A Fisheries and Wildlife Survey

of the

Burnie Lakes Park Proposal

Survey undertaken on: August 22-30, 1975

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Parks Branch, Department of Recreation and Conservation
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Acknowledgement

We would like to thank the Fish and Wildlife Branch, Smithers for information on the Burnie Lakes streams and the generous cooperation of the Regional Fisheries Biologist in assigning staff to assist Parks Branch personnel.

Introduction

It is proposed that a provincial park be declared in an area centred on the Burnie Lakes south of Smithers. The area includes the eastern ramparts of the Coast Range which drop dramatically to the narrow trench containing the Burnie Lakes, the gently profiled rolling alplands to the east of these lakes and forested plateau land to the southeast.

At present the area is accessible only by float plane other than by arduous overland hiking. Development is limited to a group of unworked mining claims to the northeast and at present use is confined almost exclusively to hunting.

Time did not allow an inventory of the whole park proposal but representative areas were visited between August 22 and 30, 1975. North Burnie, South Burnie and Kluck Lakes and their tributaries were surveyed for fisheries values while wildlife values were looked at around Kluck Lake, over the rolling alpine to the east of Burnie Lakes, and in the area surrounding these lakes.

MAP 1

Scale - 1: 250,000 (1 inch = 4 miles)

Symbols for Wildlife Sightings:

B - Beaver

C - Caribou

D - Deer

Ma - Marmot

M - Moose

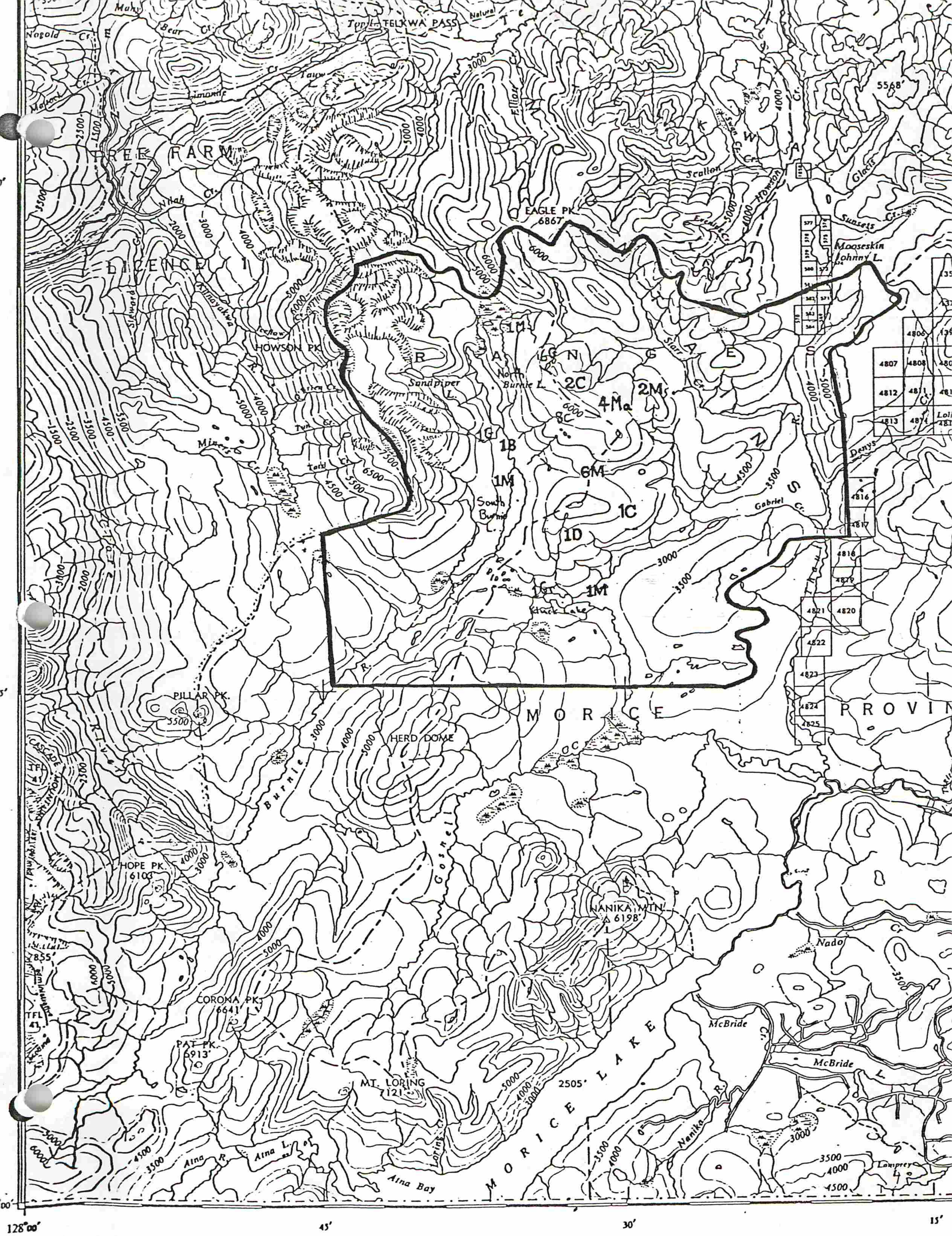
G - Mountain Goat

Gr - Grizzly

Black letters - Sightings made by survey crew

Blue letters - Sightings made in the past by Parks Branch people

—— Approximate Location of Proposed Boundary for Park



TELKWA PASS
Nogold Cr.
Bear Cr.
Limonite
TREE FARM LICENCE 1
Nilah Cr.
Kitnayakwa
HOWSON PK.
EAGLE PK. 6867'
5568'
Scallon Cr.
Howson Cr.
Glacis
Sunsets Cr.
Mooseskin Johnny L.
Sandpiper L.
North Burnie L.
South Burnie L.
Starr Cr.
Denys
Gabriel Cr.
1M
2C
2M
4Ma
1G
1B
6M
1C
1D
1M
Mines Cr.
Tarn Cr.
RANGES
MORICE
PROVIN
PILLAR PK. 5500
HERD DOME
Burnie
Gosnell
HOPE PK. 6103
NANIKA MTN. 6198'
Nado
CORONA PK. 6641
PAT PK. 5913'
MT. LORING 7121
MORICE LAKE
2505'
McBride
McBride L.
Nanika R.
Atna R.
Atna L.
Atna Bay
Lamprey
TFL 41
4806
4807
4808
4812
4813
4816
4817
4818
4819
4820
4821
4822
4823
4824
4825
128°00'
45'
30'
15'

KLUCK LAKE

Wildlife

1. Bird sightings:

Common Loon

Red-necked Grebe

Ring-necked Duck

Herring Gull

Harlequin Duck

Canada Goose

Wilson Snipe

Sandpiper spp. - 4 or 5 light coloured sandpipers flying around lake on August 23rd.

Golden-crowned Kinglet - common around Kluck Lake.

Red-breasted Nuthatch - common in spruce.

Flycatcher (Empidonax spp.) - observed on slope north of lake. Size of Hammond's flycatcher.

Townsend's Warbler - in mixed spruce lodgepole forest north of lake.

Pine Siskin - Flock seen in subalpine north of Kluck Lake.

Clark's Nutcracker

Song Sparrow

Wilson's Warbler

Steller's Jay - east of Kluck Lake in spruce forest.

Gray Jay

Boreal Chickadee

Rusty Blackbird

Winter Wren

Hermit Thrush

Oregon Junco

Rufous Hummingbird

Northern three-toed woodpecker

Raven

Spruce Grouse

Ruffed Grouse

Sharp-shinned Hawk - one observed in spruce stand, making chattering noise resembling a red squirrel - could be a Cooper's Hawk.

Bald Eagle

Golden Eagle

Belted Kingfisher - fairly common around the lake edge.

2. Mammals

White-footed Deermouse (Peromyscus maniculatus)

Red Squirrel (Tamiasciurus hudsonicus)

Moose (Alces alces) the remains of a female moose were found by a stream (inlet SW of Kluck Lake) There was very little flesh left on the carcass, which was surrounded by wolf tracks.

3. Amphibians

Northwestern toad (Bufo boreas) - on wet edges of the lake.

Western spotted frog (Rana pretiosa) - on log by creek on slopes north of lake.

The vegetation around Kluck Lake was very lush with an overstory consisting chiefly of Engelmann spruce (Picea engelmanni), lodgepole pine (Pinus contorta) and balsam fir (Abies lasiocarpa). Alder (Alnus tennuifolia) and willow (Salix spp.) were found along streams and the lakeshore, willow also occurred in the frequent sedge meadows of the area. The understory consisted of black twinberry (Lonicera involucrata), blue huckleberries (Vaccinium ovalifolium and V. membranaceum), cow parsnip (Heracleum lanatum), hellibore (Veratrum viride), water parsnip (Sium cicutaefolium), stinging

nettle (Urtica lyalli) and false azalea (Menziesia ferruginea). Mushrooms and ripe huckleberries were abundant in all areas covered at lower elevations.

The willow browse in the Kluck Lake region was variable. The old browse noted was light to moderate whereas the fresh browse was light and occurred sporadically. Some old, heavy browse of willow was in evidence in the meadows southwest of the lake while to the east of the lake light, old mountain ash (Sorbus sitchensis) browse was seen.

Recent dams, tracks, runways and alder cuttings indicated the presence of beaver, particularly in the meadows to the east and southwest of the lake (See Plate 1). Recent and/or active beaver lodges and scent mounds were also seen in these areas.

Fresh moose tracks were found throughout the Kluck Lake region, most frequently in the meadow systems to the southwest and to the east. The north shore also had fresh tracks although the many tracks seen in the mossy humus soil were impossible to age. There were also numerous beds in the meadows. At the east end of the lake the shore game trail was very well travelled and trails through the thick vegetation broke off towards the large sedge meadows. Infrequent old winter pellets were noted in these areas including the south aspect slope north of the lake, especially in the lodgepole pine forest. Fresh clumps were seen on the south-facing slope, in the sedge meadows and in the vaccinium lodgepole forest west of the lake.

No deer sign was observed around Kluck Lake but presumably there would be some in the area, perhaps later in the year as there was some deer sign in the subalpine to the north of the lake.

