



INTER-OFFICE TRANSMITTAL

U. S. Fish & Wildlife Service - Colorado Field Office

30930

Director, \_\_\_\_\_

Regional Director, \_\_\_\_\_

Project Leader, \_\_\_\_\_

Dr. Behnke, CSU

Regular Mail

Air Mail

Action

Information

From

Office

Date

Rosenlund

5/20/87

Subject

Draft, Hatcheran Lakes Restoration Project

How do the "mid Hatcheran" fish look?

Rosenlund

DRAFT

PROPOSAL FOR THE INTRODUCTION OF GREENBACK  
CUTTHROAT TROUT INTO LOWER HUTCHESON LAKE  
ROCKY MOUNTAIN NATIONAL PARK, COLORADO  
1987

Prepared by:  
U.S. Fish and Wildlife Service  
Colorado Fish and Wildlife Assistance Office  
730 Simms, Suite 292  
Golden, Colorado 80401  
6 May 1987

DRAFT

## Introduction and Summary

The Hutcheson Lakes of Rocky Mountain National Park consist of seven lakes and ponds located in four cirques at the head of Coney Creek. Coney Creek is a tributary of the North St. Vrain Creek, with Calypso Cascades isolating the majority of the Coney Creek drainage fish population from the North St. Vrain. Through 1980, the lower three lakes of the Hutcheson Lakes were located outside RMNP. In 1981, the southern boundary of RMNP was changed to include all the Hutcheson Lakes within RMNP. Hutcheson Lakes and the former RMNP/Forest Service boundary, Figure 1.

During fisheries surveys conducted in the Hutcheson Lakes drainage during 1981, a phenotypic population of greenback cutthroat trout was observed in "Upper" Hutcheson Lake located just downstream from barren Coney Lake.

Following the discovery of a pure population of greenback cutthroat trout in Hunters Creek, RMNP, in 1985, An additional survey of Hutcheson Lakes was conducted in 1986, with 27 specimens of cutthroat trout removed from Upper Hutcheson Lake for taxonomic analysis by Dr. Behnke, Colorado State University. Dr. Behnke's examination of the fish and concluded:

"Based on 27 specimens, the cutthroat trout population found in Upper Hutcheson Lake is identified as a pure greenback cutthroat trout, Salmo clarki stomias. I assume this population is derived from an early transplant from the St. Vrain River drainage. This sample is more "extreme" in their taxonomic characters than the 1985 sample from Hunter's Creek. This may be due to the "founders effect" as no evidence of a hybrid influence was detected."

The Hutcheson Lakes downstream from Upper Hutcheson Lakes were managed by the Colorado Division of Wildlife through 1980. Mid Hutcheson Lakes contained a phenotypic population of greenbacks, but Lower Hutcheson Lake contained rainbow trout and rainbow x greenback hybrids.

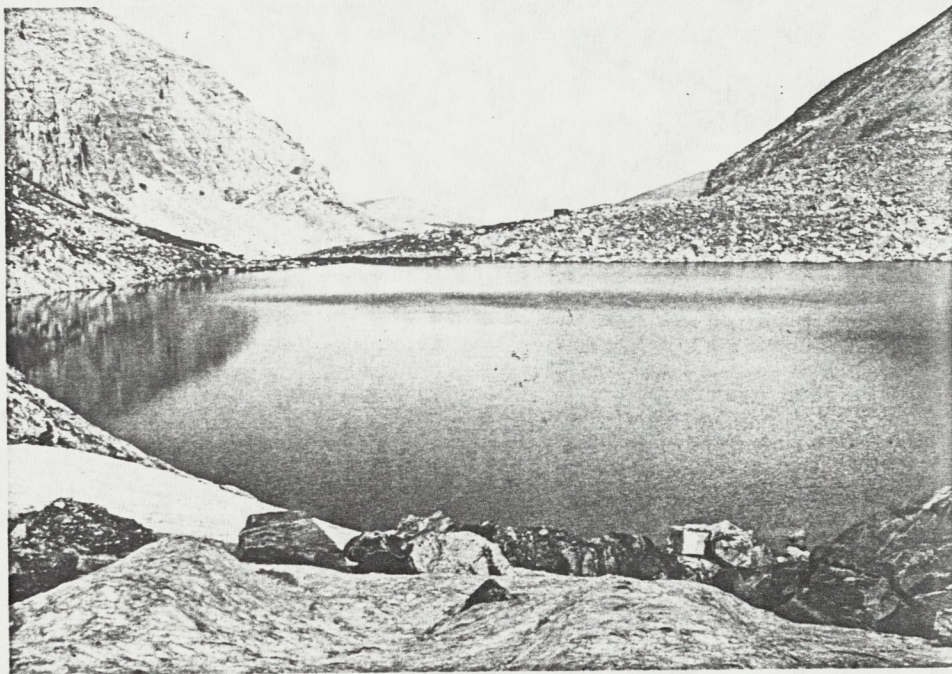
Based upon the findings of Dr. Behnke and the Greenback Cutthroat Trout Recovery Plan, it is proposed that rainbow trout be removed from Lower Hutcheson Lake downstream to a barrier just upstream from the junction of the outlet of Pear Reservoir and Coney Creek in 1987. Fish may also be removed from Mid Hutcheson Lake, if Dr. Behnke finds evidence of rainbow trout influence in this population. This action will result in all fish in the Hutcheson Lakes to be pure greenbacks, and make possible the future expansion of this project to include Pear Reservoir and all of Coney Creek upstream of Calypso Cascades.

Physical Data

Cony Lake (3,508m, 5.26ha)

The uppermost lake in the Cony Creek drainage is Cony Lake. This lake appears to be too cold to support fish life, with inlet water temperatures of 0C and outlet temperatures of 2C to 9C, Table 1. No inlet spawning habitat exists (snow bank), with good spawning substrate present in the outlet, but cold water temperatures inhibit any possible spawning activity. On 24 July 1986, ice partially covered this lake while lakes downstream were ice free. When observed 30 July 1981, the lake was slightly turbid.

No trail was found from Upper Hutcheson Lake to Cony Lake, with little evidence of visitor use at this lake.

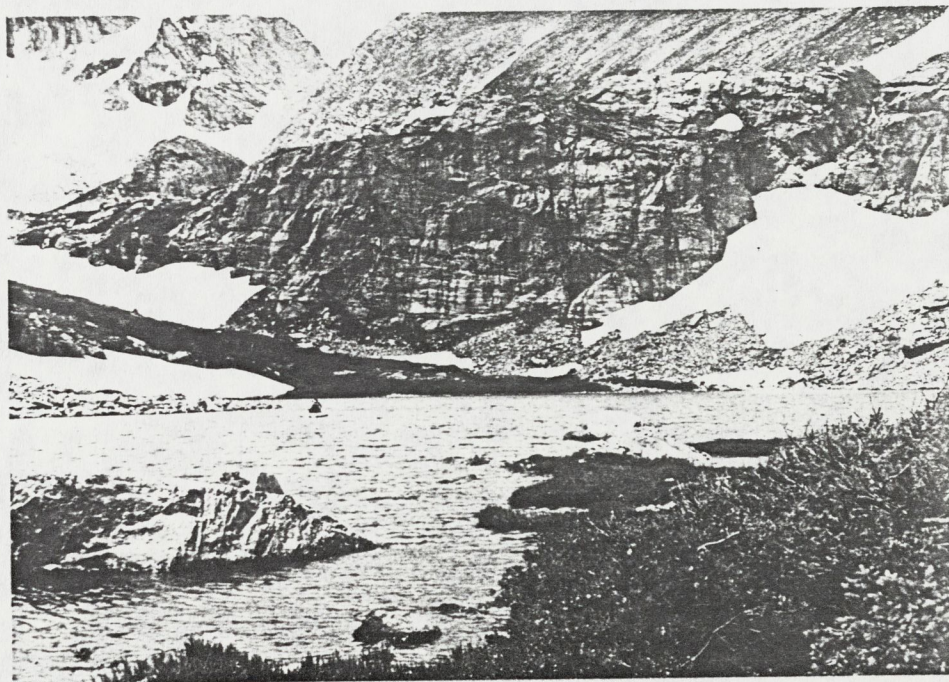


Cony Lake, RMNP, 29 July 1981

Upper Hutcheson Lake ( 3,404m, 2.95ha)

Upper Hutcheson Lake supports fish life although it lies above treeline. The Lake has an extensive littoral area near the outlet, with the depth of the lake not exceeding 4.3 m, Figure 2. Outlet water temperatures were observed as high as 10C, 29 July 1981, Table 1. Spawning habitat exists in the outlet, with fish observed spawning there in late July 1981 and 1986. This lake is very clear, but high winds during July 1986 prevented Secchi disk readings.

