

Special Report ²⁰
NOTES ON THE REMOVAL OF BOULDERS IN ALSEA RIVER BY BLASTING
SEPTEMBER 24, 1952

Following notification of this laboratory that the removal of several boulders in the Alsea River by the use of dynamite was to take place September 24, 1952 at 9:00 AM members of this lab went to Kozy Kove Fish Camp near Tidewater, Oregon and supervised the operation as formerly directed by a letter from the Portland office of the Fish Commission dated September 22, 1952.

The actual blasting commenced at approximately 9:00 AM, Pacific Standard Time, *and was completed by 11:00 AM.* The rated height of the low tide for this date was 2.4 feet at 9:38AM as taken from the Astoria tide table. For all practical purposes one can read the Astoria tide table direct for the Tidewater area on the Alsea River as there is but a very small variation.

Present at the operation were Mr. George Worth, manager and owner of Kozy Kove Fish Camp; Mr. Price Hunter, powder man and local commercial fisherman; Mr. Charles Henne, resident; and biologists from this station. No representative of the Oregon State Police was present although they had been notified previously.

Three boulders of the sandstone type were to be removed or shattered in such a manner as to enable Mr. Worth to float a new boat house where the boulders were standing. The largest boulder measured approximately seven feet long by four feet wide by four feet deep and at extreme low tide was exposed by about six inches. The two other boulders were smaller measuring approximately three feet long by three feet wide by two feet deep. These were entirely submerged throughout the operation. The depth of water in which they stood averaged about four feet. The river was about 65 yards wide at this point and 25 feet deep in midchannel. The boulders

were about 12 feet from the northern bank of the river and about 25 feet downstream (west) from the existing boat house.

All the charges were detonated were on the bank side (toward the northern river bank) so that the greatest force of the blast was directed toward the bank and not towards the deeper water in midstream.

A long-handled dip net was used from a skiff to pick up the dead and dying fish. The effect on the perch was apparently to upset their equilibrium the fish coming to the surface in a spiral motion and finally dying in a belly-up position. The last signs of motion (life) were the quivering of the muscles and fins.

The one cut-throat trout that was killed was picked up within ten feet from the blast center and upon examination it was easily seen concussion had caused the ribs to tear loose from the body cavity causing an internal rupture about four inches along both sides of the fish.

The two smaller boulders were the object of the first blast of four sticks of 40% dynamite. Before the blast a dynamite cap was thrown into the water immediately adjacent to the boulders in an effort to frighten any fish away. Whether or not this was effective on the larger fish it is impossible to say. It certainly wasn't on the smaller fish as witnessed by the number of perch killed. This first blast throwing a column of water 25-30 feet in the air successfully shattered the two smaller boulders and attention was then turned toward the remaining large boulder.

A total of 22 sticks of dynamite were used on the large boulder which was successfully broken up after three charges. The highest geyser produced was about 35-40 feet.

It was a bit difficult to determine the lethal distance from

the blast center within which a fish would be killed as a fairly strong current prevailed throughout the operation. This carried the fish away from the blast area. Also the fish, although badly stunned, were capable of propelling themselves just beneath the surface of the water. This propulsion became less and less until the fish died. An estimated lethal distance was 60 feet although some fish were picked up as far as 300 feet from the blast for reasons as stated above.

An equal or increasing number of fish were killed for the first three blasts. The number of fish/^{killed} in the fourth blast gave an indication of the first three blasts as having killed off a good portion of the fish in the area. This can only be stated in the most general way as there was an elapse of about two hours between the first and last blasts. This would allow time for a new population of fish to move into the area between blasts. It is evident, however, that fish are not driven from an area in which blasting is taking place for any length of time under the conditions of this operation.

It is believed by the attending members of this lab that the operations were carried out in a commendable manner in that due consideration was given to the possibility of the presence of fish in the immediate area. No extremely large charges of powder were used, only the amount necessary for the removal of the obstructions. A minimum of damage to fish was sustained.