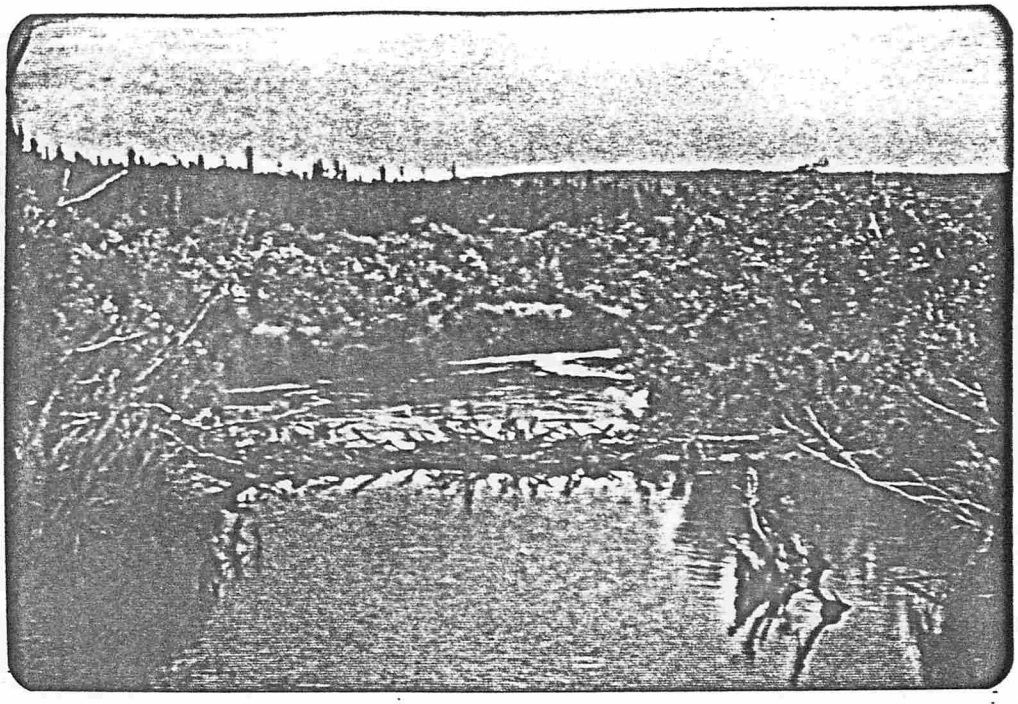


Plate 1. Beaver dam on the sedge/willow meadows to the east of Kluck Lake.

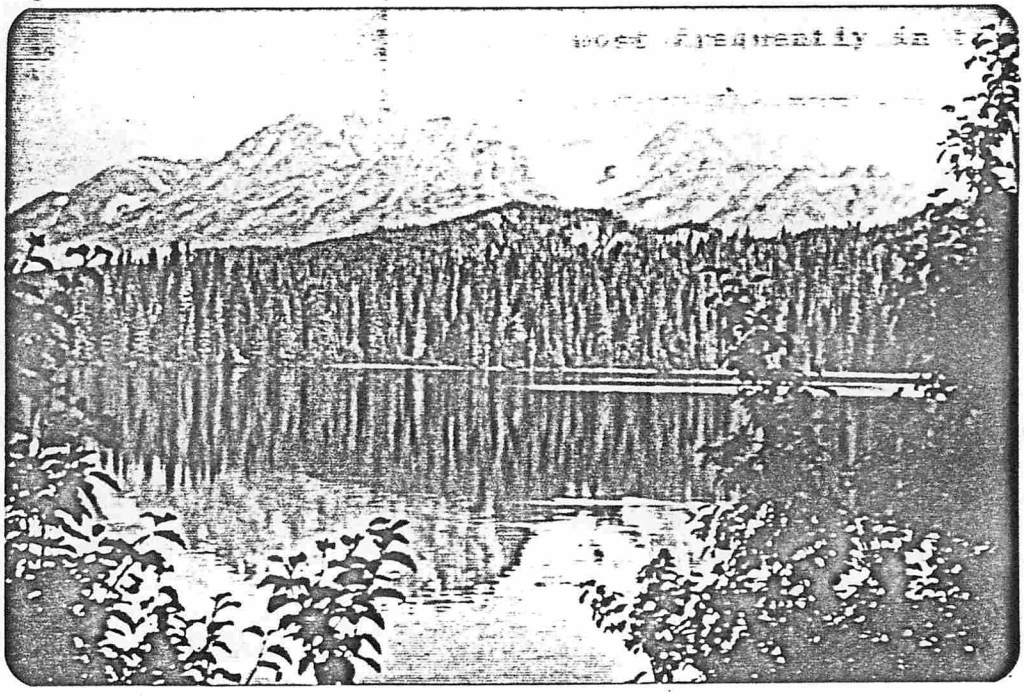


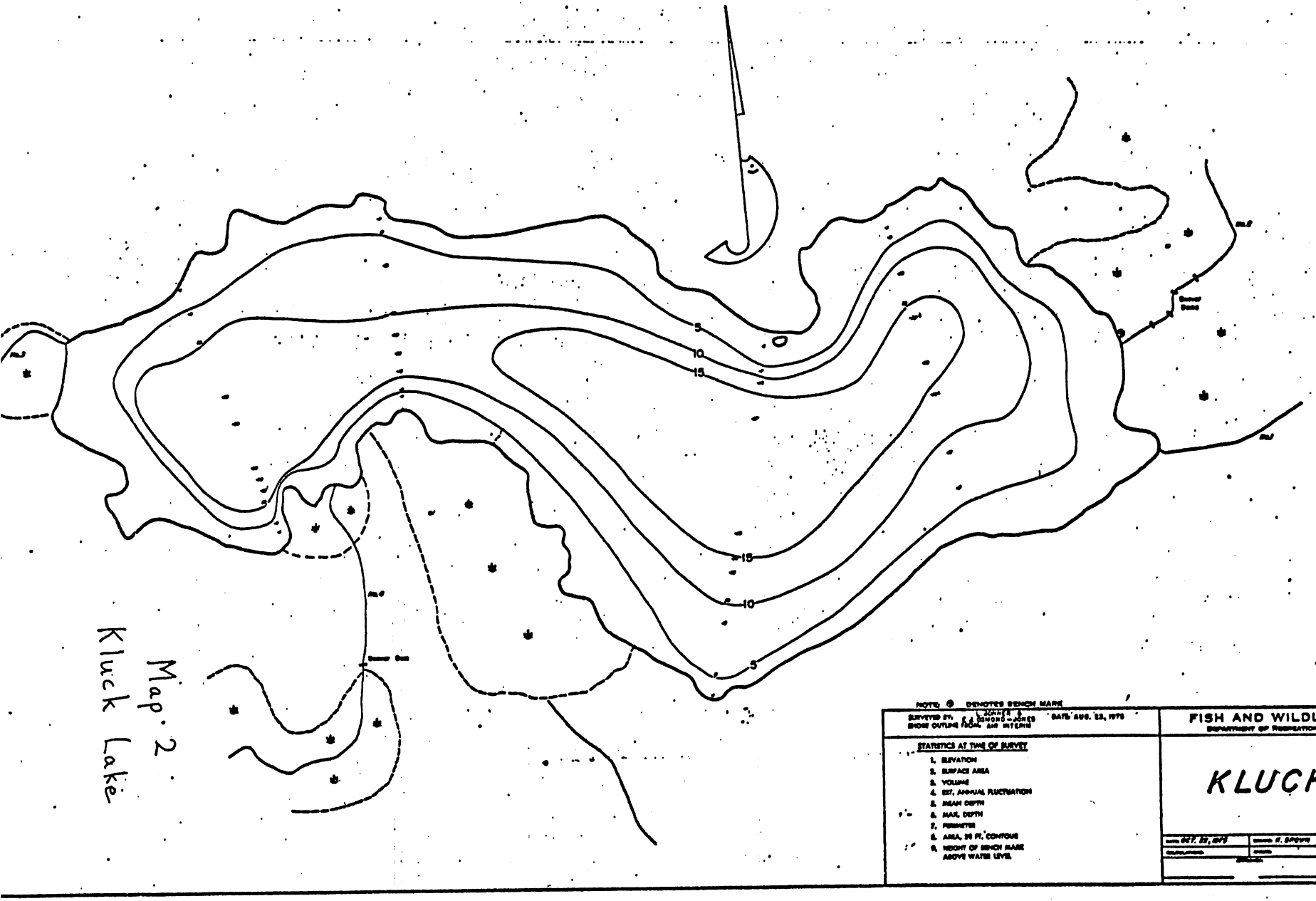
Plate 2. Kluck Lake looking west to the Coast Mountains.

Pellet groups, thought to be caribou, were observed infrequently on the south aspect slope in lodgepole/vaccinium habitats. Fresh caribou tracks were seen crossing a stream in firm sand about 1 km. to the southwest of Kluck Lake.

Wolf tracks were seen along the southwest inlet stream, particularly in the region around the remains of the cow moose and a few were also noted by the stream entering the lake on the east. Bear tracks were encountered in the southwest meadow (Right hind foot, width: 10.6 cm., length: 10.5 cm.) and in the willow flats to the east (left hind foot, width: 11 cm., length: 20.5 cm.; left fore foot; width: 11 cm., length: 14 cm.). Early summer bear scats of medium to large bore were noted beneath a marking tree east of the lake. Bill Hepper (pers. comm.) encountered a small grizzly bear on the trail northwest of Kluck Lake in the summer of 1974. Otter and mink tracks were seen along the stream to the east. An odiferous scat or secretion on the grass on the island of Kluck Lake which appeared to be a marking sign, possibly belonged to either a mink or an otter. Goose droppings were evident on all sandbars on the lakeshore.

Fisheries

Kluck Lake was a small lake 2 1/2 km. long and 1/2 km. wide with a maximum depth of about 18 M. (55 feet). Although the lake was not especially deep, it drops off rather suddenly 10 to 20 metres from the shore (See map 2). The hilly topography immediately surrounding the lake became quite mountainous to the north, west and south (See Plate 2). Small sand and gravel patches occurred on the east shore near the outlet, the rest of the shore was vegetated to the water mark by sedges, grasses and alder. The lake water



Map. 2
Kluck Lake

NOTE: ⊕ DENOTES BENCH MARK

SURVEYED BY: A.A. JONES & JONES — DATE: AUG. 23, 1975
SHORE OUTLINE FROM: AIR INTERP.

STATISTICS AT TIME OF SURVEY

1. ELEVATION
2. SURFACE AREA
3. VOLUME
4. EST. ANNUAL FLUCTUATION
5. MEAN DEPTH
6. MAX. DEPTH
7. PERIMETER
8. AREA, 99 FT. CONTOUR
9. HEIGHT OF BENCH MARK ABOVE WATER LEVEL

FISH AND WILDLIFE BRANCH
DEPARTMENT OF RECREATION AND CONSERVATION

KLUCK L.

DRAWN: OCT. 22, 1975 — CHECKED: R. BROWN
SCALE: 1cm. = 30m.
93 L/SE

was quite clear with visibility to about 7 M (21.5 feet) and water temperature was relatively warm - 15.0° C. at the surface and 9.0° C. at the bottom.

No marked thermocline was evident and little reduction in dissolved oxygen content with depth was noted. Retention time was likely short and total dissolved solids low; the relatively large littoral area suggested the possibility of a moderate bottom fauna and indicated that overall productivity was moderate with a good chance of supporting a sizeable sport fishery.

Aquatic plants such as potamegeton, water moss and water milfoil were abundant, particularly at the east end of the lake near the outlet. Three species of fish were found in Kluck Lake: Cutthroat trout (Salmo clarkii) ranging in length from 12.0 cm. to 35.5 cm., Mountain whitefish (Prosopium williamsoni) 13.5 cm. to 32.0 cm. and Longnose suckers (Catastomus catastomus) from 20.0 cm. to 23.0 cm. Small fish caught with a dip net in the outlet were keyed out to the minnow family (Family Cyprinidae) but the species was uncertain. Several of the streams entering the lake were obstructed by beaver dams which probably limit fish migration. The stream flowing from the west and entering at the west end of the lake provided good spawning and rearing potential. Numerous fry were seen here, most likely Cutthroat trout. One was caught and positively identified as a Cutthroat fry. Other fish of lengths up to 10 cm. were observed and thought to be Redside shiners. The inlet to the southwest of Kluck Lake meandered through flat meadowland where frequent beaver activity may present major obstructions to fish movement. However, excellent spawning and rearing areas with plenty of pools, swirls, cutbanks and log debris for fish habitat did occur in the streams. Some salmonid

fry were seen, one of which was caught and identified as a Cutthroat trout, but no mature fish were observed. The scenic appeal of this stream lay in its meandering route through meadows and spruce/fir forests with mountain views in the distance. The open banks and gravel bars make it potentially suitable for sport fishing. The presence of beaver dams seems to prevent fish migrations up this stream and fish populations were minimal above these obstructions during the survey.

