

THE SPATSIZI AND STIKINE RIVERS:
MAINSTEM SYSTEM EVALUATIONS OF
FISHERY AND RECREATION VALUES.

by

E. J. Osmond-Jones

Environmental Management Division
B. C. Parks Branch

October, 1977.

TABLE OF CONTENTS

Acknowledgements	1
Introduction	2
Summary	3
Reach Data	9
Kluayetz Creek	9
Spatsizi River	16
Stikine River	26
Points of Management Interest	42
Upper Stikine River Ranger Assessment Report - A. Poulson	48
Appendices	
I Fish Data	61
II Wildlife Sightings	62
III International Scale of River Difficulty	66
Reference	68

ACKNOWLEDGEMENTS

Grant Hazelwood, Lynne Bonner, Irene Pawlas, Jim Pojar and Andy Stewart all participated in the survey and provided additional expertise. Their help is much appreciated.

Al Poulson, Spatsizi park ranger, provided information on the upper Stikine river which also is included in this report.

Chris Kissinger, park technician, provided emergency logistic support and Lori Heimbecker contributed her skillful typing to the manuscript. Additional thanks are given to Irene Pawlas and to my supervisor, Grant Hazelwood, who gave helpful comments and proofread the report to final draft.

INTRODUCTION

The purpose of this survey was to obtain information on the mainstem river systems, fishery and recreational values along the Spatsizi and Stikine rivers in and adjacent to Spatsizi Wilderness Park. This work complements the survey carried out in 1976 in Tatlatui and Spatsizi parks and the Park Ranger assessment reports for Spatsizi Park.

Parks Branch personnel involved were W. G. Hazelwood and E. J. Osmond-Jones. The survey took place between 15th and 24th July, 1977. This is a time of considerable run-off so that water levels and suspended sediment loadings were high. Water levels drop and water clarity increases as the summer progresses and this affects canoeability and probably also influences the distribution of fish. In spring and early summer water is high and murky and canoeing conditions are more difficult due to powerful currents and high standing waves. As the season progresses reduced water flows calm the rapids but expose rocks and bars and tend to narrow the navigable channels.

A ground reconnaissance was made along Kluayetz creek as far as Wing creek. Then the party boarded inflatable boats and a canoe at the mouth of Kluayetz creek and traversed the Spatsizi river and continued down the Stikine river as far as the Klappan river. Additional information on the upper Stikine river between Fountain rapids and the Spatsizi river is also included in A. Poulson's ranger assessment report of this section of the river.

Kluayetz Creek

Due to the presence of the B.C.R. grade the area around the confluence of Kluayetz creek and Spatsizi river has the potential of receiving relatively high visitor use as an easily reached point of access to the park.

It appears feasible to cross Kluayetz creek 5 km. upstream from the confluence with Spatsizi river. Hiking in this generally open country is relatively easy except where creek crossings are encountered. Attractive routes lead to the Buckingham valley and the Stikine headwaters.

Stream width averages about 25 m. Near Fire Flats the creek flows at shallow gradient between low banks. Below Wing creek gradient increases, riffles develop and considerable bank sloughing takes place as the stream erodes to produce incised meanders. A canyon section extends for 2 km. upstream from Ellis creek. Walls of the canyon are up to 60 m. high, gradient goes up to 2% and large boulders produce rough water conditions. Canoeing above the canyon is feasible for the experienced paddler but the canyon section should not be attempted. Portaging around the canyon would be difficult but a horse trail exists on the southwest side of the canyon.

Arctic grayling are plentiful and conditions are good for fish production in Kluayetz creek.

Spatsizi River

Kluayetz Creek to Mink Creek

The relatively narrow valley has a dense spruce and shrub cover. Wet meadowland and muskeg conditions are common particularly

between Beaver and Mink creeks. Conditions for foot travel are generally difficult and crossing Didene, Beaver and Buckinghorse creeks could be hazardous.

Width at the upper end of this section is about 25 m. and the river twists through many bars and islands. 5 km. upstream from Beaver creek there is a minor canyon with rock walls up to 10 m. high and a riffle section where gradient goes up to 2%. Downstream from Buckinghorse creek water velocity slackens, the river meanders and forms oxbow lakes and width goes up to 50 m. There is considerable erosion of alluvial banks in the lower reach leading to a reduction in water clarity. Suspended load is further increased by a muddy tributary draining Spatsizi mountain's red soils.

The confluence of the Spatsizi river and Kluayetz creek is an excellent launch site for downriver travel. All of this section is good canoeing water; challenging upstream of Buckinghorse creek but much easier lower down.

Good fish habitat is abundant although production and angling is probably adversely affected by the low water clarity. Rearing conditions are particularly good in the large lagoons in the lower reach and large Dolly Varden char are also likely to occur in this area. Arctic grayling are abundant.

Mink Creek to the Stikine River

The valley floor broadens out and the forest floor is more open than upstream. Spruce is still dominant but there are large stands of lodgepole pine on dry benches. Conditions are generally good for foot travel but crossing Kliweguh creek and the Dawson and Ross rivers could cause difficulty.



View from a grassy terrace overlooking the confluence of Kluayetz creek and the Spatsizi river. This is the practical head of navigation on the river.



Lunch with the Canadian River Expedition on the Stikine river.

At Mink creek the gradient of the Spatsizi river increases and many bars and islands have formed. Below Kliweguh creek the gradient slackens again and generally placid conditions extend downstream as far as the Dawson river. At this point velocity increases again and bars and riffles develop, especially downstream from the Ross river. Canoe routes are clear and wide but choosing routes and negotiating standing waves requires at least an intermediate level of skill. The river averages 40 m. in width.

Low water clarity, high velocity and paucity of back eddies and side channels suggests no better than moderate angling prospects except in and at the mouths of tributaries. Game fish present are Arctic grayling, mountain whitefish, a few rainbow trout and Dolly Varden char.

Stikine River

Spatsizi River to Pitman River

A broad hilly valley extends on either side of the river and within this downcutting has produced a secondary valley so that steep banks and rock bluffs are common features. Vegetation is predominantly spruce forest with groves of aspen on the steep well-drained river banks.

The formation of a secondary valley means that the easiest hiking is often back from the river.

Water clarity in the Stikine river decreases dramatically as a result of the inflow of murky water from the Spatsizi river. Average width is 50 m. and velocity is high, around 3 m./sec. At first the river is a fairly straight run but near Marion creek it breaks into many channels and riffles develop. Regaining its single

channel, the river then accelerates to produce a rolling run down to the white water of Jewel rapids. In this rapid, gradient goes up to 2%, water is shallow, high standing waves develop and the channel is strewn with huge boulders. Velocity remains high below the rapids with the occasional bar, island or rock ledge producing steep riffles.

River travellers leave the park at Marion creek.

Canoe routes are generally obvious and easily negotiated but Jewel rapids requires fast maneuvering and good river reading - it should be attempted only by experienced and competent canoeists.

Moderately good fish habitat exists in eddies and side channels. Arctic grayling and Dolly Varden char appear to be the most common game fish but rainbow trout have been reported by guides.

The Pitman is a clear stream containing good fish habitat but it would probably be difficult for hikers to cross. Marion creek would also be hazardous to cross on foot.

Pitman River to Cullivan Creek

To the north the land rises steeply from the river to mountains of the Stikine ranges. More gentle slopes rise from the south bank to the Spatsizi plateau. In this section of the river active erosion of soft boulder clay and lacustrine deposits gives rise to massive slumping which adds greatly to the suspended load of the river and reduces water clarity to 10 cm. Mature spruce forest is the dominant vegetation with groves of aspen on the south aspect slopes.

Water velocity remains around 2 or 3 m./sec. and width averages

60 m. At Shreiber creek a rock bluff produces a steep riffle with high standing waves and this is followed by a braided reach with many bars, side channels and islands. This gives way to a more uniform run but between Cambridge and Cullivan creeks, bars, islands and side channels again develop.

Canoe routes are wide and obvious but care and attention is required in the braided reaches.

Angling conditions are good in back channels and at the mouths of tributaries. Water in the main channel is too murky for good angling. Arctic grayling, Dolly Varden char and mountain whitefish are locally abundant.

Kehlechoa river and Cullivan creek are the principal tributaries in this section. Both have clear water and they probably contain excellent salmonid habitat.

Hiking conditions appear best on the drier north bank but stream crossings could be difficult.

Cullivan Creek to the Klappan River

In this section the river valley once more becomes confined with Mt. Sister Mary and Mt. Brock forming prominent features to the north and south respectively. Vegetation is predominantly spruce forest but the well drained south aspect slopes support open brush and aspen groves. These more open forest conditions and favourable aspect provide marginal deer winter range for a small population in the Stikine valley.

Braiding is less common than upstream and is confined to the area of McBride river. Banks are more consolidated and sloughing is not so pronounced as upstream. Downstream from McBride river

water conditions are uniform broken only by the 300 m. long Beggerlay canyon 3 km. upstream of the Klappan river. Here the river width of 60 m. is constricted to 23 m. by rock walls. High standing waves and powerful boils make canoeing conditions in the canyon hazardous - attempts to run it should be made only by competent and experienced canoeists. Apart from the canyon, canoe routes are obvious and easy.

Murky, fast flowing water in the main channel indicates poor conditions for fish production and angling but Arctic grayling, Dolly Varden char and mountain whitefish are abundant in back channels and at the mouths of tributaries. The clear water conditions of McBride river provide excellent sport fish habitat.

The generally improved drainage conditions suggest easy hiking and an old mining exploration road should provide good hiking west of Mt. Sister Mary.

REACH DATA

In describing the rivers and their environs this report follows the sequence of the field survey and begins with Kluayetz creek, continues with the Spatsizi and ends up with the Stikine river. Waterways have been broken into reaches and described following the methods used by the Resource Analysis Unit, Ministry of the Environment and the Inventory Section, Fish and Wildlife Branch. Matters of recreational interest have been mentioned and the river has been classified for canoeability using the International Scale of River Difficulty, a copy of which is included in Appendix III.