An old trail exists from Lower Hutcheson Lake to Upper Hutcheson Lake, and indicates some angler use in the past. However, little evidence of previous campsites remain.



Upper Hutcheson Lake, RMNP, 23 July 1986

Mid Hutcheson Lakes (3,362m, 1.01ha)

These two small lakes had outlet water temperatures observed to 12C from the lowest of these lakes, Table 1. The upper small pond does not exceed 1.5m in depth and the lower lake is up to 3.05m deep. Good spawning habitat exists between the two lakes, and in the inlet.

The old trail from Lower Hutcheson to Upper Hutcheson passes above this lake, with few signs of visitor use observed at these lakes.



Mid Hutcheson Lakes, RMNP, 29 July 1981

Lower Hutcheson Lake (3,299m, 1.74ha)

This lake is surrounded by conifers to the North and boulder fields to the South, and is accessible by trail from Pear Reservoir. This lake is the deepest of the Hutcheson Lakes, 6.7m, with the lake deepest along the southern boulder field, Figure 4. Littoral areas exist at the outlet, with no outlet spawning habitat available. Inlet spawning habitat is excellent, and is adjacent to the old campsites near the lake.

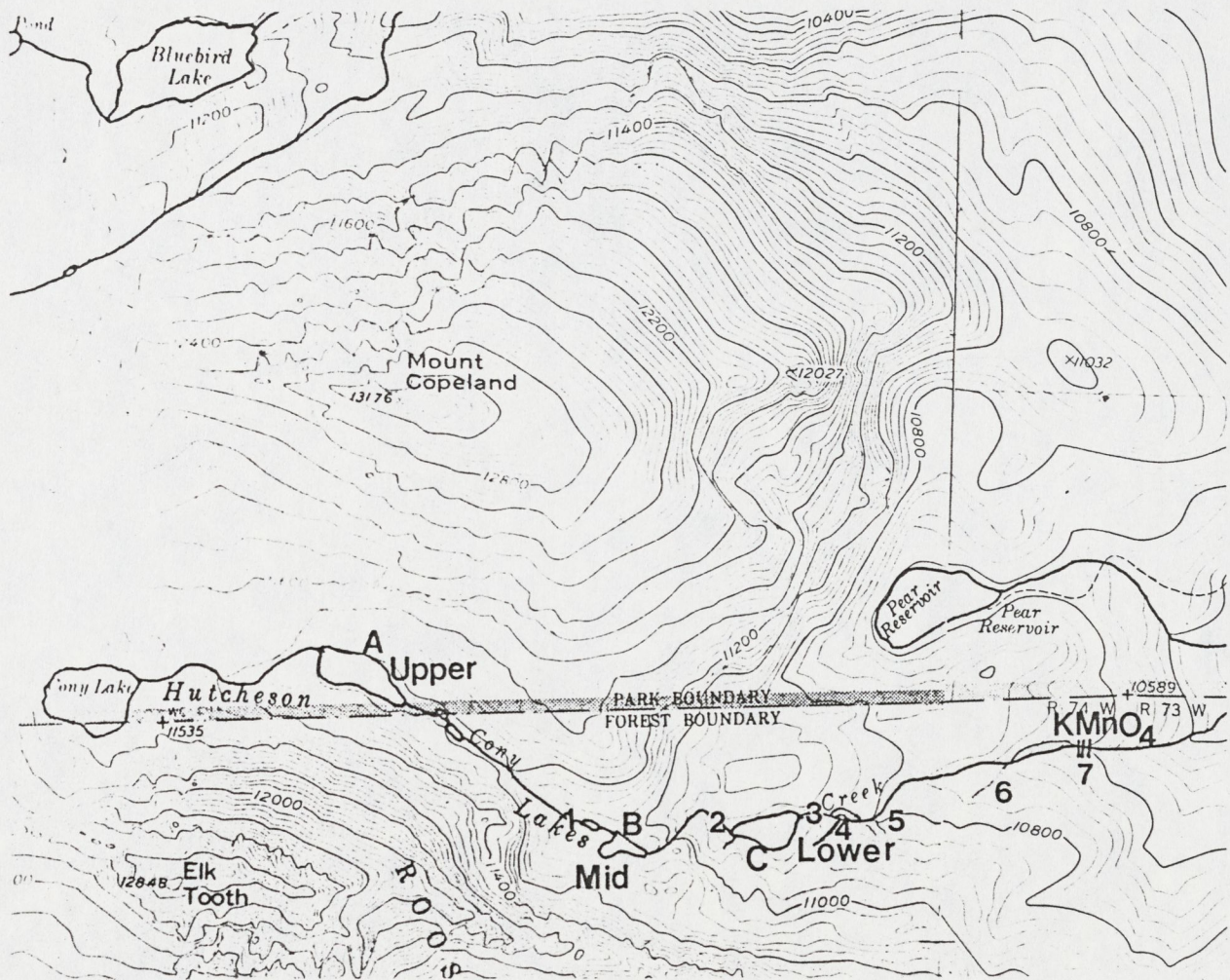
When observed in July 1981, the area had been heavily used by campers and fishermen with damage to the riparian vegetation evident. Since this lake was just outside RMNP, the area was used by persons desiring not to obtain a camping permit, and to have fires. Since 1981, camping has not been allowed without a RMNP permit, with campers directed to campsite away from the lake. By July 1986, the riparian habitat had shown obvious improvements, although impacts around the conifers growing near the lake are still evident.



Lower Hutcheson Lake, RMNP, 30 July 1981

## Cony Creek

Approximately 100 m below Lower Hutcheson Lake, Cony Creek divides into three branches, with an excellent barrier existing on the main branch. Near this barrier a small cold stream enters from the south. For approximately 0.5 k below Lower Hutcheson Lake, Cony Creek flows through a meadow area. Downstream of the meadow, the steepness of the canyon increases to form several excellent barriers near an elevation of 3,222 m (10,600'). Stream habitat near the junction with Pear Reservoir is excellent, and continues to be excellent to just below the junction with Finch Lake. Downstream from Finch Lake, the stream gradient increases, forming an excellent fish barrier existing at Calypso Cascades.





## STATUS OF FISH LIFE

Cony Lake. A gill net set for 17.5 hours 24 July 1986, caught no fish, as was found in 1963. Although adequate spawning habitat exists in the outlet, this lake is too cold to support fish life.

Upper Hutcheson Lake. This lake supports the largest population of pure greenback cutthroat trout known to exist within Colorado. On 23 July 1986, a gill net set for 2 hours across the outlet caught 57 greenbacks at the rate of 27 per hour, a significant increase over the 3.26 fish per hour caught 30 July 1981, using the same net, set in the same location. In addition to fish per net hour, kilograms of fish caught per net hour, and size of fish caught significantly increased, Table 2.



Greenback Cutthroat Trout, Upper Hutcheson Lake, RMNP. 1986

Mid Hutcheson Lake. The cutthroat trout population in this lake appears to be pure, with a beautiful 419 mm specimen caught in 1981, Table 2. However, this lake could have been stocked, with the decision to remove the present fish population to be based upon the findings of Dr. Behnke. Although this lake is close to Lower Hutcheson, the access is difficult, and could have discouraged frequent stocking.