Although trout of 20 cm. - 25 cm. were seen in the stream entering the lake on the northeast shore, the amount of good spawning gravel was limited and the productivity was considered low. Angling was only likely to be worthwhile for the first 50 m. downstream from the beaver dams where the banks are relatively open.

The lake outlet was a slow flowing stream impeded by beaver dams. The low clay banks with considerable log debris provide good holding pools although this was not a spawning area for game fish. Cutthroat trout of 20 cm. - 23 cm. were abundant and the open banks provided excellent opportunities for angling.

Bill Hepper reports that about 12 km. downstream on the outlet stream there was a major obstruction in the form of a cascading falls of at least 8 m. in height. This would almost certainly be a complete barrier to fish migration and so the Kluck Lake fish population is isolated from the lower reaches of the stream.

KLUCK LAKE

SPECIES	LENGTH	WEIGHT	SEX	AGE	REMARKS
Cutthroat Trout	14.0 cm	30 gm	imm.		
	16.5 cm	45 gm	imm.		
	18.0 cm	55 gm	imm.		
	24.0 cm	120 gm	female		
	24.5 cm	148 gm	female		
	24.5 cm	145 gm	male(imm.)		
	24.5 cm	140 gm	male		
	25.5 cm	155 gm	male		
	26.0 cm	160 gm	female		
	27.0 cm	145 gm	female		
	27.0 cm	170 gm	female		
	27.5 cm	180 gm	male		
	28.0 cm	190 gm	female		
	33 cm	350 gm	male		
	34.0 cm	360 gm	male		
	35.5 cm	425 gm	male		
Mountain Whitefish	21.0 cm	110 gm			
	21.0 cm	105 gm	male		
	23.0 cm	140 gm	male		
	23.0 cm	125 gm	male		
	24.0 cm	180 gm			Nematodes→ Cysts wi water (20 gm)
	24.0 cm	145 gm	male		
	24 cm	170 gm	male		
	24.0 cm	150 gm	female		
	24.0 cm	240 gm	male		
	24.0 cm	145 gm	female		
	24.0 cm	140 gm	male		
	24.5 cm	150 gm	female		
	24.5 cm	195 gm	female		
	24.5 cm	160 gm	male		
	25 cm	155 gm	female		
	25.0 cm	175 gm	male		
	25.0 cm	205 gm	female		
	25.0 cm	185 gm	female		
	25.5 cm	165 gm	male		
	26.0 cm	190 gm	female		
	26.0 cm	175 gm	female		
	26.0 cm	215 gm	female		
	26 cm	200 gm	female		
	27.0 cm	185 gm	female		
	32.0 cm	400 gm	male		
Longnose Sucker	20 cm	100 gm	male		
	21.0 cm	135 gm	male		
	21 cm	130 gm	male		
	21.5 cm	115 gm	male		
	23.0 cm	160 gm	female		
	23.0 cm	125 gm	female		
	23.0 cm	130 gm	female		

KLUCK LAKE August 23, 1975

No scale samples taken

Species	Length (cm)
Mountain Whitefish	13.5
Cutthroat Trout	12.0
	12.0
	12.5
	12.5
	13.0
	13.0
	13.5
	14.0
	14.0
	14.0
	14.5
	16.0

ALPINE AREA - EAST OF BURNIE LAKES

B. Smith and M. Sather hiked from Kluck Lake on August 23 to the high country north of the lake completing the trip at North Burnie Lake on August 27. The alpine areas were separated by a valley approximately between the Burnie Lakes and to the east. Henceforth, these two alpine areas will be referred to as the north alpine and the south alpine areas. The weather was very poor during the time spent in the north alpine and observations for that area were consequently limited.

1. Birds

The birds noted in the alpine areas and the valley between were:

Canada goose - one seen flying around ponds on the south alpine. Considerable dropping and feathers around and in small ponds in that area.

Goldeneye - five seen on lake, south alpine. Probably Barrow's.

Northern phalarope - three birds in winter plumage feeding on small lake, south alpine.

Sandpiper sp. - two flushed from a rocky pond on the north alpine. They appeared to be Baird's sandpipers.

Willow ptarmigan - A brood of eight on heather-low scrub fir slope on the west side of the north alpine.

Rock ptarmigan - A male seen on very barren part of the north alpine.

White-tailed ptarmigan - two broods of seven each seen on the north alpine.

Flycatcher (Emipidonax sp.) - several in scrub fir of south alpine. Very yellowish underparts.

Clark's Nutcracker - one seen in the south alpine.

Mountain Chickadee - several in scrub fir, south alpine.

Boreal Chickadee - fewer in number than mountain chickadees and in same locality.

Red-breasted Nuthatch - observed on lower alpine part of south alpine where firs are 3 to 7 metres tall.

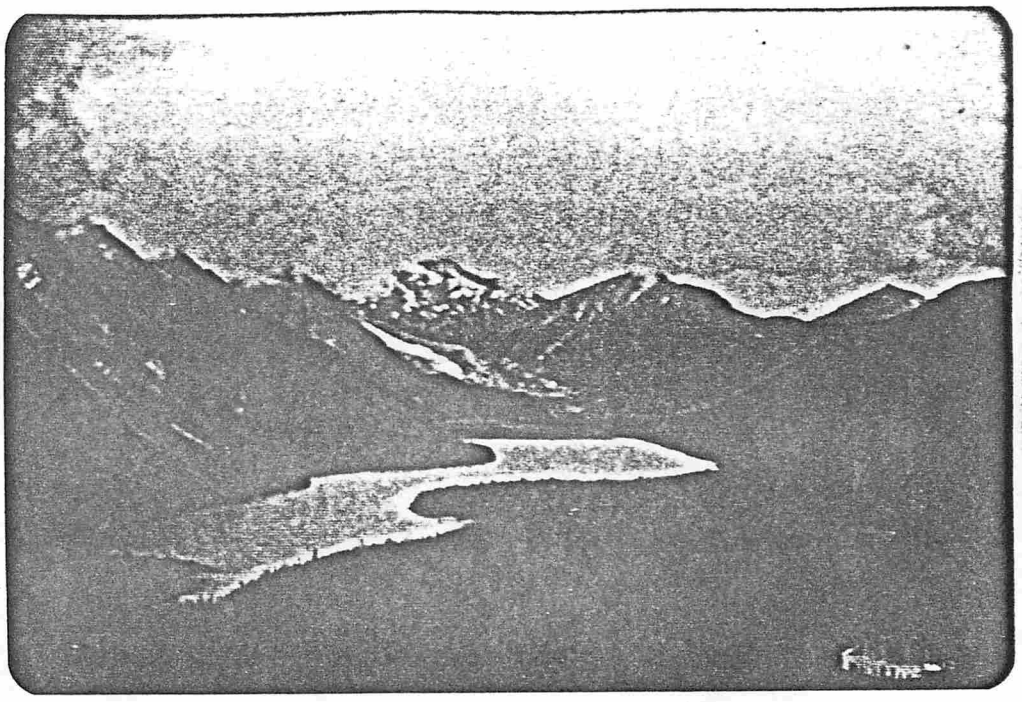


Plate 3. North Burnie Lake, looking northwest. Note one of the several glaciers which feed into the lake.

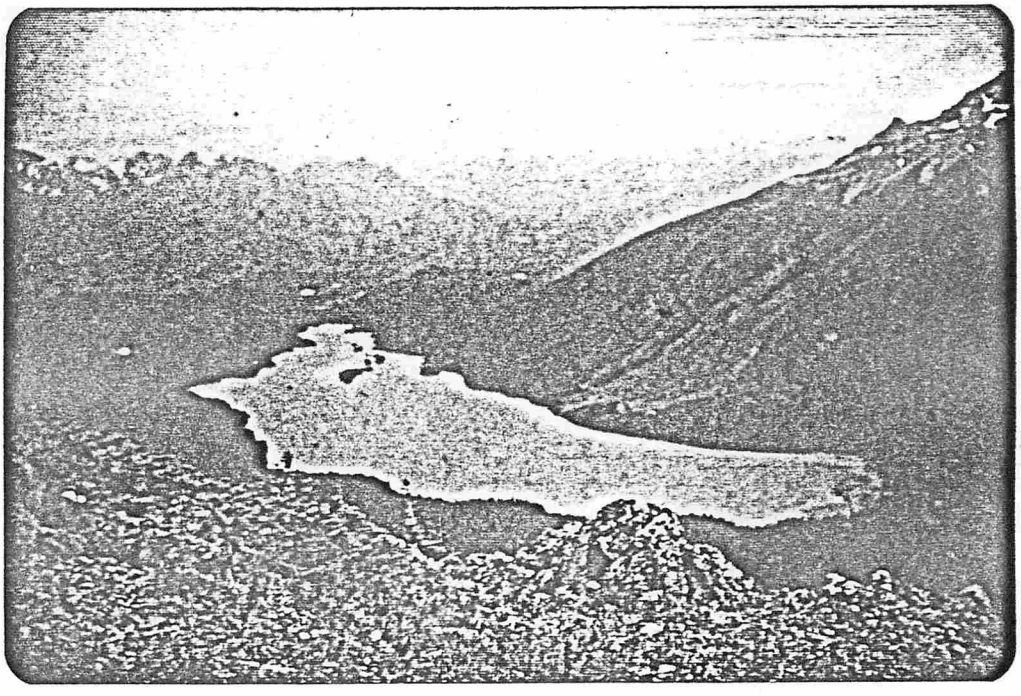


Plate 4. South Burnie Lake seen from alpine ridge to the east, with islands and large avalanche slope on west shore.