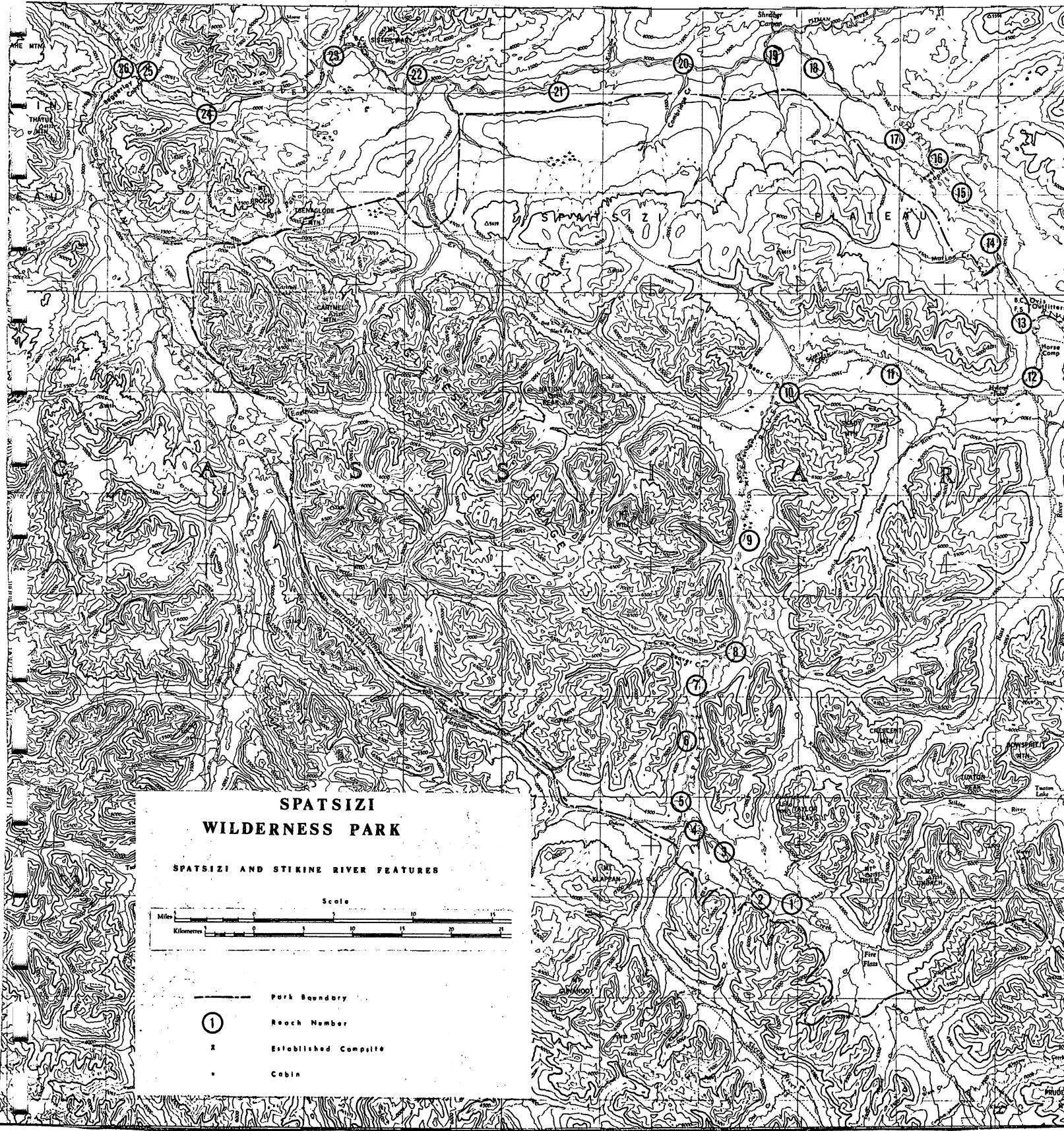
Kluayetz Creek

Reach 1. Upstream from 600 m. below Wing creek. The upper limit of the reach was not determined but it probably extends upstream to Fire Flats.

Surroundings. The valley floor is about 2 km. wide and contains uneven drift deposits on which open meadows of grass, willow and Arctic birch grow. Valley sides have spruce and alpine fir cover.

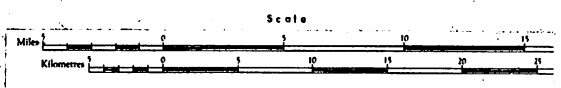
Stream Features

Width	20 m.
Depth	0.8 m.
Substrate	Large rubble to sandy gravel. Small rubble/ large gravel predominant.
Gradient	0.5%
Temperature	8.5°C.
Clarity	Fairly clear, about 60 cm.



SPATSIZI WILDERNESS PARK

SPATSIZI AND STIKINE RIVER FEATURES



- Park Boundary
- ① Reach Number
- X Established Campsite
- Cabin

Channel form	Gently curving with a few bars and islands.
Flow characteristics	Mostly a swirling to gently rolling run. A few minor riffles.
Banks	Mostly 2 m. high consisting of outwash rubble and gravels. Short sections of fine alluvial soil banks which were undercut and rapidly eroding. Little overhanging vegetation.

Fish. Arctic grayling fry present under cutbanks and in side channel. Adult Arctic grayling were present in the main channel. Habitat conditions for game fish are rated as moderately good.

Recreation. Good hiking conditions with firm going, some patches of shrubs hinder progress but conditions in grass meadows are excellent. Flat campsites are plentiful but near the river there is little shelter and no firewood. Chances of seeing game are good with moose and caribou plentiful. Crossing the river would be difficult for hikers. Good angling for Arctic grayling is available. Canoeing conditions are fairly easy and water conditions are rated as class II.

Reach 2. From 600 m. downstream of Wing creek to 7.3 km. downstream from Wing creek. Distance 7.9 km.

Surroundings. Valley floor reduced to a width of about 1 km. and consisting of flat, grassy terraces, especially on the north bank.

Stream Features

Width	20-30 m.
Substrate	Mainly large and small rubble with sand in interstices. Numerous large emergent boulders.
Gradient	1-1.5%
Temperature	8.5°C.
Clarity	Decreases to 50 cm. due to slumping.
Channel form	Incised meanders; bars common.
Flow characteristics	Generally a rolling run with riffles caused by bars and boulders.
Banks	Up to 30 m. high, steep slopes consisting of till and outwash rubble and gravel. Considerable slumping of till. Little overhanging vegetation.

Tributaries. Some spawning potential in a creek on the north bank.

Fish. The increase in velocity indicates less fish habitat. Arctic grayling to 33 cm. fork length and 365 g. were caught by angling in side channels and at a creek mouth.

Recreation. Hiking conditions are good to excellent in open meadows. Open spruce forest is encountered on the north bank towards the downstream end of the reach but hiking is easy along game trails near the river. There is little firewood or shelter in the upper part of the reach. Camping conditions are better at the west end of the reach but flat camping spots are few and small. The chance of seeing moose and caribou are good.

Hiking across the river would be difficult and riffles and boulders at the lower end of the reach would make difficult canoeing; the water is rated as class III. Good angling for Arctic grayling is available in a few places in the reach.

Reach 3. From 7.9 km. downstream of Wing creek to 500 m. upstream from Ellis creek. Distance 1.4 km.

Surroundings. The river is confined to a narrow canyon with walls up to 60 m. high. To the south open meadows persist on a wide bench but to the north land rises rapidly through spruce forest with little meadowland.

Stream Features

Width	20-30 m.
Substrate	Many large emergent boulders. Rubble and boulders predominate.
Gradient	1-2%
Channel form	Generally straight to slightly curving with a few sharp turns caused by rock outcrops. Bars have formed in the middle section of the reach.
Flow characteristics	A turbulent run with standing waves caused by constriction. Several white water sections due to emergent and submerged boulders.
Banks	A mixture of rock bluffs and steeply sloping drift deposits. In the middle section the canyon walls have receded from the margin to give a narrow rubble and boulder floodplain.

Tributary. North bank tributary 5 m. wide and maximum depth of 1 m. Tumbling flow in side canyon and little fish habitat.

Fish. A few pools and eddies provide habitat.

Recreation. Hiking routes and camping spots are probably more numerous on the south side. On the north bank the easiest hiking is along the break of slope at the top of the canyon; this route avoids numerous patches of muskeg further inland but requires a detour inland to cross a tributary stream. A convenient log was available at the stream crossing but otherwise wading is required. A relatively easy crossing of the Kluayetz was seen in the mid section of this reach where the river passes over a series of shallow riffles between bars.

This reach is best not attempted by canoeists. During this survey an experienced canoeing party came to grief in this reach and was flown downstream by helicopter. Boulders and turbulent conditions produce very congested routes rated at class IV. Lining through severe sections is generally impossible because of rock bluffs. Portaging up the steep banks would be very arduous. A horse trail parallels the stream on the southwest side back away from the canyon.

Reach 4. 500 m. upstream from Ellis creek to the confluence with the Spatsizi river. Distance 2.8 km.

Surroundings. The canyon walls of the previous reach give way to more gentle slopes. Open grass and aspen groves lead up to spruce forest on the northern bank. Open spruce forest and willow shrubs predominate on the south bank. Near the Spatsizi

a flat grassy terrace overlooks the river on the north side. A narrow wet floodplain bearing spruce forest and willow shrubs has developed near the river and provides good habitat for beaver.

Stream Features

Width	30-50 m.
Substrate	Mostly small rubble and sandy gravel, some boulders.
Gradient	1%
Clarity	40 cm.
Temperature	8.5°C
Channel form	Numerous bars and islands, curving.
Flow characteristics	Generally a rolling run with riffles between bars. Several pools and slack water in side channels.
Banks	Some rock and fine alluvium but mostly actively eroding rubble/gravel banks 1-2 m. high.

Fish. Arctic grayling to 30 cm. caught in beaver pond. Arctic grayling fry seen in side channel. This reach contains a small amount of moderately good fish habitat.

Tributary. Ellis creek flows in from the south. It appears to be 5-6 m. wide and would require wading by hikers unless convenient logs are available.

Recreation. Firm going for hikers on the terraces and hill-sides of the north side of the river. Very good campsites are available near the confluence with the Spatsizi river. The presence of bars and narrow channels leads to a rating of grade II for canoeability.

Spatsizi River

Reach 5. From Kluayetz creek to 7.2 km. downstream. Distance 7.2 km.

Surroundings. The first half of the reach has open grass and shrub terraces near the river up to 300 m. wide. On the east side the terraces give way to steep spruce forested slopes. To the west the country is fairly open and hilly up the valley of Didene creek. In the lower half of the reach the valley narrows, and spruce forest comes down to the water's edge.

Stream Features

Width	20-30 m.
Depth	Averages about 1 m.
Substrate	Rubble and gravel, fairly well compacted with sand.
Gradient	0.5-1%
Temperature	8.5°C.
Channel form	Numerous bars and islands, curving.
Flow characteristics	Mostly a slightly rolling run with a few minor riffles between bars.
Banks	Rubble and gravel fluvio-glacial deposits make up most of the bank material but some sections contain fine alluvium. Height of banks 1-2 m. and there is some active undercutting.

