising 11% of the total harvest respectively. Almost 1,798 lbs of roe were from paddlefish while 15 pounds were from shovelnose sturgeon. This harvest represents an 86% decline in harvest as compared to the previous year for this river. Lake Dardanelle harvest declined, for the third year in a row, to the second lowest harvest ever reported. Harvest from Ozark Pool was also the second lowest harvest, with only the 2002 season being lower. This decreased harvest may be a result of the intensive harvest during the previous season (2006-07) when over 9,500 pounds of roe and 2,648 fish were harvested from Ozark Pool.

The minimum length limit for paddlefish was increased for Lake Dardanelle and Ozark Pool from 36 inches to 37 inches beginning January 1, 2008.

However, the minimum length limit for paddlefish in the remaining Arkansas River pools was not increased, yet the harvest from these other reaches declined by 44%-97%. Therefore, it is unlikely that the increase in the minimum length limit alone had such a significant effect on harvest.

Rainfall amounts during the winter and spring of 2007-08 were the greatest seen in recent years, and created very high flows in the Arkansas River that were sustained through the end of the harvest season. However, these high flow events did not occur until two months into the harvest season and, based on historical data, this should have allowed ample time to harvest more paddlefish than was reported for the season.

Due to the popularity of Lake Dardanelle with commercial fishers, a shorter historical minimum length limit (32 inches), and the ability of commercial fishers to efficiently harvest paddlefish, it is possible that overfishing has occurred in Lake Dardanelle. Unfortunately, because it takes six-to-seven years for a female paddlefish to reach sexual maturity, it may take years for the fishery to recover.

Harvest by Month

Monthly paddlefish harvest varies annually due to several factors; but, the three that have the most effect include: fishing effort, population density, and river stage. The March roe harvest dominated the total harvest for the 2007-08 season with almost 8,050 lbs, over half of which was taken from the Mississippi River when it was at the highest stage of the season. Harvest from the 15 days in November comprised 2,170 pounds while the 31 days in December contributed 2,275 pounds. January and February monthly harvests were the lowest with 1,285 and 1,410 lbs, respectively. It is interesting that the highest monthly roe harvest reported since 2001 occurred in the months when river stages were at, or near, their highest.

Harvest Trends

Harvest has increased in consecutive years, with the exception of the 2003-04 and the 2007-08 seasons. The average pounds of roe harvested per fisher increased every season through the 2003-04 season; but, has decreased each season since 2003-04. Average harvest per fisher was highest for the 2003-04 season (563 lbs/fisher) while the lowest recorded average harvest occurred in the 2007-08 season (226 lbs/fisher), an 18% decrease per fisher from the 2006-07 season (275 lbs/fisher). These data suggest that the sexually mature paddlefish population is limited and has a limited ability to sustain intense harvest pressure over an extended period of time.

Conclusion

Paddlefish, shovelnose sturgeon, and bowfin roe harvest continues to be an important component of the commercial fishery in Arkansas. While the harvest from this season was below the five-year running average, it still represented 82% of that average and should not be considered a "bad" year. Like any business that relies on weather (e.g. farming, construction), the bad has to be considered, not compared, with the good. While it initially appears the resource has been affected to a point that detriment to the remaining population is imminent, only time will tell. New regulations in place prior to this season's opening should begin to increase the harvest per fisher, since smaller fish will grow into the minimum length limit on the Arkansas River, and more fish will be allowed to spawn before they are harvested. The minimum length limit for the Mississippi River paddlefish will also increase this coming season, which will likely reduce the yield from that river. At this point, we will need to monitor the harvest for the next few years to determine if enough protection has been afforded the roe fishery.



Pebbles...

(Quick notes on what we've been up to...)

