# EXPERIMENTAL USE OF EXPLOSIVES ON THE AUCILLA RIVER

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## ABSTRACT

Seven charges of Nitromon Primer S were exploded at six stations on the Aucilla River. Results of three explosions, each consisting of ten pounds of explosive, at Station No. 1 killed at least 842 shortnose gar, 300 longnose gar and three channel catfish. The successive treatments at this station indicated a reduction of longnose gar in the area. More shortnose gar were destroyed in the third explosion than in the first and second.

Variation occurred in the results at other stations. It was noted gar concentrations could be detected by their surfacing activity. At all stations where this activity was noted, large numbers of gar were killed without destroying many fish of other species. At stations where this activity was not noted, frequently, numerous fish of other species were destroyed.

## INTRODUCTION

A preliminary survey was made of the Aucilla River, Florida, February 18, to determine if there were concentrations of gar fish in the river as were reported. Contacts made with three fish camp owners of the area indicated gar fish were a source of annoyance to sport fishermen. Previous explosive work had been performed by members of the Game and Fresh Water Fish Commission during January, 1956. Large numbers and weights of gar fish were reputedly killed using unknown amounts of dynamite. In addition to gar fish destroyed, sports fishing camp operators in the area said numerous other fish were killed, mullet being the principal species.

Results of experiments in the Wacassasa River (Copeland, J. B., Report to Game and Fresh Water Fish Commission, September, 1956) had indicated it would be possible to limit kill of fish, other than gar, by use of explosive providing caution was exercised in selection of river areas. It had been observed at the time of that study large concentrations of gar could be detected by their surfacing activity. Verification of this observation was obtained during the time of this experiment.

## DESCRIPTION

The portion of the Aucilla River studied was located in Jefferson County, 24 miles west of Perry, Florida on Highway No. 98. The Aucilla River originates in the northern part of the state and by a series of sinks and rises emerges at Nutall and flows six miles to the Gulf. Fifteen to twenty residences were located on the west bank of the river. From Highway No. 98 the entire west bank is a wildlife refuge. A large portion of the east bank is a wildlife management area. The river was clear and its depth affected by tide. The bottom was rocky and during low tide difficult to navigate.

## MATERIALS

Seventy-five, one pound cans of Nitromon Primer S, eight shields and eight electric blasting caps with eight-foot lead wires were used during the operations. A Dupont ten cap blasting machine and 200 feet of doorbell wire were used to set off the explosive. Nitromon Primer S cans were constructed so they could be attached together allowing as much explosive to be used as the experiment demanded. The top of each can was formed so a cap could be inserted, and a shield used to prevent the cap from coming out of the can. Misfires experienced with dynamite did not occur.

## METHODS

Amounts of explosive to be used in each experiment were attached together and placed in a boat with the wire and blasting machine. As a safety measure the blasting cap and operation handle of the blasting machine were kept separate from the explosive so only the operator had access to them. Upon reaching the experimental area, the charge was assembled. Wires of the blasting cap

were then connected to the doorbell wire and the explosive lowered to desired depth. Depth of explossive (10 feet) was maintained by attaching large corks to the wire at the surface of the water. After reeling out the wire, the boat, approximately 100 feet from the explosive, was in position for blasting. The other ends of the doorbell wire were then connected to the blasting machine and the explosive set off. Killed and stunned fish, which surfaced, were immediately taken from the water with dipnets. Length-frequency and length-weight data were recorded and the fish then dumped in a disposal location. This operation was performed three times at Station No. 1 and once at five other stations on the river.