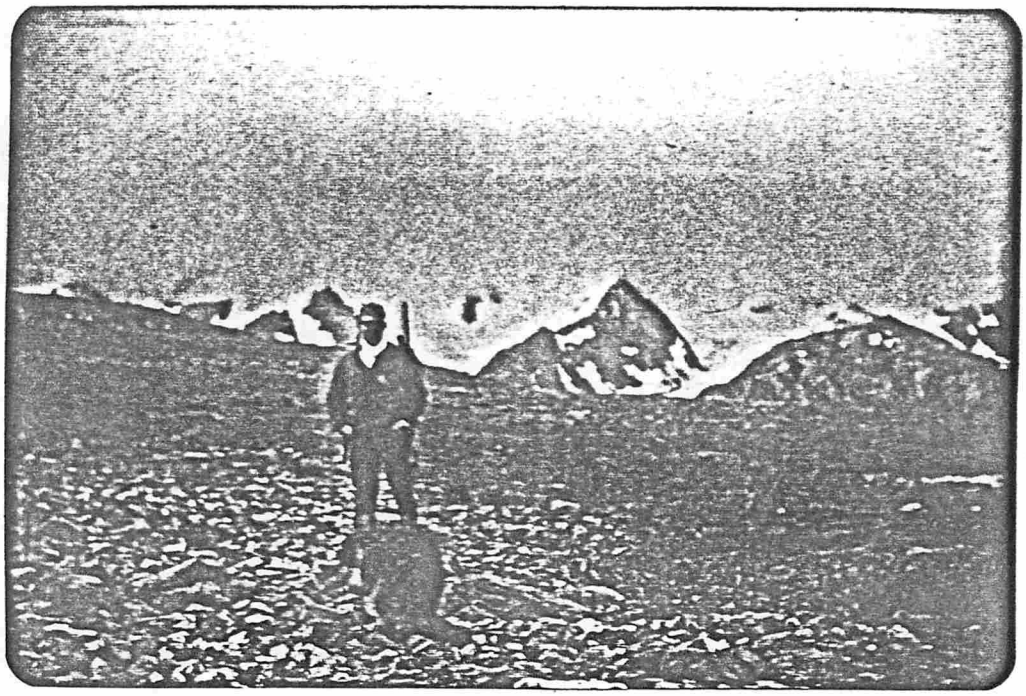


Plate 5. Porcupine seen in the north alpine area east of the Burnie Lakes.

Plate 6. Cutthroat trout caught in North Burnie Lake. Vern Knutson - Kitimat resident - shown above.

Winter wren - noted in lush vegetation above North Burnie Lake.

Robin - one observed in rocky, mossy habitat, south alpine.

Golden-crowned kinglet - in valley between the north and south alpine.

Water Pipit - occasional to common in alpine.

Rusty blackbird - a male in nonbreeding plumage, south alpine.

Pine Siskin - seen in spruce in valley between south and north alpine.

Oregon Junco - with chickadees in scrub fir patch, south alpine.

Golden-crowned sparrow - fairly common, south alpine. Young also seen.

Rufous hummingbird - one observed in the south alpine.

Golden eagle - a pair observed over south alpine and one observed pursuing a rock ptarmigan on the north alpine.

Great Horned Owl - A feather from what was believed to have been a horned owl was found in the south alpine.

The use of the alpine areas by Canada Geese brought up some questions as to whether the area was used for nesting or perhaps as a summering area for nonbreeding birds or possibly only as a migratory stop. The number of geese using the area appeared to be minimal however.

The sighting of rock ptarmigan probably indicated one of the most southerly extensions of the range of that species.

The finding of a great horned owl feather may have indicated that the alpine is hunted for voles presumably, although one wouldn't expect owls in the alpine.

Robins did not appear to be as common in the Burnie Lakes alpine areas as in the Rainbow Mountain and the Chickamin Range although some might have migrated by the time the area was surveyed.

2. Mammals

Mammals observed in this area were: Mountain Caribou (Rangifer tarandus), moose (Alces alces), mule deer (Odocoileus hemionus hemionus),

hoary marmot (Marmota caligata), and presumably a northern bog lemming (Synaptomys borealis).

The caribou were sighted (Map 1 and Table 1), one on the south alpine and two on the north alpine. According to the Fish and Wildlife Branch Provincial Management Policy this is an overlap area for mountain caribou (R. tarandus montanus) and Osborn caribou (R. tarandus osborni). Because the animals were sighted at a distance, it was impossible to distinguish which subspecies these could have been. Fresh and also older aged tracks were fairly frequent on the south alpine but fresh tracks were not very frequent on the north alpine. Clumps from the current summer were noted on the south alpine particularly in the lush meadow draws on the slopes below the top. Only one fresh clump was seen on the north alpine that being on the west side of the area in the subalpine. Old clumps and pellets were fairly common on the north and the south alpine areas.

Browsing was not heavy on either area. Moderate fresh and old browse was noted along creeks on the lower south slopes of the south alpine. On top it was noted that mountain valerian (Valeriana sitchensis) was browsed infrequently as were the heads of Indian paintbrush (Castilleja spp.) and lupine (Lupinus sp.) The elevation and exposure of the ridgetops of the north alpine tended to exclude much flower growth there and the area was generally quite barren. However, there were richer lower slopes to the east and northeast on the north alpine, but these were only observed by binocular and therefore their use was not accurately determined. However, no caribou were seen in those areas although the habitat appeared quite suitable for caribou.

Caribou antlers were not found in the Burnie Lakes alpine areas suggesting that these areas were not used as wintering grounds.

Eight moose were sighted (see map 1 and table 1). Six of these were sighted in the meadows between the north and south alpine areas and a cow and calf on the lower slope on the east edge of the north alpine area. Some clumps and frequent old pellets were observed in the meadow and adjacent forest where two fresh sets of moose tracks were seen on top of the south alpine and winter pellets were noted on the west side of the ridge near the top of the south alpine. It appeared that some moose used this area winter and summer. The north alpine was devoid of shrubs on top and hence wasn't used by that species; however, the lower slopes and ridges were used, as evidenced by the cow and calf observed browsing low shrubs in that area.

G. Hazelwood (Pers. comm.) saw 6 mountain goats in the north alpine on the east slope at approximately 1700 m (5,600') elevation in early September 1967. He also came across a porcupine in the subalpine of the north alpine area (See Plate 5).

Mule deer appeared to occasion the lower slopes of the alpine and subalpine but did not appear to be numerous according to the sign. The tracks of two deer including those of the buck sighted were noted on the south slopes of the south alpine.

Bear sign was infrequent. The ridge top of the north slope was probably too devoid of vegetation to attract bears and there were no marmots there either. Nonetheless the track of a grizzly was seen proceeding into the high country of the north alpine leading up from a creek valley on the south side of the area. The tracks of one bear were seen on the south alpine and a fresh large

bore and a fresh small bore bear scat were also observed there, the latter near some uprooted lupines. One very old bear scat was found on the north alpine.

One set of wolverine tracks was found along the largest lake of the south alpine, another set was found on the north, and a scat of wolverine or coyote on the south alpine. One set of hare tracks was noted on the summit of the south alpine beside a pond. One wouldn't expect hare that high in the alpine; however, a skull of a hare was found in similar habitat in the Rainbow Mountains of Tweedsmuir Park and so apparently the species does occasionally frequent such areas. This might lend credence to the apparent presence of horned owls in the same habitat as evidenced by the feather that was found.

Several hoary marmot were observed on a lower slope to the east of the north alpine at the head of Star Creek. There appeared to be two colonies since the separation of burrows was about 175 metres. Two marmot skulls were found on the top of the alpine, one on the south and one on the north alpine.

Numerous hay piles and winter pellet accumulations were seen. These were probably left by the northern bog lemming. One specimen was trapped on the south alpine area (table 2).

3. Amphibians and Reptiles

No adults were observed but young amphibians just out of the tadpole stage, probably either Bufo boreas or Rana pretiosa were seen in ponds of the south alpine area.

BURNIE LAKES

Wildlife

1. Birds

The birds observed in this area were:

Common Loon - observed on South Burnie Lake

Canada Goose - five birds seen on North Burnie Lake

White-winged scoter - observed on S. Burnie Lake

Common Merganser - occasionally seen on either lake

Herring Gull - immature thought to be of this species on N. Burnie Lake.

Solitary sandpiper - observed at S. Burnie Lake

Spotted sandpiper - being pursued by an accipiter.

Western sandpiper - seven seen at S. Burnie Lake

Common Snipe - one flushed from marsh to north of N. Burnie Lake

Dipper - observed along the Burnie River between the lakes.

Empidonax flycatcher - possibly Hammond's S. Burnie Lake.

Western wood pewee - in open lodgepole south end of N. Burnie Lake

Stellar's Jay - heard at N. Burnie Lake

Gray Jay - fairly common in forests in this area.

Clark's nutcracker - in spruce stand north of N. Burnie Lake

Black-capped chickadee - in scrub fir at edge of moraine north of N. Burnie Lake

Boreal Chickadee - " "

Red-breasted nuthatch - common in spruce forest.

Robin - one seen in open lodgepole area at south end of N. Burnie Lake.

Hermit Thrush - " "

Golden-crowned kinglet - heard in spruce along sandy wash between the lakes.

Bohemian waxwing - feeding young, south end of N. Burnie Lake.

Yellow-rumped warbler - lodgepole area south end of N. Burnie Lake.

Wilson's warbler - near Sandpiper Lake (above N. Burnie to the west).

Rusty Blackbird - immature in puddles along north shore of S. Burnie Lake.

Pine Siskin - in open lodgepole area south end of N. Burnie Lake.

Oregon junco - near moraine.

White-crowned sparrow - observed at S. Burnie Lake.

Golden-crowned sparrow - observed near Sandpiper Lake.

Fox sparrow - two seen at N. Burnie Lake.

Lincoln's sparrow - observed at S. Burnie Lake.

Rufous hummingbird - occasionally seen.

Sharp-shinned hawk - one seen at S. Burnie Lake.

Osprey - occasional seen flying over the lakes.

Belted kingfisher - fairly common along lake shores.

Raven - nine seen flying north of N. Burnie Lake.

Fish eating birds were not common on Burnie Lakes but a few loons, osprey, kingfisher and mergansers were apparently able to catch fish successfully despite the extremely turbid glacial water.

Accipiter Hawks were seen more commonly (three times) in the Burnie and Kluck Lakes area than they were in Tweedsmuir Park. However, no concrete ideas of their abundance can be drawn from those sightings. The hawk observed chasing the spotted sandpiper may have been a Cooper's but it was suspected that it was a Sharp-shinned.

The forest type in most of the area is thick coastal type and few songbirds were observed there. The areas of greatest concentration of songbirds appeared to be the sandy lodgepole area at the south end of North Burnie Lake and near the glacial moraine north of the same lake.

2. Mammals

The mammals observed were a bull moose several hundred metres above the N.W. shore of South Burnie Lake, a beaver along the Burnie River, red squirrel, and several voles or bog lemmings.

There was a fair bit of moose sign in the area but there was considerable doubt as to whether the area supports many of this species. However, the habitat that is available was not extensive and hence the food supply may have been rather critical at times for moose and other ungulates.

Moose tracks were in evidence on all shores of both North and South Burnie Lakes and fresh droppings occurred at the outlet of South Burnie, in the meadows to the north of North Burnie, to the west of the area between the two lakes, and in the Sandpiper Creek delta. Old moose pellet groups were found scattered throughout the area. A large bull moose was sighted feeding on the avalanche slope on the west shore of South Burnie Lake in the late afternoon. Bill Hepper reports seeing a moose feeding by the small lake northeast of North Burnie [at approx. 1500 m (4900') level] in July 1974.

Deer tracks belonging to an individual animal with a fawn appeared on the southwest point of North Burnie Lake. No fresh deer pellets were seen but several old groups occurred at the outlet of South Burnie Lake and near the glacier at the end of North Burnie Lake.

A few mountain goat tracks and pellets were seen in the alpine area about 800 m. east of Sandpiper Lake. A deep accumulation of goat droppings was discovered at the base of rock bluffs in the forest along the Sandpiper Creek valley. No goats were seen although

the wet weather and poor visibility probably inhibited the chances of any sighting. G. Hazelwood (pers. comm.) reports sighting a billy goat on the slopes about 70 m. above North Burnie Lake at the southwestern end, in early September 1967. A family of 7 Spruce grouse were also seen at that time by the creek on the southeast of North Burnie Lake.

