

SUMMARY OF OPERATIONS ON CONTRACT NO. W-28-094-eng-33
FOR THE MONTH OF MARCH 1948.

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403923

Project I.* Basic studies of the effect of X-rays upon fish in various stages of development.

Section I and II*

The young chinook salmon fingerlings (F₂ generation) produced from the 1947 spawning of adults from irradiated (100 r) and control stock continue to develop. Mortalities continue to be recorded.

Total cumulative mortalities to the end of March for the seven control lots averaged 13 per cent, and for the six irradiated lots 26 per cent. Because of the great variability, however, these values lack statistical significance, the value of "t" being 1.50, which for 11 degrees of freedom lies at the 15% level of probability. Toward the end of the month the frequency of picking off and preserving dead and dying specimens was increased to several times a day in an effort to avoid decomposition and mutilation by the other fish that occur when the dead are allowed to remain with the other fish for as short a time as a few hours or in some cases even a few minutes. It is hoped that with well-preserved material, gross anatomical abnormalities may be measured and a comparison made between control and irradiated stock that will permit of detecting in the groups mutant changes or deficiencies of small magnitude.

Marks have been assigned for use in identifying these fish when they are returned to natural waters. The assigned marks, adipose and left ventral combination will again be used on the offspring of

* Project and section numbers refer to the Project Chronology Chart and Summary, revised March 11, 1948.

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the 100 r F₂ generation, while the adipose and right ventral combination will be applied on the control stock.

Section XI-a.

The adult rainbows brood stock of the same ancestry as those used as "controls" for the rainbow irradiation tests (Section XI-a, XI-b, and XI-c) continue to spawn. Eggs have been obtained from about one-half of the females. This is a portion of the stock being used at Hanford Engineering Works, 146 Building for absorption studies. The stock retained at the Applied Fisheries Laboratory serve as a control for the absorption studies, carried on at Hanford Engineering Works.

Section XI-b.

The young fish in this section are the second generation (F₂) offspring of the adult fish X-rayed and spawned in 1945.

These fish are being retained for study of the growth and mortality rates of the various exposures. They will be retained to produce the F₃ generation in the spring of 1949.

Project IV. Bikini Experiments of 1947.

Work continues on the analysis of data collected and the preparation of special reports on special phases of the project.

Samples of ashed material collected at Bikini during 1947 were forwarded to the Atomic Energy Project, U.C.L.A. for chemical analysis. A total of 92 samples were included in this first shipment.

Project V. Laboratory experiments using Bikini "mud" and coral rocks as sources of fission products are underway. Some difficulty is being experienced in keeping the animals alive in the aquaria with this material.

Project VI.

Studies were started January 15-16, 1948 when six groups containing $20 \pm$ amphipods each were exposed to X-rays. The six doses were 150 r, 900 r, 6,400 r, 16,000 r, 32,000 r and 82,000 r. Six similar lots were used as controls.

By the end of March all control jars contained some living amphipods, whereas of the irradiated groups, only the two lowest exposures, 150 r and 900 r had survivors.

On March 9 a new experiment was started consisting again of 12 jars, 6 irradiated and 6 controls, with doses of 200 r, 500 r, 1,250 r, 2,500 r, 5,000 r, and 10,000 r. Each group consisted of 30 amphipods. On March 29 all died in the last control jar due to fouling of the water from decomposing Ulva (sea lettuce). By the end of the month 18 survived in the 10,000 r group and each of the 10 other jars contained from 20 to 24 survivors. Numbers of newly-hatched young seemed to be appreciably sparse in groups irradiated with 2,500 r or more.

During the month of March the Applied Fisheries Laboratory was visited by Dr. Simeon T. Cantrill, Swedish Hospital, Seattle, Dr. C. H. Perry, NEPA Project, Oak Ridge and Mr. H. H. Wallace, NEPA Project, Oak Ridge, Tennessee.

Dr. Kelshaw Bonham, Dr. Arthur D. Welander, and Mr. Allyn H. Seymour attended the meeting of the Pacific Fisheries Biologists.

Dr. Lauren R. Donaldson made a trip east for conferences and to attend meetings. Conferences were held in Washington, D. C. with

Dr. Shields Warren and Dr. John Z. Bowers. The meetings of the Division of Biology and Medicine were attended at Oak Ridge, Tennessee.

Lauren R. Donaldson
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