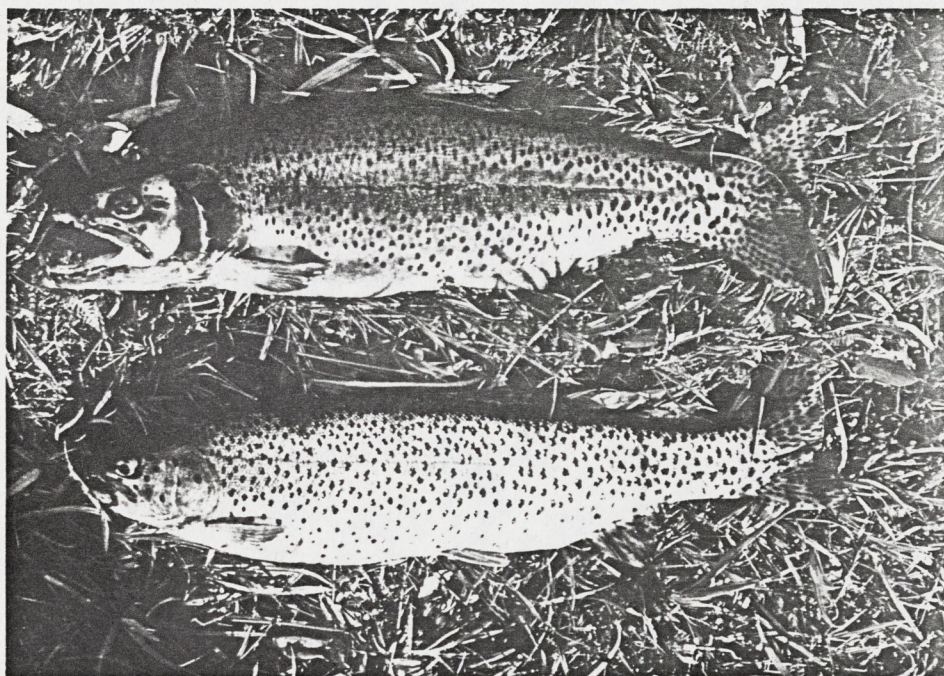
Greenback Cutthroat Trout (?), Mid Hutcheson Lake, RMNP. 1981

Lower Hutcheson Lake. This lake appears to have been heavily used by anglers prior to 1981. Apparently, the CDOW provided trout to a sportsmen club to stock the lake. When sampled in July 1981, the lake contained both rainbow trout and cutthroat trout, with no fish exceeding 279 mm.

Following the change in camper management and fishing regulations, the fish population in Lower Hutcheson dramatically changed. By July 1986, fish were present to 373 mm, with the average size of fish, fish/net hour and kilogram of fish/net

hour all increasing since 1981, Table 2. It is assumed that the increase in fish biomass in Lower Hutcheson and Upper Hutcheson is a direct result of less fishing pressure and RMNP fishing regulations that limits the use of bait, and the taking of cutthroat trout.

By 1986, most of the Lower Hutcheson fish appeared to be hybrids, with greenback spotting, rainbow scales and a mixture of colors of both species. Some hybrids were sterile, and one fish with a cancerous pyloric caecae and teste. As expected, sterile fish were fat and feeding, while fertile fish had stopped feeding prior to spawning.



Rainbow x Greenback Hybrids, Lower Hutcheson Lake, RMNP, 1986.

Coney Creek. Downstream from the junction of Pear Reservoir the influence of rainbow trout is very evident, with the fish being distinct rainbow x cutthroat hybrids. No brook trout are known to exist within the Coney Creek drainage. Pear Reservoir contains rainbow x greenback hybrids, and Finch Lake is barren. The stream to the east of Finch Lake is also barren.

Removal of Non-Native Fish From Coney Creek Upstream of 3,222 m (10,600') and From Lower Hutcheson Lake, RMNP.

At this time it is assumed that Mid Hutcheson Lake will be found to be pure greenbacks, requiring only the 1.74 ha Lower Hutcheson Lake and 1.2 km of Coney Creek to be treated. This action will result in 1.74 ha and 1.2 km of additional greenback habitat, and increase the amount of greenback habitat in the Hutcheson Lakes to 5.7 ha and 1.2 km of stream.

Chemical Application. Amount and concentration of antimycin to be applied to Lower Hutcheson, Coney Creek and Mid Hutcheson (if necessary), Table 3. The area should be treated in early September 1987. This will allow for minimum water flows, low visitor use, and the assurance that all hybrid fish spawned in 1987, will be hatched and susceptible to antimycin.

Time. It is proposed that the target area be treated 9 September 1987. Personnel could pack into the area on 8 September, treat the 9th, pickup fish the 10th and depart by the 11th.

Detoxification of Antimycin. In an attempt to neutralize the antimycin, potassium permanganate at 1.0 mg/l will be applied to Coney Creek just upstream from the junction of Pear Reservoir. Downstream impacts should be very minimal due to aeration and dilution from Pear Reservoir, Finch Lake and the North St. Vrain. The major impact will be having Calypso Cascades red on 9 September.

Safety and Public Relations. Antimycin is an antibiotic that is EPA registered as a chemical for the irradiation of fish. All handling precautions should be followed, Figure 5.

It is very important that no soft contact eye lens be worn by anyone handling or applying antimycin. These lens absorb antimycin fumes and hold them against the eyes causing extreme eye irritation.

To prevent adverse public relations due to the planned fish kill and presence of antimycin in Lower Hutcheson Lake, Lower Hutcheson Lake and any Coney Creek campsites should be closed to camping after 7 September 1987. Trails should be signed to prevent day users from drinking the water and using the area.

Introducing Greenback Cutthroat Trout into Lower Hutcheson Lake and Coney Creek.

Following the removal of non-native fish in 1987, the area will be monitored for success. If no non-native fish are found, pure greenback cutthroat trout from the Fish and Wildlife Service

captive broodstock, and from Upper Hutcheson Lake should be stocked here by September 1988. The mixing of these two stocks will increase the heterozygosity of the population.

Greenbacks should be large enough to fish for in Lower Hutcheson Lake by 1992 to 1993.

#### Personnel and Equipment

Personnel. Sixteen people will be required to treat the area, if Mid Hutcheson is treated. If Mid Hutcheson does not have to be treated only 12 people will be required from 8 September to 11 September. In addition to personnel required to run the chemical stations, personnel are required for communications and handling unforeseen problems. Personnel should be available to answer such questions as to why the fish are dying and why Calypso Cascades are red ?.

The FWS can provide up to three people for four days.

Personnel should be prepared to stay a minimum of four days to apply antimycin and remove dead fish.

8 September 1987

1. Pack into area.
2. Set up treatment stations.

9 September 1987

1. Treat Lakes and Cony Creek downstream to barrier.

10 September 1987

1. Pick up fish
2. Pack up equipment

11 September 1987

1. Pack out.

#### Equipment

Major equipment needed for this project, Table 4.

Table 1. Temperature elevation and flow, (CFS), Hutcheson Lakes and Coney Creek RMNP. 1980, 1986.

Location	Date	Elevation	Temp.	CFS Flow	Time
Coney Inlet	7-29-81	11,512	32		1500
Coney Outlet	7-20-81	11,512	48	6.0	1500
Coney Outlet	7-30-81	11,512	44		0700
Coney Outlet	7-24-86	11,512	37		0930
Upper Hutch. Outlet	7-29-81	11,200	50		1400
Upper Hutch. Outlet	7-30-81	11,200	48		0800
Upper Hutch. Inlet	7-23-86	11,200	37		1200
Upper Hutch. Outlet	7-23-86	11,200	43		1200
Mid Hutch. Outlet	7-29-81	11,060	54		1430
Mid Hutch. Outlet	7-30-81	11,060	51		1130
Mid Hutch. Outlet	7-23-86	11,060	45	23.1	1630
Mid Hutch. Outlet	8-26-86	11,060	49		0830
Low Hutch. Outlet	7-29-81	10,852	54		1130
Low Hutch. Inlet	7-20-81	10,852	55		1200
Low Hutch. Inlet	7-30-81	10,852	56		1330
Low Hutch. Outlet	7-23-86	10,852	47		1800
Low Hutch. Inlet	7-23-86	10,852	48		180
Low Hutch. Inlet	7-24-86	10,852	39	17.0	0800
Low Hutch. Outlet	7-25-86	10,852	43		0930
Low Hutch. Inlet	8-25-86	10,852	48	4.3	1500
Low Hutch. Outlet	8-25-86	10,852		6.0	
Pear Outlet	7-25-86	10,260	48	2.2	1100
Pear Outlet	8-26-86	10,260	57	1.2	1215
Coney Creek	7-25-86	10,260	47	18.9	1100
Coney Creek	8-26-86	9,900	50	9.2	1330

\* Chip method - all other flow measurements with flow meter.

Table 2. Summary of Gill Net Captures Using the Same Nets Set in the Same Locations, Hutcheson Lakes, RMNP. 1981, 1986

Lake	Date	Species	Ave ln mm	Range mm	Fish/Net Hour	Kg/Net Hour
Cony	7-24-86	0			0	0
Up. Hut.	7-30-81	Cutt-gb	236.4	178-320	3.26	0.50
Up. Hut	7-23-86	Cutt-gb	255.1	205-330	27.00	4.58
Mid Hut	7-30-81	Cutt-gb	296.0	216-419	0.43	0.16
Lo. Hut	7-30-81	Rbt	248	209-260	0.25	0.05
Lo. Hut	7-30-81	Cutt	215	178-279	0.25	0.03
Lo. Hut	7-23-86	CuttXRbt	266	161-373	1.57	0.40

Table 3. Locations and Amount of Antimycin Required for Hutcheson Lake Restoration Project, RMNP. 1987.