Beaver tracks along the banks of Burnie River between the two lakes, fresh cuttings, dams and runways in the area and a beaver seen by the river confirmed the presence of this animal. Tracks and cuttings were also noted in the Sandpiper Creek delta and old cuttings occurred throughout the area. Otter tracks were found on the shore of a large pond about 1 km. south of S. Burnie Lake.

Bear sign included tracks (right forefoot: 15.6 cm. long, 12.7 cm. wide) in the sandy shore at the north end of South Burnie Lake, a scratching tree located in a lodgepole pine stand at the north end of North Burnie Lake and an old scat containing berries at the outlet of South Burnie Lake. An early summer bear scat of small bore was also found at the edge of the alpine area towards Sandpiper Lake.

A porcupine den was found in the forest along the Sandpiper Creek valley. It consisted of a hollow log with a deep layer of scats, plus hairs and quills.

The tracks and droppings of Canada Geese were abundant on all the shallow-sloped shores and beaches of North and South Burnie Lakes. An owl regurgitated pellet was found beside the large pond east of the Burnie River where it leaves South Burnie Lake.

In the mountain hemlock/balsam fir slopes to the east of North Burnie Lake sporadic light fresh browse and moderate old browse on

Mammals observed in the Burnie Lakes area, August 23-30 (1975)

Species	Location	M	F	Y	UC	Habitat
Moose (*Alces alces*)	Pass between north & south alpine areas	5	1			Sedge-willow meadow
" " "	East slope of north alpine area		1	1		Subalpine meadow
" " "	West side of S. Burnie Lk.	1				Willow growth in avalanche area
Mountain caribou (*Rangifer tarandus*)	South alpine area				1	Alpine meadow
" "	North alpine area				2	Alpine tundra
Mule deer (*Odocoileus hemionus*)	South alpine area	1				Alpine meadow
Hoary marmot (*Marmota caligata*)	North alpine area				3	Alpine meadow
Beaver (*Castor canadensis*)	Burnie River				1	Rocky shore of river

Table 1

Results of small mammal trapping in Burnie Lakes region

August 24-28 (1975)

Location	Date	No. Traps Set	Species	Sex	(mm) Total Length	Tail	Hind Foot
Burnie Lakes alpine	Aug. 24	*4	Northern bog lemming	♂	139	37	19
" "	Aug. 25	*4	-	-	-	-	-
" "	Aug. 26	*4	-	-	-	-	-
" "	Aug. 27	*4	-	-	-	-	-
Kluck Lake	Aug. 24	3	-	-	-	-	-
" "	Aug. 25	2	-	-	-	-	-
S. Burnie Lake	Aug. 26	2	-	-	-	-	-
" "	Aug. 27	2	-	-	-	-	-
" "	Aug. 27	0	1 Zapus hudsonicus	-	230	150	31
" "	Aug. 28	2	-	-	-	-	-

1 - Mouse found in gut of cutthroat trout caught at mouth of Burnie River entering S. Burnie Lake.

* - Snap traps used - otherwise line trap.

Table 2

Table #3

Birds observed - Burnie Lks. and Kluck Lake

August 22-30, 1975

SPECIES	LOCATION	OBSERVED NUMBER	RELATIVE ABUNDANCE	HABITAT
Common loon (Gavia immer)	Burnie & Kluck Lakes	-	Occasional	Lake
Canada goose (Branta canadensis)	Burnie Lakes & alpine ponds	6	"	"
Red-necked grebe (Podiceps grisegena)	Kluck Lake	2	Infrequent	"
Ring-necked duck (Aythya collaris)	" "		"	"
Goldeneye (Bucephala spp.)	South alpine area	5	Occasional	Pond
Harlequin duck (Histrionicus histrionicus)	Kluck Lake			
White-winged scoter (Melanitta deglandi)	S. Burnie Lake			
Common merganser (Mergus merganser)	Burnie Lakes	-	"	Lake
Sharp-shinned hawk (Accipiter striatus)	Kluck & S. Burnie Lakes	3	"	Forested edge of lakes
Golden eagle (Aquila chrysaetos)	Kluck Lake & north and south alpine areas	4	"	Alpine tundra & meadow
Bald eagle (Haliaeetus leucocephalus)	Kluck Lake	1	Infrequent	
Osprey (Pandion haliaetus)	Burnie Lakes	2	"	Lakes & adjacent coniferous forest
Ruffed grouse (Bonasa umbellus)	Kluck Lake			
Willow ptarmigan (Lagopus lagopus)	North alpine area	8	X	Scrub alpine fir, heather
Rock ptarmigan (Lagopus mutus)	" " "	1	X	Barren rocky area
White-tailed ptarmigan (Lagopus leucurus)	" " "	14	Fairly common	Barren alpine tundra
Solitary sandpiper (Tringa solitaria)	S. Burnie Lake			
Spotted sandpiper (Actitis macularia)	Burnie Lakes			
Baird's sandpiper (Erolia bairdii)	North alpine area	2	X	Rocky alpine pond
Western sandpiper (Ereunetes mauri)	S. Burnie Lake	7	X	
Northern phalarope (Lobipes lobatus)	South alpine area	3	X	Small lake in alpine meadow
Common snipe (Capella gallinago)	N. Burnie Lake	1	Infrequent	Sedge marsh
Herring gull (Larus argentatus)	Burnie & Kluck Lakes	-	Occasional	Lake
Rufous hummingbird (Selasphorus rufus)	Burnie Lakes & alpine	-	"	Mixed forest, alpine meadow
Belted kingfisher (Megaceryl alcyon)	Burnie & Kluck Lakes	-	Fairly common	Lake edge
Northern three-toed woodpecker (Picoides tridactylus)	Kluck Lake			
Empidonax flycatcher (Empidonax sp.)	Burnie Lakes & alpine	-	X	Alpine fir & open forest
Western wood pewee (Contopus sordidulus)	Burnie Lakes	-	X	Lodgepole pine stand
Steller's jay (Cyanocitta stelleri)	N. Burnie Lake	1	Infrequent	Coniferous forest
Gray jay (Cyanocorax yncas)	Burnie Lakes	-	Fairly common	" "
Clark's nutcracker (Nucifraga columbiana)	N. Burnie Lake	-	X	" "
Common raven (Corvus corax)	Burnie Lakes	-	Common	" "
Black-capped chickadee (Parus atricapillus)	Burnie Lakes & alpine	-	Fairly common	Scrub alpine fir and spruce-fir forest
Mountain chickadee (Parus gambeli)	South alpine area	-	X	Scrub alpine fir
Boreal chickadee (Parus hudsonicus)	N. Burnie Lake	-	X	Shrub layer conifers near glacial moraine
Dipper (Cinclus mexicanus)	Burnie River	1	X	
Red-breasted nuthatch (Sitta canadensis)	Burnie & Kluck Lakes & alpine	-	Common	Alpine fir and spruce-fir forest
Winter wren (Troglodytes troglodytes)	N. Burnie Lake	-	X	Fir-hemlock slope
Robin (Turdus migratorius)	" " "	1	X	Open lodgepole stand
Hermit thrush (Hylocichla guttata)	Burnie & Kluck Lakes	-	X	Open lodgepole stand
Golden-crowned kinglet (Regulus satrapa)	Burnie & Kluck Lakes	-	Common	Spruce-fir forest
Water pipit (Anthus spinoletta)	North & south alpine areas	-	Fairly common	Alpine tundra & meadow
Bohemian waxwing (Bombycilla garrulus)	N. Burnie Lake	-	X	Open lodgepole stand
Yellow-rumped warbler (Dendroica coronata auduboni)	" " "	-	X	" " "
Townsend's warbler (Dendroica townsendi)	" " "	-	X	Shrub layer conifers near glacial moraine
Rusty blackbird (Euphagus carolinus)	S. Burnie Lake	-	Occasional	Puddles around lake
Brewer's blackbird (Euphagus cyanocephalus)	" " "			
Pine siskin (Spinus pinus)	Burnie & Kluck Lakes & subalpine	-	Fairly common	Coniferous forest & alpine fir
Oregon junco (Junco oreganus)	" " " "		Common	" " " "
White-crowned sparrow (Zonotrichia leucophrys)	S. Burnie Lake			
Golden-crowned sparrow (Zonotrichia atricapilla)	North & south alpine areas	-	Fairly common	Alpine fir patches
Fox sparrow (Passerella iliaca)	N. Burnie Lake	2	X	Willow at lake edge and open lodgepole stand
Song sparrow (Melospiza melodia)	Kluck Lake			
Lincoln's sparrow (Melospiza lincolnii)	S. Burnie Lake			

vaccinium was noted close to a sedge meadow with moose beds. The meadows to the north of North Burnie Lake showed no fresh browse on the knee high willows in the open; however, there was sporadic light browse and light to moderate old browse in the less open areas.

The extensive willow/sedge meadows to the east of Burnie River (between North and South Burnie Lks.) had moderate old, and light, fresh browse. The meadows here were much wetter than those higher up. To the west of the river the browse was quite variable. The willows in the old braided creek showed no browse while those in the very sheltered areas were light to moderate, freshly browsed. Branches 3 to 4 meters off the ground showed very heavy to moderately heavy, old browse. It therefore appeared that there were some moose wintering in this area. Browse at the south end of South Burnie Lake was light and sporadic, both old and fresh.

3. Amphibians

Northwestern toads were fairly common as well as a few Western spotted frogs here.

Fisheries

The Burnie Lakes were set in a valley running generally in a north-south direction at approximately 1,100 m. (3600') elevation. (See Plates 3 and 4) Flanked on the west by the formidable Coast Mountains and on the east by gentler alpine ridges these lakes were surrounded by forests of Engelman spruce, subalpine fir, western hemlock and lodgepole pine. Extensive sedge/willow meadows lay to the northeast, southeast and between the two lakes. Glacial streams drained into North Burnie Lake and into Burnie River between the lakes, causing the milky blue colour characteristic of the lakes.

