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SUMMARY OF OPERATIONS ON CONTRACT NO. W-28-094-eng-33

FOR THE MONTH OF NOVEMBER 1948.

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

Sections I and II*

The eggs obtained from the five (5) year old chinook salmon female, marked A. and R., of the "control" stock continue to develop at the Samish Hatchery, State of Washington Department of Fisheries. As soon as these eggs develop to the "eyed" stage they will be transfered to the Applied Fisheries Laboratory, University of Washington, to continue their development. A very critical study will be made of the young fish produced to add to our knowledge of the variations expected in "control" but possibly inbred stock.

Section XI

Rainbow trout yearlings, females and males, from University of Washington stock were exposed to 50, 100, 500, 750, 1000, 1500 and/or 2500 r. A total of 128 yearling (nearly two years old) were irradiated in January 1945. An additional 20 fish were used as controls. The effect on the offspring of this stock to the exposure to X-rays prior to their first spawning (Spring of 1945) was described in the report "Some effects on embryos and young rainbow trout (Salmo gairdnerii Richardson) from exposing the parent fish to X-rays" UWFL-10.

OPENNET ENTRY
☐ Authorized for Public Release By: [signature] Date: 7/11/95
Entered in OpenNet By: Date:
☐ Not Authorized for Public Release By: Date:

*Project and section numbers refer to the Project Chronology Chart and Summary UWFL-9, revised March 11, 1948.

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW
SINGLE REVIEW AUTHORIZED BY: [signature]
REVIEWER (ADD): 11-2-94
NAME: [signature]
DATE: 11-14-94
DETERMINATION (SINGLE NUMBER)
1. CLASSIFICATION CHANGED
2. CLASSIFICATION CHANGED TO:
3. CONTAINS NO DOE CLASSIFIED INFO
4. COORDINATE WITH:
5. CLASSIFICATION CANCELLED
6. CLASSIFIED INFO BRACKETED
7. OTHER (SPECIFY):

[redacted]

DOE ARCHIVES

Data accumulated on the parent fish following their spawning in the spring of 1945 are being evaluated. Mortality, growth and other radiation syndromes are being analyzed. The data indicates that X-ray dosages of 1500 and 2500 r are 90% and 100% lethal respectively in 64 weeks. Growth in length and weight appears to be retarded by irradiation of 750 or 1000 r with definite symptoms of X-ray damage seen in trout exposed to such intensities.

Project VI. Exposure of invertebrates to X-rays.

On November 16, 1948, the report entitled, "Lethal effects of X-rays on Marine Amphipods" (UWFL-14), Kelshaw Bonham was submitted to the Commission

Marine snails, Thais lamellosa, of the two experiments started July 6 and October 20, 1948, survived the month in apparently good condition except for a control specimen in the second experiment which had detached from the substratum and remained withdrawn for 3 or 4 weeks. On November 22 this specimen was sacrificed and was found to be quiescent, almost moribund, and to have its operculum almost completely dissolved. Toward the end of the month, breeding congregation, behavior and a few abortive egg cases were observed.

Fresh water snails brought October 24, 1948, from the creek in Richland, Washington by R. F. Foster, were X-rayed on November 12. Groups of 8 snails each were given single doses in roentgens of 500, 1000, 2500, 5000, 10000, 20000, 40000, or 80000 at the rate of 500 r per minute, with 36 control snails. Four days later on November 16 all

DOE ARCHIVES

snails in the 80000 r and 40000 r groups, half of the snails in the 20000 r group and 5 of the controls had died, but none died in the 10000 r group. Mortality rates in other groups were similar to the controls. By the end of the month 7 controls had died and mortalities in other groups were: 20000 r, 5; 10000 r, 0; 5000 r, 1; 2500 r, 1; 1000 r, 0; and 500 r, 4. The relatively high mortality in the 500 r group may possibly be attributed to rough handling, as they were the first ones irradiated.

Project X. Bikini Resurvey of 1948.

In the counting and sample preparation laboratory, periodical counts were continued of the selected Bikini and Eniwetok plates for determining rate of decay of the activity. The preparation of ashed samples of Bikini and Eniwetok materials for U.C.L.A. was continued. The technique of preparing coral samples for counting was changed. The present procedure is to pulverize the sample with a mortar and pestle, place about one-half a gram of sample on a plate and cover with o.5% solution of Formvare in ethylene dicloride to make sample adhere to plate. Results are good. For the purpose of separating those samples of low activity from those of background only, a recount was started of the Bikini fish samples that on first count were only 4 counts or less higher than background. A check on the ashing technique used up to the present time indicates that considerable activity may have been driven off during the process. Samples in which acid was not used in preparation gave substantially higher counts than those prepared by the original method. This is to be investigated further.

DOE ARCHIVES

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The record of the beach and land survey with field instruments at Bikini, July, 1948, has been studied and summarized.

Tissues of the fish from the Bikini mud and Bikini coral aquarium experiments of last spring were examined. Damage of tissue was not readily apparent.

Visitors at the Applied Fisheries Laboratory, University of Washington, included:

Dr. Herman J. Muller, University of Indiana, conferred with the staff on genetic changes due to irradiation.

Mr. Ray Haggeman, Hanford Operations Office, conferred with the staff on administrative problems and the Columbia River studies.

Mr. Frank Lowman left November 25, 1948, to attend meetings in New York of the American Institute of Electrical Engineers. He attended meetings on isotope measurement, counter design, etc.

Lauren R. Donaldson
Lauren R. Donaldson, Director
Contract No. W-28-094-eng-33

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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW
SINGLE REVIEW AUTHORIZED BY: [signature]
REVIEWER (ADD): 11-2-94
NAME: [signature]
DATE: 11-14-94
DETERMINATION (CIRCLE NUMBER(S))
1. CLASSIFICATION REMAINED
2. CLASSIFICATION CHANGED TO:
3. CONTAINS NO DOE CLASSIFIED INFO
4. COORDINATE WITH:
5. CLASSIFICATION CANCELLED
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