

A RESOURCE INVENTORY OF THE CHITISTONE TRAIL

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October 1990

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Introduction

The use of the historic Chitistone and Goat Trails date back to Athabaskan hunting and trading parties (Stevenson, 1990). The trails were further utilized by miners traveling to the Chisana gold fields during the 1912-13 rush. The trails subsequently fell into disrepair due to lack of use. Since Wrangell-St. Elias National Park and Preserve (WRST) was established in 1979, they have experienced a substantial increase in usage by both independent backpackers and commercially guided groups.

The 25 mile Chitistone Trail is located in the middle region of WRST on the McCarthy Quadrangle (Figure 1). Most groups, fly by air taxi into either the Lower Skolai Lake Airstrip at the north end of the Chitistone Trail or the Glacier Creek Airstrip at the south end and are picked up at the opposite airstrip. The hike between the Lower Skolai Lake Airstrip and the Glacier Creek Airstrip takes approximately five to eight days, depending on the pace of the group and whether side trips are taken. Some groups of backpackers fly into Chisana in the northern region of the park and hike the entire distance to the Glacier Creek Airstrip. The Goat Trail is often referred to as if it is a trail distinct from the Chitistone Trail.

For the purposes of this inventory, the Goat Trail is considered to be the middle section of the Chitistone Trail.

From 8/1/1990 to 8/8/1990, a Resource Management team consisting of Katy Beck, Tim Duncan, Ken Faber and park volunteer, Trace Nelson, hiked the Chitistone Trail from the Lower Skolai Lake Airstrip to the Glacier Creek Airstrip. There were many objectives and rationales for hiking the Chitistone Trail.

Present trail conditions were documented in anticipation of a continuing increase in the use of the Chitistone Trail. The trail is becoming well known as the park becomes a more popular visitor destination and as a result, the number of people hiking the trail has increased steadily in the past several years. It is a physically challenging and incredibly scenic trail which offers the visitor a variety of experiences including hiking in alpine tundra, bush plane flights and river and glacier crossings. Popularity of the trail can also be attributed to the fact that it is one of the few established trails in WRST. In addition to independent groups of hikers, the park concessionaire, St. Elias Alpine Guides leads several groups of people along the length of the Chitistone Trail every year. The combined effects of hiker related disturbances on unstable portions of the trail, water quality, fragile alpine vegetation communities, and on animal and breeding bird populations is not known.

Information on the trail was collected in order to initiate a database on which to base a Backcountry Management Plan for the area. Another objective of the Resource Management team was to inventory the large piles of refuse abandoned during the late 1960's at Chitistone Pass by the Icefield Ranges Research Project for possible future mitigation.

The dangers and the level of experience required to safely hike the trail was underrated by the park's Chitistone Trail information sheet and by park personnel giving out verbal information about trail conditions to visitors. This was in

part because no one on park staff had hiked the trail since 1982 and resource management personnel had never hiked the trail previous to 1990. The visitor handout sheet was revised.

Methods and Results

In order to facilitate a comprehensive discussion of conditions observed along Chitistone Trail, the 25.3 mile trail was divided into 16 trail segments (Figure 2). In the discussion of each trail segment, there is a section describing the trail segment, river crossings, vegetation, campsite locations, water availability, firewood availability, garbage and wildlife.

Trail Segment Description: This section provides an overview of the trail and the terrain it traverses. Additional information on factors such as milepost, segment length, elevation range, USGS quadrangle, slope and aspect of the trail and terrain, trail substrate and trail width is located above the trail segment description. Milepost estimations are calculated from the northeast to the southwest end of the trail with a map wheel from 1:63,360 maps. Measured from the Lower Skolai Airstrip to the Glacier Creek Airstrip, the portion of the trail being surveyed is approximately 25 miles long. Sometimes a distinct trail is not easily locatable as groups of backpackers often hike in slightly different areas. In other places a distinct trail may not be present even though a trail is drawn in on the USGS quadrangle. Likewise, a trail traversing a floodplain may not be visible if its substrate consists of cobbles and boulders. The elevation of the Chitistone Trail ranges from 4500 feet at the Lower Skolai Lake Airstrip, up to 5800 feet at Chitistone Pass, and down to 2300 feet at the Glacier Creek Airstrip. Appendix 1 contains a comparative summary of trail segment data.

River Crossings: The number of and relative difficulty of river crossings along the Chitistone Trail is influenced by a variety of environmental factors, including rainfall, water runoff, hot weather, time of day the river is crossed, and whether or not the creek is glacial in origin. At the time at which our group hiked the trail, five river crossings were encountered. Depending on when the trail is hiked, the number of river crossings is likely to vary for other groups. Groups planning on hiking the trail should have previous river crossing experience, as well as a rope and knowledge of different methods of crossing rivers. If a creek appears too high and swift for a safe crossing, groups should plan on waiting until water level and velocity subside. In general, water level and velocity is lowest during the morning hours. Locations of creek and river crossings are mapped on Figure 2. If water levels are low, it may be possible to boulder hop across many of the crossings indicated on the map.

Vegetation: In the vegetation section of each of the Chitistone Trail segment descriptions, dominant vegetation communities, characteristic plant species and vegetational zone(s) are listed. Vegetation community classification to Level IV follow Viereck et al, 1986. When vegetation communities are referred to in the text of this report, the first word of the name is capitalized (i.e. Tall willow shrub). Scientific names of plant species follow Hulten, 1968. Common names of plant species mentioned in the trail segment descriptions are listed in Appendix 2. Appendix 3 contains a list of all vegetation communities observed

along each trail segment (Viereck, 1986).

Following Scott, 1974, there are three vegetational zones found along the Chitistone Trail; Subalpine boreal forest, Lower alpine zone and Middle alpine zone. The Subalpine boreal forest occurs up to about 1100 meters (3600 feet) and is characterized by the presence of Picea glauca, which is usually found mixed with Alnus crispa or Populus balsamifera. The Lower alpine zone includes valley floodplains and slopes based between 1100 and 1450 meters (3600 and 4750 feet).

Typical stands of vegetation include willow and birch thickets, stands of ericaceous shrubs and sedge meadows. The middle alpine zone is found between 1446 and 2215 meters (4750 and 7250 feet) and contains the greatest community diversity. Dominant vegetation species of wet meadows are Carex Bigelowii and Petasites frigidus, while drier sites and exposed ridges support Dryas octopetala, Salix sp., Cassiope tetragona and Vaccinium uliginosum. Lichen-moss turf is the predominant vegetation type on exposed sites; dominant species including Cladonia rangiferina and Rhacomitrium lanuginosum (Scott, 1974).

In the late 1960's, the Icefield Ranges Research Project did extensive research on the vegetation communities of the Chitistone-Skolai region. For more detailed information about the vegetation of the region, refer to the sources listed in the bibliography.

Campsites: The existence and overall condition of campsites, and the location and number of fire rings found along the Chitistone Trail is described in this section. The location of campsites is often determined by the availability and proximity of clear water. In the vicinity of the Goat Trail, campsite locations are nearly non-existent due to the lack of flat terrain. Areas with potential campsite locations are mapped on Figure 3. In general, our group did not encounter many obvious or established campsites, large denuded areas indicating past camping usage or other impacts associated with campsite use (fire rings, garbage, tree cutting, etc.) along the length of the trail. The number of campsites and their associated impacts is likely to increase as popularity of the Chitistone Trail increases.