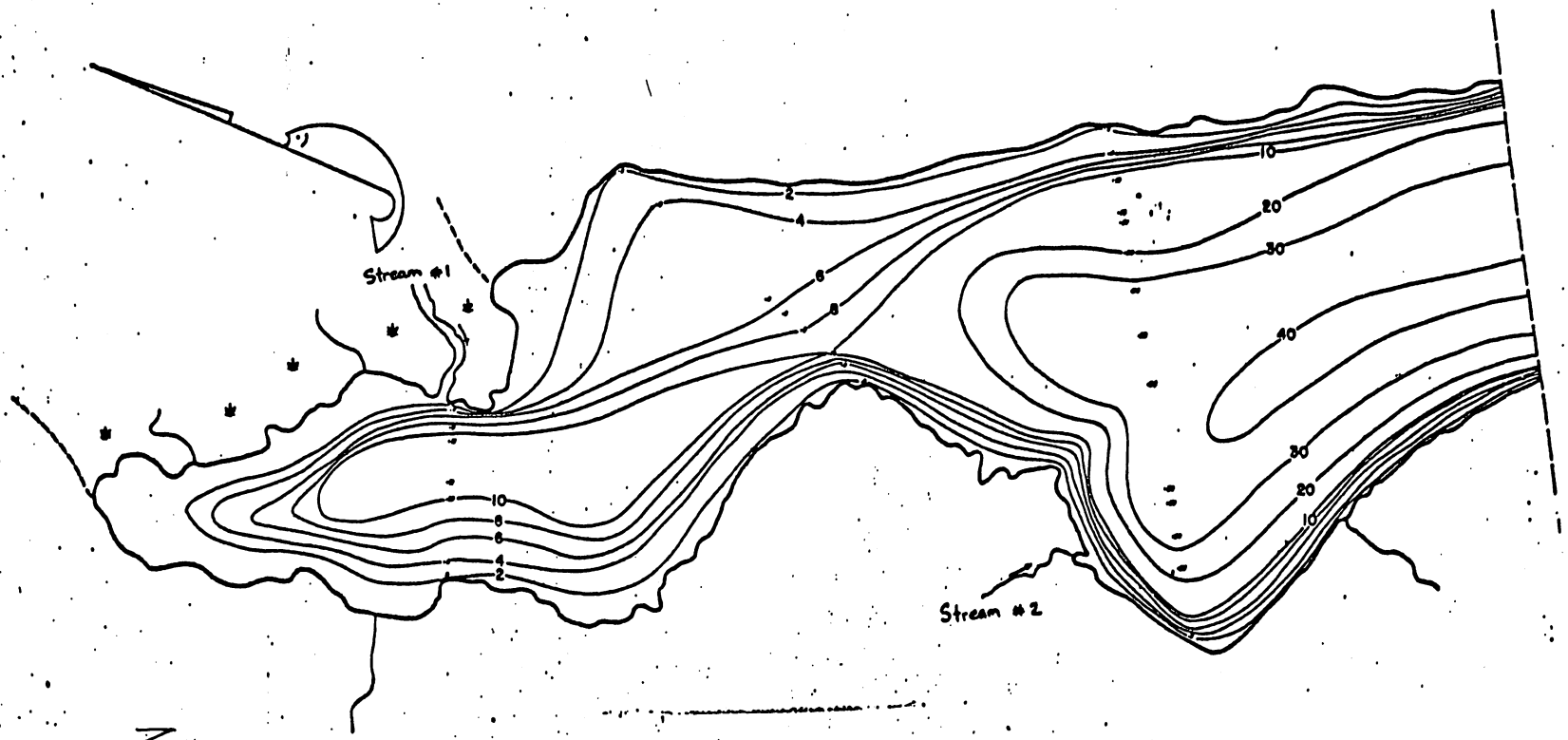
This glacial silt limited visibility into the water to less than one metre.

North Burnie Lake: was 8 km. long and 1 km. wide. The shoreline consisted mainly of small boulders and rubble and was particularly steep along the west shore. Glaciers reached to within 3-5 km. of the lake so that the majority of the streams entering North Burnie from the north and west were silt-laden. These frigid glacial waters were also the cause of the generally low temperatures of the lake, ranging from 9.5° C at the surface to 4.3° C at the bottom. North Burnie had a maximum depth of 43 m. (130 ft.) and the rapid drop-off from shore, particularly on the west side, reflected the steepness of the surrounding country. (See Map 3)

The dissolved oxygen was 10 ppm both at the surface and at 19 m. (60') and was 9 ppm at the bottom. The pH was 6.7 at the surface and 6.5 at the bottom.

Six species of fish were found in this lake: Cutthroat trout (Salmo clarkii) ranging in length from 26.3 cm. to 48.1 cm.; Rainbow trout (Salmo gairdneri) 15.0 to 15.5 cm.; Kokanee (Oncorhynchus nerka) 11.4 cm. to 16.8 cm.; Dolly Varden (Salvelinus malma) 11.2 cm.; Mountain whitefish (Prosopium williamsoni) 12.6 cm. to 26.2 cm., and Longnose Sucker (Catastomus catostomus) 21.9 cm. to 38.6 cm. Because no adult Rainbow trout were caught it was likely that the juveniles seen were indicative of a Steelhead (Salmo gairdneri) run. The Cutthroat trout showed a marked reduction in spots and an overall silvery hue, likely an adaption to the milky colour of the water.

These fish were also very slender, particularly the larger ones, so it would appear that fish growth is extremely slow in these lakes. It was also interesting to note that the trout caught in both lakes



Map 3a
North Burnie Lake

NOTE: ⊕ DENOTES BENCH MARK

SURVEYED BY: L. CONNELL & A.A. DOWDS – JONES AIR INTERNS DATE: AUG. 20, 1975
SHORE OUTLINE FROM AIR PHOTOS

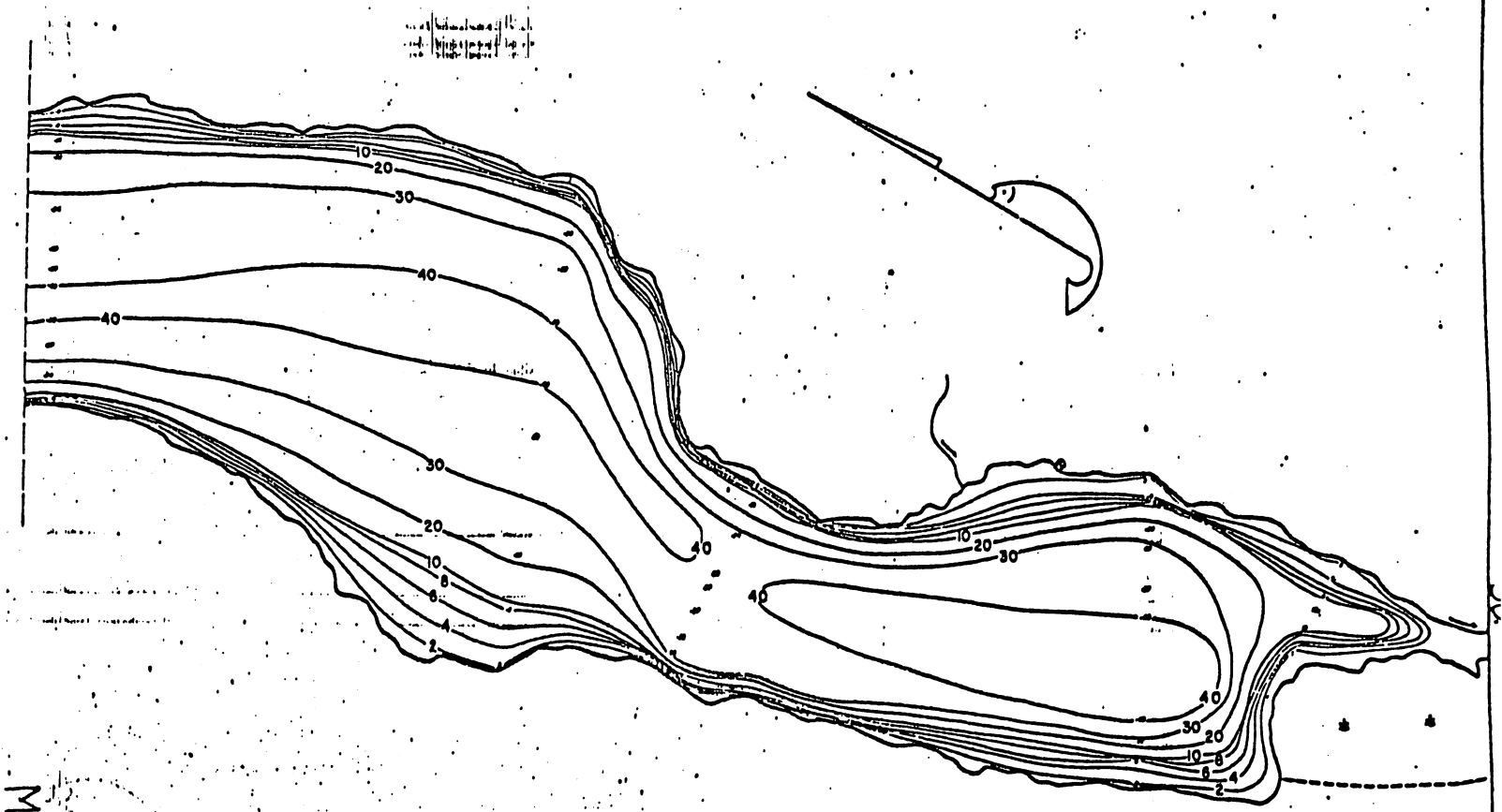
STATISTICS AT TIME OF SURVEY

1. ELEVATION
2. SURFACE AREA
3. VOLUME
4. EST. ANNUAL FLUCTUATION
5. MEAN DEPTH
6. MAX. DEPTH
7. PERIMETER
8. AREA, 50 FT. CONTOUR
9. HEIGHT OF BENCH MARK ABOVE WATER LEVEL

FISH AND WILDLIFE BRANCH
DEPARTMENT OF RECREATION AND CONSERVATION

NORTH BURNIE L.
(SHEET 1 OF 2)

DATE: OCT. 20, 1975 DRAWN: K. DROUIN SCALE: 1cm. = 40m.
93 L/8-9



Map 3b

North Burnie Lake

NOTE: ⊕ DENOTES BENCH MARK

SURVEYED BY: [illegible] DATE: AUG. 29, 1970

SHORE OUTLINE FROM AIR INTERP.

STATISTICS AT TIME OF SURVEY

1. ELEVATION
2. SURFACE AREA
3. VOLUME
4. EST. ANNUAL FLUCTUATION
5. MEAN DEPTH
6. MAX. DEPTH
7. PERIMETER
8. AREA, 20 FT. CONTOUR
9. HEIGHT OF BENCH MARK ABOVE WATER LEVEL

FISH AND WILDLIFE BRANCH

DEPARTMENT OF RECREATION AND CONSERVATION

NORTH BURNIE L. (SHEET 2 OF 2)

DATE: OCT. 22, 1970 | DRAWN: R. STOPPS | SCALE: 1cm. = 40m.

93 L/5-8

and in the Burnie River often feed on small rodents. One Cutthroat from the Burnie River contained a Western Jumping mouse in its stomach, the long tail of the mouse was still hanging out of the mouth of the fish when it took a lure. Other fish were feeding on aquatic insects and minute fresh water clams. G. Hazelwood (pers. comm.) reports catching a Cutthroat off the creek mouth on the southeast shore of N. Burnie Lake using Spruce grouse hearts for bait. (See Plate 6)

On North Burnie Lake stream #1 entering at the north end (See Map 3a) provided the best spawning potential with substrate and flow patterns well suited to fish habitat. However, as the glacier was only 3 km. upstream, the water temperature of 5° C may have been a limiting factor for productivity. No fish were seen or caught although angling was attempted. The stream entering on the west shore of North Burnie from Sandpiper Lake (stream #2 on Map 3a) also had good spawning potential but again the low temperature, 4° C, may inhibit fish habitat requirements.