Tributaries. The principal tributary apart from Kluayetz creek is Didene creek which enters 300 m. from the beginning of the reach. It is about 15 m. wide and would be difficult for hikers to cross. Fish and Wildlife Branch have found burbot and Arctic grayling near the confluence with the Spatsizi river.

Fish. Many Arctic grayling were rising; eddies and side channels provide a moderate amount of good habitat.

Recreation. Open terraces in the upper part of the reach are very good for hiking but conditions downstream deteriorate due to wet meadows, thick brush and steep side slopes. Camping areas are plentiful on the edges of the terraces but firewood could be easily depleted by moderate use of favoured spots. Good campsites are available in open forest in the lower part of the reach.

Canoeing conditions are easy. Most of the reach is class I water with short stretches rated class II because of the need for rapid manoeuvring through braided channels.

Reach 6. 7.2 km. downstream from Kluayetz creek to 17.8 km. below Kluayetz creek. Distance 10.6 km.

Surroundings. Spruce forest comes right to the water's edge with some patches of willow. The valley floor is only a few hundred meters wide and the river impinges on the valley sides in places.

Stream Features

Width	20-30 m.
Substrate	Variable from rubble to sandy silt.
Gradient	Generally less than 0.5%.
Clarity	Increased due to erosion; about 30 cm.
Channel form	Variable from slightly curving to meandering. Moderately numerous bars and islands.
Flow characteristics	Generally placid to slightly swirling conditions in the middle of the reach but slightly

Flow characteristics (Cont'd.)

higher velocity producing slightly rolling water toward the ends of the reach.

Banks Low (1-2 m.) consisting of glacio-fluvial rubble and gravels and fine alluvium. Rapid erosion is taking place in the alluvium leading to an increase in the silt load.

Fish. Arctic grayling were seen rising. Side channels and cutbanks should provide good rearing habitat and the generally placid waters should support abundant fish.

Recreation. The narrow valley with wet floodplain probably does not make for easy hiking but good camping spots should be available in the dry parts of the forest. Canoeing is easy and rated as Class I.

Reach 7. 17.8 km. downstream from Kluayetz creek to 1.8 km. above Beaver creek. Distance 4.6 km.

Surroundings. Banks increase sharply in height as the river cuts through thick glacio-fluvial deposits which form dry terraces supporting stands of lodgepole pine.

Stream Features

Width	20-30 m.
Substrate	Mostly rubble but with some boulders and gravel.
Gradient	Generally 1% but with a major riffle at about 2% in the middle of the reach.

Channel form	Confined by resistant banks. Gently curving with a few sharp turns. Few bars and islands.
Flow characteristics	A rolling run with standing waves up to 70 cm. high in the mid section. Few pools and eddies.
Banks	Glacio-fluvial gravel and rubble but with some rock bluffs in the mid section. Steep sided and up to 10 m. high.

Fish. Good fish habitat probably limited to the few eddies and swirls.

Recreation. Hiking and camping conditions should be very good on the benches near the river. Both ends of the reach are easy canoeing with water rated as class I. Velocity builds up in the mid section but routes are wide with few obstructions and are rated as class II.

Reach 8. 1.8 km. above Beaver creek to Buckinghorse creek. Distance 6.6 km.

Surroundings. The valley floor is narrow but flat near the river and spruce forest reaches to the banks. Several small ponds back from river support Canada geese in summer.

Stream Features

Width	25-40 m.
Substrate	Rubble, gravel and sand.
Gradient	0.5% or less.
Channel form	Curving, numerous bars and side channels.

Flow characteristics In a few areas where the surface is slightly rolling but generally a swirling run with pools and eddies.

Banks Low (1-2 m.) mostly of rubble and gravel but with some fine alluvium.

Tributaries. Beaver creek enters on the left bank. 15 m. wide. Temperature 8°C. Moderate glacial turbidity. Sandy gravel substrate. Good spawning habitat in the lower 800 m.

Fish. Net set for 2 hours at confluence with Beaver creek and caught longnose suckers to 38 cm. Moderately good salmonid habitat.

Recreation. Open forest near the river should provide fairly easy hiking but muskeg could be a problem. Horse trail on benches leading up Beaver Creek on north side of canyon. Good campsites near the river. Easy canoeing conditions with water rated as class I.

Reach 9. Buckinghorse creek to Mink creek. Distance 26.1 km.

Surroundings. Valley bottom flat and floodplain often extends for over 1 km. on each side of the river in the lower part of the reach. Spruce forest is the dominant vegetation with patches of willow and numerous open sedge meadows. Oxbow lakes are common in the lower half of the reach.

Stream Features

Width 40-50 m.
Depth Over 3 m. in places.
Temperature 9°C.



Spatsizi mountain overlooks a deposition area of the river with many meanders, oxbow lakes and low marshy areas. Mink creek and Kliweguh creek respectively enter the valley from the left.



A frontal view of Spatsizi mountain from a meander of the river.

Gradient	Less than 0.5%
Channel form	Meandering, few bars and islands.
Flow characteristics	Placid or gently swirling.
Clarity	Decreases to 20 cm. due to erosion of alluvial banks and inflow of a muddy tributary.
Banks	Mostly fine alluvium which is being rapidly eroded as the river meanders. Levees have built up to 3 m. above the river level.

Tributaries. Buckinghorse creek enters on right bank. At the confluence it is a rolling run about 25 m. in width.

The creek flowing off Spatsizi mountain midway down the reach carries a very heavy red silt load.

Fish. Arctic grayling to 31 cm. and Dolly Varden char to 28 cm. fork length were angled at Mink creek. The water may be too turbid for optimum salmonid habitat but the shallow, clear backwaters and sloughs appear to be good habitat, especially for rearing.

Recreation. The large extent of muskeg and slough would make hiking in this reach difficult but good camping spots are available on levees and in open parts of the forest. This is an excellent area for observing moose and waterfowl. Trails lead off up Mink creek towards Cold Fish lake 10 km. away.

Angling potential is good with the possibility of catching large Dolly Varden char. Placid water conditions make for very easy canoeing and the water is rated as class I.

Reach 10. Mink creek to Scotty's cabin. Distance 21.5 km.

Surroundings. Near Mink creek the valley curves to the east and opens out so that the valley floor is often 3 or 4 km. wide. Spruce is still the dominant vegetation but around Scotty's cabin there is open meadowland and a stand of lodge-pole pine.

Stream Features

Width	30-60 m.
Depth	Approx. 1.5 m.
Gradient	1%
Channel form	Curving, numerous bars and islands with side channels often obstructed by logs.
Flow characteristics	Velocity increases considerably from the upstream reach, a few minor riffles over bars but generally a swirling and slightly rolling run.
Banks	Mostly outwash rubble and gravel. 1 to 10 m. high with considerable active erosion.

Tributaries. Mink creek. At the confluence the creek is divided into two distributaries which are frequently not well confined and subject to changes in course. Both channels are 3 to 4 m. in width and about 60 cm. deep. Water is clear and flows as a rolling run over a predominantly rubble substrate. A few pools and side channels provide fish habitat, particularly in the south channel where fry were seen and grayling to 31 cm. angled.

Bear creek. 2 m. wide, clear and a swift rolling run over a rubble substrate at the confluence. Probably contains little fish habitat.

Kliweguh creek. 6-7 m. wide and a shallow, braided run with little fish habitat for at least 1 km. from the confluence. Conditions for fish probably improve upstream in both Bear and Kliweguh creeks.

Fish. Arctic grayling and Dolly Varden char were caught off Mink creek and good fishing for rainbow trout has been reported by T. Walker. Side channels and log jams provide moderately good fish habitat.

Recreation. With the valley considerably wider and the river following a less meandering course than upstream conditions improve for hikers. The going is very good in the dry area at the downstream end of the reach. A cabin is located at Scotty's and a tent frame camp at Bear creek.

Angling prospects off stream mouths are good and probably improve in clearer water conditions. Canoeing conditions are easy and are rated class II. Many channels are shallow and the best choice of route may not be immediately obvious.

Reach 11. Scotty's cabin to the Dawson river. Distance 8.4 km.

Surroundings. The valley remains wide and is generally flat floored with significant areas of open meadow. Spruce forest is the dominant cover with patches of lodgepole pine, particularly on the north bank.

Stream Features

Width	30-40 m.
Gradient	Less than 0.5%
Channel form	Straight to gently curving, few bars and islands.
Flow characteristics	A placid to swirling run.
Banks	Generally about 2 m. high of outwash cobbles and gravel. Some stretches of fine alluvium subject to undercutting.

Fish. The generally placid conditions should be conducive for good fish production.

Recreation. Hiking conditions should be good but with the possibility of wet spots. Placid water conditions make for easy class I canoeing water.

Reach 12. Dawson river to the Stikine river. Distance 15.3 km.

Surroundings. In this reach the river swings north to join the Stikine. On the north and west banks the valley narrows and rises sharply to the bluffs of the Spatsizi plateau. The valley topography is hummocky with a cover of spruce, lodgepole pine and some aspen.

Stream Features

Width	40-60 m.
Depth	Approx. 1.5 m.
Velocity	2.5 m./sec.
Gradient	0.5-1%
Clarity	10 cm.

Channel form Generally gently curving with few bars and islands. The river takes a sharp turn at the Ross river and there follows a short braided section containing a moderate number of bars and islands.

Flow characteristics Velocity increases considerably at Dawson river to produce a rolling run with several riffles over bars near the Ross river.

Banks Erosion of outwash deposits produces some slumping banks up to 20 m. high but the general bank height is 2-6 m. Material is mostly rubble with some gravel and boulders. There is a rock outcrop at the Ross river.

Tributaries. Dawson river. Width 9 m. A high velocity stream at the confluence. There may be significant fish habitat higher up in the hanging valley.

Ross river. 35 m. wide at the confluence and a high velocity run with few pools in the lower 10 km. Upper reaches are more suitable for fish production. Canadian River Expedition tourists caught rainbow trout near the confluence with the Spatsizi river at the time of this survey.

 Small creeks on the south bank near Hyland Post contain very good spawning and rearing habitat. They support Arctic grayling and Dolly Varden char.

Fish. The few pools and side channels are known to harbour mountain whitefish, Arctic grayling and Dolly Varden char but the high velocity, turbidity and lack of shelter suggest low productive capability in the mainstem.

Recreation. The generally open spruce and lodgepole pine make for easy hiking. At Hyland Post there is an airstrip, a permanent guide camp and corrals. Near the confluence with the Stikine river Horse camp consists of a good cabin and corrals.

Excellent angling is available in ponds near Hyland Post; there is a high possibility of sighting goats on the bluffs and the reach contains good moose habitat.