Water Availability: There are two types of creeks from which water can be obtained, silty creeks which are glacial in origin and clear water creeks which originate from runoff and snowmelt. Clear water creeks are preferable to glacial creeks as a source of drinking water. Other important sources of clear water along the Chitistone Trail are small seepages which are available in some areas. The location and availability of clear water often determines where hikers camp.

Little is known about water quality or the presence of Giardia in creeks and lakes located along the Chitistone Trail. Although no cases of sickness have been reported, it is recommended that water be filtered or boiled prior to consumption. Sources of clear water are mapped on Figure 3.

Firewood: The availability of firewood can to some degree influence where groups camp. Common sources of firewood along the Chitistone Trail include: willow shrubs, white spruce, balsam poplar and shrub alder. Except for the area in the vicinity of the Lower Skolai Lake Airstrip, firewood is unavailable from Lower Skolai Lake Airstrip up to the Chitistone Pass and down to the Chitistone River in Trail Segment 13. While firewood is plentiful along the Chitistone River

floodplain from Trail Segment 13 to the Glacier Creek Airstrip, (Trail Segment 16), very few fire rings were observed. The location and number of fire rings is noted in the campsite section. Legally, hikers are only allowed to collect dead and downed wood for recreational use, i.e. campfires.

Garbage: One of the objectives of the survey was to document the presence and amount of garbage discarded along the Chitistone Trail. Because very little litter was found along the trail and in the vicinity of campsites, it can be assumed that either groups hiking the trail do not litter very much or that groups pick up litter others have left along the trail. Toilet paper and human waste not disposed of properly seemed to be the most significant visible source of left litter along the trail.

Our group photographed and documented the approximate amount, type and location of piles of refuse abandoned during the late 1960's at Chitistone Pass by the Icefield Ranges Research Project. This information will be compiled as a separate report in Appendix 4.

Mammals: To be written by Ken Faber.

Birds: Bird species were recorded at each of the Chitistone Trail segments. To simplify listing, the 16 trail segments were divided into three groups with similar habitats: Trail Segments 1 to 3, Lower Skolai Lake Airstrip to Chitistone Pass; Trail Segments 4 to 10, Chitistone Pass to the Chitistone River; and Trail Segments 11 to 16, Chitistone River to the Glacier Creek Airstrip. The 29 bird species observed along the Chitistone Trail between 8/1/90 and 8/8/90 are listed in Appendix 5. It can be expected that many more bird species migrate through and/or breed in the Chitistone-Skolai area.

The Chitistone Pass area and especially the large lake at Chitistone Pass appear to be important breeding habitat for a number of bird species including: semipalmated plover, red-necked phalarope, spotted sandpiper, least sandpiper, Baird's sandpiper, water pipet and snow bunting, among others. High alpine lakes such as the lake at Chitistone Pass (approx. 5800 feet) are not abundant in WRST, and thus it is possible that birds requiring this type of habitat for breeding purposes are not common in the park. While hiking the Chitistone Trail, hikers often camp on the shore adjacent to the lake. It is not known how much human disturbance these breeding birds can tolerate before breeding success is affected.

When our group camped in this area, some of the birds appeared to be affected by our presence.

Appendix 6 provides a listing of photographs taken at each trail segment. Slides are on file at the WRST Resource Management office. (Slides are to be provided by Ken Faber and Tim Duncan.)

Chitistone Trail Segments 1 - 16

Chitistone Trail Segment 1: Lower Skolai Lake Airstrip and camp area

Milepost: 0.0

Segment Length: N/A

Elevation: 4500 feet

USGS Quad: McCarthy C-3

Location: T 3S R 18E S 2

Trail Slope: 3.5%

Terrain Slope: 3.5%

Trail Aspect: 315° to 135°

Terrain Aspect: 45° to 125°

Trail Segment Description: The Lower Skolai Lake Airstrip is 15 feet wide, with a useable section approximately 900 - 1000 feet long and a total length of approximately 1100 feet. It has a northwest/southeast orientation and a 1% to 2% slope. The sides of the airstrip are well brushed and it appears to be in fairly good shape overall. In July of 1982, rangers Stevenson and Flanagan state in their trip report, "The (Lower Skolai Lake) Airstrip is pretty soggy and doesn't look like it would be in condition for use at this point. There are about 600 feet of fairly dry strip though, if you were in a pinch."

River Crossings: None

Vegetation: Middle alpine zone. Willow dwarf shrub tundra is the dominant vegetation type directly in the vicinity of the airstrip. It is not continuous, however, as there are patches of Tall willow shrub and Mesic forb herbaceous interspersed, as well as vegetation types more typical of marshy areas to the northeast near Skolai Creek and its wide floodplain. Dominant vegetation species from the Willow dwarf shrub tundra vegetation type include: Salix reticulata, Dryas octopetala, Stereocaulon sp., Carex sp., Hylocomium alaskanum, Cetraria sp. and graminoid species. This vegetation type seems to be fairly well drained and resistant to the compaction and damage usually associated with repeated camping activities. Averaging between three and six feet tall, tall willow species include: Salix alaxensis, Salix planifolia and Salix lanata. Often mixed amongst the tall willows, Mesic forb herbaceous vegetation species include: Artemesia tilesii, Carex sp., Polemonium acutiflorum, Aconitum delphinifolium, Luzula sp., Equisetum arvense, Senecio lugens and graminoid species.

Campsites: There are plentiful areas to camp in the vicinity of the Lower Skolai Lake Airstrip and along the base of the slope south of Skolai Creek. The area is used by a relatively large number of groups because they are commonly dropped off and picked up at the airstrip by air taxi services. The substrate is well-drained, generally flat and campspots can be private because of the patchy distribution of the tall willows in the area. The vegetation is primarily a Dry willow dwarf shrub tundra type, which is fairly resistant to trampling. Thus, there are no large denuded areas commonly associated with campsites that experience repeated use. This lack of denuded areas may also indicate that campsite use

is usually not site specific. At a specific site that had just been camped at by a group of eight people, evidence of use included: kicked up clods of tundra, broken lichens and trampled herbaceous vegetation.

Water Availability: There are small clearwater seepages in the vicinity of the airstrip.

Firewood: There are two old unused fire rings in the vicinity of the airstrip; one at the northwest end and one at the southeast end. There is also a large fire ring that shows signs of current use on the southwest side of the airstrip.

Garbage: The area around the Lower Skolai Lake Airstrip has the largest quantity of recently discarded garbage of any place along the Chitistone Trail. A significant amount of visible toilet paper and human waste which has not been disposed of properly has resulted from the popularity of this area for camping.

This waste has been spread out over a large area in the vicinity of the airstrip.

There is also three piles of old garbage consisting of rusting cans, glass, and aviation gas cans. This section of the trail will probably need monitoring and some form of management to reduce current and future impacts from visitors.

