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PROJECTS UNDER WAY OR PROPOSED AT THE HUNT CREEK FISHERIES EXPERIMENT STATION

by

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For budgeting purposes and to clarify the objectives and procedures at the Hunt Creek Fisheries Experiment Station projects now under way and proposed investigations have been listed and described. These have been classified as maintenance (M), old research (O.R.) and new research (N.R.). Prevailing rates of pay have been used in figuring costs.

Maintenance Projects

(Labor estimated at $6.00 per day)

Project 1-M

Maintenance of buildings and grounds

Purpose

To preserve the structure and appearance of the station.

Methods

By painting, carpentry, and manual labor.

Man-power needed

One man - 40 days yearly

Approximate yearly cost $240

Project 2-M

Weir maintenance and repair

Purpose

To preserve and keep the weirs in operating condition

Methods

By painting and rough carpentry

Man-power needed

One man 6-8 days yearly

Approximate yearly cost $36-48

Project 3-M

Sign maintenance and repair

Purpose

To keep the present signs legible; make new signs as needed

Methods

By painting and rough carpentry

Man-power needed

One man 5-10 days yearly

Approximate yearly cost $30-60

Project 4-M

Firewood stockpile

Purpose

Furnish wood for use in the cabin stoves and fireplaces in the station buildings

Methods

Cut by axe and saw in woods; buzz into proper lengths after hauling to lab.

Man-power needed

Two men 10-14 days yearly

Approximate yearly cost $120-170

Note: It may prove to be cheaper and more satisfactory to purchase the wood needed. This is being determined.

Old (Already Established) Research Projects

Under Way At the Hunt Creek Fisheries Experimental Area

Project 1-OR

Yield studies on the experimental waters of the Hunt Creek Fisheries Area

Purpose

To learn the variation in the yield of brook trout, particularly from Sections A, B, C, D, and E of the experimental stream and from East Fish Lake to the anglers under varying angling pressures and following various management procedures.

Method

By intensive creel census technique

Man-power needed

(a) For field work
One Fish. Res. Tech. B --- 4 months $500
Two Fish. Res. Tech. C (or Fish Cult. Aide C)-4 months.. 800
(b) For compilation of data
One statistical clerk --- 1 month 125
One Aquatic Biologist II -- 1 month 200

Approximate yearly cost $1,625

Duration

This project should be operated each year of the station's existence during each trout season, and during the trout season should receive precedence over all other projects.

Project 2-OR

Migration studies on the tributary streams emptying into Hunt Creek on the Hunt Creek Fisheries Experimental Area.

Purpose

To learn more facts concerning the number and size and time of migration etc. of brook trout moving into and out of the tributaries in the area.

Methods

Capture the fish in traps located at or near the mouths of the tributaries and mark all fish over 4 inches long by jaw-tagging. Fish under 4 inches in length are to be marked by removing a different fin or fins for each tributary. Data on movement and growth can be obtained by subsequent recovery at the traps, or by anglers, or by the shocker.

Man-power needed

One Fisheries Research Technician B or C from 2-8 hours daily depending on the season. During the fishing season the task of cleaning the weirs and recording the fish passing can (and has been) taken over by the creel census clerks without impairing the effectiveness of their other duties.

Approximate yearly cost $900-1400

Duration

Continuous throughout the life of the station. However, the lower weirs (Tribs #2 and #3) might be dropped after five years, also Trib 5, which has shown little activity in recent years.

Project 3-OR

Evaluation of stream improvement in Section B of the experimental stream

Purpose

To determine whether or not stream improvement can bring about an increase in the quality of the fishing, and at what cost.

Methods

(a) Determine variations in yield before and after placement of the improvement devices (Project 1-OR).
(b) Repeat depth and areal measurements
(c) Determine the changes in the bottom food organisms by means of yearly bottom food studies, starting before the placement of the improvement devices.
(d) Determine changes in the fish population before and after the placement of improvement devices by means of block-and-seine or block-and-shock technique.

Man-power needed

(a)	Supplied by Project 1-OR	
(b)	One Fish. Res. Tech. C --- 3 days	$15
(c)	One Fish. Res. Tech. A or B --- 1 month	150
(d)	One Aquatic Biologist II --- 8 days	50
	Three Fish. Res. Tech. C --- 5 days	75

Approximate yearly cost $290

Duration

Until September 1, 1946

Project 4-OR

Survival and growth of hatchery-reared and wild fingerling brook trout in a natural stream section containing a normal fish population

Purpose

To compare the survival and growth of young fish of the two types in the presence of a normal population including muddlers, minnows and trout of various sizes.

Methods

Annual population studies of the population of Diversion 1-A (which has been blocked off continually since June 1942) with the aid of the electric shocker. Each June the water will be lowered and the population present will be removed and weighed, measured and counted. Immediately following this, hatchery-reared young of the year will be added in numbers equal to the wild young of the year found in I-A.