The section downstream of Ross river provides challenging canoeing with standing waves up to 1 m. high; water is rated as class II bordering on class III.

Stikine River

Reach 13. Spatsizi river to 3.7 km. downstream. Distance 3.7 km.

Surroundings. On the west bank there is generally a flat, low bench varying from 10 to several hundred meters wide fringing the river. Beyond this the land rises steadily to the Spatsizi plateau. On the east bank this bench is confined to the upstream part of the reach. Lower down the bank is about 40 m. high and slopes steeply down towards the river. Vegetation is spruce and lodgepole pine with aspen on the slopes of the east bank.

Stream Features

Width 50 m.

Depth Approximately 3 m.

Substrate Mostly small rubble with some gravel and sand.

Gradient Less than 0.5%

Clarity At the confluence water from the Stikine has a clarity of about 1 m. compared with the Spatsizi where the value is about 10 cm. Mixing of the two waters occurs progressively down the reach until a uniform level of about 25 cm. is reached.

Channel form Straight to slightly curving with a few back channels but little or no development of bars.

Flow characteristics A swirling to slightly rolling run with few eddies.

Banks Outwash rubble and gravel predominates with some sand and boulders. Bank height varies from 1 or 2 m. to 40 m. and more. There is steady erosion into the benches but no large scale slumping.

Fish. Angling was not attempted but guides report catching Dolly Varden char, Arctic grayling and small rainbow trout.

Recreation. Hiking is easy along the benches by the river. A guide camp is situated on the east bank halfway down the reach and a Forest Service cabin has been built on the opposite bank. Floatplanes regularly land at the guide camp.

Canoeing conditions are easy with water rated as class I.

Reach 14. From 3.7 km. downstream of Spatsizi river to 6.5 km. downstream of Marion (Diamond) creek. Distance 9.8 km.

Surroundings. The high banks continue on the east side of the river. Below Marion creek the valley becomes confined with wooded slopes rising sharply on both banks to a height of up to 60 m. Vegetation is predominantly spruce forest with aspen groves on the side hills.

Stream Features

Width	40-60 m.
Substrate	Cobbles with some boulders, sand and gravel.
Gradient	0.5-1%
Clarity	25 cm.
Channel form	Curving, numerous bars, islands and side channels.
Flow characteristics	Swirling to rolling in the riffles in side channels and over bars.
Banks	Generally rubble and gravel with some boulders and patches of sand. Banks adjacent to the water 1-2 m. high with some undercutting.

Tributary. Marion (Diamond) creek. 10 m. wide at the mouth; temperature 9°C. and a broken high velocity flow containing little fish habitat. Previous work in the area indicates that Arctic grayling and Dolly Varden char are found up this stream.

Fish. A 28 cm. Arctic grayling was angled at the mouth of Marion creek. In a previous visit to this reach a net in a back channel produced a Dolly Varden char of 79 cm. (4.9 kg.), Arctic grayling to 25.5 cm. and longnose sucker to 32.5 cm.

Recreation. Hiking conditions on the left bank appear good but Marion creek would be difficult to cross. Canoe routes are obvious and riffles are easily navigated. Water is rated as class II.

Reach 15. 6.5 km. downstream from Marion creek to Jewel rapids.

Distance 6.6 km.

Surroundings. This reach is characterized by increased entrenchment with the river confined within steep banks up to 60 m. high. Side slopes support spruce forest and aspen groves.

Stream Features

Width 50 m.

Substrate Mostly cobbles and boulders.

Gradient 1%

Clarity 25 cm.

Channel form Gently curving, very few bars and back channels.

Flow characteristics Velocity increased to give a rolling run with some swirls and eddies.

Banks The river is generally confined within a steep sided valley about 60 m. deep; the banks immediately next to the river are of glacial drift consisting of gravel, rubble and boulders.

Fish. Good habitat in the eddies and swirls.

Recreation. The easiest hiking routes would probably be away from the river because of the incised nature of the valley. River velocity increases but canoeing remains fairly easy with water rated as class II.

Reach 16. Jewel rapids. 13.1 to 14.0 km. downstream from Marion creek.

Surroundings. Downward erosion through thick glacial deposits confines the river to a narrow valley.

Stream Features

Width	50-60 m.
Depth	1-2 m.
Gradient	1-2%
Substrate	Large rubble and boulders.
Clarity	25 cm.
Channel form	Curving, relatively shallow with numerous large submerged and emergent boulders.
Flow characteristics	A very turbulent high velocity run with high standing waves and white water.
Banks	Rubble and boulders. Many of the boulders are huge glacial erratics.

Fish. Little habitat but eddies and pockets behind boulders should support Arctic grayling.

Recreation. Hiking, particularly at high water conditions would probably be easiest away from the river.

This rapid is challenging canoeing which changes considerably with water levels. Routes are confined by boulders many of which are submerged and barely visible from upstream. Standing and breaking waves are liable to swamp open canoes. Water is rated as class IV and scouting from shore is recommended.



Large glacial erratics in the Stikine river make Jewel rapids a hazardous passage.



Many are almost submerged and require constant attention from the river navigator.

Reach 17. From Jewel rapids to 14.4 km. upstream of the Pitman river. Distance 9.0 km.

Surroundings. River remains incised with banks frequently 30 or more meters high. Vegetation cover is predominantly spruce forest with aspen groves on side slopes. Several rock bluffs add to the scenic appeal of this reach.

Stream Features

Width	60 m.
Gradient	1%
Substrate	Cobbles and boulders.
Clarity	25 cm.
Channel form	Curving. Several sharp turns around rock bluffs. A few bars and islands.
Flow characteristics	A high velocity rolling run with some white water riffles and a few pools.
Banks	Glacial drift gravel, cobbles and boulders with occasional rock bluffs.

Fish. Generally little good habitat except in the few eddies and pools.

Recreation. The incised nature of the valley means that the best hiking routes are probably back from the river. Canoe routes are obvious and wide but standing waves are over a meter high in places and requiring skill and care. Water is rated as class II bordering on class III.

Reach 18. 14.4 km. upstream of the Pitman river to Shreiber creek.

Distance 16.6 km.

Surroundings. The valley becomes progressively less incised downstream. Spruce forest predominates with a large burned area upstream of the Pitman river.

Stream Features

Width	60 m.
Gradient	0.5-1%
Substrate	Cobbles and boulders.
Clarity	25 cm.
Channel form	Gently curving; moderate development of bars, islands and side channels.
Flow characteristics	Mostly a rolling run with minor riffles over bars. Gradient decreases downstream and standing waves are not as high as in the previous reach.
Banks	Generally less than 20 m. high and often only 1-2 m. Mostly rubble and boulders with some finer materials. A few low rock bluffs.

Tributary. Pitman river. A major tributary about 20 m. wide at the confluence. Water is clear and Lane, Sigurdson, Lee and Stenberg (1972) report placid water conditions and good angling for Dolly Varden char and Arctic grayling.

Fish. Moderate habitat in the few pools and eddies.

Recreation. Hiking conditions appear fairly good close to the river. Canoeing is generally easy and water is rated as class II.

Reach 19. Shreiber creek downstream for 7.5 km. Distance 7.5 km.

Surroundings. The river is contained within a fairly broad valley and lateral erosion produces variation from eroding bluffs to depositional bars and spits. Dominant vegetation is spruce forest.

Stream Features

Width	45-90 m.
Gradient	0.5%
Substrate	Rubble and gravel with some sand.
Clarity	20 cm.
Channel form	Considerably curving with many bars, islands, side and back channels.
Flow characteristics	Swirling to slightly rolling with a steep riffle just downstream from Shreiber creek.
Banks	Vary from low gravel and rubble to over 20 m. high. Rapid erosion of high boulder clay bluffs is resulting in active slumping and the addition of a significant amount to the suspended load of the river.

Tributary. Shreiber creek. A minor stream about 2 m. wide. A short distance up the creek erosional features in the rock walls of Shreiber canyon are a scenic attraction.

Fish. A net set in a back channel caught Arctic grayling to 38.5 cm., Dolly Varden char to 48 cm., mountain whitefish to 26.5 cm. and longnose sucker to 37 cm. Back and side channels provide good rearing habitat.

Recreation. The spruce forest appears to be generally open and fairly easy for hiking but muskeg conditions are probably common along the north facing slopes. Hiking routes would frequently have to be away from the river to avoid slumps and bluffs. Canoeing is easy with the water rated as class II. A short riffle just downstream of Shreiber creek contains high standing waves but these are easily avoided by keeping to the left bank.

Reach 20. 7.5 km. downstream from Shreiber creek to 4 km. below Cambridge creek. Distance 7.8 km.

Surroundings. The floodplain on the left bank is up to 500 m. wide and on the right bank valley sides rise steeply with the formation of bluffs where bedrock and drift deposits are exposed. Vegetation is spruce forest.

Stream Features

Width	60 m.
Gradient	0.5%
Temperature	10° C.
Substrate	Rubble and gravel.
Clarity	20 cm.
Channel form	Gently curving with moderate bar, side and back channel formation.
Flow characteristics	A uniform swirling to gently rolling run.
Banks	Mostly fluvial and glacio-fluvial rubble and gravel with minor slumping.

Tributaries. Small left bank tributaries are of relatively low gradient and may contain good fish habitat.

Fish. Back and side channels provide moderately good habitat. Several large lagoons appear good for rearing.

Recreation. Hiking is probably easy along the floodplain on the left bank. Easy canoeing conditions with water rated as class I.

Reach 21. 4 km. downstream of Cambridge creek to Cullivan creek.

Distance 13.5 km.

Surroundings. The floodplain is up to 1 km. wide and the channel is highly braided. Bluffs are eroding rapidly. Vegetation is predominantly spruce forest with patches of open meadow and aspen on the right bank side slopes.

Stream Features

Width	50-100 m. wetted width; active bed width up to 150 m.
Depth	About 1 m.
Gradient	0.5%
Substrate	Cobbles, gravel and sand.
Clarity	Erosion increases suspended load considerable and clarity reduces to about 10 cm.
Channel form	Curving, braided. Many bars, islands and side channels.
Flow characteristics	Varies from swirling to short stretches of white water over bars and where confined.



Unstable till soils of the Stikine valley promote largescale slumping along the course of the river. Any logging or road-building in this area would only accelerate this process.



Banks Range from low floodplain banks of cobbles and gravel to bluffs about 50 m. high. Rapid erosion into fine grained lacustrine deposits and boulder clay has produced massive active slumping.