Chitistone Trail Segment 2: Lower Skolai Lake Airstrip to the base of the ascent of Chitistone Pass

Milepost: 2.5 miles

Segment Length: 2.5 miles

Elevation Range: 4500 - 4500 feet

USGS Quad: McCarthy C-3

Location: T 3S R 18E S 2,11,12 to T 3S R 19E S 7

Trail Slope: 14%

Terrain Slope: 34%

Trail Aspect: 140° to 90°

Terrain Aspect: 360°

Trail Width: A trail was not located.

Trail Segment Description: Although many sets of footprints were observed, we found no discernable trails traversing this trail segment. The route heads southeast from the Lower Skolai Lake Airstrip, at the base of a large slope, to the base of the ascent up to Chitistone Pass (in the vicinity of a small draw in the middle of the lower half of section 7). The hiker can either cross this segment higher on the slope and traverse often uneven, rocky terrain, or lower on the slope and contend with extensive patches of dense, thick, tall willow. Much of the area the route traverses is what appears to be either very recent or relatively young rockslides and scree slopes, although occasional patches of tall shrubs must also be crossed. Several glacial creeks are crossed, which flow underground beneath rocks in some places. Boulders on the sides of creeks are often piled steeply.

River Crossings: None

Vegetation: Middle alpine zone. Dominant vegetation types along this trail segment are Open and Closed tall scrub, as well as marshy vegetation types. These occur mainly at the base of the slope adjacent to the Skolai Creek floodplain and intermittently between the extensive unvegetated rockslides and the rocky felfields the route traverses. Dominant Tall scrub species include: Salix alaxensis, Salix planifolia, and other Salix species. Rockslide and felfield areas are at early stages of revegetation with herbaceous species including Epilobium latifolium, Saxifraga sp., Poa alpina etc., and lichen species such as Umbilicaria sp., Rhizocarpon sp. and Stereocaulon species. The substrate of the rockslide areas is very well drained, and there is often little to no soil.

Campsites: None observed

Water Availability: Clear water is available from several creeks and seepages.

Firewood: None available

Garbage: None observed

Chitistone Trail Segment 3: Ascent from Skolai Creek to Chitistone Pass

Milepost: 4.6 miles

Segment Length: 2.1 miles

Elevation Range: 4500 - 5800 feet

USGS Quad: McCarthy C-3

Location: T 3S R 19E S 7,18 to T 3S R 18E S 13

Trail Slope: 18% to 38% to 2%

Terrain Slope: 82% to 3% to 38% to 5%

Trail Aspect: 90° to 23° to 298°

Terrain Aspect: 90°

Trail Substrate: The trail substrate varies from being rocky and gravelly near the erratics, to soft humus in the basin area.

Trail Width: 6"

Trail Depth: 1.5" to 6"

Trail Segment Description: Except for the portion of the trail segment just below Chitistone Pass, the trail as mapped on the topographic map was not located by our group. It appears as though most groups choose the vicinity of the southeast portion of section 7 to begin their ascent, then hike directly up the slope, gaining approximately 1300 feet in elevation. The trail can then be located near the northwest corner of section 18, where there are several large glacial erratics.

The last half mile of this trail segment, in sections 13 and 18, traverses a flat basin which appears to be a relatively recent glacial moraine. From there it ascends up to the Chitistone Pass where the trail again becomes evident. There are also signs of a double trail across the basin section with portions being worn down approximately six inches. In the last portion of the trail, there is an old rocky glacial moraine.

River Crossings: None

Vegetation: Middle alpine zone. The dominant vegetation types of this slope are Dryas dwarf shrub tundra, Willow dwarf shrub tundra and Ericaceous dwarf shrub tundra. Dominant vegetation species amongst the types are similar, including:

Salix reticulata, Salix polaris, Salix sp., Dryas octopetala, moss species, Hylocomium alaskanum, Cetraria sp., Carex sp., Carex Bigelowii, Vaccinium uliginosum, Arctostaphylos rubra, and Saxifraga species. There are localized patches of Mesic and Wet forb herbaceous vegetation communities in the vicinity of seepages and creeks.

Campsites: None observed

Water Availability: Clear water is available near the top of this trail segment, from the creek in the northwest portion of section 18, just below Chitistone Pass.

Firewood: None available

Garbage: There was some improperly disposed of toilet paper at Chitistone Pass.

Chitistone Trail Segment 4: Chitistone Pass (north to south end)

Milepost: 6.2 miles

Segment Length: 1.6 miles

Elevation Range: 5800 - 5800 feet

USGS Quad: McCarthy C-3

Location: T 3S R 18E S 13,24

Trail Slope: 2% to 5% to 9%

Terrain Slope: 5% to 16% to 42%

Trail Aspect: 235° to 180° to 260°

Terrain Aspect: 105°

Trail Substrate: Composed of humus and medium sized rocks.

Trail Width: 6"

Trail Depth: 0" to 2"

Trail Segment Description: This trail segment travels northeast to southwest along the length of the Chitistone Pass. On both sides of the pass, the terrain slopes gently at first, then steeply up to glaciers and ridges reaching 9000 feet in elevation. There is no distinct trail along much of this trail segment, thus groups probably hike slightly different routes. We observed footprints in various places along the length of the pass. There is a double trail heading south from the small pond at the end of Trail Segment 3. The west branch of the trail is visible three quarters of the way from the small pond to the big lake at Chitistone Pass, whereas the east branch of the trail disappears after approximately one quarter of the way.

River Crossings: None

Vegetation: Middle to high alpine zone. The entire Chitistone Pass area is a complex mosaic of vegetation types, ranging from types characteristic of saturated soils to those of dry, exposed slopes. Vegetation types include: Wet bryophyte, Alpine herb-sedge, Alpine herbs and Mesic and Wet forb herbaceous (typical species include: Petasites frigidus, moss species, Carex Lachenalii, Oxyria digyna, Polemonium acutiflorum, Salix polaris, Ranunculus sp., Carex sp., Stereocaulon sp. and Saxifraga sp.), Willow dwarf shrub tundra, Dryas dwarf shrub tundra and Dryas-lichen dwarf shrub tundra (typical species: Dryas octopetala, Salix reticulata, Salix polaris, Cetraria sp., moss species, etc.). The more characteristically wet vegetation types tend to be located in the less sloped lowland pass areas and around the large lake at Chitistone Pass. The substrate in these areas is often supersaturated from the flow of water down from surrounding ridges, both from creeks and from subterranean seepages.

The Icefield Ranges Research Project of the American Geographical Society did extensive vegetation studies in the Chitistone Pass area during the late 1960's.

For literature sources with detailed vegetation information, refer to the bibliography.

Campsites: Scattered along the length of the Chitistone Pass area, suitable campsites can be grouped into three areas. (1) Camping is possible near the small, unmapped lake encountered upon just reaching the top of the north end of the pass (located roughly in the southeast corner of section 13). (2) There are small

localized areas on relatively flat, gravelly spots near the edge of the west side of the large lake at the pass. These spots are often supersaturated or at least have high water tables from water draining down from the high slope to the west and so may be mucky. It is recommended that groups do not camp along the shoreline of the lake, because the vegetation types and substrates in these areas are delicate and thus are very susceptible to trampling and damage. Furthermore, there is a relatively sizeable population of breeding and migratory birds that use this area. There does not appear to be suitable campsites along the east side of the lake. (3) For hikers camping in the vicinity of the pass, we recommend the rolling hills at the northeast end of the lake at Chitistone Pass where several large piles of debris from the abandoned research camp are located. The dominant vegetation type in this area is a Dry dwarf shrub tundra type which has a well drained substrate and can withstand a greater use intensity than the wetter vegetation types around the lake.