Man-power needed

One Aquatic Biologist II or III --- 1 1/2 days	$15
Two Fish. Res. Tech. B or C --- 1 day	10
Approximate yearly cost	$25

Duration

Until July, 1946

Project 5-OR

Survival and growth of hatchery-reared and wild fingerling brook trout in the absence of any other trout large enough to prey on the fish introduced.

Purpose

To compare the survival and growth of the two types of fish in the absence of predatory fish and competition from other trout and other fish.

Methods

Place 100 hatchery-reared brook trout fingerlings and 100 wild fingerlings in Diversion III-B of Section C in July, 1943, using a different fin-clip combination on each type of fish, and measuring and weighing the fish before release. With the aid of the shocker, check the fish in October, 1943 to obtain survival and growth data. Check again in June, 1944, and discontinue at that time.

Man-power needed

One Aquatic Biologist II or III --- 3 days $30
Two Fish. Res. Tech. B or C --- 3 days 45

Approximate yearly cost $75

Duration

Until June, 1944

Project 6-OR

Fluctuations in a normal, unfished brook trout population

Purpose

To determine the composition of a brook trout population, over which no fishing is allowed at different seasons of the year, specifically in April, June, September, January.

Methods

Study the population of Diversions II-A and III-A by blocking this natural stream area off with the blukhead screens and then using the electrical shocker to collect the fish present. The captured fish are to be weighed, measured and scale-sampled, and returned each time to the stream.

Man-power needed

One Aquatic Biologist II --- 8 days $80
Three Fish. Res. Tech. B or C --- 8 days 120

Approximate yearly cost $200

Duration

Until September, 1946. (Omit January and April, 1944 checks because of experiments in II-B and III-B.)

Project 7-OR

Life history studies of brook trout in winter

Purpose

To learn more facts concerning the winter habits of brook trout of all sizes, their requirements, mortalities, and the causes of the mortalities.

Methods

(a) Read all available scientific literature for the findings of other investigators on habits of trout in the winter months.

(b) Utilize weir records for information concerning migrations and growth from recoveries.
(c) Utilize data from 1939-1942 seining taken during the winter months (December-March).
(d) Utilize Leonard's data on feeding habits of brook trout fingerlings in the experimental raceways during the winter months.

(e) Obtain further information on movement and location of adult trout during the winter months by use of brook funnel-nets set in some of the deeper pools and runs below Section A, by digging mud banks, observation with jack-light.

Man-power needed

One Aquatic Biologist II or III -- approximately 1/3 of his time for 4 months $300
Two Fish. Res. Tech. B or C --- approximately 1/3 of his time for 4 months $200

Approximate yearly cost $500

Duration

November-March of each year through 1946

Project 8-OR

Growth rate of brook trout in Hunt Creek and in East Fish Lake.

Purpose

To learn how soon brook trout reach legal size, the dominant age groups in the catch, maximum growth, and age attained, etc. This information is needed in order to properly evaluate the result of planting, stream improvement, population control, and other types of management. Through recovery of fish of known age the validity of the scale method can be determined.

Methods

(a) Determine growth empirically by repeated measurements of tagged fish captured by anglers, by population studies and by weir captures.
(b) Scale sample and measure all fish tagged at time of release and on recovery. Scale-sample all recoveries of marked plantings or releases of known age. Mount and age to determine if actual age corresponds with age shown by scales.
(c) Scale-sample good series of unmarked trout taken by anglers each year and a good series taken in population studies to be used if scale method proves to be valid.

Man-power needed

Most of samples and data will be taken in other projects as 1-OR, 2-OR, 4-OR, 6-OR, etc.

In addition the following labor is estimated to be required annually:

One Biologist I or II to read scales and interpret data and prepare reports --- 2 months	$400
One Fish. Res. Tech. C to mount scales, tabulate data --- 2 months	220
Approximate yearly cost	$620

Duration

Ten years +

Project 9-OR

"Condition" of trout

Purpose

To determine variation in weight-length relationship (condition factor) throughout the year, especially during the open fishing season. This may be important in determining the proper opening and closing dates.

Method

(a) Secure accurate weights and lengths of a good number of trout taken each week of the open season by anglers. Determine weight "in the round" and dressed (viscera and gills removed). Weigh gonads separately to determine ratio to weight of other viscera at different seasons. Determine for Hunt Creek, East Fish Lake, Suttons Pond.(?)

(b) Secure weight and length (without killing) of a good series of legal-sized trout in other months in connection with population studies, etc. in Hunt Creek.

Man-power needed

Data can be secured with little extra labor. Projects 1-OR, 2-OR, 6-OR, 7-OR, 1-NR and 4-NR will contribute most of the materials needed.
Additional labor is estimated as follows:

One Biologist I or II to compile and interpret data and prepare report --- 1 months	$300
One Fish. Res. Tech. C to assemble data and make calculations --- 1 month	110
Approximate yearly cost	$ 410

New Research Projects To Be Undertaken At the Hunt Creek Fisheries Experiment Station

Project 1-NR

Studies on the natural reproduction of the brook trout in Hunt Creek.