Tributaries. Kehlechoa river and Cullivan creek contain clear water and may be important fish habitat. Large rainbow trout are found in the Kehlechoa drainage according to Lane et al, 1972.

Fish. The high suspended load may limit fish production but the numerous back and side channels are otherwise good habitat.

Recreation. High unstable banks mean that hiking trails are best located away from the river. Canoe routes are clear and obstacles can be easily avoided. Water is rated as class II.

Reach 22. Cullivan creek to 5 km. upstream of McBride river.

Distance 10.8 km.

Surroundings. Mount Sister Mary rises rapidly on the right bank. Spruce forest is the dominant vegetation with groves of aspen on south facing slopes. Some deeply incised meanders with active erosion.

Stream Features

Width 45-60 m.

Gradient 0.5%

Substrate Rubble and gravel, some sand.

Clarity 20 cm.

Channel form Curving. Little bar formation, few back and side channels.

Flow characteristics Swirling to slightly rolling.

Banks Considerable variety with rock bluffs on the right bank 1 km. downstream from Cullivan creek. Active erosion of till banks is taking place in the incised sections and slumping is common.

Tributary. Right bank tributary near the end of the reach contains very good fish habitat and several Arctic grayling and Dolly Varden char were caught there.

Fish. A net set in a back channel caught Arctic grayling to 35 cm., Dolly Varden char to 68 cm. (2.75 kg.), mountain whitefish to 33 cm. and a longnose sucker.

Recreation. About 1.5 km. to the north of the river opposite Cullivan creek there is an old exploration road. It heads down the Stikine valley and may provide a good hiking route. Water conditions are easy, rated class I.

Reach 23. 5 km. upstream to 6.9 km. downstream of the McBride river. Distance 11.9 km.

Surroundings. Land rises sharply to hills on the north while to the south there is a more gentle rise to plateau. Vegetation remains spruce forest with patches of aspen on south aspect slopes. There is a B. C. Forest Service cabin 2 km. upstream of the McBride river which services the lookout on Mt. Sister Mary.

Stream Features

Width	45-100 m.
Depth	Often shoals down to 1 m. deep where braided.
Gradient	0.5%, slightly higher in riffles.
Substrate	Rubble and gravel.
Clarity	20 cm.
Channel form	Curving; many bars, islands and side channels.
Flow characteristics	Slightly rolling with riffles where braided.
Banks	Moderately high bluffs have formed on both banks with active erosion of fluvio-glacial, rubble and gravel.

Tributary. The McBride is a major clear water river about 30 m. wide. It appears to contain good fish habitat.

Fish. The heavy silt load is not conducive to high biological activity but the many side channels provide moderately good habitat.

Recreation. Hiking conditions should be good along a 4-wheel drive road on the right bank. Canoeing is easy with the water rated as class I.

Reach 24. From 6.9 km. downstream of McBride river to Beggerlay creek. Distance 19.4 km.

Surroundings. The valley narrows considerably in this reach and the river is especially confined on the north bank. Spruce forest is still the dominant vegetation but groves of aspen and open brush on the south aspect slopes indicate drier climatic conditions.

Stream Features

Width 60-75 m.
Gradient 0.5%
Substrate Rubble, gravel, some sand.
Clarity 20 cm.
Channel form Slightly curving, few bars and islands.
Flow characteristics A generally uniform slightly rolling run.
Banks Generally low rubble banks 1-2 m. high.

Tributary. Water was clear in a tributary flowing off Mount Brock and moderately good fish habitat was seen at the mouth.

Fish. The fairly straight run provides only moderate fish habitat.

Recreation. Along the north bank easy hiking conditions should be found on the old 4-wheel drive road. Water conditions are easy for canoeing and are rated as class I.

Reach 25. Beggerlay canyon. Extends for 300 m. below Beggerlay creek.

Surroundings. The river cuts through a conglomerate outcrop forming a narrow canyon with walls up to about 60 m. high.

Stream Features

Width 23-30 m.
Gradient 1%
Substrate Rock, boulders.
Clarity 20 cm.
Channel form Straight, confined by steep rock walls.



The B. C. Forest Service cabins above McBride river confluence occupy a scenic site.



Beggerlay canyon on the Stikine river is one of the dangerous parts of the float trip. Portaging is almost impossible and extreme caution should be exercised.

Flow characteristics The river slides over a ledge at Beggerlay creek producing large standing waves and powerful boils.

Tributary. Beggerlay creek is a clear water stream which probably contains moderately good fish habitat.

Recreation. Only the most competent canoeists should attempt to run the canyon. The dangers are from swamping by high standing waves and from loss of control in the surges and boils. In the water conditions of our trip the best route was close to the left bank while taking care to stay clear of the ledge jutting out opposite Beggerlay creek. This route avoids the worst standing waves but remains in the main stream and thus avoids the boils. An approach on the right bank would result in being swept by the flow from Beggerlay creek into the most turbulent water.

Beggerlay creek prevents portaging on the right bank and the left bank portage over a high bluff would be arduous.

Water conditions are rated as class IV.

Reach 26. Beggerlay canyon to the Klappan river. Distance 2.7 km.

Surroundings. A confined spruce forested valley with mountains rising on both sides.

Stream Features

Width	60 m.
Gradient	0.5%
Substrate	Boulders and rubble with some sand and gravel.



Keeping to the extreme left in Beggerlay canyon avoids the wash from Beggerlay creek meeting the Stikine's waters.



The bottom of the canyon fans out into a large pool where the boater's tingling excitement can subside before proceeding the final kilometer to the railway bridge.

Clarity	20 cm.
Channel form	Very slightly curving, no bars and islands.
Flow characteristics	A swirling and slightly rolling run.
Banks	Low boulder and rubble banks leading to steep valley sides.

Tributary. Klappan river. A major river about 30 m. wide at the confluence. Turbidity is high and the lower reach is a high velocity rolling run containing little good fish habitat.

Fish. The lack of sheltered water indicates poor conditions for fish.

Recreation. Hiking conditions are probably good in the mature timber near the river. The railway bridge spans the Stikine river here and marked the termination point of this survey. Canoeing is easy with water rated as class I.

POINTS OF MANAGEMENT INTEREST

Access available to canoeists

- a) Entry by road along the B. C. Railway grade to Didene Creek gives access to the head of navigation on the Spatsizi river. It also provides a route for hikers to enter the south portions of the park.
- b) Floatplane landings are possible on the Spatsizi river near Spatsizi mountain.
- c) Floatplane access is possible on the Spatsizi river downstream of Scotty's cabin between Kliweguh creek and the Dawson river.
- d) Wheeled aircraft can land on the private airstrip at Hyland Post in the lower reach of the Spatsizi river subject to the permission of the lessee, H. Paish.
- e) Floatplane access is possible on the Stikine river at Holmes' guide camp 4 km. below the confluence with the Spatsizi.

Canoeing

The whole distance from Didene creek on the Spatsizi to the Stewart-Cassiar road bridge can be run in six days.

Weather conditions are unpredictable and rain is common in summer. Water level fluctuations of 20 cm. and more routinely occur in response to rainstorms and boaters should be aware of this when beaching boats and selecting campsites.

Water conditions are generally suitable for experienced canoeists of intermediate competence.

In June and July high water flows mean high standing waves and powerful currents. Water levels drop in August and September, narrowing navigable channels and exposing bars and boulders. These changes mean that canoeing difficulties and danger levels also change, particularly on upstream reaches.

High water velocity and lack of back channels makes landing from a canoe difficult along many stretches - Hyland Post and Horse Camp on the Spatsizi river are typical examples. Difficult conditions exist on the Stikine at Jewel rapids and Beggerlay canyon. Both of these rapids should be scouted beforehand and it would be arduous to portage around them.

Canoeing parties should always consist of more than one craft and the use of canoe covers is considered to be essential protection.

Riparian Features Outside the Park

Portage trails around Jewel rapids and Beggerlay canyon are highly desirable. High recreation values are apparent on the Pitman, Kehlechoa and McBride rivers and at Shreiber canyon. The easiest and most scenic hiking route along the Stikine below the Pitman river lies on the north bank.

None of these areas of concern lie within the present park boundaries but are clearly part of the recreational package available or desirable for the river users of Spatsizi Park. Ideally the park boundary should be extended to include the right bank of the Stikine river. Failing this our influence should be used to ensure protection of the recreational interests mentioned and the building of portage trails.

Camping

Good camping spots with level ground, shelter and firewood are found all along the route.

Established Camps and Cabins

The following were seen on the river run:

- a) Tent frame camp on the right bank just downstream of Spatsizi mountain.
- b) Tent frame camp at the mouth of Bear creek.
- c) Scotty's cabin in poor condition downstream from Kliweguh creek.
- d) Guide cabins at Hyland Post, usually occupied.
- e) Horse Camp cabin in good condition on right bank of Spatsizi river approximately 3 km. above the confluence with the Stikine.
- f) Ovis Outfitters (Holmes) cabins on the Stikine 4 km. below the confluence with the Spatsizi.
- g) Forest Service cabin in good condition on the opposite side of the river to Holmes' camp.
- h) Forest Service cabin on the right bank of the Stikine about 2 km. upstream of the McBride river. Occupied in summer.

Hiking Routes Adjacent to the Major Rivers

The principal difficulty for the hiker is crossing streams and rivers.

Good routes are available from the Spatsizi-Didene creek area to Fire Flats and to the Buckinghorse valley.

The Spatsizi valley between Didene and Mink creeks cannot be recommended as a hiking route due to steep side slopes, thick brush and extreme marshy conditions. Canoeists and hikers travelling down the Spatsizi valley have easy access to a variety of magnificent alpine terrain.

Hiking along the south bank of the Stikine downstream of the Pitman river would probably entail crossing much muskeg but keeping to the drier north bank slopes would entail crossing several major rivers. The old 4-wheel drive road down the north side of the Stikine valley from Mt. Sister Mary should provide easy hiking.

Wildlife Observation

Conditions are excellent for observing moose and caribou in open country in the Kluayetz valley.

The chance of seeing moose and waterfowl in riparian habitat between Didene creek and Mink creek on the Spatsizi river are very good.

There are excellent opportunities to view mountain goat on the mountains from Didene creek to the confluence of the Spatsizi and Stikine rivers.

Observant travellers have a good chance of observing moose or bear in scattered patches of riparian shrub habitat downstream from Mink creek. Stone sheep can be observed on the alpine areas east of Beggerlay creek.

Fisheries

Upstream from the Dawson river conditions on the Spatsizi river and Kluayetz creek favour moderately high fish production.

Especially good conditions exist in pools and eddies in the braided reaches and in the lagoons and slow waters of the meandering reach between Beaver and Mink creeks.