Water Availability: There are several seeps coming down the slope to the pass, in addition, clear water can be obtained from the lake and from the creek draining the lake.

Firewood: None available

Garbage: No garbage was observed other than the piles of refuse abandoned by the Icefield Ranges Research Project (Appendix 4).

Chitistone Trail Segment 5: Chitistone Pass (south end) descent to Chitistone River

Milepost: 8.2 miles

Segment Length: 2.0 miles

Elevation Range: 5800 - 4800 feet

USGS Quad: McCarthy C-3

Location: T 3S R 18E S 24,23,26,27

Trail Slope: 3% to 32 % to 14% to 17%

Terrain Slope: 40% to 65% to 7% to 14%

Trail Aspect: 240° to 180° to 200°

Terrain Aspect: 135°

Trail Segment Description: A defined trail was not evident in this section until just before the undulating bench in section 26. Until here the route lies between the steep slopes to the west and the moraine of a large unnamed glacier on the east side of the valley. This glacier is the source of the Chitistone Falls Creek.

The location of the trail becomes evident as it descends down towards the undulating bench. The descent of the trail is gradual most of the length of this segment, but is steep after it crosses the creek in section 27 and heads down toward the Chitistone River. Here the trail is not always obvious and is easy to lose. Just after the section 27 creek crossing, a steep slope must be traversed before the final descent down to the floodplain.

River Crossings: In section 26, there is a glacially fed creek which can usually be crossed by boulder hopping, but could require wading if the water is high.

Vegetation: Middle alpine zone. Dominant vegetation types along the majority of this trail segment (sections 24, 23, 26, to the creek crossing in section 27) include: Willow dwarf shrub tundra, Dryas dwarf shrub tundra and Dryas-lichen dwarf shrub tundra, which are all somewhat similar in species composition. These vegetation types are typical of dry, windswept alpine sites with thin, well-drained stony soils. Soils are slow to develop due to short growing seasons and deflation of fine soil particles and organic materials (Viereck et al, 1986). Typical vegetation species include: Dryas octopetala, Salix polaris, Salix reticulata, moss species, Carex sp., Racomitrium canescens, Saxifraga bronchialis, Carex sp., Stereocaulon sp., Cetraria sp., Peltigera malacea and Epilobium latifolium.

From the creek crossing in section 27, down to the Chitistone River floodplain, the vegetation type changes from Dwarf shrub tundra types to Low and then Tall scrub. Characteristic vegetation species include: Arctostaphalos rubra, Dryas integrifolia, Salix glauca, Salix alaxensis, Salix reticulata, Stereocaulon sp, Saxifraga tricuspidata, and Solidago multiradiata. Vegetation generally has a low percentage of cover along this trail segment. The trail traverses rocky felfields from slopes to the north and old river terraces adjacent to the Chitistone River and generally has a very well-drained, rocky substrate.

Campsites: There are abundant suitable campsites available downhill from the trail in the northwest portion of section 26 on a vegetated bench area (an old glacial moraine) which has gently undulating topography. In addition, many sites here are well protected from the wind. Vegetation types of this area are dry

and fairly resistant to trampling (Willow dwarf shrub tundra), so there is not much evidence of camping even though camping has occurred here. From this area, there are scenic views of the Chitistone canyon.

Water Availability: Clear water is available from small seepages in the bench area and from the unnamed creeks on the topographic map which cross the trail in sections 23 and 27.

Firewood: None available

Garbage: There is a red horizontal stabilizer from an airplane laying near the beginning of this Trail Section in section 23.

Chitistone Trail Segment 6: Chitistone River to Goat Trail ascent

Milepost: 10.0 miles

Segment Length: 1.8 miles

Elevation Range: 4800 - 4200 feet

USGS Quad: McCarthy C-3 to McCarthy C-4

Location: T 3S R 18E S 27,34,33

Trail Slope: 9% to 12%

Terrain Slope: 5% to 53%

Trail Aspect: 240° to 200°

Terrain Aspect: 135°

Trail Segment Description: In this trail segment, the route is often directly on the active floodplain (boulder, cobble and gravel substrate) and is therefore not a distinct trail. Footprints in the sand are occasionally visibly, however.

There are sections of discontinuous trail on vegetated river terraces which have been separated by river washouts.

River Crossings: Intersecting the trail at the junction of sections 33 and 34, the glacially fed creek which drains the Hole-In-The-Wall Glacier must be waded during times of high water. When water levels are low, it is possible to boulder hop across it.

Vegetation: Middle alpine zone. The dominant vegetation type is Open tall willow shrub which is a type that commonly occurs on floodplains and recent outwash deposits. The substrate is composed of coarsely textured alluvial gravels and is excessively drained. This vegetation type often develops from Seral herb vegetation communities, which are also present along this portion of the route.

Vegetation cover is low overall, however cover and vegetation height increase in more protected spots such as adjacent to creek drainages and as elevation decreases. In some areas, willow shrubs reach seven to nine feet in height. Characteristic vegetation species include: Salix alaxensis, Salix glauca, Salix reticulata, Arctostaphalos rubra, Dryas integrifolia, Shepherdia canadensis, Stereocaulon sp., Epilobium latifolium, Rachomitrium canescens, Artemesia tilesii, Hedysarum alpinum, and Solidago multiradiata.

The first vegetation species to colonize the youngest river terraces and on floodplains directly adjacent to the Chitistone River is Epilobium latifolium.

Campsites: There are occasional places to camp on flat portions of river terraces adjacent to the river.

Water Availability: Only glacial sources of drinking water may be available in this trail section.

Firewood: None available

Garbage: None observed except for an old aviation gas can game trap located in section 34.

Chitistone Trail Segment 7: Trail ascent and Lower Goat Trail

Milepost: 11.2 miles

Segment Length: 1.2 miles

Elevation Range: 4200 - 5000 feet

USGS Quad: McCarthy C-4

Location: T 3S R 18E S 33,32 to T 4S R 18E S 5

Trail Slope: 51% to 5% to 42% to 14%

Terrain Slope: 70% to 110% to 70% to 67%

Trail Aspect: 190° to 260° to 280° to 180°

Terrain Aspect: 145°

Trail Segment Description: There are two routes that traverse this trail segment; the Upper and Lower Goat Trails. Our group traveled the Lower Goat Trail which is significantly more difficult and dangerous than the Upper Goat Trail. As we hiked this segment of the trail, we were not aware of where the two trails diverged or converged, or initially that there were two routes. Later, we were informed by Danny ?, one of the St. Elias Alpine Guides, that groups hiking from Glacier Creek up the trail are usually diverted onto the Upper Goat Trail, whereas groups hiking from Chitistone Pass down are usually funneled onto the Lower Goat Trail.