Purpose

To learn the number of fry produced by adult brook trout of various sizes, the average number of fry produced per redd, and to calculate the number of fry produced per acre of stream.

Duration

Three to five years (to 1946 or 1948)

Methods

(a) Obtain estimates of the egg production of female brook trout of various sizes by egg counts on females taken in late August, September, October, and November.

(b) Place 3-5 pairs (or any suitable number of males and females) in Diversion II-B and allow them to spawn. Remove spawners after they have spawned. County the unspawned eggs in the females removed. Replace 6-mesh screens in the diversions with 10-mesh screens about January 15. In June of the following year, lower water level in the diversion, remove and count the resulting fry. Mark the surviving fry by fin-clipping and liberate in Section C to determine the percentage that survive to reach legal size and anglers' creel.

(c) Determine the average number of eggs deposited per redd by removing the contents of 5-7 redds noted during the spawning season.

(d) Determine the number of redds in II-A and III-A by observation, and in as many of the experimental sections as time allows. Determine percentage of cleaned redds used for egg deposition.

(e) During the height of the spawning season cruise entire Hunt Creek system and count all redds.

(f) Other projects as 4-OR and 5-OR will contribute to the study.

Man-power needed

One Biologist III for two months
One Biologist I for two months $1,000

Project 2-NR

Survival, growth, and migration studies on hatchery-reared trout planted in tributary streams.

Purpose

To learn more facts concerning the fate of hatchery-reared trout after release in small tributaries

Duration

Five years (to 1948) for #1. Three years for #2 (1948-1951)

Methods

1. Fin-clip equal numbers of wild fingerlings and hatchery-reared fingerlings and place above weir in Fuller Creek in June. Tag equal numbers of both kinds of fingerling brook trout in September and place above weir in Fuller Creek. (This portion of the experiment has been started and the marking and planting completed in September, 1943). Obtain recoveries by fish-trap and by angling and seining or shocking.
2. Tag 50 legal-sized hatchery-reared brook trout and plant them in Fuller Creek above the weir in October. Repeat in April. (Defer until #1 is finished.)

Man-power needed

One Biologist III
Two Fish. Res. Tech. B or C ---------- 5 days

Approximate yearly cost $110

Project 3-NR

(This project should be deferred until after the war)

Chemical investigations of various waters of the Hunt Creek Experimental Area

Purpose

To determine the dissolved oxygen content, carbon dioxide content, M.O. alkalinity, and pH of the various waters at different seasons of the year.

Duration

Two years

Methods

Using standard limnological equipment and solutions, take samples for determination in the spring, summer, fall, and winter at the following points:

1. Hunt Creek at the A Bridge, and the D Bridge
2. Fuller Creek at the Fuller Creek Beaver Pond, at the pool above the weir.
3. Trib #2 from the beaver pond, and from the pool above the weir.
4. At other points indicated by the above studies.

Man-power needed

One Aquatic Biologist III
One Fish. Res. Tech. C --- for four days yearly

Approximate yearly cost $75

Project 4-NR

Additional population studies in various areas of the experimental waters (in addition to those now in progress in Section B and the diversions.)

Purpose

To determine the variations in fish population in different trout habitats found in the experimental waters

Duration

Three years

Methods

By means of blocking short sections of stream with stop-nets and capturing the fish present with the aid of the electrical shocker. For example, the stream between diversions I-A and II-A has not been fished for three years. The population of this unfished water could be compared with an equal stream area of Section C which has been continually open to fishing. In addition to the population study areas now sampled yearly in Section B, three such areas should be established in Sections A, C, D and E, and depending on time and man power available, population counts should be taken in the period April 10-25 and September 7-20 of each year.

Man-power needed

One Aquatic Biologist II or III
Three Fish. Res. Tech. B or C --- 36 days yearly

Approximate cost $1,000

Project 5-NR

Population studies of special habitats at repeated intervals

Purpose

To determine the variation in the numbers of fish found in certain good pools or riffle areas over a short period of time

Duration

Two years

Methods

Block off pools or riffle areas at both ends with stop-nets. Obtain the fish present with the aid of electrical shocker. Mark all fish larger than 4 inches taken each time by jaw-tags to determine local migrations and growth.

Man-power needed

One Aquatic Biologist II or III
Three Fish. Res. Tech. C or B

for 10 days yearly

Approximate yearly cost $300

Project 6-NR

Effect of fish refuges

Purpose

To learn to what extent fishing above and below would be improved by closing portions of a stream to fishing

Duration

Five years

Methods

When Project 4-NR is undertaken, tag all legal-sized trout captured and return to the section. Subsequent recoveries in creel census above and below the closed section will show extent of movement and effect on the catch in open water

Man-power needed

Can be included in Project 4-NR with very little extra labor.

INSTITUTE FOR FISHERIES RESEARCH

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