Lakes	S.A.	ACF	ug/l Ant	Total mls Antimycin	Number People
Mid Hutcheson (a)*	0.5	2.0	8.0 ug/l	196	2
Mid Hutcheson (b)*	2.0	14.0	8.0 ug/l	672	2
Lower Hutcheson*	4.3	22.0	4.0 ug/l	3,072	2
Streams	CFS	ACF	ug/l Ant & Duration	Total mls Antimycin	Number People
Inlet Mid Hutch. 1*	5.6	3.7	4.0/8H	177	1
Inlet Low Hutch. 2* (two inlets)	5.6	3.7	4.0/8H	177	1
Out. Low Hutch. 3*	10.0	6.6	8.0/8H	634	1
Side Stream 4*	<1			60	1
Seeps (2) 5*	<.5			20	1
Seep (1) 6*	<.5			20	1
Spray Backwaters				100	2

Neutralization

	CFS	ACF	mg/l KMnO4	Kilos	People
KMnO4	7* 10.0	6.6	1mg/l/10H	8.1	1

TOTALS

With Mid Hutcheson, 11 units of Anitmycin and 15 people.

Without Mid Hutcheson, 9 units of Anitmycin and 11 people

\*Location of sites, Figure 1.



Table 4. Equipment and Chemicals for the Hutcheson Lakes Restoration Project. 1987.

Item	Amount	Agency
Antimycin	11 units	NPS
Potassium permanganate	10 kilo	NPS
Inflatable boat	1	FWS
Boat motor	1	FWS
Antimycin pump	1	FWS
Antimycin drip stations	6	FWS
Potassium drip station	1	FWS
Block Nets	4	FWS
Marking dye	1 pound	FWS
Backpack pumps	3	NPS
Radios	4	NPS/FWS
Dip net	8	FWS

Figure 1. Location of Antimycin Sites, Hutcheson Lakes Restoration Project, RMNP. 1987

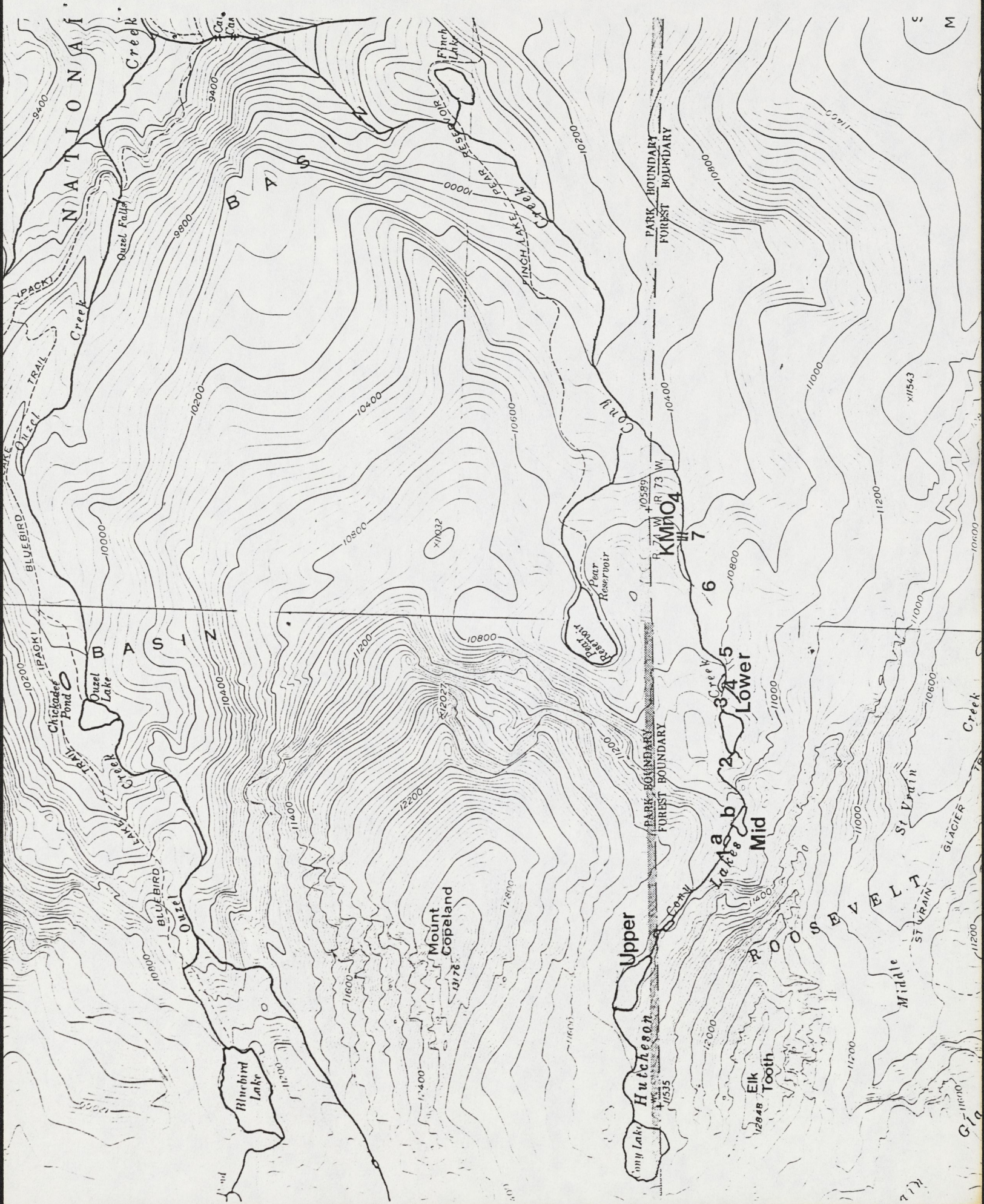


Figure 2. Sonar Transects, Upper Hutcheson Lake, RMNP. July 1986.