The following trail segment description is primarily concerned with the Lower Goat Trail where both of the routes exist, and is limited to the portion of the Goat Trail that has a southeastern exposure (sections 33, 32 and 5).

Just before the trail crosses the creek mapped in the southern half of section 33, the Chitistone River narrows into the extreme upper end of the Chitistone Gorge. At this point, the trail first ascends off of the floodplain. As it traverses up partially vegetated dirt and rock slide areas, the trail is steep and unstable at times. From this point until where the trail descends back down onto the Chitistone River floodplain in trail segment 11, the trail is essentially circumnavigating the steep and narrow Chitistone Gorge and Chitistone Falls.

The Upper and the Lower Goat Trails diverge just past the midway point of the hike down the Chitistone Canyon. After crossing the unnamed creek in section 5, the trail ascends steeply up a dirt slide area which has a 45° slope, then

continues zigzagging for a short ways up the slope. At the end of the zigzag portion, the trail winds around a bend and can be seen to be continuing across more scree slopes. Though it may not be obvious, the divergence between the Upper and the Lower Goat Trail is visible from this point. Approximately 30 feet farther, the Upper Goat Trail branches off and ascends at a steeper angle. The color of the rock formations in this section can aid in locating the Upper Goat Trail. At this point the Lower Goat Trail traverses through an area of black volcanic rock. Once the Upper Goat Trail branches off, it passes through a red and a sandy colored sediment layer above the black layer. The Lower Goat Trail beyond this point is extremely dangerous due to very steep slopes, a narrow, unstable trail and rockslides which periodically obliterate the trail. The Lower Goat Trail traverses through and around approximately six very steep side canyons and then seems to stabilize in section 5 near the end of Trail Segment 7. Continuing and increased use of the Lower Goat Trail is likely to increase the rate of degradation evident on the trail.

River Crossings: In the middle of the southern half of section 33, there is a clear water creek that must be boulder hopped. The boulders on the sides of this creek are steeply piled.

Vegetation: Middle alpine zone. Much of the terrain the trail traverses in this segment is unvegetated due to rockslides and extremely steep slopes. Where the terrain surrounding the trail is vegetated, the vegetation type is typically a dry dwarf shrub tundra type; either Willow dwarf shrub tundra, Dryas dwarf shrub tundra or Ericaceous dwarf shrub tundra. Vegetation species composition is similar amongst these types, differing primarily in the relative amounts of cover of each species in the community. These vegetation types are typical of dry windswept alpine sites with thin, well-drained stony soils. Soils are slow to develop due to short growing seasons and deflation of fine soil particles and organic materials Viereck et al, 1986). Characteristic vegetation species include: Dryas octopetala, Salix reticulata, Salix polaris, Cassiope tetragona, moss species, Hierochloe alpina, Carex sp., Arctostaphalos rubra, Vaccinium uliginosum and many tundra lichen species including Stereocaulon sp., Thamnolia sp., Cetraria sp., Cladina sp., Cladonia sp., Alectoria sp. and Dactylina species.

Campsites: There is potential camping on the less steeply sloped, vegetated bench in the middle of section 5, several hundred feet below the trail, just before the trail heads uphill in a northwesterly direction. Our group camped on this bench.

Water Availability: Clear water is available from the creek that bisects the trail in the southern half of section 33 and from small seepages in the vicinity of the camp area described above. Clear water is also available from an unmapped, medium-sized clear water creek bisecting the Goat Trail near the midpoint of this trail segment (northeast corner of section 5).

Firewood: None available

Garbage: None observed

Chitistone Trail Segment 8: Goat Trail and switchbacks
Falls detour section)

(Chitistone

Milepost: 12.8 miles

Segment Length: 1.6 miles

Elevation Range: 5000 - 4700 feet

USGS Quad: McCarthy C-4

Location: T 4S R 18E S 5,8

Trail Slope: 36% to 14%

Terrain Slope: 36% to 47% to 58%

Trail Aspect: 270° to 170° to 200°

Terrain Aspect: 215° to 90°

Trail Substrate: Rock scree and gravel; little organic material.

Trail Width: 4" to 12" wide

Trail Segment Description: Relative to the situations encountered along the Lower Goat Trail (Trail Segment 7), there were no particularly dangerous sections along this segment of the Goat Trail. The trail in this segment is however, generally quite narrow and caution is required. Our group found little of the established trail as the route heads northwest toward the creek. Rather, we climbed a steep ridge to gain altitude, then headed northwest, and easily traversed the steep, vegetated hillside mid-slope. This is at approximately the same elevation as the visible trail on the other side of the canyon. Our route climbed above a rather steeply cliffed area, but was probably below where the actual trail was.

We rejoined the trail at its descent toward the creek. From the creek crossing to the switchbacks which descend towards a large flat bench (located in the northwest portion of section 8), the trail traverses a steep, but usually vegetated hillside. There are isolated slide areas along this portion. Located in the middle of the southern portion of section 5, are a number of steep switchbacks which descend down to the bench; these are generally in good condition.

River Crossings: While it is generally possible to boulder hop across the creek that the trail crosses in section 5, wading might be required during times of high water.

Vegetation: Middle alpine zone. The dominant vegetation types along this trail segment are several Dwarf shrub tundra types which are common in the middle alpine zone (Dryas dwarf shrub tundra, Willow dwarf shrub tundra and Ericaceous dwarf shrub tundra). Characteristic vegetation species include: Dryas sp., Salix reticulata, Salix polaris, Potentilla fruticosa, Cassiope tetragona, Arctostaphalos rubra, Vaccinium uliginosum, moss species, Cetraria sp., Carex sp. and Hedysarum alpinum. Often these species, especially Dryas sp., are observed growing in the trail, even though they are obviously somewhat trampled. On exposed bare areas and slide areas which are colonizing, common vegetation species include: Artemesia Tilesii, Epilobium latifolium, Aster sibericus and Solidago multiradiata.

Campsites: There is the potential for smaller groups of people to camp in the vicinity of the creek crossing in the northwest portion of section 5.

Water Availability: Clear water is available from the creek that the trail crosses in the northwest portion of section 5.

Firewood: None available

Garbage: None observed.

Chitistone Trail Segment 9: 13 Mile Bench

Milepost: 13.5 miles

Segment Length: 0.7 miles

Elevation Range: 4700 - 3700 feet

USGS Quad: McCarthy C-4

Location: T 4N R 18E S8

Trail Slope: 5%

Terrain Slope: 3%

Trail Aspect: 180°

Terrain Aspect: 135°

Trail Segment Description: We could not locate a trail traversing the majority of the length of the bench, but if present, it is likely to be located at the base of the slope to the northwest of the bench. At the northeast end of the bench, there are two large rocky outcroppings at which there are impressive views of the Chitistone Falls and Chitistone Gorge.

River Crossings: None

Vegetation: Middle to Lower alpine zone. Although the area is basically flat, moisture regimes on the bench vary from dry to wet, which results in a variety of vegetation types. In addition, exposure to the wind and elements seems more moderate than at previous trail segments and taller shrub species tend to be more dominant. Vegetation types include Dwarf shrub tundra and Low scrub (Salix sp., Betula sp. and Vaccinium sp.) towards the southwest end of the bench. Additionally, there are wetter microhabitats on the bench which are dominated by forbs and/or graminoids, i.e. Mesic and Wet forb herbaceous and Mesic and Wet graminoid herbaceous.