The Burnie River, between North and South Burnie Lakes, was 20 to 30 m. wide and .5 to 1 m. deep with a flow of about 90m^3/sec. The water was 7.8° C and very turbid. This heavy glacial siltation inhibited spawning activity but shallow shelf areas were good for rearing. One fry was seen, invertebrates were numerous and small fish were rising all around the head of the river. The upper .5 km. supported abundant aquatic vegetation. This section may have been used for spawning as it was above a heavily silted tributary entering from the west where less silt would be deposited. Electro-fishing off the mouth of the Burnie River at South Burnie Lake resulted in 6 Cutthroat trout (2.5 cm. to 6.4 cm.), 5 Mountain

NORTH BURNT LAKE

SPECIES	LENGTH	WEIGHT	SEX	AGE	REMARKS
Cutthroat Trout	26.3 cm	170 gm	F (spent)		
	28.7 cm	225 gm	F (spent)		Stomach contents: mouse remains
	30.2 cm	250 gm	F (imm.)		Stomach contents: fish remains
	38.7 cm	525 gm	M maturing		Stomach contents: empty
	48.1 cm	100 gm	Male		Stomach contents:
Rainbow	15.0 cm	25 gm	F (imm.)		Probably Steelhead
	15.5 cm	30 gm	M (imm.)		Probably Steelhead
Kokanee	13.5 cm	30 gm	M maturing		
	13.6 cm	30 gm	F maturing		
	13.9 cm	30 gm	M (mature)		
	14.3 cm	30 gm	M maturing		
	14.6 cm	40 gm	M (mature)		
	16.8 cm	55.0 gm	M (mature)		
Dolly Varden	11.2 cm	15 gm	F (imm.)?		
Mountain Whitefish	12.6	25 gm	F (imm.)		
	21.1 cm	110 gm	Female		
	21.7 cm	120 gm	Female		
	26.2 cm	190 gm	Female		
Longnose Sucker	21.9 cm	130 gm	Male?		
	22.4 cm	120 gm			
	22.8 cm	150 gm			
	25.0 cm	160 gm			
	33.5 cm	400 gm	Female		
	38.6 cm	550 gm	Female		

NORTH BURNIE LAKE (August 28, 1975)

Kokanee

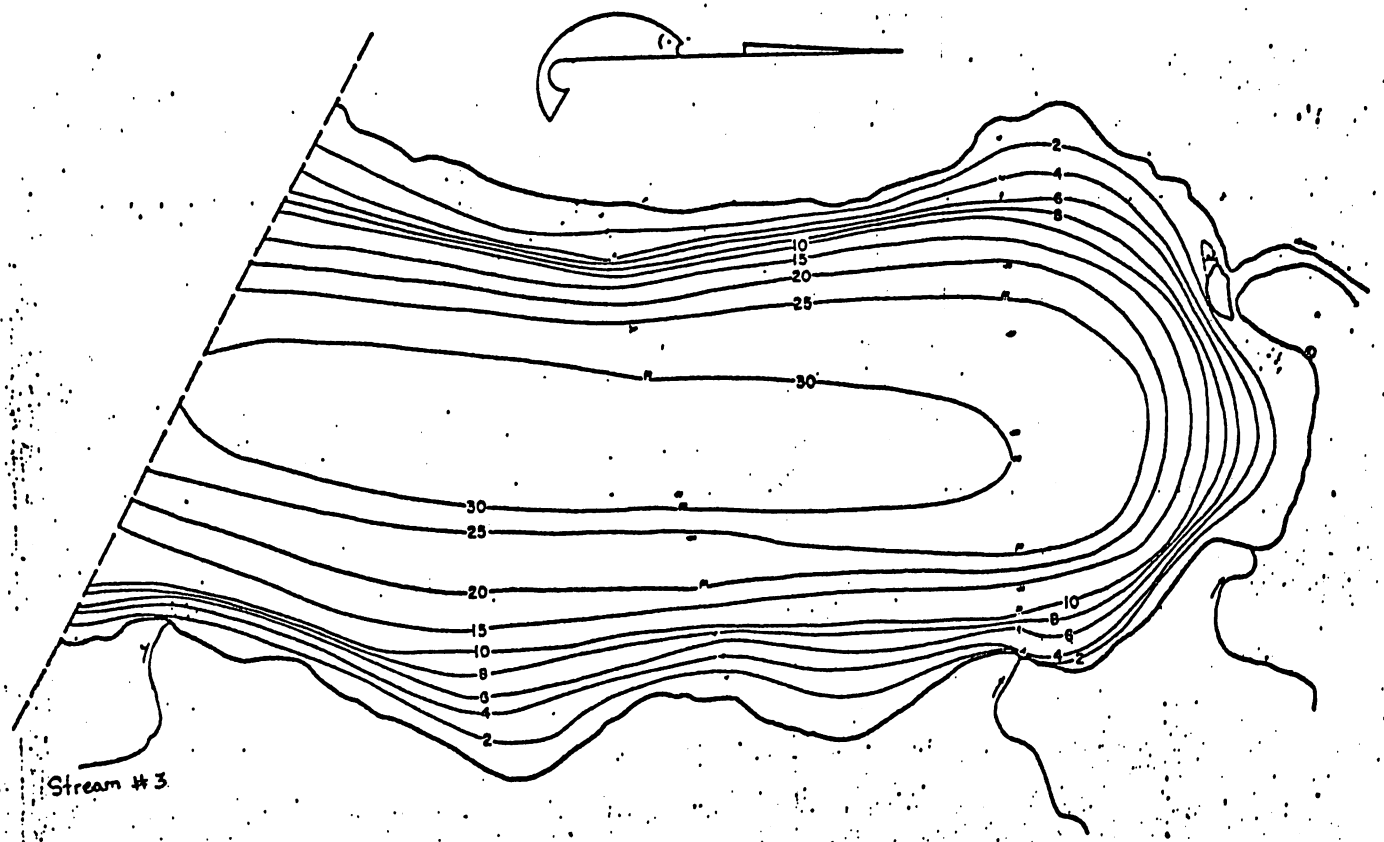
(No scale samples taken)

Length (cm)	Length (cm)
11.3	12.4
11.4	12.4
11.4	12.5
11.6	12.6
11.8	12.7
11.8	12.7
11.8	12.7
11.8	12.8
11.8	13.0
11.9	13.1
12.0	13.2
12.0	13.3
12.0	14.2
12.1	14.4
12.1	14.5
12.4	

whitefish (4.2 cm. to 4.8 cm.) and 5 Prickly sculpins (Cottus asper) 4.8 cm. to 7.5 cm. in length.

South Burnie Lake: was similar in size and shape to North Burnie Lake; however, it was not quite as deep, the maximum depth being about 30 m. (90 feet). A feature of this lake was the chain of small islands off the southwest shore. (See Map 4b) There were some rocky shoals along the inside passage by the islands, which were difficult to detect due to the poor visibility into the water. Another characteristic of South Burnie Lake was the large avalanche slope on the west shore where vegetation and debris was swept into the lake. The shoreline, like the north lake, consisted mainly of boulders, and large gravel. The north shore, however, was a sand and gravel beach with sandbars formed by the outflow of the Burnie River. Alders grew along the immediate shoreline, otherwise the spruce/fir forest dominated. Glaciers were not generally at as close a proximity as to North Burnie, therefore, the temperature of South Burnie Lake was slightly higher - 10.9° C. at the surface and 5.8° C. at the bottom. Five species of fish were found in this lake: Cutthroat trout ranging in length from 11.0 cm. to 34.0 cm., Kokanee from 11.0 cm. to 13.5 cm., Mountain whitefish from 13.0 cm. to 23.5 cm., Redside Shiner (Richardsonius balteatus) 9.5 cm. and Longnose sucker ranging from 22.0 cm. to 33.0 cm. The characteristics described for the fish in North Burnie Lake also held true for those of South Burnie. Dolly Varden and juvenile Steelhead were not present in the fish sampled but it was suspected that these two species are found in the south lake as well as the north.

Neither lake showed significant reduction in dissolved oxygen with depth and there was no formation of a distinct thermocline.



Map 4a
South Burnie Lake

NOTE: ⊕ DENOTES BENCH MARK

SURVEYED BY: [illegible] DATE: AUG. 28, 1970
SHORE OUTLINE FROM: AIR SYSTEMS

STATISTICS AT TIME OF SURVEY

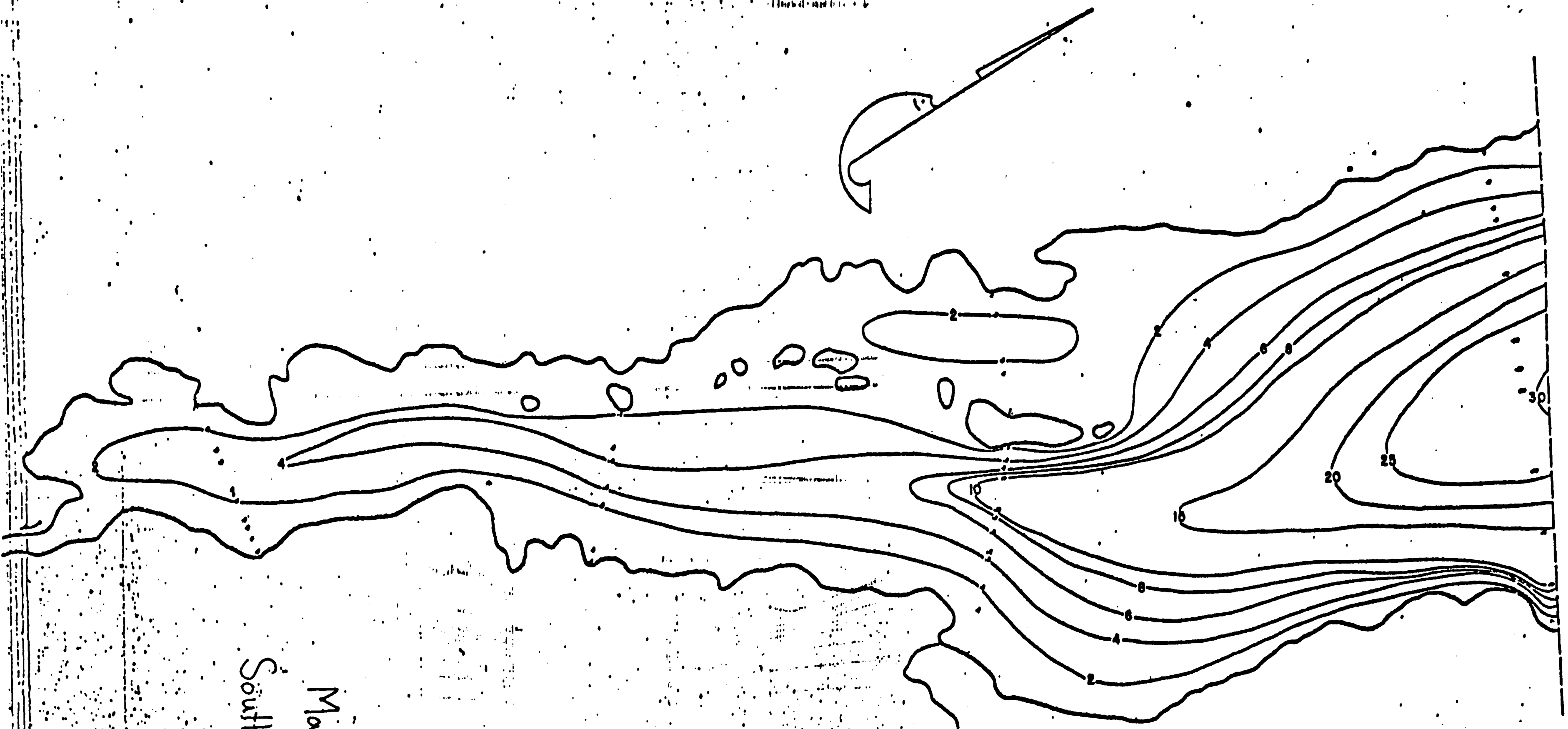
1. ELEVATION
2. SURFACE AREA
3. VOLUME
4. EST. ANNUAL FLUCTUATION
5. MEAN DEPTH
6. MAX. DEPTH
7. PERIMETER
8. AREA, 30 FT. CONTOUR
9. HEIGHT OF BENCH MARK ABOVE WATER LEVEL

FISH AND WILDLIFE BRANCH
DEPARTMENT OF RECREATION AND CONSERVATION

SOUTH BURNIE L.
(SHEET 2 OF 2)

DATE: OCT. 27, 1970 | DRAWN: K. SPOOR | SCALE: 1 cm = 40 m.
DRAWING NO. 93 L/3-1

Map 4b
South Burnie Lake



NOTE: ⊕ DENOTES BENCH MARK

SURVEYED BY: SHORE OUTLINE FROM AIR INTERIM	DATE: AUG. 20, 1978

STATISTICS AT TIME OF SURVEY

1. ELEVATION
2. SURFACE AREA
3. VOLUME
4. EST. ANNUAL FLUCTUATION
5. MEAN DEPTH
6. MAX. DEPTH 9 m.
7. PERIMETER
8. AREA, 20 FT. CONTOUR
9. HEIGHT OF BENCH MARK 1' ABOVE WATER LEVEL

FISH AND WILDLIFE BRANCH
Department of Recreation and Conservation

SOUTH BURNIE L.
(SHEET 1 OF 2)

OCT. 27, 1978

1cm. = 40m.