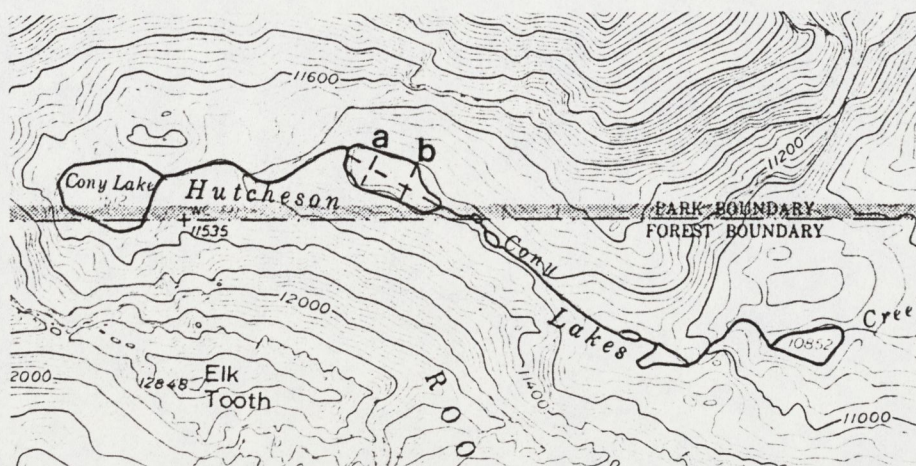
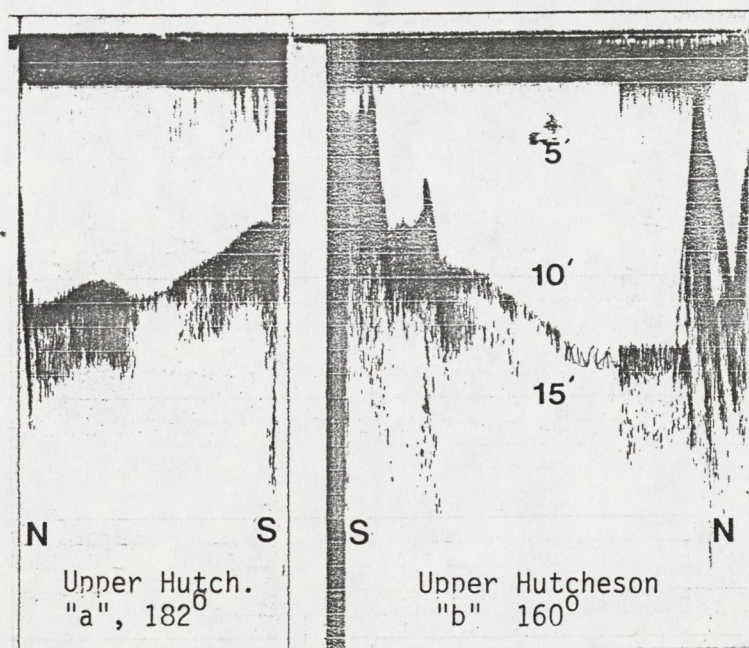
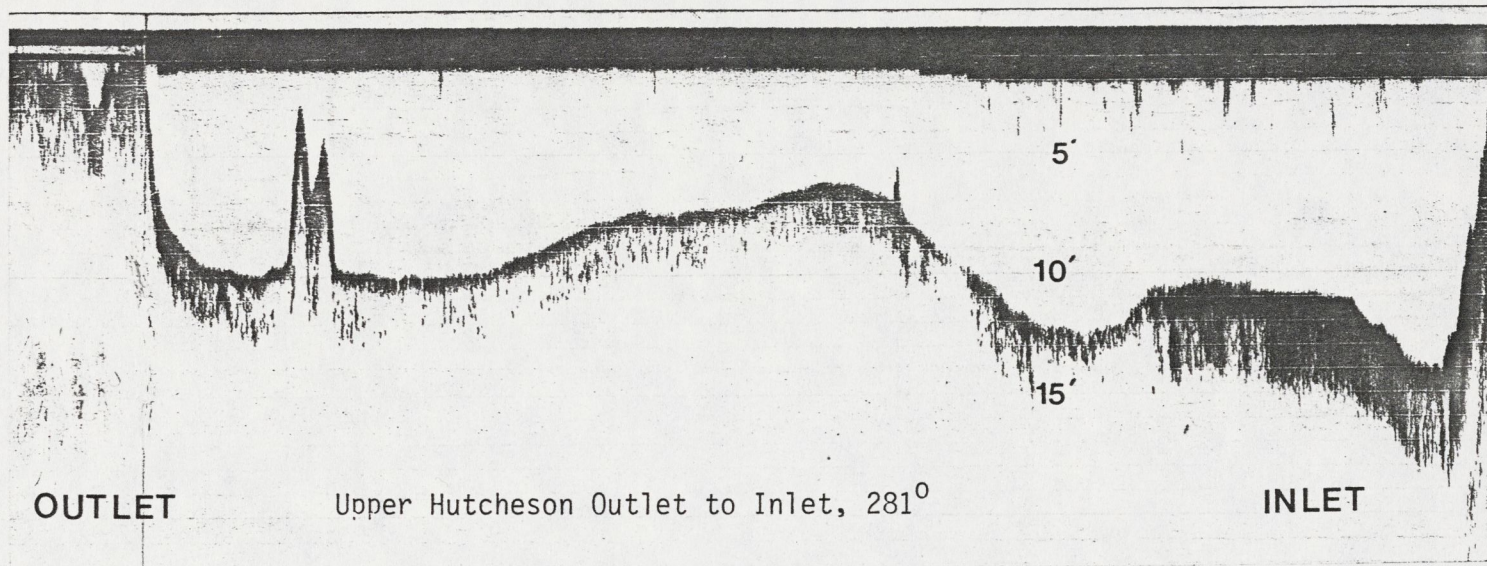


Figure 3. Sonar Transects, Mid Hutcheson Lake, RMNP. July 1986

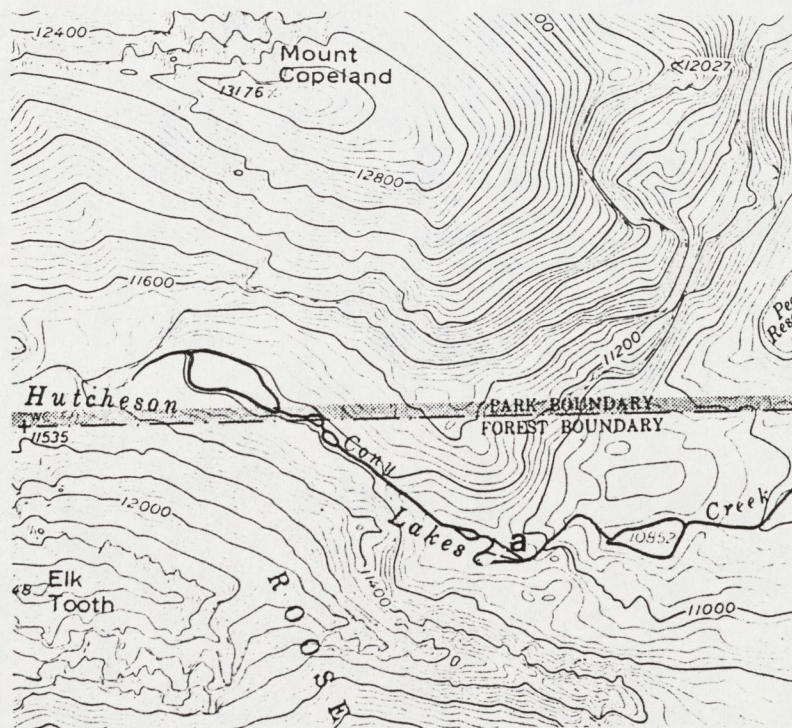
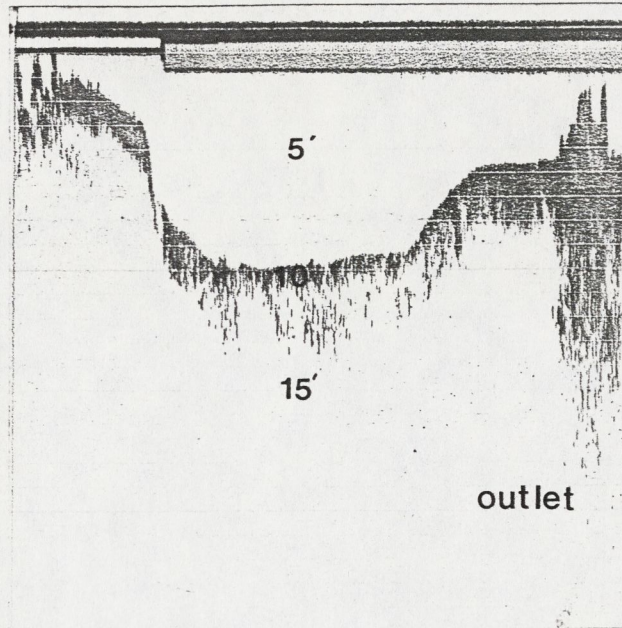