Below Dawson river the Spatsizi and Stikine rivers are generally fast flowing with only short stretches of good fish habitat characterized by eddies caused by bluffs, bars and boulders.

Murky water conditions persist throughout the spring and summer months in the mainstem Spatsizi, particularly downstream from Beaver creek and in the Stikine below the confluence with the Spatsizi. The high silt content is not conducive to good angling but where the rivers contain sheltered areas fish are abundant. Arctic grayling appear to be the most ubiquitous game fish and angled fish generally weigh between 200 and 400 g. Dolly Varden char and mountain whitefish are also common. Whitefish are generally under 300 g. but Dolly Varden go up over 4 kg. in weight. Rainbow trout did not appear to be common in the mainstem rivers at the time of our survey but they probably do better in the clear water tributaries during higher water levels.

Most tributaries have clear water and many contain important fish habitat. The Pitman, Kehlechoa and McBride rivers appear especially productive and should provide excellent angling. Conditions in the tributaries are generally still poorly known, especially on the Stikine from Laslui lake to the Spatsizi river.

Conditions for the angler vary seasonally depending on water level and clarity so changes in the numbers and variety of fish available can be expected. In general the best mainstem angling conditions are found in the Stikine river upstream from the Spatsizi confluence and in the Spatsizi river upstream from Beaver creek.

Wherever tributaries enter or where eddies, pools and backwaters form, good fishing can be expected. Arctic grayling and Dolly Varden char are the species most likely to be taken.

Environmental Impacts

Present park use is having a negligible effect on the riparian environment. This year Canadian River Expeditions ran four rafting trips down the Spatsizi and Stikine rivers. Their groups consisted of 20 or more persons and they launched at Hyland Post and camped at the Ross river, Pitman river, upstream from McBride river and downstream from the Klappan river. The company appears to operate in an exemplary manner, showing great respect for the wilderness and having a minimal impact considering the size of the groups.

To maintain high standards it may be advisable to insist that all commercial rafting outfits work under a Park Use Permit designed to minimize environmental degradation.

Large groups of rafters can deplete fish stocks if all parties camp in the same places. It is expected that current usage allows immigration of fish to restock heavily angled areas. Angling success should be monitored so that appropriate action can be taken if catches show a decline.

Ranger Assessment Report
for
- The Canoe Route
Along the Stikine River -

being the portion of the river
extending from

Tuaton Lake to the
Stikine-Spatsizi Rivers Confluence

by

A. Poulson

August 20 - 1977 -

SUMMARY

This assessment report covers the canoe route of the upper Stikine River - being that portion of the river extending from Tuaton and Laslui Lake to the Spatsizi-Stikine River confluence.

Tuaton and Laslui Lake lie in a broad mountain valley at an elevation of 4250'. The high exposed table uplands of the Spatsizi Plateau lie to the north. The plateau is not a true plateau as it is dissected by many small creek drainages. The most significant mountain in this area is Tomias Mtn. (6840'). Individually raised glacially affected mountains lie to the south of the lakes. Ridge-lines average 6000' in elevation and are usually non-continuous. The most noteworthy mountain is Mount Terraze.

The Stikine River issues forth from Laslui Lake with moderate volume flows sufficient to float a canoe. Four habitat types are noticeable as far downstream as Metsantan Creek.

- 1) a dwarf birch-scrub willow community on poorly drained stream margins.
- 2) a forest cover of spruce adjacent to the river with lodgepole pine occurring on well-drained upland benches.
- 3) grassland meadow formations in selected exposed areas.
- and 4) trembling aspen on open favourable bluffs.

Downstream from Metsantan Creek and extending to the Spatsizi-Stikine River confluence a constant forest cover exists composed of spruce and lodgepole pine. A flat wide river valley condition occurs throughout this area.

Challenging and strenuous canoeing opportunities exist on the Stikine as far down as Metsantan Creek. The river current is fast with white water and rapid conditions predominating. Two portages of approximately 1/2 mile each have to be made. Good portage routes exist. River conditions can be characterized as being Grade 2 and some Grade 3 water according to the International River Classification System.

Downstream from Metsantan Creek and extending to the Chukachida - the Stikine offers very pleasant opportunities for river travel. Canoeing is leisurely and is aided by a swift current. No defined hazards exist to safe river navigation.

The entry of the Chukachida marks significant increased volume flows into the Stikine. Preferred canoeing conditions exist all the way to the Stikine-Spatsizi confluence with no hazards to navigation encountered. The section from Metsantan Creek to the confluence can be described as Grade 1 according to the river classification system.

Preferred camping areas exist on many flat well-drained benches which are adjacent to the river. Camping potential is also found on some large grassland meadows in the Chapea Creek area plus on exposed gravel bars which occur in selected areas.

The main use that this area receives is centered upon the guiding camp at Goat Creek. The outfitters utilize the Stikine to transport people and supplies by jet boat. Relatively little use is made of the river at the present time for canoeing trips.

Access to the Tuaton and Laslui Lake area is provided by float plane. Jet boats have been known to get up as far as the canyon above Metsantan Creek. Egress from the river can be achieved at Stikine Camp two miles below the Spatsizi-Stikine confluence.

1) AREA

a) i) map and ii) air photo reference

i) National Topographic System
1:250,000 series

Spatsizi 104 H
Toodoggone River 94 E

ii)

b) drainage and volume

This assessment report covers that portion of the Stikine River which extends from Tuaton Lake (4250') to the Spatsizi-Stikine River confluences (3250'). Total mileage (including Tuaton and Laslui Lakes) in this river section is 66 miles giving an average gradient drop of 15' per mile of river. The most significant gradient loss occurs between Laslui Lake and Metsantan Creek. The major tributary stream entering the Stikine is the Chukachida River. Other tributary streams include Worry Cr., Chapea Cr., Metsantan Cr., Chili Cr., Adoogacho Cr., Goat Cr. and Sanabar Cr.

Canoeing potential starts at the outlet of Laslui Lake where the Stikine River can be characterized by moderate volume flows. White water and rapid conditions dominate from here to Metsantan Creek. Two portages of approximately 1/2 mile are required. Increased volume flows plus lower river gradients make canoeing the next section between Metsantan and the Chukachida River most enjoyable. The only hazard to navigation are occasional sweepers and a few low water channels where the river is dissected by islands. The entry of the Chukachida into the Stikine signifies a marked change in river character. Water volumes are increased considerably plus a good current flow making the next section of river preferable for canoeing. The only hazard to navigation are occasional standing waves. This river type dominates down to the Spatsizi-Stikine River confluence.

c) distinguishing features

The most notable features contained within this assessment area include:

- 1) the Stikine and Chukachida Rivers
- 2) Tuaton and Laslui Lakes
- 3) numerous mountain streams
- 4) panorama views of the surrounding mountains and ridgelines

The Stikine River is bordered by the Spatsizi Plateau and Stikine Ranges where maximum elevations exceed 7000' and ridgelines average 6000'. Significant mountains include Tomias Mtn. (6840'), Alberts Hump and Mt. Albert Dease.

d) elevation and aspect

The headwaters of the Stikine River are found at Tuaton and Laslui Lakes which lie a broad east-west running valley at an elevation of 4250'. The Stikine system is situated in an extensive flat river land bordered by the Spatsizi Plateau and the Stikine Range. This area has a favourable aspect and receives maximum sunlight hours.

e) gradients

Flat valley conditions dominate along the land margins adjacent to the Stikine River system. Valley sidewalls extend from 4000 to over 6000'.

f) hiking time and difficulty

This reconnaissance was conducted on a canoeing and rubber raft basis from Tuaton Lake to the Spatsizi-Stikine Rivers confluence. Overall reconnaissance time was five days. Relating to the International River Classification System Grade 1 water predominates with Grade 2 and 3 water conditions being found in selected river sections (Laslui Lake-Metsantan Creek).

g) mileage involved in reconnaissance

Total river mileage involved in this assessment report is 66 miles (including both Tuaton and Laslui Lakes).

h) access

The basic mode of access to this area is float plane. Egress from the river by float plane can be achieved at the Ovis Outfitters camp two miles below the Spatsizi-Stikine River confluence. It is known that river boats have got as far up the Stikine as the canyon above Metsantan Creek.

i) length of use season

The Stikine River can be expected to be free of ice by mid-April and Tuaton and Laslui Lake somewhat later extending into mid-May. The canoeing season is not likely to begin until late May when all ice is gone from headwater lakes. Water levels are quite low in the fall with minimum volume flows usually occurring in mid-October. However, water levels should always be sufficient for canoe travel. The end of October marks the close of the canoeing season.

j) history

The old Indian settlement of Caribou Hide lies adjacent to that portion of the Stikine River around Metsantan Creek. The site lies approximately 3 miles to the east of the river on a bench area. The site was extensively burned by a large fire that raged through this area a number of years ago. All that remains now are a few charred ground logs to show where the cabins once stood.

k) alienations

No known alienations are known to occur within this assessment area.

l) resource use

The guiding territory of J. Savage occurs in the Chukachida lobe of the park and that of J. Holmes of Ovis Outfitters lies to the north of the Stikine River (not within park).

2) PHYSICAL FEATURES

Vegetation

a) biogeoclimatic zones

A spruce willow-birch subalpine zone is found on upland areas bordering Tuaton and Laslui Lakes and extends downstream as far as Sanabar Creek. A boreal white and black spruce zone is encountered on those areas adjacent to the Spatsizi-Stikine River confluence. An alpine tundra zone is found on the surrounding mountains and ridgelines.

b) timber types

The area surrounding Tuaton and Laslui Lake lies at an elevation of 4250' in a broad mountain valley. Heavy concentrations of dwarf birch and scrub willow exist on uplands adjacent to the lakeshore. Scattered spruce and lodgepole pine exist in selected areas. Trembling aspen is found on open exposed favourable bluffs. Grassland meadow formations are located along the southern shoreline of Tuaton Lake, at the estuary of Hotlesklwa Creek and on benches on the northern margin of Laslui Lake. The combination of a diversity

of habitat types gives this area a parkland appearance. A heavier concentrated cover of mainly spruce occurs as one approaches the valley sidewall. Surface seepage from adjacent slopes causes increasing amounts of scrub willow to occur. The conifer cover extends up to 5500' where an intergrade community composed of stunted alpine fir and spruce is found intermingled with meadow formations representative of the alpine tundra zone. The alpine meadows dominate on the exposed ridgelines which exceed 6000' in elevation.

