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

FOR THE MONTH OF DECEMBER 1947.

I. The basic program of the Applied Fisheries Laboratory, of measuring the effect of X-rays upon aquatic organisms, was the major concern of the staff.

*Sections I and II

During December the balance of the eggs produced from the adult salmon returning to the Samish River, that in turn had been produced by adult chinook salmon exposed to 100 r of X-ray prior to spawning, or that were used as "controls", were transferred to the laboratory at the University of Washington. The majority of the eggs have now hatched and are in the yolk sac stage.

The 38 irradiated- and control-stock chinook salmon adults retaken in 1947, produced 15 egg lots, the spawn from 13 of the females was apparently mature and normal while the spawn from two females (Lot 13 and Lot 14) appeared to be immature or "green".

Further investigation into the inferior nature of the eggs in Lot 13 (100 r - 100 r X-rayed stock) with Lot 14 (control stock) revealed that Lot 13 was from a "green" or slightly immature female, and consisted of 6059 poor eggs, deformed, including many of a pearshape. In ordinary hatchery procedure Lot 13 would have been discarded. Egg Lot 14 was also from a "green" female resulting in a relatively small percentage of the eggs flowing out into the bucket when the female was opened, but the 1386 eggs that were taken seemed at the time to be normal and would have been retained in ordinary hatchery procedure. When Lot 13 is for this reason excluded from

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

consideration, the 7 lots of irradiated stock show a significantly (3 per cent level of "t") higher mortality (26%) through December 30, 1947 than do the 7 control lots (5.5%). If Lot 13 be included, the difference is not significant, "t" being above the 50% level.

Egg weight and uniformity of egg size do not differ significantly when comparing irradiated with control stock.

Sections VI and VII.

The work completed in these two sections was summarized into a final report, UWFL-8, "The effects of Roentgen rays on the embryos and larvae of the chinook salmon". This report was forwarded to the Atomic Energy Commission for clearance for anticipated publication.

Section XI-B.

During January 1945 a total of 128 rainbow trout yearlings were exposed to 50, 100, 500, 750, 1,000, 1,500 or 2,500 r of X-ray. Twenty fish were used as controls. These fish spawned in the spring of 1945, and their progeny were studied during 1945, 1946 and until the spring of 1947 when they in turn spawned.

On December 26, 1947 the rainbow fingerling of the year, F_2 generation, were measured and weighed individually. When the average lengths were tested using "t", there was shown to be no significant difference between the controls, the 50 r, and the 100 r stock. Differences from the controls of the 500 r and 750 r groups were significant, and of the 1000 r group was highly significant.

Mortalities of these rainbow fingerling during the past quarter totaled 9 fish distributed as follows. Four of the 1000 r group died, 1 - 100 r, 3 - 50 r, and 1 control.

II. Cultures of marine organisms were started and equipment assembled to initiate a program of food-chain assimilation and transfer studies.

[redacted]

It is hoped that it will be possible to study the problems of passage of active salts from the simple forms to the more complex.

III. Study of the material collected at Bikini during the summers of 1946 and 1947 continues. Radioautographs are being made of representative material. Studies of the rate of absorption are also under way.

IV. The contacts between the Applied Fisheries Laboratory and the Hanford Engineering Works continue to operate effectively.

Mr. Phil Olson transferred truck AEC-57-UW from Richland to Seattle.

Mr. R. P. Gallagher visited the Applied Fisheries Laboratory to check on security matters pertaining to the project.

Dr. Lauren R. Donaldson spent December 10 and 11 at Richland and vicinity in conferences and on inspection trips.

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

[redacted]

[redacted]

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

FOR THE MONTH OF DECEMBER 1947.

I. The basic program of the Applied Fisheries Laboratory, of measuring the effect of X-rays upon aquatic organisms, was the major concern of the staff.

*Sections I and II

During December the balance of the eggs produced from the adult salmon returning to the Samish River, that in turn had been produced by adult chinook salmon exposed to 100 r of X-ray prior to spawning, or that were used as "controls", were transferred to the laboratory at the University of Washington. The majority of the eggs have now hatched and are in the yolk sac stage.

The 38 irradiated- and control-stock chinook salmon adults retaken in 1947, produced 15 egg lots, the spawn from 13 of the females was apparently mature and normal while the spawn from two females (Lot 13 and Lot 14) appeared to be immature or "green".

Further investigation into the inferior nature of the eggs in Lot 13 (100 r - 100 r X-rayed stock) with Lot 14 (control stock) revealed that Lot 13 was from a "green" or slightly immature female, and consisted of 6059 poor eggs, deformed, including many of a pearshape. In ordinary hatchery procedure Lot 13 would have been discarded. Egg Lot 14 was also from a "green" female resulting in a relatively small percentage of the eggs flowing out into the bucket when the female was opened, but the 1386 eggs that were taken seemed at the time to be normal and would have been retained in ordinary hatchery procedure. When Lot 13 is for this reason excluded from

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

[redacted]

consideration, the 7 lots of irradiated stock show a significantly (3 per cent level of "t") higher mortality (26%) through December 30, 1947 than do the 7 control lots (5.5%). If Lot 13 be included, the difference is not significant, "t" being above the 50% level.

Egg weight and uniformity of egg size do not differ significantly when comparing irradiated with control stock.

Sections VI and VII.

The work completed in these two sections was summarized into a final report, UWFL-8, "The effects of Roentgen rays on the embryos and larvae of the chinook salmon". This report was forwarded to the Atomic Energy Commission for clearance for anticipated publication.

Section XI-B.

During January 1945 a total of 128 rainbow trout yearlings were exposed to 50, 100, 500, 750, 1,000, 1,500 or 2,500 r of X-ray. Twenty fish were used as controls. These fish spawned in the spring of 1945, and their progeny were studied during 1945, 1946 and until the spring of 1947 when they in turn spawned.

On December 26, 1947 the rainbow fingerling of the year, F_2 generation, were measured and weighed individually. When the average lengths were tested using "t", there was shown to be no significant difference between the controls, the 50 r, and the 100 r stock. Differences from the controls of the 500 r and 750 r groups were significant, and of the 1000 r group was highly significant.

Mortalities of these rainbow fingerling during the past quarter totaled 9 fish distributed as follows. Four of the 1000 r group died, 1 - 100 r, 3 - 50 r, and 1 control.

II. Cultures of marine organisms were started and equipment assembled to initiate a program of food-chain assimilation and transfer studies.

[redacted]

It is hoped that it will be possible to study the problems of passage of active salts from the simple forms to the more complex.

III. Study of the material collected at Bikini during the summers of 1946 and 1947 continues. Radioautographs are being made of representative material. Studies of the rate of absorption are also under way.

IV. The contacts between the Applied Fisheries Laboratory and the Hanford Engineering Works continue to operate effectively.

Mr. Phil Olson transferred truck AEC-57-UW from Richland to Seattle.

Mr. R. P. Gallagher visited the Applied Fisheries Laboratory to check on security matters pertaining to the project.

Dr. Lauren R. Donaldson spent December 10 and 11 at Richland and vicinity in conferences and on inspection trips.

Lauren R. Donaldson

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

[redacted]