Campsites: There are flat spots suitable for camping along the length of the bench. In order to minimize damage to the substrate and vegetation, it is advisable that campsites be chosen at drier sites where the vegetation is more resistant to trampling. Hikers should camp away from a wolf den which is located on the southeast periphery of the bench.

Water Availability: Clear water can be obtained from seepages located on the bench.

Firewood: None available

Garbage: None observed

Chitistone Trail Segment 10: Descent from 13 Mile bench to the Chitistone River

Milepost: 14.3 miles

Segment Length: 0.8 miles (approx.)

Elevation Range: 3700 - 2900 feet

USGS Quad: McCarthy C-4

Location: T 4S R 18E S 8,7,18

Trail Slope: 36% to 7%

Terrain Slope: 36% to 5%

Trail Aspect: 150° to 130°

Terrain Aspect: 215°

Trail Segment Description: From the southern end of the 13 mile bench where this trail segment begins (sections 7 and 8), there are two routes that descend down to the floodplain of the Chitistone River. The less commonly used route heads northwest from the bench for a short distance, sidehilling and dropping directly onto the upper floodplain of the creek that bisects the eastern half of section 7. Thus, most of the elevational drop occurs while traveling down the actual floodplain of the creek. The more commonly traveled route descends down the southwest exposure of the bench, through a series of switchbacks that eventually open up onto the rocky floodplain of the creek in the eastern half of section 7. The trail joins the floodplain of the creek near the bottom of the descent, which is located near the interface of sections 7 and 18. From this point, the route follows the floodplain of the creek to that of the Chitistone River.

The vegetation is quite tall and thick along the majority of this trail segment, however herbaceous growth and small shrubs on the margin of the trail are obviously brushed back on a regular basis. In addition, some roots and larger shrubs appear to have been cut. Presumably, the St. Elias Alpine guides have been responsible for this trail maintenance. Certainly the fact that the trail has been maintained somewhat makes it much easier to traverse as well as to locate initially. Although some sort of marking might exist, our group did not notice any trail location markings at the base of the switchbacked trail up to the bench for hikers traveling toward Chitistone Pass.

River Crossings: None

Vegetation: Lower alpine zone. As the trail descends from the bench down to the floodplain of the Chitistone River, the vegetation changes radically. Near the top, Low scrub dominates with common shrub species including Salix sp., Betula glandulosa, and Vaccinium uliginosum. As the descent from the bench begins, Low scrub quickly transforms into Tall scrub. Dominant shrub species in the Tall Scrub vegetation type include: Salix alaxensis, Alnus crispa, Salix glauca, Salix planifolia and Salix arbusculoides. Associated herbaceous species include: Heracleum lanatum, Aconitum delphinifolium, Epilobium angustifolium, Mertensia paniculata, Actaea rubra, Calamagrostis canadensis and Viburnum edule. The height of the shrubby overstory averages from 10 to 15 feet. Near the bottom of the rise, tree species such as Picea glauca and Populus balsamifera become a significant element of the vegetative overstory.

Campsites: None observed

Water Availability: Clear water can be obtained from the creek located in the eastern half of section 7.

Firewood: There are tall shrubs and some small spruce at the bottom of the trail segment near the Chitistone River floodplain.

Garbage: None observed

Chitistone Trail Segment 11: NW bank of Chitistone River to Falls Creek

Milepost: 15.3 miles

Segment Length: Variable, 0.25 to 1.0 miles, depending on where the Chitistone River is crossed.

Elevation Range: 2900 - 3100 feet

USGS Quad: McCarthy C-4

Location: T 4S R 18E S 18,17,8

Trail Slope: 3%

Terrain Slope: 3%

Trail Aspect: 90°

Terrain: 145°

Trail Segment Description: In order to proceed down canyon from the base of the large bench (the southeast portion of section 7), the Chitistone River needs to be crossed. The route of this trail segment follows the rocky floodplain of the Chitistone River to wherever the crossing is to take place, either to the southwest as indicated on the map quad, or northeast, to the Chitistone Falls Creek above its confluence with the creek draining the Chitistone Glacier. Because the substrate of this portion of the route is composed of large boulders, cobbles, and gravel, there is no definite trail to be followed, although footprints can be found in sandy and gravelly areas.

River Crossings: The USGS quad indicates that the trail crosses the Chitistone River near the top of section 18. During times of low water flow, groups do occasionally cross in this area, however river crossing experience is highly recommended before it is attempted. Usually the Chitistone Falls Creek is crossed (the northeast portion of section 8), then the terminus of the Chitistone Glacier is traversed (the southeast portion of section 8), in order to circumvent the huge volume of water that originates from under Chitistone Glacier. Refer to the description of trail segment 12 for more information about this river crossing.

Vegetation: Lower alpine zone. The route is located primarily on the unvegetated floodplain of the Chitistone River. Tall scrub and Seral herb vegetation communities are however, pioneering the margins of the floodplain. Typical vegetation species include: Salix sp., Alnus crispa, Epilobium angustifolium etc.

Campsites: Campsites may be found on flat portions of river terraces.

Water Availability: Clear water is available from the creek that bisects the eastern half of section 7.

Firewood: There are tall willow shrubs, alder shrubs, balsam poplar and young spruce at the base of the slope.

Garbage: None observed

Chitistone Trail Segment 12: Chitistone Glacier/Chitistone River crossing

Milepost: 16.2 miles

Segment Length: 0.9 miles

Elevation Range: 3100 - 3100 feet

USGS Quad: McCarthy C-4

Location: T 4S R 18E S 8,9,8

Trail Slope: 2% to 3%

Terrain Slope: 3%

Trail Aspect: 130° to 45°

Terrain Aspect: 220°

Trail Segment Description: Refer to the section below on river crossings.

River Crossings: The crossing of the Chitistone River as indicated on the topographic map is possible during times of low water flow. However, most groups first cross the Chitistone Falls Creek (northeast portion of section 8), then hike over a portion of the terminus of the Chitistone Glacier (southeast portion of section 8), in order to avoid wading the huge volume of water that originates from under the Chitistone Glacier. Even the Chitistone Falls Creek can be dangerous to cross during times of high water flow.

During late July of 1990, the location of most of the flow of meltwater coming out from underneath the Chitistone Glacier changed course. Presently, the water first comes out the southern edge of the terminus, is then sucked back down under another terminal lobe of ice and glacial debris for approximately 0.1 mile, and then comes out again. It is thus possible to use as a bridge the portion of the glacier under which the majority of the meltwater flows. The portion of the terminus which is hiked over is covered with glacial debris such that ice is not visible as the crossing is being made. The crossing appears to be relatively safe. There is a second meltwater channel crossing after the glacial bridge crossing. The volume and velocity of water in this channel is much lower than the first channel so that wading it can be done relatively easily.