Figure 4. Sonar Transects, Lower Hutcheson Lake, RMNP. July 1986

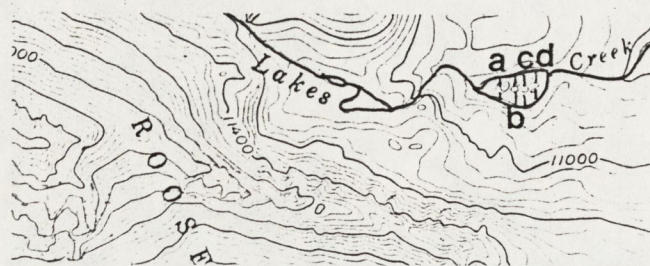
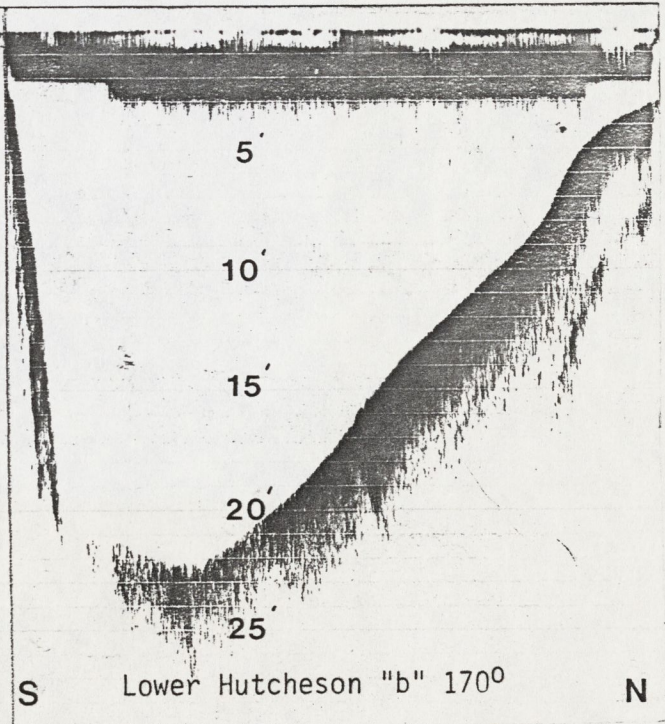
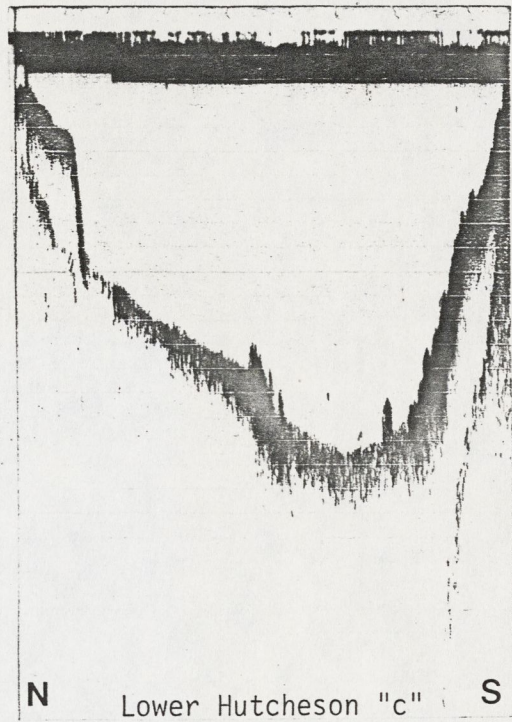
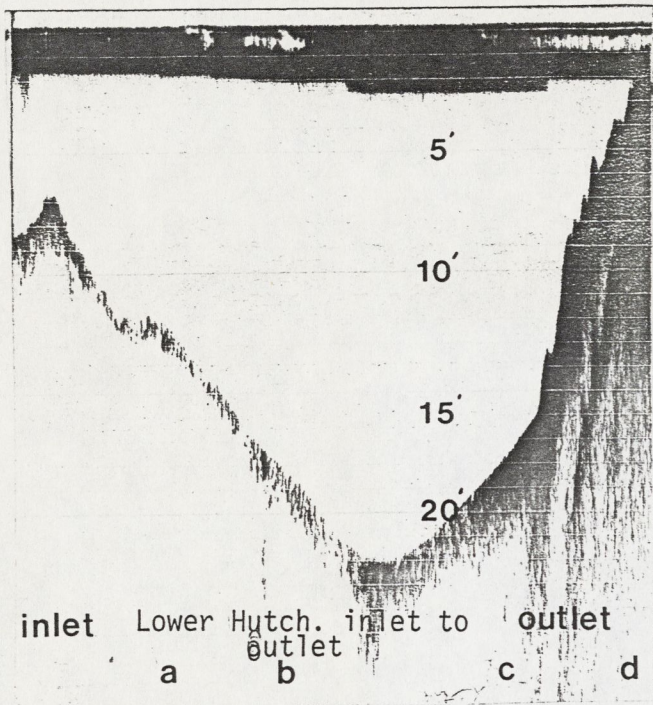


Figure 5. Precautions for the Use of Anitimycin

#### METHODS OF APPLICATION

**IMPORTANT:** DURING APPLICATION OF FINTROL, ALL PERSONS IN THE IMMEDIATE VICINITY SHOULD WEAR PROTECTIVE GOGGLES AND PROTECTIVE GLOVES.

Liquid formulation: Directions for mixing: Add the Diluent [blue label] to the FINTROL-CONCENTRATE (solution 20%) [green label] in the oversize mixing container. Cap tightly and invert 2 to 3 times to mix thoroughly. Further dilute with AT LEAST five (5) gallons of water to insure that the acetone contained in FINTROL-CONCENTRATE will not affect rubber parts on any equipment that might be used to apply it. After water has been added, apply within eight (8) hours. [Note: The solution obtained by mixing the Diluent with FINTROL-CONCENTRATE (solution 20%) retains potency for up to seven (7) days. But once water has been added to this solution, it must be used within eight (8) hours to ensure potency.]

After appropriate dilution with water, the liquid formulation of FINTROL can be applied to lakes and ponds by the boat bailer method or spray equipment. Spray methods are useful at depths to one foot. Boat bailer and drip tubes when applied at the propeller wash are useful at depths to 3 feet. Pinpoint applications to shoal areas and small, isolated ponds can readily be made with back-pack sprayers. (See CAUTION on use of PROTECTIVE GOGGLES AND PROTECTIVE GLOVES.)

In streams, FINTROL-CONCENTRATE is most often applied through drip stations established to meter the toxicant at a precalculated rate. Information on the use of such equipment may be obtained from state and/or federal agencies, experienced in stream treatment.

It is recommended that all applications of FINTROL be made at day-break or as soon as there is enough light to work by.

#### PRECAUTIONS

USE PROTECTIVE GOGGLES AND PROTECTIVE GLOVES at all times when mixing, handling, or applying FINTROL. Any contact of FINTROL with the eyes can cause *intense pain and irritation* immediately or within several hours following contact. Avoid contact of FINTROL with skin. If any contact occurs with eyes or skin, flush repeatedly with water immediately. Consult physician if discomfort occurs. FINTROL-CONCENTRATE contains acetone. If swallowed, give 2 to 4 glasses of water to dilute acetone, induce vomiting, and consult physician. Should inhalation of the vapors of FINTROL-CONCENTRATE cause nausea, fresh air will dispel it.

FINTROL may be fatal or harmful if swallowed.

Keep FINTROL out of reach of children, pets, livestock, and wildlife. Thoroughly rinse all containers prior to disposal. Pending the conclusion of studies now in progress, fish killed with antimycin A should not be consumed by man or animals. Treated waters must not be used for drinking by man or animals, or for crop irrigation, until fingerling rainbow trout or fingerling bluegills survive 48 hours' exposure in livecars in the treated waters.

Leftover portions of diluted liquid formulation retain potency for up to seven (7) days. But once water has been added to FINTROL-CONCENTRATE, it must be used within eight (8) hours to ensure potency.

Due to its acetone component, FINTROL-CONCENTRATE is flammable: keep away from heat and flame.

#### HOW TO DETERMINE WHEN TREATED WATER MAY BE RESTOCKED

Since antimycin A degrades rapidly following application, waters can usually be restocked about one week following treatment with FINTROL. Place livecars containing a sensitive species of fish in the treated water. It is recommended that these fish be fingerling rainbow trout or fingerling bluegills if the water temperature is between 35° and 68°F. When the water temperature exceeds 68°F, only fingerling bluegills should be used. If the fish survive for 48 hours, the water may be restocked.

#### HOW TO DETOXYIFY FINTROL WITH POTASSIUM PERMANGANATE (KMnO<sub>4</sub>)

If it should be necessary to detoxify FINTROL in the outflow of a pond to prevent killing fish downstream, apply potassium permanganate (KMnO<sub>4</sub>) at 1 part per million (1 p.p.m.) to the outflow. Drip systems of hose-and-clamp or carburetor types can be employed to continuously dispense a solution of potassium permanganate into the water at the discharge outlet.

To evaluate the effectiveness of the detoxification process, place livecars containing fingerling rainbow trout or fingerling bluegills approximately 100 yards downstream from the site of KMnO<sub>4</sub> introduction. The water is considered detoxified if the fish survive for at least 48 hours in the livecar.

To detoxify FINTROL-treated streams, apply KMnO<sub>4</sub> at 1 p.p.m. at detoxification stations. Continue the application of KMnO<sub>4</sub> until all FINTROL-treated water has passed the station. The water may be considered detoxified when fingerling rainbow trout or fingerling bluegills survive for at least 48 hours in livecars placed 100 yards downstream from the site of potassium permanganate (KMnO<sub>4</sub>) introduction.

**Special instructions:** Prior to the use of a fish toxicant in either public or private waters, the Director of the State Fish and Game Department or Conservation Department must be contacted to determine whether a permit is required. Such products must be used by or under the technical supervision of personnel of state and federal fish and game agencies, trained in fisheries management, who will provide any special instructions applicable to the particular geographical area.