## RESULTS

Results of three blasts at Station No. 1 (Nutall Rise) February 25, February 27, and March 6, 1957 are summarized in Tables I and II. It was found many more longnose gar were taken as a result of the first blast than of the second and third. An index that shortnose gar moved into the affected area soon after the explosions was obtained. Immediately following the explosion of February 25, eighty-seven longnose gar weighing 303 pounds were dipnetted. On February 27, only 15 were recovered following a similar explosion. Seven days later on March 6, seventeen were taken. The data suggests the longnose gar in the Aucilla did not rapidly repopulate the blast area. Extent of reduction was further determined by observations of an additional 181 longnose gar which had been destroyed by blast No. 1 but did not come to the surface until February 27th, prior to blast No. 2. Dead gar which resulted from separate blasts could be separated by the stage of their decomposition. A conservative estimate of number of longnose gar killed at Station No. 1 during the three blasts was 400. Total weight destroyed, based on average weight determinations of 199 (3.2 pounds), was 1,280 pounds.

The other major species affected by the explosive was shortnose gar. Data gathered indicated the shortnose gar population of the blast area was soon replaced. There is reason to believe more moved into the area following the explosions than were there prior to the explosions. At Station No. 1, one hundred and seventy-seven were recovered following the first explosion and 510 were taken following the third explosion. Further verification was possible since an additional 200 dead were counted in the river on the day subsequent to the third blast. A possible reason for this to have occurred was with a reduction of longnose gar the shortnose gar found it a more favorable location to congregate. There may have been large quantities of shortnose gar in other portions of the stream whereas longnose may not have been present in as large numbers.

A total number of 1,250 shortnose were conservately estimated to have been killed. An average weight of 1.6 pounds was determined from individual weights of 842. Total estimated weight of those destroyed at the station was 2,000 ponds. Total estimated weight of all gar killed at Station No. 1 was 3,280 pounds.

Station No. 2: Ten pounds of Nitromon were used in the experiment at this station which was located approximately 50 yards north of Highway No. 98. Forty longnose gar with a total weight of 249 pounds were recovered. The smallest was 25 inches long, the largest 49.5 inches (total length). Seventy-four longnose gar were counted on the bottom beyond reach of the dip net. The following day, 154 additional longnose gar surfaced with an estimated weight of 1,806 pounds.

In comparison to Station No. 1, longnose gar were considerably larger. Individual weights obtained ranged from five to eighteen pounds. No other species including shortnose gar were observed to have been killed (Table I).

At Station No. 3, located approximately 150 yards south of Highway No. 98, five pounds of nitromon were used. One longnose gar, 36 inches long, weight 5.25 pounds; nine mullet, total weight 7 pounds; five redbreast, total weight 0.50 pound; and one bass, weight 0.75 pound were recovered. Due to muddy conditions of the water following the explosion, it was not determined if fish remained on the bottom (Table I).

At Station No. 4, located approximately 450 yards south of Highway No. 98, ten pounds of Nitromon were used. Dipnetted were four largemouth bass, total weight 9.25 pounds; nine mullet, total weight 9.25 pounds; two chub

TABLE I

NUMBER OF FISH KILLED AND COUNTED AT STATIONS ON THE AUCILLA RIVER

| *Station Number* | *Station 1* | | | *Station 2* | *Station 3* | *Station 4* | *Station 5* | *Station 6* | *Total Number* | *% Total Number* |
|---|---|---|---|---|---|---|---|---|---|---|
| *Species* | *Blast 1* | *Blast 2* | *Blast 3* | | | | | | | |
| Longnose Gar | 268 | 15 | 17 | 268 | 1 | ... | 54 | ... | 623 | 35.5 |
| Shortnose Gar | 177 | 355 | 510 | ... | ... | ... | 1 | ... | 1,043 | 59.4 |
| Largemouth Bass | ... | ... | ... | ... | 1 | 4 | 3 | ... | 8 | 0.5 |
| Mullet | ... | ... | ... | ... | 9 | 9 | 47 | ... | 65 | 3.7 |
| Redbreast | ... | ... | ... | ... | 5 | 7 | ... | ... | 12 | 0.7 |
| Channel Cat | ... | ... | 3 | ... | ... | ... | ... | ... | 3 | 0.2 |
| Chub Sucker | ... | ... | ... | ... | ... | 2 | ... | ... | 2 | 0.1 |
| Golden Shiner | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | 0.1 |
| TOTAL | 445 | 370 | 530 | 268 | 16 | 23 | 105 | ... | ... | .. |
| GRAND TOTAL | ... | ... | 1,345 | ... | ... | ... | ... | ... | 1,757 | .. |