In the past, groups have had to spend two to three hours hiking up the lateral moraine, finding a safe route to cross the glacier, then hiking down the opposite lateral moraine (southeast corner of section 8 and the southwest corner of section 9). The route traversing the lateral moraine is steep, and the substrate is composed of unconsolidated glacial scree. It is quite likely that the configuration of the glacier terminus will change again, thus necessitating the use of this route.

Vegetation: Lower alpine zone. The substrate of this trail segment is composed of relatively recent alluvial deposits and glacial moraine and thus, is largely unvegetated. If the area is to colonize, it can be expected to do so with Seral herbs and Tall scrub vegetation communities.

Campsites: Camping is possible on alluvial deposits in the area east of the Chitistone Falls Creek and north of the Chitistone Glacier terminus. Our group camped here.

Water Availability: Clear water can be obtained from seepages on the southside of the terminal moraine of the Chitistone Glacier (southeast portion of section 8).

Firewood: None available

Garbage: None observed

Chitistone Trail Segment 13: SE bank of Chitistone River to vegetated rise

Milepost: 20.6 miles

Segment Length: 4.4 miles

Elevation Range: 3100 - 2600 feet

USGS Quad: McCarthy C-4 to McCarthy B-4

Location: T 4S R 18E S 8,17,18 to T 4S R 17E S 13,24,23,26

Trail Slope: 0% to 5%

Terrain Slope: 0% to 5%

Trail Aspect: 260° to 220°

Terrain Aspect: 310°

Trail Segment Description: This trail segment travels from the south side of the Chitistone Glacier along the southern bank of the Chitistone River, to just before a densely vegetated hill whose steep slope comes down directly adjacent to the Chitistone river in section 26. The route can be followed either on the active floodplain on boulders and cobbles, or on vegetated river terraces where there is usually an easily followed trail. There are several very large rockslides extending down to the Chitistone River which are easily walked around or crossed.

River Crossings: There is a glacial creek that our group needed to wade in the middle of section 18. In addition, there is a creek crossing the route in section 24, which may need to be waded during times of high water.

Vegetation: Lower alpine zone to subalpine boreal forest zone. The vegetation growing along this trail segment is typical of that found growing on floodplains in the early stages of succession. Vegetation types include Mixed forest, Broadleaf forest, Tall scrub and Low scrub. Cover of the taller plant species is generally quite low and their distribution is scattered. Dominant vegetation species include: Salix alaxensis, Populus balsamifera, Shepherdia canadensis, Dryas Drummondii, Salix sp., Picea glauca, Arctostaphalos rubra, Stereocaulon sp., Oxytropis campestris, moss species and Potentilla fruticosa. Proceeding down valley, willow shrubs, balsam poplar and spruce trees become increasingly taller and more dominant. Yellow dryas forms extensive mats in some floodplain areas.

Campsites: There is camping and clear water available at an unvegetated glacial moraine area just south of the Chitistone Glacier terminus. In addition, there are potential camping areas on revegetating river terraces anywhere the substrate is flat enough.

Water Availability: Clear water is available from seepages just south of and adjacent to the terminus of the Chitistone Glacier. Water is also available from various creeks and seepages along the route, including a clear water channel which parallels the Chitistone River for approximately 0.5 miles in the southern part of section 23 just before the forested rise.

Firewood: Firewood from tall shrubs, balsam poplar and spruce trees is available along much of the length of this section.

Garbage:

Chitistone Trail Segment 14: Forested rise to Toby Creek

Milepost: 21.8 miles
Segment Length: 1.2 miles
Elevation Range: 2600 - 2500 feet
USGS Quad: McCarthy B-4
Location: T 4S R 17E S 26,27
Trail Slope: 3% to 47%
Terrain Slope: 5% to 70%
Trail Aspect: 240°
Terrain Aspect: 305°

Trail Segment Description: Approximately 0.5 miles long, the first portion of this trail segment traverses a steep, densely vegetated hill which is situated directly adjacent to the Chitistone River. The trail undulates up and downhill along the length of the vegetated rise, rapidly gaining and losing altitude. There are several isolated mudslides and unstable areas along this stretch. The trail appears to receive regular brushing and some minimal maintenance making it fairly easy to follow despite a densely vegetated overstory and understory.

The trail is not difficult to locate hiking from north to south, however it might be difficult to locate initially when approaching the vegetated rise from the south.

South of the vegetated rise, the route follows the Chitistone River floodplain down to Toby Creek, sometimes on the active floodplain with a substrate of boulders and cobbles and sometimes on older, vegetated river terraces.

River Crossings: None

Vegetation: Subalpine boreal forest zone. Vegetation types of the first portion of this trail segment are Closed tall alder- willow scrub and Open balsam poplar forest. The vegetation is very dense and the soils are more developed than the surrounding vegetated river terraces. Dominant vegetation species include: Alnus crispa, Populus balsamifera, Salix sp., Aconitum delphinifolium, Epilobium angustifolium, Oxyria digyna, Calamagrostis canadensis and moss species. The southeast portion of this trail segment, in section 27, has vegetation communities which typically grow on floodplains in the early stages of succession, i.e. Mixed forest, and Tall and Low scrub.

Campsites: Potential campsites are available on flat river terrace areas between the southern portion of the vegetated rise and Toby Creek.

Water Availability: Clear water is available from the small creek just north of Toby Creek in section 27.

Firewood: Firewood from tall shrubs, balsam poplar and spruce trees is available along much of the length of this section.

Garbage: None observed.

Chitistone Trail Segment 15: Toby Creek to Glacier Creek Airstrip

Milepost: 25.3 miles

Segment Length: 3.5 miles

Elevation Range: 2500 - 2300 feet

USGS Quad: McCarthy B-4

Location: T 4S R 17E S 27,34,33,32 to T 5S R 17E S 4,5,8,9

Trail Slope: 3%

Terrain Slope: 3%

Trail Aspect: 230°

Terrain Aspect: 305°

Trail Segment Description: This trail segment begins with a crossing of Toby Creek and ends at the Glacier Creek Airstrip. During its length, the hiker can either follow the rocky, unvegetated active floodplain or a relatively well defined, nearly continuous trail on an older vegetated river terrace. In places where the trail may be washed out by the Chitistone River, the general route can be followed by hiking along the edge of the river terrace or on the floodplain of the river. It is quite probable that in some areas along the route, there is more than one trail on the river terrace.

To find the trail heading northeast from the Glacier Creek Airstrip, WRST Rangers Barrett and Inafuku's trip report states that, "From the shack at the northeast end of the Glacier Creek Airstrip, the trail can be located by heading westerly.

A visible tread becomes apparent approximately 200 feet from the shack and 100 feet north of the airstrip."

River Crossings: In section 27, the route crosses Toby Creek, which drains several glaciers to the southeast. During times of hot weather or rainfall, it may be necessary to wait for the water level to subside before attempting to cross. It is probably wisest to cross Toby Creek in the morning when the water is usually at its lowest level. During times of high water, it is possible to cross Toby Creek several miles upstream even when crossing Toby Creek near its confluence with the Chitistone River is unsafe.