Respectfully submitted
Lowell D. Marriago
Kenneth D. Waldron
Aquatic Biologists
September 25, 1952

Table 1

Summary of fish killed by dynamiting in Alsea River

| Blast No. | No. Sticks Dynamite | Fish Killed | | | | | Tot. |
|-----------|---------------------|----------------|------------------|---------|-------------|----------------|------|
| | | Shiner (Perch) | Split-Tail Perch | Herring | Stickleback | Cut-thr. Trout | |
| 1 | 4 | 46 | 6 | 0 | 1 | 0 | 53 |
| 2 | 6 | 99 | 12 | 1 | 0 | 0 | 112 |
| 3 | 6 | 101 | 6 | 0 | 1 | 1 | 109 |
| 4 | 10 | 50 | 1 | 1 | 0 | 0 | 52 |
| Total | 26 | 296 | 25 | 2 | 2 | 1 | 326 |

The shiner, Cymatogaster aggregatus, the most numerous fish present averaged 10.7 cm overall length and ranged from 7.0-15.1 cm. Another species of ocean perch present, Phanerodon furcatus, averaged 10.6 cm in length and ranged from 10.1-11.0 cm. One herring, Clupea pallasii, was captured and another was seen being eaten by a seagull. The one captured measured about 15.0 cm. Two three-spined-sticklebacks were picked up, Gasterosteus aculeatus, and these measured about 3.0 cm. One cut-throat trout, Salmo clarkii clarkii, was killed by the blast measuring 34.0 cm.

A few fish were seen being eaten by sea gulls present in the area but the fish consumed in this manner were few.

Cymatogaster aggregatus

(overall length in cm.)

Collected on the Alsea River 9/24/52

cm.

10.8

13.1

13.9

14.1

14.6

13.9

7.7

11.0

14.1

11.3

12.0

15.1

12.3

12.1

12.1

13.4

11.6

11.1

10.6

10.9

12.5

8.1

12.1

13.3

8.0

11.6

10.5

10.5

7.5

7.8

11.1

11.6

10.4

8.6

7.1

11.5

10.8

7.2

10.2

9.7

7.6

8.2

7.4

7.2

11.3

7.4

11.1

10.6

7.0

11.0

n = 50

average

534.6

50

= 10.69

other sp. overall
length in cm.

10.6

10.1

10.2

10.7

11.0

10.7

n = 6

average = $\frac{63.3}{6} = \underline{\underline{10.56}}$

FISH COMMISSION OF OREGON

307 STATE OFFICE BUILDING
1400 S. W. 5TH AVENUE
PORTLAND 1, OREGON

September 22, 1952

Mr. George Worth
Kozy Nose Fish Camp
Tidewater, Oregon

Dear Sir:

This letter may be considered as your permit or authority as required under paragraph (e) Section 83-312, O. C. L. A., to use dynamite in removing two boulders in the Alsea River adjacent to your property at Tidewater.

It is understood that the shooting of dynamite is to be done only at low water and that only sufficient charges of powder to effect the desired results will be used or employed and that no over-charges or unusually heavy loads will be utilized.

It is further understood that every care and extreme precaution will be exercised to prevent damage or injury to any food or game fish, and in event any food or game fish are killed or injured during the explosion, same are to be immediately turned over to this department or a representative thereof.

It is understood as a condition hereof that operations or privileges granted under this permit as issued are revocable for non-compliance and that same must be carried out under the supervision of Mr. Dean Marriage, our local representative. You are requested to notify Mr. Marriage, at 121 S. W. Bay Blvd., Newport, (Telephone Newport 332) of the exact date and time the dynamite is to be used.

The Department of State Police has been requested to check on and enforce this permit, which it is understood shall be valid for the period of September 23 to 29, inclusive, of this year.

Very truly yours,

State Fisheries Director

cc: Dean Marriage, 121 S. W. Bay Blvd., Newport ✓
cc: State Police Department, Salem

Mrs. Honey called for
Mr. Hatch @ 1400
Sept 23, 1952 to
notify us of blasting
to take place at 9:00 AM
Sept 24, 1952

Called Neil Jordan
& told him of same.

COPY