Extending down the Stikine River open meadow formations exist only in a few selected areas. More commonly lodgepole pine exists on well-drained benches adjacent to the river. Spruce more commonly occurs on areas having a higher water table. Trembling aspen has a spotty occurrence being found only on exposed bluffs. This habitat type extends from Laslui Lake to Metsantan Creek. Along the entire length of the Stikine downstream from this point a constant forest cover composed of spruce and lodgepole pine occurs. Density is dependent on site with particularly heavy concentrations of spruce being found along the more poorly drained stream margins. Lodgepole pine finds its greatest occurrence on well-drained benches. This habitat type composed of a heavy and constant forest cover dominates in the wide flat valley bottom which runs from Metsantan Creek all the way down to the Stikine-Spatsizi River confluence.

c) undergrowth

The most commonly occurring undergrowth species found in this assessment area are dwarf birch and scrub willow along with immature conifer growth. Density is dependent on site with particularly heavy concentrations found along stream margins and in poorly drained areas.

d) ground cover

Species sited include:

Shrubs

dwarf birch
scrub willow
juniper
twinflower
soopolallie
white heather
Labrador tea
shrub cinquefoil
kinnikinnick
wild rose

Flowers

monkshood	bunchberry
larkspur	trailing rubus
columbine	yellow ragwort
saxifrages	mountain forget-me-not
Indian paintbrush	fireweed
spreading phlox	buttercup
Sitka valerian	mountain bluebell
spreading fleabane	elephant head
arnica	pyrola
Indian hellebore	cow parsnip
yarrow	globe flower
strawberry	horsetail

Soils

a) type

The soil type is basically rock or mineral soil overlain by varying amounts of organic material.

b) erosion

No significant recent erosion sites were noted on any stream margins contained within this assessment area. High cut banks exist in the section from the Chukachida to Spatsizi-Stikine Rivers confluence area but appear to be stable.

3) RECREATIONAL FEATURES

a) scenic views

Extensive panoramic viewing opportunities are available of the surrounding mountains and ridgelines from the open meadow formations that occur in the valley bottom. Views are available from around Tuaton and Laslui Lakes and as far down the Stikine as Metsantan Creek where a heavier forest cover plus a wider flatter valley condition restricts viewing possibilities.

b) meadows

Dwarf birch and scrub willow dominate on upland areas adjacent to the lakeshore of Tuaton and Laslui and along poorly drained stream margins of the Stikine River. Grassland meadow formations occur in selected spots around the lakes area and on some exposed benches along the Stikine as far down as Metsantan Creek.

c) mountains - ridgeline

The portion of the Stikine drainage covered in this assessment report is bordered by the Spatsizi Plateau to the west and south,

and the Stikine Ranges to the east and north. Ridgelines in this portion of the Spatsizi Plateau average 6000' with a maximum elevation being achieved at Tomias Mtn. (6840'). This area is not a true plateau but a series of individually raised table uplands which are dissected by many small drainages with as much as 500-1000' gradient breaks occurring. Ridgelines are discontinuous being separated by low passes which mark the headwaters of small creeks.

The mountains of the Stikine Range are more abrupt and stand as individual peaks being separated by major drainages. Dominant mountain of this range is Mt. Albert Dease when viewed from Stikine River.

d) river - streamside features

A spectacular waterfall exists 1/2 mile inland of the Stikine River up the Adoogacho Creek drainage. Often times a rainbow effect is achieved over the area as the creek plunges 100' over a ledge and down into a rocky canyon.

4) FISH AND WILDLIFE

a) wildlife use

The areas bordering this portion of the Stikine River provide excellent year-round moose habitat. Potential is also evident for winter range for caribou populations that spend their summers on the adjacent high mountains and ridgelines.

b) distributions

The Stikine River acts as a migration corridor between summer and winter ranges. Game trails in this area appear to be heavily utilized.

c) fishing potential

Excellent fishing potential is afforded the enthusiast along the upper Stikine. Rainbow, dolly varden, grayling and whitefish occur with grayling being easily the most common fish taken.

5) CANOEING

a) classification of river difficulty for canoeing

CLASS I

Moving water with a few riffles and small waves. Few or no obstructions.

CLASS II

Easy rapids with waves up to 3 feet, and wide, clear channels

CLASS II (Cont'd.)

that are obvious without scouting. Some maneuvering is required.

CLASS III

Rapids with high, irregular waves often capable of swamping an open canoe. Narrow passages that often require complex maneuvering. May require scouting from shore.

CLASS IV

Long difficult rapids with constricted passages that often require precise maneuvering in very turbulent waters. Scouting from shore is often necessary, and conditions make rescue difficult. Generally not possible for open canoes. Boaters in covered canoes and kayaks should be able to Eskimo roll.

CLASS V

Extremely difficult, long, and very violent rapids with highly congested routes which nearly always must be scouted from shore. Rescue conditions are difficult and there is significant hazard to life in event of a mishap. Ability to Eskimo roll is essential for kayaks and canoes.

CLASS VI

Difficulties of Class V carried to the extreme of navigability. Nearly impossible and very dangerous. For teams of experts only, after close study and with all precautions taken.

b) route description

For purposes of documenting the upper Stikine River can be divided into seven individual descriptive units:

- 1) Tuaton - Laslui
- 2) Laslui Lake outlet - Chapea Cr.
- 3) Chapea Creek - Metsantan Cr.
- 4) Metsantan Cr. - Adoogacho Cr.
- 5) Adoogacho Cr. - Chukachida River
- 6) Chukachida River - Sanabar Cr.
- 7) Sanabar Cr. - Spatsizi-Stikine confluence

1) Tuaton - Laslui

The portion of the Stikine River which extends from Tuaton to Laslui Lake is 3 miles long. Channel width averages 50-75' and water depths are usually around 2'-4'. The first 1/2-3/4 mile of river is dominated by riffle areas with a moderate current flow. Gravel bars and exposed boulders exist in selected areas. Further downstream deeper river channels occur along stream margins composed mainly of scrub willow and dwarf birch. Laslui Lake forms a back-up

effect and the river for the last 1 1/2 miles slowly meanders downstream with deep water conditions predominating. The entire length of this river section can be characterized as being Class 1 under the international classification system.

2) Laslui Lake outlet - Chapea Cr.

The Stikine River at the outlet from Laslui Lake is a slow-moving low gradient stream with an average channel width of 50-75'. Water depths approximate 2'-4'. Canoeing is pleasant with no defined deterrents found to river travel. Gravel bars are encountered in selected areas but preferred channels exist near the river banks. Approximately one mile downstream a high grassy knoll on the left hand river bank marks the start of a rapids section. Canoeing is of moderate difficulty. Opportunities for pulling out of the river exist on the right hand bank. At this point a major set of falls and rapids makes the river impassable necessitating a portage. A good portage trail extends 1/2 mile downstream through an open lodgepole pine. The route starts directly above the falls on the right bank.

The next five miles of river travel from the re-entry point to Chapea Creek offer challenging and strenuous canoeing. White water and rapid conditions dominate. The strong current creates standing waves that occasionally spill into the canoe. The channel is free of sweepers and log jams but submerged and exposed boulders exist.

3) Chapea Creek - Metsantan Creek

Entry into the Chapea Creek area is marked by a broad valley extending to the south. Chapea Creek is a low-volume stream and is a defined reference point along the river. The creek marks the area where the second portage must be made.

A constant forest cover exists on the banks preceding Chapea Creek and immediately afterward a high gravel cut bank extends 10-12' up from the river edge on the left stream bank. A bench is situated at the top of the cut bank covered by dwarf birch and scattered lodgepole pine. Fast water dominated by rapids and white water conditions extends one-half mile downstream. Scouting is recommended beforehand for the novice canoeist, but this river section is canoeable. One-half mile downstream from Chapea Creek a small stream enters from the south along an S-curve in the river. A pull-out must be made at this point to enable a reconnaissance of the next section of river to be done. Fast water conditions dominate through white water rapids with submerged and exposed boulders occurring. The main difficulty for canoeists is a set of two small cascades. The river suddenly drops 3'-4' and then continues causing a boil of water. The canoe in effect bottoms out here as it is only suspended at either end. Both cascades act as significant deterrents to canoe travel as it is extremely easy to swamp the boat. However, they do not pose a defined hazard for rubber rafts. After the second cascade turbulent water conditions occur along a narrow channel before the river finally

enters the calm deep waters of a short steep-walled canyon. The preferred portage route extends along the left bank from the S-curve in the river. Open country exists on a gravel bench approximately 1/3 of a mile downstream to where the river can be re-entered at a point just preceding the steep-walled canyon. Good portage conditions exist. A preferred portage route seems to be indicated along the right hand bank but the river cannot be re-entered until after the canyon necessitating a longer portage.

The next 4 1/2 miles of river feature some intermediate rapids characterized by large standing waves and fast current. Canoeing is challenging and strenuous with the major danger points boulders which exist in the stream channel. Water depths are sufficient providing one keeps to the deeper channels.

The next identifiable river feature is a canyon section. Granite and sandstone cliffs of from 30'-40' alternate on opposite stream margins for approximately 3/4 mile. The fast current creates some swells, boils and standing waves that can be canoed with little difficulty.

The end of the canyon marks a defined change in the river character. Whereas white water conditions with numerous rapids dominate upstream the river below the canyon becomes more tranquil with a constant and even flow of water right across the channel. Water depths average 3-4 with river widths averaging 75'. The siting of an extensive burn area indicates that one is approaching Metsantan Creek.

Grade 2 waters dominate on this section along with Grade 3 in the river section immediately following Chapea Creek.

4) Metsantan Creek - Adoogacho Creek

This river section is a continuation of the preceding area where constant water flows make river travel pleasant. In the area around and preceding Caribou Hide an extensive burn has occurred scarring the surrounding hillsides. The river in this area flows through a broad valley with low river gradients. At this point the river has lost most of its vertical height with white water conditions occurring in only a few selected areas. Canoeing is pleasant and the moderate current aids travel. No defined hazards to navigation are encountered. Low water conditions (caused by channel braiding) exist over gravel bars making careful route selection important. Scattered boulders exist but do not pose serious hazard. This river section is Grade 1 throughout.

5) Adoogacho Creek - Chukachida River

The Stikine River past Adoogacho Creek extends north past Spruce Hill to its confluence with the Chukachida River. River gradients are at all time low - with white water riffle areas occurring in only a few selected spots. River travel is generally pleasant with no significant difficulties encountered. Channel widths

average 75-100' with water depths ranging from 2-6'. A constant forest cover of spruce exists on boggy areas adjacent to the river while lodgepole pine exists on upland benches. Approaching the Chukachida River islands divide the river into channels. Low water conditions with gravel bars make careful route selection important. Sweepers also pose a problem. Preferred routes are found wherever the greatest volume water flows occur. While these conditions pose a hazard they are not a significant deterrent to river travel. This river section can be classified in its entirety as Grade 1.

