

Fish

SUMMARY OF OPERATIONS ON CONTRACT NO. W-28-094-eng-33  
FOR THE MONTH OF MARCH 1947.

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The activities of the Applied Fisheries Staff were devoted to the work attendant to the actual conduct of the various experimental phases of our project with only such spare time as available used to further the summarization of data from completed sections.

I. The basic program of the Applied Fisheries Laboratory at the University of Washington, that of measuring the effect of exposure of aquatic organisms in various stages of development to X-rays was greatly increased. Three part-time laboratory technicians were added to our staff to aid in caring for the eggs and young fish in the third generation studies of Section XI.

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\*Sections I and II.

In October 1943 adult chinook salmon were exposed to 25, 50, or 100r with some as controls. The offspring of the 100r parents and control parents were reared until migration time and went to sea during May 1944. During the fall of 1946 the first of the returns from the sea came back to the Samish River and were spawned. The eggs that were produced have been incubated through hatching and yolk sack absorption. The mortalities experienced by the second generation of eggs of the 100r exposures have been significantly greater than that of the "controls". Among the young that have sur-

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\*Section numbers refer to the Project Chronology Chart, revised January 9, 1947.

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vived in at least one of the two 100r lots are large numbers of malformed. The external characteristics of these malformed fish seem, for the most part, to be those of emission. Eyes are missing or partly formed, Jaws fail to fuse, the color pattern is incomplete, etc.

Sections III and IV.

The sockeye salmon data have not been written up.

Section V.

This preliminary Columbia River steelhead experiment has not been described as yet.

Sections VI, VII, and VIII.

Final reports have been submitted.

Section IX

This preliminary rainbow trout experiment has not been formulated into a final report.

Section X.

Completed and a final report submitted.

Section XI and XI-a.

The data descriptive of the work in these sections are nearing final form for reporting.

Section XI-b.

The active experimental work in this section has occupied the major portion of our time during the past month. The fish have continued to reach maturity and have produced eggs that have been fertilized with the sperm from male fish of like irradiation experience. A variation in this procedure is being made for some of the "control", 50r and 100r fish. In an effort to determine the sex differences we are splitting the eggs produced from a portion of the females and fertilizing

one portion with the sperm of a corresponding male and the second portion with the sperm of a control, 50r, or 100r male as the case may be. To date 141 egg lots have been produced. We expect that the number of egg lots may number as many as two hundred. To take care of this great mass of material it has been necessary to make some changes in the experimental laboratory to increase our facilities.

#### Section II-c.

The data contained in this section are needed for some subsequent work so it will be necessary to complete it as soon as possible.

Sections XII, XIII and XIV.

Work on the final report is nearing completion.

Sections XV - XVII.

The U. S. Fish and Wildlife Service is cooperating with us on the recovery of the steelhead trout returns expected in Icicle Creek, Leavenworth, Washington.

Such fish as are obtained in a mature condition will be spawned and the eggs fertilized with a male of similar exposure history.

#### Section XVIII.

The work on goldfish awaits summarization and reporting. II. The studies on absorption and retention of radioactive materials have been continued but at a minimum rate. Counters and material have not arrived to activate this program.

A trip was made by Laurence E. Donaldson to Berkeley, California during the month to study techniques and instrument operation. Dr. Kenneth Scott is supervising the repair of the counter being transferred to us.

III. Programs for continued study of the Bikini Lagoon were prepared. These estimates involved personnel, time, equipment, and expense of conducting the studies.

IV. During the month 505 rainbow trout, nearly a year old, were transferred to the ponds near the 146 Building in 100-F area, Hanford Engineer Works. These fish are to be used to conduct absorption, feeding, and reproductive studies at the plant, in the river, and/or plant effluent waters.

*Lauren R. Donaldson*  
Dr. Lauren R. Donaldson  
Director of Contract  
No. W-28-094-eng-33

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