- Bill and Kelly assisted the Buffalo National River with a survey for Rabbitsfoot mussels.
- Brian continues to help work on the Aquatic Nuisance Species Plan.
- Kelly taped a program on alligators at Channel 4 KARK with Steve "Wildman" Wilson for a show on "Talkin' Outdoors at the Corner Cafe."
- Bill attended the biennial workshop of the Freshwater Mollusk Conservation Society in Chattanooga, TN.
- Brian presented three crayfish programs to elementary school students at Washington Magnet School in Little Rock.
- Kelly surveyed two sites (one for a proposed streambank stabilization project, and the other for a private boat ramp access installation) on the Eleven Point River for the presence of Ozark hellbenders. Fortunately, both sites did not contain suitable habitat to harbor hellbenders.
- Bill conducted a mussel survey in the Illinois River to determine the status of the Neosho mucket.
- Brian and Shawn did a crayfish display and presentation at the Janet Huckabee Arkansas River Valley Nature Center in Fort Smith.
- Bill conducted two programs for Underwater Arkansas.
- Kelly assisted Stephen O'Neal, Sam Barkley, and Sam Henry in pre-project sampling of the fish fauna on a streambank stabilization project on the Eleven Point River. This pre-project sampling will form the baseline for comparing any fish faunal changes in post-project sampling.
- Brian spent a day in the field with researchers from Arkansas Tech searching for Stargazing darters in the lower Saline River.
- Brian, Bill, and Kelly attended a Fisheries Division staff meeting in Brinkley.
- Bill and Kelly conducted a mussel survey of the Little River above Millwood Lake in southwest Arkansas.
- Bill presented the 2007-08 Roe Harvest Report to the AGFC Commissioners.
- Kelly and Lisa Irwin attended the annual Grassy Lake Alligator Snapping Turtle hatch. Six out of eight caged nests were inexplicably empty and two nests still contained unhatched eggs, so no hatchlings were found.
- Bill, Brian and Kelly attended the Arkansas Wildlife Action Plan meeting at Magazine Mountain State Park.
- Brian attended the 'public comment' meeting held in Brinkley regarding the Snakehead Eradication Project effort.
- Kelly gave a requested public presentation to the Malvern Rotary Club on alligators and venomous snakes in Arkansas.
- Brian and Bill attended a coordination meeting between AGFC and the Oklahoma Department of Wildlife Conservation.
- Bill, Brian and Kelly attended and gave presentations at the "Kickin' on the Kings" teacher workshop at Leatherwood Creek near Eureka Springs.



A Case of Mistaken Identity

By Kelly Irwin, Herpetologist

Over the years I have received several telephone calls from citizens reporting coral snakes in their yards. Based on the geographic location of the callers, I was able to determine in all of these cases that the modest-sized snake in question was one of two species of harmless snakes, either the Scarlet Snake (*Cemophora coccinea*) or Milk Snake (*Lampropeltis triangulum*). These two snakes exhibit what is referred to as “Batesian mimicry,” where a harmless species has evolved to imitate the warning signals of a harmful species. In this case, these snakes mimic the three-color pattern (called a triad) of the Texas Coral Snake (*Micrurus tener*). Both the Scarlet Snake and Milk Snake range throughout Arkansas, whereas the Texas Coral Snake has been recorded in only a few counties (Columbia, Lafayette, Nevada, Ouachita, and Union) in southern Arkansas. If you live in south-central Arkansas and encounter a bright red, boldly

patterned snake...just remember the adage, “Red touch black venom lack, red touch yellow harm a fellow.” Texas Coral Snakes are actually quite docile and will not bite unless provoked. Before moving to Arkansas I worked in south Texas for a while and, during that time, I collected several Texas Coral Snakes. When picked-up gently they would glide through my hands, and never once did any of the snakes attempt to bite. These snakes generally remain hidden from humans, preferring to remain under cover of leaf litter, pine straw, or logs, where they seek out small snakes and lizards to eat. Although they can occasionally be found actively moving on the surface, particularly in the spring and fall months after warm rains, or on warm, humid, summer mornings. So, the next time someone tells you they saw a coral snake in their yard, and you are not in southern Arkansas, it’s obviously a case of mistaken identity!



Scarlet Snake



Milk Snake

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Texas Coral Snake

Harmless snakes are often mistaken for the venomous coral snake.



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