6) Chukachida River - Sanabar Creek

The entry of the Chukachida River into the Stikine marks a defined change in river conditions. Increased volume flows make canoeing less hazardous as water depths average from 4-6'. Gravel bars and submerged boulders do not present any significant hazards to navigation. Channels widths vary from 100-125' with a constant water flow right across the river. The section of the Stikine extending down to Goat Creek is a relatively deep and slow moving with a constant heavy cover of spruce adjoining the river on flat terrain. Goat Creek is a prominent reference point entering the Stikine from the north. An extensive gravel bar extends right across the river channel below the creek estuary. A riffle area exists but water depths are sufficient to float a canoe. Downstream from this point and extending to Sanabar Creek favourable canoeing water is encountered. The river moves at a relatively good pace with sufficient water depths at all times to float a canoe. No defined deterrents to river navigation are found. Constant water depths right across the river channel plus lack of gravel bars or boulders makes river travel very pleasant. A constant forest cover of spruce is found adjoining the generally flat terrain beside the river. Lodgepole pine is found on upland benches and trembling aspen to a lesser extent on some exposed hillsides. An outfitters camp consisting of two tent frames exists one mile below the Chukachida's entry into the Stikine. Another guiding camp exists at the confluence area between the Stikine and Goat Creek. This river section can be classified as Grade 1 in its entirety.

7) Sanabar Creek - Spatsizi-Stikine Confluence

This section of river is marked by a constant water flow of from 3-6' right across the river channel which averages between 125-150' wide. The river flows at a good pace (5-6 miles per hour) through a series of meanders until its confluence with the Spatsizi River. Terrain adjoining the river is generally flat with a constant heavy cover of spruce dominating while lodgepole pine exists on well-drained upland benches and trembling aspen on exposed hillsides. River travel is pleasant and no defined dangers exist to navigation. Water depths at all times are sufficient to float a canoe and gravel bars or submerged boulders in the river channel do not present any problems. This river section can be classified as Grade 1 throughout its whole length.

6) CANOE FEASIBILITY

a) potential camping areas

Many preferred camping areas exist along the entire length of the upper Stikine River. Excellent camping potential is found on flat well drained lodgepole pine benches that lie adjacent to the river. Additional camping spots are located on some grassland meadows in the Chapea Creek area and on gravel bars which occur in selected areas.

7) USER PROBLEM AREAS

a) lack of signs

Some provision should be made to install signposts above the two portage routes to indicate dangerous river conditions ahead.

b) water quality

At certain periods of the year the upper Stikine is known to carry a heavy sediment load. As a result campsites must be established on the entry of small feeder streams into the river. Water quality improves as the season progresses with potable water probably being available from the river from August on.

8) PRESENT RECREATIONAL USE

a) type and amount of use

The guiding operation of Ovis Outfitters utilize the upper Stikine to supply their camp at Goat Creek (via a jet boat). However, beyond this little is known about the amount of recreational use that this area presently receives.

APPENDIX I

FISH DATA

APPENDIX I

Fish Data

Date	Location	Species	Fork Length (cm)	Weight (gr)	Sex	Comments
<u>Kluayetz Creek</u>						
16-7-77	Above canyon	Arctic grayling	33	365	F	Angled
	" "	" "	32	300	M	"
<u>Spatsizi River</u>						
19-7-77	Beaver creek	Longnose sucker	38	-	-	Netted
	" "	" "	35	-	-	"
20-7-77	Mink creek	Arctic grayling	31	235	-	Angled
	" "	" "	31	210	-	"
	" "	" "	30	190	-	"
	" "	Dolly Varden	28	115	-	"
	" "	" "	27	100	-	"
<u>Stikine River</u>						
22-7-77	Marion creek	Arctic grayling	28	-	-	Angled
23-7-77	Near Shreiber Cr.	" "	38.5	495	M	Netted
	" "	" "	35	370	F	"
	" "	" "	25	163	M	"
	" "	Dolly Varden	48	870	M	"
	" "	Mountain white-fish	26.5	174	F	"
	" "	" "	25	150	M	"
	" "	" "	23.5	150	F	"
	" "	" "	23.5	112	M	"
	" "	" "	23	130	F	"
24-7-77	Upstream of McBride R.	Arctic grayling	38	-	-	Angled
	" "	" "	32	-	-	"
	" "	" "	32	-	-	"
	" "	" "	26	-	-	"
	" "	" "	25	-	-	"
	" "	" "	35	-	-	Netted
	" "	" "	34	-	-	"
	" "	" "	32	-	-	"
	" "	" "	20	-	-	"
	" "	" "	20	-	-	"
	" "	" "	19	-	-	"
	" "	" "	16	-	-	"
	" "	Dolly Varden	68	2750	-	"
	" "	" "	25	-	-	Angled
	" "	" "	20	-	-	"
	" "	Mountain white-fish	33	200	-	Netted
	" "	Longnose sucker	26	-	-	"

APPENDIX II

WILDLIFE SIGHTINGS

APPENDIX II

Wildlife Sightings

Caribou. A total of 22 caribou were seen between Ellis and Wing creeks in open country near Kluayetz creek. The sightings consisted of four bands and there is a high probability that one band was a repeat sighting. The three confirmed bands were classified as follows:

	<u>Adult male</u>	<u>Adult female</u>	<u>Subadult male</u>	<u>Unclassified subadult</u>	<u>Total</u>
Band 1	5				5
Band 2		4		3	7
Band 3	1		3		4
					<u>16</u>

Animals were classified as adult if body and antler proportions were at or near maximum. Subadults were recognized by being smaller than adults and having less developed or no antlers. No young of the year were seen.

Moose. The abundance of wet meadowland, shallow oxbow lakes and willow growth makes the area along the Spatsizi valley between Beaver creek and Mink creek particularly valuable moose range.

Moose were seen as follows:

<u>Location</u>	<u>Adult Male</u>	<u>Adult Female</u>	<u>Sub-adult</u>	<u>Calf</u>	<u>Total</u>
Kluayetz valley nr. Wing Cr.	1				1
Confluence of Spatsizi R. and Didene Cr.			1		1

<u>Location</u>	<u>Adult</u>		<u>Sub- adult</u>	<u>Calf</u>	<u>Total</u>
	<u>Male</u>	<u>Female</u>			
Spatsizi valley N. of Didene Cr.		2			2
Spatsizi valley nr. Spatsizi Mtn.	1	1		1	3
Spatsizi valley nr. Scotty's cabin		1			1
Stikine valley E. of Kehlechoa R.		1			1
					<hr/> 9 <hr/>

Mountain goat. Two were seen on the east side of the Spatsizi valley north of Buckingham horse creek, two more were seen to the northeast of Spatsizi mountain and there were a further ten on the bluffs north of Hyland Post.

Birds

Excellent waterfowl habitat consisting of wet meadowland and oxbow lakes is found in the Spatsizi river valley between Spatsizi mountain and Mink creek. On one lake a flock of 54 Canada geese was seen.

Rough-legged hawks were common along the banks of the Stikine. Rocky bluffs along the Stikine provided nesting sites for ravens.

Bird List

1. Seen in the Gladys Lake Ecological Reserve area by W. G. Hazelwood.

Canada goose	Empidonax flycatcher
Goldeneye	Horned lark
Harlequin duck	Grey jay
White-winged scoter	Dipper
Golden eagle	Robin
White-tailed ptarmigan	Townsend's solitaire
Semipalmated plover	Yellow warbler
Solitary sandpiper	Grey-crowned rosy finch
Lesser yellowlegs	Dark-eyed junco
Sanderling	Tree sparrow
Least sandpiper	White-crowned sparrow
Herring gull	Snow bunting

2. Seen in the valleys of the Spatsizi and Stikine rivers.

Canada goose	Solitary sandpiper
Pintail	Spotted sandpiper
Goldeneye	Lesser yellowlegs
Harlequin duck	Northern phalarope
Black scoter	Common snipe
Common merganser	Herring gull
Marsh hawk	California gull
Rough-legged hawk	Bonaparte's gull
Golden eagle	Common nighthawk
Osprey	Rufous hummingbird
Spruce grouse	Belted kingfisher
Willow ptarmigan	Common flicker

Hairy woodpecker	Hermit thrush
Northern three-toed woodpecker	Western bluebird
Say's phoebe	Golden-crowned kinglet
Empidonax flycatcher	Ruby-crowned kinglet
Olive-sided flycatcher	Water pipit
Horned lark	Bohemian waxwing
Barn swallow	Orange-crowned warbler
Cliff swallow	Yellow-rumped warbler
Tree swallow	Blackpoll warbler
Bank swallow	Northern waterthrush
Grey jay	Wilson's warbler
Common raven	Savannah sparrow
Black-capped chickadee	Dark-eyed junco
Red-breasted nuthatch	Tree sparrow
Robin	Golden-crowned sparrow

APPENDIX III

INTERNATIONAL SCALE OF RIVER DIFFICULTY

APPENDIX III

International Scale of River Difficulty*

If rapids on a river generally fit into one of the following classifications but the water temperature is below 50 degrees F. or if the trip is an extended trip in a wilderness area, the river should be considered one class more difficult than normal.

CLASS I

Moving water with a few riffles and small waves. Few or no obstructions.

CLASS II

Easy rapids with waves up to 3 feet, and wide, clear channels that are obvious without scouting. Some maneuvering is required.

CLASS III

Rapids with high, irregular waves often capable of swamping an open canoe. Narrow passages that often require complex maneuvering. May require scouting from shore.

CLASS IV

Long difficult rapids with constricted passages that often require precise maneuvering in very turbulent waters. Scouting from shore is often necessary, and conditions make rescue difficult. Generally not possible for open canoes. Boaters in covered canoes and kayaks should be able to Eskimo roll.

CLASS V

Extremely difficult, long, and very violent rapids with highly congested routes which nearly always must be scouted from shore.

*According to the American Whitewater Affiliation's Safety Code, revised in 1974.

Rescue conditions are difficult and there is significant hazard to life in event of a mishap. Ability to Eskimo roll is essential for kayaks and canoes.

CLASS VI

Difficulties of Class V carried to the extreme of navigability. Nearly impossible and very dangerous. For teams of experts only, after close study and with all precautions taken.

REFERENCE

Lane, M., L. Sigurdson, G.W. Lee, G. Stenberg and J.F. McLellan.
Recreation and Land Use Survey of proposed Klappan and Stikine
P.S.Y.U.'s. B. C. Forest Service, Inventory Division. 1972.