93 L/3-1

SOUTH BURNIE LAKE

SPECIES	LENGTH	WEIGHT	SEX	AGE	REMARKS
Cutthroat	11.0 cm	22.0 gm			
	11.5 cm	22 gm			
	11.5 cm	23.0 gm			
	13.0 cm	25 gm			
	24.0 cm	137 gm	female		stomach contents: chironomid larvae and molluscs
	25.5 cm	160 gm	male		stomach contents: fish remai
	26.0 cm	167 gm	female		
	34.0 cm	410 gm	male(ripe)		stomach contents: small rode (poss. peromyscus)
Kokanee	11.0 cm	20 gm			
	11.0 cm	20 gm			
	11.0 cm	21.0 gm			
	11.0 cm	22 gm			
	12.0 cm	24 gm			
	13.5 cm	31 gm			
Mountain Whitefish	13.0 cm	27 gm			
	13.5 cm	30 gm	immature		
	20.0 cm	94 gm	female		
	20.0 cm	100 gm	female		
	20.5 cm	98 gm	male (imm.)		
	23.5 cm	135 gm	female		stomach contents: gastropod
Redside Shiner	9.5 cm	18.0 gm	female		
Longnose Sucker	22.0 cm	120 gm	female(imm)		
	22.5 cm	125 gm	male		
	33.0 cm	350 gm	female		

BURNIE RIVER (S)

SPECIES	LENGTH	WEIGHT	SEX	AGE	REMARKS
Cutthroat	20.5 cm	85 gm	Female		Stomach - Chironomi larvae and gastropods
	23.0 cm	120 gm	Female		Stomach contents - fish
	27.0 cm.	190 gm	Male (imm.)		
	28.5 cm	223 gm	Female		
	29.0 cm	253 gm	Male(mature)		Stomach contents - (peromyscus spp.) mouse (tail hanging out of mouth when caught)

Low total dissolved solids, an extremely rapid drop-off in depth, and high silt content of the water points to low productivity. The small size of the Kokanee was probably due to lack of plankton production.

Most tributaries to South Burnie Lake were poor fish habitat due to low flows and high gradients. Stream #3 entering on the northeast shore had some suitable spawning gravel near the mouth; because there were few spawning areas elsewhere around the lake this stream may be used quite a lot. Two Cutthroat trout (8-10 cm.) were observed 10 m. upstream and fish were also seen feeding off the mouth of this stream.

The Burnie River, outlet from South Burnie Lake was a broad stream 25 to 45 m. wide, but with an average depth of .4 m. and a flow of $94 m^3/sec$. The stream temperature was 11^0 C and the water was moderately turbid. The gradient was 1% and the substrate mostly gravel and rubble. As a fishing stream it had good potential - five Cutthroat trout (20.5 cm. to 29.0 cm.) were caught with a hand line.

Recreational Potential

The Burnie Lakes and vicinity offer a variety of recreational activities for the wilderness-oriented visitor. No roads or established trails enter the area at present, therefore, access is primarily by float plane. Although evidence of campsites on both lakes was found there are no established camping spots. There was a small aluminum A-frame cabin on the north shore of South Burnie with two aluminum and a fiberglass boat nearby, but otherwise there was little sign of human activity. A rough trail following the west bank of the Burnie River between the two lakes was also discovered.

Hiking the alpine ridges to the east and mountain climbing in the rugged peaks to the west will obviously be two attractions to the area. The hike to Sandpiper Lake has many interesting features. The hiker must first climb up from North Burnie Lake through a mature spruce/fir/hemlock forest where several species of vaccinium berry bushes make up the majority of the understory. Along the way the canyons and cascading falls of Sandpiper Creek offer exciting views from above the valley. At the top of the second major falls (which can be seen from North Burnie Lake) the route levels out over a subalpine plain. Sandpiper Lake itself is surrounded by moraines, glaciers and steep mountain scenery.

Canoeing is another possibility on the lakes. The Burnie River between the two lakes is navigable, except for a couple of log jams and the route is particularly attractive. Mountains and glaciers are a backdrop to the forest and meadows along the way. A glimpse of a beaver may be likely as this animal is active in the area. The Burnie River appears to be navigable by the expert canoeist for several miles after it leaves South Burnie Lake; however, a circle route is not possible nor are there any lakes further downstream where float planes could land to pick up canoeists.

Fishing on these lakes would likely be most successful using bait, as the limited visibility seems to be poor for lures. The best fishing, however, is on Kluck Lake where good-sized Cutthroat trout are found. Although the scenery at this lake is not as spectacular as the Burnie Lakes, the mountains still dominate the background. Marshes and meadows are frequent around the lake; however, extensive beaver activities east and southwest of the lake may render hiking in this country rather difficult. Yet many of

the meadows are quite dry in the summer. A portion of a blazed trail was encountered by the northwest end of the lake, but it was not explored further than this. Hiking potential in the area is variable. The dry meadows and open grown lodgepole forests are readily accessible; however, beaver activities and the denser undergrowth of many parts of the forest severely inhibit easy hiking in these parts without a trail. Kluck Lake itself would be good for canoeing but none of the streams entering or leaving it would be feasible canoe routes.

In a recreational summary then, fishing and hunting would likely be the prime elements of attraction for Kluck Lake while hiking and camping would be a secondary reason in any user survey at present. The potential availability of moose, caribou and grizzly bear in the area and the relatively inexpensive floatplane access from Smithers is sufficient inducement for many fall recreationalists. The Burnie Lakes can provide good fishing usually at stream mouths but it is unlikely to sustain high fishing pressures over time. Mountain goat, caribou, moose and grizzly bear in the adjacent areas offer recreation to the hunter who has been the prime user of the area in the past. For example, G. Hazelwood in September 1967 described a Burnie Lake hunting trip as follows:

"In the course of a 4 day trip we observed 8 caribou (harvested one bull), 7 mountain goat, one black bear and kept ourselves supplied with spruce grouse. The entrails of these birds in turn allowed us to catch cutthroat trout to 2 1/2 lbs. with bait whereas lures and flies were of no effect in the milky waters of the north lake. All in all it was a most pleasurable trip except for the foul weather involved."

The hiker has limited opportunities on the alpine areas to the East and in the Sandpiper Lake drainage on the West where mountain climbing terrain is generally prevalent. The head of the valley above the lakes offers a 3 km. walk along the inlet stream to the toe of an extensive glacier on the northwest corner of the proposal area.

APPENDIX I

A partial list of plants in some of the areas surveyed was compiled through casual observation:

KLUCK LAKE

Large-leaved Avens (Geum macrophyllum)
Thin-leaved Arnica (Arnica fulgens)
Single Delight (Moneses uniflora)
Pink Wintergreen (Pyrola spp.)
Yarrow (Achillea millefolium)
Veronica (Veronica alpina)
Bunchberry (Cornus canadensis)
Mountain Daisy (Erigeron peregrinus)
Dwarf Huckleberry (Vaccinium caespitosum)
Canada Blueberry (V. myrtilloides)
Twisted Stalk (Streptopus amplexifolius)
False Solomon's Seal (Smilacina amplexicaulis)
Indian Hellebore (Veratrum viride)
Cow Parsnip (Heracleum lanatum)
Douglas Spirea (Spirea douglasii)
Cotton Grass (Eriophorum chamissonis)
Large Purple Fleabane (Erigeron speciosus)
Daisy Fleabane (Erigeron strigosus)
Pearly Everlasting (Anaphalis margaritacea)
Bog Orchid (Habenaria dilatata)
Foamflower (Tiarella unifoliata)
Indian Paintbrush (Castilleja spp.)
Water Parsnip (Sium cicutaefolium)
Marsh Grass of Parnassus (Parnassia fimbriata)
Yellow Monkey Flower (Mimulus guttatus)
Giant Ragwort (Senecio triangularis)
Northern Bedstraw (Galium boreale)
Thimbleberry (Rubus parviflorus)
Highbush Cranberry (Viburnum trilobum)

SOUTH BURNIE LAKE

Columbine (Aquilegia formosa)
Cotton Grass (Eriophorum chamissonis)
Water Parsnip (Sium cicutaefolium)
Mountain Valerian (Valeriana sitchensis)
Foam Flower (Tiarella unifoliata)
Black Twinberry (Lonicera involucrata)
Fireweed (Epilobium angustifolium)
Elephant Head (Pedicularis groenlandica)
Tall Blue Huckleberry (Vaccinium ovalifolium)
Black Mountain Huckleberry (Vaccinium membranaceum)
Squashberry (Viburnum edule)
Indian Hellebore (Veratrum viride)
Bog Orchid (Habenaria dilatata)
Bunchberry (Cornus canadensis)
Wintergreen (Pyrola spp.)
Marsh Grass of Parnassus (Parnassia fimbriata)
Thin-leaved Arnica (Arnica fulgens)
Heart Leaf Arnica (Arnica cordifolia)
Yellow Dryas (Dryas drummondii)
Indian Paintbrush (Castilleja spp.)
Large Purple Fleabane (Erigeron speciosus)
Mountain Daisy (Erigeron peregrinus)
Pearly Everlasting (Anaphalis margaritacea)
Self Heal (Prunella vulgaris)
Twisted Stalk (Streptopus amplexifolius)
Crowberry (Empetrum nigrum)
Cow Parsnip (Heracleum lanatum)
Yarrow (Achillea millefolium)
Lupine (Lupinus spp.)
Alpine Fireweed (Epilobium alpinum)
Labrador Tea (Ledum groenlandicum)
Douglas Spirea (Spirea douglasii)
Wooly Thistle (Cirsium undulatum)
Stonecrop (Sedum spp.)
Yellow Monkey Flower (Mimulus guttatus)