**ORDER FOR SUPPLIES OR SERVICES**

**IMPORTANT: Mark all packages and papers with contract and/or order numbers.**

1. DATE OF ORDER <b>8-11-86</b>	2. CONTRACT NO. (If any)	3. ORDER NO. <b>653208600307</b>	4. REQUISITION/REFERENCE NO.
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5. ISSUING OFFICE (Address correspondence to) <b>U.S. FISH AND WILDLIFE SERVICE Colo. Fish &amp; Wildlife Assistance 730 Simms Street #292 Golden, CO 80401</b>	6. SHIP TO: (Consignee and address, ZIP Code) <b>same as #5</b>  SHIP VIA:
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7. TO: CONTRACTOR (Name, address and ZIP Code) <b>Dr. Behnke - Colo. Coop Wildlife Research Unit Colo. State University 201 Wagar Building Fort Collins, CO 80523</b>	8. TYPE OF ORDER <input type="checkbox"/> A. PURCHASE — Reference your _____  Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheets, if any, including delivery as indicated. This purchase is negotiated under authority of:  <input type="checkbox"/> B. DELIVERY — Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.
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*Completed sent Oct. 22*

9. ACCOUNTING AND APPROPRIATION DATA <b>65320 1937 0360 23</b>	10. REQUISITIONING OFFICE
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9a. OBJECT CLASS	11. BUSINESS CLASSIFICATION (Check appropriate box(es)) <input type="checkbox"/> SMALL <input type="checkbox"/> OTHER THAN SMALL <input type="checkbox"/> DISADVANTAGED 8(a) <input type="checkbox"/> MINORITY <input type="checkbox"/> WOMEN OWNED <input type="checkbox"/> LABOR SURPLUS <input type="checkbox"/> INTER-AGENCY
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12. F.O.B. POINT <b>origin</b>	14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date)	16. DISCOUNT TERMS
13. PLACE OF INSPECTION AND ACCEPTANCE			

**17. SCHEDULE (See reverse for Rejections)**

ITEM NO. (A)	SUPPLIES OR SERVICES (B)	QUANTITY ORDERED (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)	QUANTITY ACCEPTED (G)
1.	Morpho-metric examination of cutthroat trout from Hutchison Lake				750.00	

SEE BILLING INSTRUCTIONS ON REVERSE	18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	17(H). TOT (Cont. pages)
	21. MAIL INVOICE IN TRIPLICATE TO: (Include ZIP Code) <b>same as #5</b>			17(I). GRAND TOTAL <b>750.00</b>

22. UNITED STATES OF AMERICA BY (Signature) 	23. NAME & WARRANT NUMBER (Typed) <b>Bruce D. Rosenlund, Project Leader CWO 6-81-183</b> TITLE: CONTRACTING/ORDERING OFFICER
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**ORIGINAL**

**PURCHASE ORDER TERMS AND CONDITIONS**

52.252-2. CLAUSES INCORPORATED BY REFERENCE (Apr 84).—This contract incorporates the following clauses by reference with the same force and effect as if they were given in full text. Upon request the Contracting Officer will make their full text available.

- 52.222-26 Equal Opportunity (Apr 84)
- 52.222-36 Affirmative Action for Handicapped Workers (Apr 84)
- 52.222-40 Service Contract Act of 1965—Contracts of \$2500 or Less (Apr 84)
- 52.222-41 Service Contract Act of 1965 (Apr 84)
- 52.225-3 Buy American Act—Supplies (Apr 84)
- 52.232-1 Payments (Apr 84)
- 52.232-8 Discounts for Prompt Payment (Apr 84)
- 52.233-1 Disputes (Apr 84) (With Alternate 1)
- 52.243-1 Changes — Fixed Price (Apr 84)
- 52.249-1 Termination for Convenience of the Government (Fixed Price) (Short Form) (Apr 84)

**FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1) CLAUSES**

- 52.203-1 Officials Not to Benefit (Apr 84)
- 52.203-3 Gratuities (Apr 84)
- 52.203-5 Covenant Against Contingent Fees (Apr 84)
- 52.212-9 Variation in Quantity (Apr 84) (In the preceding clause, the permissible variations are stated in the schedule)
- 52.222-3 Convict Labor (Apr 84)
- 52.222-4 Contract Work Hours and Safety Standards Act—Overtime Compensation—General (Apr 84)

NOTE.—If desired, this order (or a copy thereof) may be used by the Contractor as the Contractor's invoice, instead of a separate invoice, provided the following statement, (signed and dated) is on (or attached to) the order: "Payment is requested in the amount of \$ \_\_\_\_\_. No other invoice will be submitted." However, if the Contractor wishes to submit an invoice, the following information must be provided: contract number (if any), order number, item number(s), description of supplies or services, sizes, quantities, unit prices, and extended totals. Prepaid shipping costs will be indicated as a separate item on the invoice. Where shipping costs exceed \$100 (except for parcel post), the billing must be supported by a bill of lading or receipt. When several orders are invoiced to an ordering activity during the same billing period, consolidated periodic billings are encouraged.

**RECEIVING REPORT**

Quantity in the "Quantity Accepted" column on the face of this order has been:  inspected,  accepted,  received by me and conforms to contract. Items listed below have been rejected for the reasons indicated.

SHIPMENT NUMBER	PARTIAL		DATE RECEIVED	SIGNATURE OF AUTHORIZED U.S. GOV'T. REP.	DATE
	FINAL				
TOTAL CONTAINERS		GROSS WEIGHT	RECEIVED AT	TITLE	

**REPORT OF REJECTIONS**

ITEM NO.	SUPPLIES OR SERVICES	UNIT	QUANTITY REJECTED	REASON FOR REJECTION

**REPORT OF NONCONFORMING ITEMS ACCEPTED**

ITEM NO.	SUPPLIES OR SERVICES	UNIT	QUANTITY ACCEPTED	NONCONFORMITY AND REASON FOR ACCEPTANCE





DEPARTMENT OF FISHERY AND WILDLIFE BIOLOGY

MEMORANDUM

16 October

TO: Dept. Faculty, Student Representatives  
FROM: Search Committee, Avian ecologist position *J. Bailey*  
RE: Your review of candidates  
Our recommendations  
Proposed schedule to arrange visits and interviews

This position is very important to the future of our department. We need someone who will teach wildlife techniques and will develop courses and research in avian biology. Please give our deliberations very serious attention.

I. We have files on 26 applicants. These are available in room 135. Please look at any of these that interest you. A general summary of candidates' names and backgrounds is at the front of the file.

II. The Search Committee recommends that you review, in particular, 5 applicants. These appear to be especially good candidates. The 5, in alphabetical order only, are:

James Bednarz  
Paul DuBow  
Richard Knight  
William McComb  
Michael Morrison

III. At a department meeting on October 28, we hope to discuss the candidates and select at least two for interviews. If there are no unexpected events, we might have visits and interviews during November, and make an offer in December.

48-57

~~8~~ -4  
-7  
-11

52

+10  
+14  
+24  
+3

+13

16

418 | 130  
128

-4  
+3

+5  
+1  
+5

194-214 (206.2)

+6  
-11  
-1  
-4  
-22

205 +3  
+8  
+7  
+5  
+23

+1

-2  
-4  
-1  
7

+4  
+9  
+9 +26  
+4 +19

1.2  
16 | 20  
16  
40



19    20    21    22    23    24    25    26    27    28  
 251    215    262    260    201    238    244    196    220    242

$\frac{8}{13}$	$\frac{7}{14}$	$\frac{8}{13}$	$\frac{7}{13}$	$\frac{8}{14}$	$\frac{9}{19}$	$\frac{8}{14}$	$\frac{7}{14}$	$\frac{7}{14}$	$\frac{7}{14}$
$\frac{21}{21}$	$\frac{21}{21}$	$\frac{21}{21}$	$\frac{20}{20}$	$\frac{22}{22}$	$\frac{18}{18}$	$\frac{22}{22}$	$\frac{21}{21}$	$\frac{21}{21}$	$\frac{21}{21}$
13	5	11	12	<del>8</del>	7	9	11	10	7



↳ diet varied (unusual for 11, 20, 21, 1212)

↳ fat on czecc - well fed, good condition

- Spurred l. insect, some terrestrial (ants) or aquatic



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
COLORADO FIELD OFFICE  
730 SIMMS STREET  
ROOM 292  
GOLDEN, COLORADO 80401

IN REPLY REFER TO:

August 4, 1986

Dr. Behnke  
Colorado State University  
Colo. Coop. Wildlife Research Unit  
201 Wagar Building  
Fort Collins, CO 80523

Dear Dr. Behnke:

Could you please look at these cutthroats taken from Upper Hutcheson Lake, Rocky Mountain National Park, Figure 1. As you can see from the map, Hutcheson Lake is within the No. St. Vrain drainage and not too far from Hunters Creek.