TABLE II

POUNDS OF FISH KILLED AND WEIGHED ON THE AUCILLA RIVER

| *Station Number* | *Station 1* | | | *Station 2* | *Station 3* | *Station 4* | *Total Weight* | *Total Weight* |
|---|---|---|---|---|---|---|---|---|
| *Species* | *Blast 1* | *Blast 2* | *Blast 3* | | | | | |
| Longnose Gar | 857.0 | 35.7 | ... | 249.0 | 5.3 | ... | 1,147.00 | 50.0 |
| Shortnose Gar | 281.3 | 828.5 | ... | .... | .. | 1.00 | 1,110.80 | 48.4 |
| Largemouth Bass | .... | .... | ... | .... | 0.7 | 9.25 | 9.95 | 0.4 |
| Mullet | .... | .... | ... | .... | 7.0 | 9.25 | 16.25 | 0.7 |
| Redbreast | .... | .... | ... | .... | 0.5 | 0.50 | 1.00 | 0.7 |
| Channel Cat | .... | 3.5 | ... | .... | .. | .... | 3.50 | 0.2 |
| Chub Sucker | .... | .... | ... | .... | ... | 6.25 | 6.25 | 0.3 |
| Golden Shiner | .... | .... | ... | .... | .. | 0.50 | 0.50 | .. |
| TOTAL WEIGHT | 1,138.3 | 867.7 | ... | 249.0 | 13.5 | 26.75 | 2,295.25 | .. |

Total Pounds Estimated Killed—5,200 Pounds

suckers, total weight 6.25 pounds; seven redbreast, total weight 0.5 pound and one shortnose gar, weight one pound. Several mullet were observed on the bottom but due to depth of the water these were not recovered. An observation made by personnel was in locations where few gar were found, other species were present.

At Station No. 5, located an estimated mile and a half south of Highway No. 98, ten pounds of Nitromon were exploded. The outgoing tide was strong at this time and gar were on the surface from other stations. It was determined there were fifty-four longnose gar, forty-seven mullet, three largemouth bass, and one shortnose gar killed and at the surface. After counting, longnose gar, mullet and bass were recovered from the river. A school of mullet, seventy-five feet from the explosion, was observed to be blown from the water. Some of these sank before they could be recovered (Table I).

Ten pounds of Nitromon were exploded against better judgment of Commission personnel, at Station No. 6, located approximately two and one half miles south of Highway No. 98. No fish appeared on the surface after the explosion. The location at certain seasons of the year was reported to have large concentrations of gar fish and operators were anxious this area be exploded. Observations made by personnel showed no surface activity of gar prior to the explosion. To satisfy the camp operators a charge was set off with negative results.

## ACKNOWLEDGMENTS

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*Question:* How deep was the charge set?
*Answer:* Depends on the depth of the water. Was set several feet off the bottom.

*Question:* What is public reaction to use of explosives?
*Answer:* Some dislike the use and the general reaction may be harmful if not properly used.

*Question:* What percent of the fish killed could be picked up?
*Answer:* About 95 percent.

*Question:* What is the cost of Nitromon?
*Answer:* $21.00 per 50 pounds.

*Question:* On the series of treatments described, what was the poundage of gar?
*Answer:* About 1,500 pounds. The exact amount is given in the paper.

*Question:* Was the location of the shots always the same?
*Answer:* Yes, all were placed in the same general location.

*Question:* Will further use be made of this gar removal method?
*Answer:* Yes, upon request of fish camp operators.