The lakes and stream below Hutcheson contain obvious rainbow x greenback hybrids. The hybrids have greenback spots and colors, but rainbow scales.

We had originally planned to remove all fish from the "three" Hutcheson Lakes, and restock them with greenbacks. However, the fish from the upper lake look so good we wanted your opinion on them prior to their possible removal. When caught, the fish had excellent greenback colors, but due to a broken bag in shipment, have lost their colors.

Sincerely,

*Bruce D. Rosenlund*

Bruce D. Rosenlund  
Project Leader

rakers - 22-23 post  
" 21 10-12

- spots  
- coloration

- coeco - 30-35  
scal 50-55  
195-200





-Please Post-

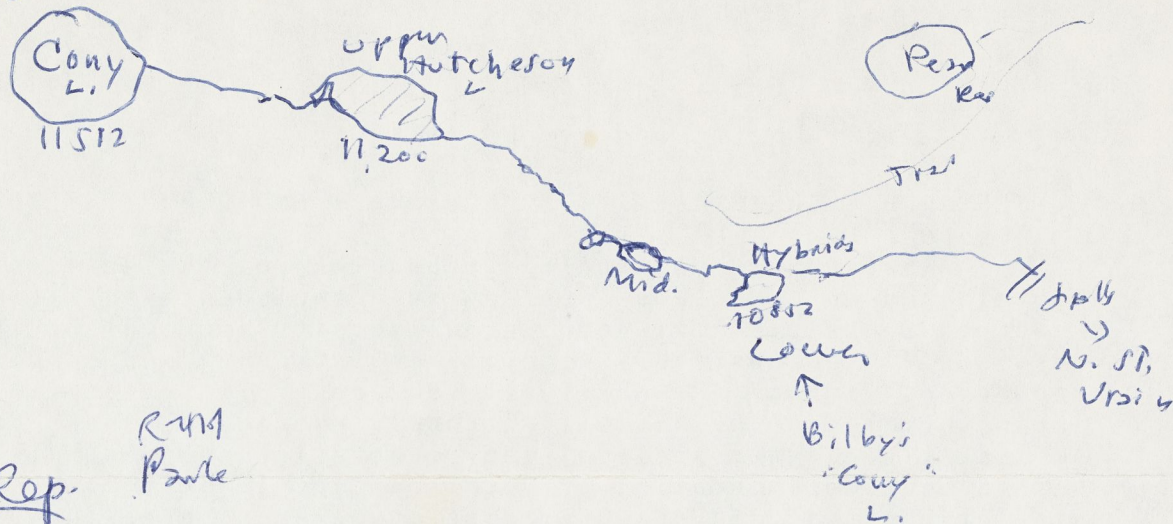
---POSITION AVAILABLE---

RESEARCH TECHNICIAN III: EVOLUTIONARY AND COMMUNITY ECOLOGY

The Savannah River Ecology Laboratory of the University of Georgia has an immediate opening for a permanent, full-time Research Technician III (pending university approval of the position) in a laboratory studying evolutionary and community ecology of fishes. Responsibilities are a mixture of field and laboratory research, but will strongly emphasize laboratory skills. The latter include electrophoretic analyses, aid in design and implementation of detailed experiments, collection and statistical analysis of data, dissection and processing of field samples, and some independent research. Actual experience in specific skills mentioned is less important than demonstrated competence in general scientific work. The successful candidate must be an independent, dependable researcher with strong organizational capabilities and able to devote attention to details of experimental protocol. Preferred qualifications include a Master's Degree in biology/ ecology/ evolution and some experience as a technician; exceptional candidates with Bachelor's Degrees and experience will be considered. Salary up to \$19,000, pending university approval. Submit an introductory letter, curriculum vitae, and names, addresses, and telephone numbers of three professional references before 21 November 1986 to:

Dr. Gary Meffe  
Savannah River Ecology Laboratory  
Drawer E  
Aiken, South Carolina 29801  
(803) 725-2472

barren (too cold)



Rep. Park R.M.

Hutcheson Lakes Surveyed Aug. 16, 1965

class II - stock

Rec. 3,500 2-3" cuts

- stock every 3rd YC

begin 1965 =

1964 stocked 3000 cuts  
1-2 in.

1962 - 1200 1-2" cuts

perhaps  
due to  
only name  
confirm  
stocking

Upper L.  
never stocked

Hutcheson Lakes - Surveyed August 16, 1963.

The Hutcheson Lakes are four lakes distributed along the upper section of Cony Creek on benches of land at lower elevations than Cony Lake. The waters for Cony Creek start at Cony Lake and flow through the Hutcheson Lakes. The uppermost lake is at an elevation of 11,200 feet, while the lowest lake is at 10,852 feet. The upper lake is the largest one and the only one in the park. The other three lakes are smaller and located outside the park in the Roosevelt National Forest. The two middle lakes probably support a transient population of cutthroat trout that are moving downstream from the largest <sup>upper</sup> lake. The fourth lake in the chain is capable and does support a reproducing population of trout. The survey was conducted on the upper lake only, but any observations and recommendations on it very aptly apply to the lowest lake, too.

The lake is located on a broad bench which provides for a gradual and flat shoreline. Two-thirds of the shoreline is gradual boulder fields. The remainder is flat and vegetated. The soil is stable and supports a good growth of grasses and willows. The lake has a substantial inflow of water through its one inlet from Cony Lake. It has one outlet. It is a fairly deep lake with the greatest depth along the south shore. The north shore has extensive shoals. There is some sand and gravel along all the shoreline. Some spawning facilities are also available at the inlet and in the inlet stream.

The water contained some moss and Fontinalis. An abundance of fish feed was visible and included caddisflies, mayflies, stoneflies, and terrestrial insects. These same organisms plus diptera larvae and shrimp were taken from the stomachs of fish that were caught. A gill net was set across a small bay at 10:30 a.m. and retrieved at 2:30 p.m. It captured six cutthroats. Two other trout were caught by rod and reel. All the trout were in a gradual size sequence from 8 to 12 inches and gave evidence of being in the same age class. The fish were in good condition and had fat surrounding the visceral organs. There were three females and five males.

Though adequate spawning area appears available and an ample food supply is present, the sampled fish population indicates that it is not perpetuating itself as it could. The number and size of fish present should encourage the more ambitious fishermen.

Management recommendations: Classify and manage as a Number II to attract fishermen and make maximum use of the lake's potential. This attention to the highest lake will contribute to the potential of the lower lakes in the chain.

D. Wayne Linn  
August 16, 1963

~~the~~ There were two age classes - 2+ and 3+ years - Recommend introduction of trout to fill the 1+ age class. From fish taken it appears that the reproduction has diminished or stopped. Average growth per year - 4 inches.  
Bob T. (over)

Recommend 3,500 2-3" cutthroat  
trout to be stocked every third year.

Stocking should be started in  
1965. There has been no previous stocking  
recommendations for this lake.

Stocked  $\bar{c}$  <sup>3000</sup> <sub>1</sub> cutthroat <sup>1-2"</sup> 1964. (Requested 3000 2-3")

Stocked  $\bar{c}$  1200 cutth 1-2" 1952

Cony Lake - Surveyed August 16, 1963.

Cony Lake represents a typical glacial cirque lake at an elevation of 11,512 feet. The lake is surrounded by gradual to steep solid rock and boulder fields. Only at the outlet end is there some flatness and vegetation. Vegetation elsewhere and in the water is lacking. The water is cold and greenish-blue in color. There is a fair amount of snow yet to melt and flow into this lake.

Some quiet shallow areas of water are present in among the boulders and on one side of the outlet. These locations had numerous terrestrial insects floating on the water surface. Such a food supply would certainly attract and support small fish, but none were seen. The quiet water near the outlet had a silt and sand bottom and many caddisfly larvae. Spawning sites are absent. The cold water, short growing season, and lack of spawning facilities would suggest an absence of fish.

Management recommendations: Classify and manage as a Number I.

D. Wayne Linn  
August 16, 1963