Vegetation: Subalpine boreal forest zone. The vegetation growing along this trail segment is typical of that found growing on floodplains in the early stages of succession. Vegetation types include Mixed forest and Tall scrub. The taller plant species are generally quite open and scattered in their cover and distribution. The substrate is well drained. Dominant vegetation species include: Populus balsamifera, Shepherdia canadensis, Picea glauca, Dryas Drummondii, Salix sp., Stereocaulon sp., Oxytropis campestris, Cetraria sp. and Solidago multiradiata. Yellow dryas forms extensive mats in some floodplain areas.

Campsites: Campsites are potentially available on flat river terrace areas along the length of this Trail Segment.

Water Availability:

Firewood: Firewood from tall shrubs, balsam poplar and spruce trees is available along much of the length of this segment.

Garbage: None observed except for the an old gun which was hanging in a tree on the north side of Toby Creek at its confluence with the Chitistone River.

Chitistone Trail Segment 16: Glacier Creek Airstrip

Milepost: 25.3 miles

Segment Length: N/A

Elevation: 2300 feet

USGS Quad: McCarthy B-4

Location: T 5S R 17E S 4,9

Trail Slope: 3%

Terrain Slope: 3%

Trail Aspect: 230°

Terrain Aspect: 210°

Trail Segment Description: The Glacier Creek Airstrip is located approximately one mile east of the confluence of Glacier Creek and the Chitistone River. It is approximately 90 feet wide and between 1650 and 1800 feet long (0.31 to 0.34 miles). Its slope is between 1% and 2% and its orientation is 140°/320°. A trail is shown on the quad which heads south approximately two miles from the southeast end of the airstrip to Radovan Gulch.

River Crossings: Glacier Creek is generally not crossable except for perhaps very late in the season. If it could be crossed, then groups could hike south past Peavine Bar, down the Nizina River to May Creek.

Vegetation: Subalpine boreal forest zone. The dominant vegetation types in the vicinity of the airstrip are Broadleaf woodland, Tall scrub and Poplar-spruce mixed woodland. The Poplar-spruce type is considered an intermediate successional stage, leading to a white spruce climax forest on floodplain sites. Spruce trees in the vicinity of the airstrip reach 10 to 15 feet in height. Although white spruce and balsam poplar trees are present, their percentage of cover is often patchy and low. Much of the area in the vicinity of the airstrip is either unvegetated cobbles, boulders and gravel, or is covered with lichens or a nearly continuous mat of yellow dryas, (Dryas Drummondii). Characteristic vegetation species include: Populus balsamifera, Stereocaulon sp., Salix sp., Cetraria sp., Shepherdia canadensis, Oxytropis campestris, Dryas Drummondii, moss species, Racomitrium sp. and Picea glauca.

Campsites: Potential campsites in the vicinity of the airstrip may be found anywhere on the gravel bar where the substrate is flat enough to camp. Our group camped on a mat of yellow dryas (Dryas Drummondii) near Glacier Creek.

Water Availability: A local source of clear water was not located by our group.

Firewood: Firewood is available from nearby stands of tall willow, balsam poplar and spruce.

Garbage: At the northeast end of the airstrip, there is a small deteriorating building (approximately 10 ft x 10 ft), several aviation gas cans, some old auto parts, at least fifteen 55 gallon barrels and the trailer portion of an old flatbed trailer. These things were presumably left behind by the mining operation that occurred in the area. Because we did not have time to do a complete survey of the area, it is possible that there is additional garbage and cultural resources.

Discussion Tim Duncan, a Chitina District seasonal ranger, estimated that approximately 85 to 100 people hiked the Chitistone Trail in 1990. By mid August, the McCarthy Air Taxi service flew approximately 30 flights into the Lower Skolai Lake Airstrip. With two to three hikers per flight, 60 to 90 hikers were flown in by mid August with the McCarthy Air Taxi Service alone. Other hikers are known to have flown into Chisana and to hiked to Glacier Creek Airstrip. Further, it is likely other hikers came in by other means.

Management Recommendations

(1) The piles of debris left behind at Chitistone Pass by the Icefield Ranges Research Project should be cleaned up. Cost, personnel, time commitment, and logistical support required for such a cleanup could be estimated using the inventory of trash at Chitistone Pass provided in Appendix 5. Once cleaned, this area would be a good alternative camping area for groups who might otherwise camp around the large lake at Chitistone Pass. In addition, there is a significant amount of trash at the Skolai Airstrip that should be cleaned up.

(2) Visitor Center personnel should be advised not to recommend the Chitistone Trail to visitors unless a visitor specifically inquires about it or a visitor obviously has the expertise required to safely hike this trail. Visitors hiking the trail should be informed that there is an Upper and a Lower Goat Trail, as well as how to locate the Upper Goat Trail, which is much safer to hike.

(3) The visitor center should have a video or short slide presentation to show Chitistone Trail conditions to visitors considering hiking the trail.

(4) Park management should consider the possibility of permanently marking the northeast end of the Goat Trail where the Lower and Upper Goat Trail diverge. At this point it is not obvious that two alternate trails exist, or that one of them is much safer than the other. Groups hiking from Glacier Creek up the trail are usually diverted onto the Upper Goat Trail, whereas groups hiking from Chitistone Pass down are usually funneled onto the Lower Goat Trail. The Lower Goat Trail has some extremely dangerous spots and its use by hikers should be discouraged.

(5) Groups of hikers should be encouraged to camp at least a certain distance away from the large lake at Chitistone Pass, because of the local population of breeding birds, and because of fragile alpine vegetation communities. The area most recommended for camping at the pass is the rolling hills at the northeast end of the lake at Chitistone Pass where the debris from the abandoned research camp is located. The dominant vegetation type in this area is a Dry dwarf shrub tundra type. It has a generally well drained substrate and can withstand a greater use intensity than the wetter vegetation types around the lake.

(6) In order to minimize disturbance, groups of hikers should be encouraged to not camp within a certain distance of the wolf den in Trail Segment 9. Yearly monitoring of activity at the wolf den should be done by Resource Management personnel.

(7) An attempt should be made to keep records on how many people hike the Chitistone Trail yearly, what groups sizes, when they hike the trail and where they camp.

This would require some communication with the St. Elias Alpine Guides who guide several groups of clients on the trail every year and McCarthy Air an air taxi service who flies visitors into the area. The park should consider whether the Alpine Guides need to obtain guidelines or a permit for the on-going brushing they do along the brushy sections of the trail.

(8) Park personnel should meet with the St. Elias Alpine Guides and McCarthy

Air and discuss problems and issues they think concern the area. They could also provide information on trends they have observed in the years that they have been guiding groups on the trail.

Suggestions for Resource Management studies in the Chitistone Trail area

(1) Videotape the Chitistone Trail in its entirety, especially the Goat Trail section, to document present trail conditions for resource management purposes.

(2) In order to initiate long term monitoring of trail conditions, establish permanent transects or photopoints along selected trail areas for comparisons through time.

(3) Establish a water quality testing program to monitor lakes and creeks along the Chitistone Trail for baseline information purposes and to monitor for possible water quality degradation caused by human use of the area. Bodies of water to be monitored include: the large lake at Chitistone Pass, the creek draining the lake, seepages at Lower Skolai Lake Airstrip and other sources of drinking water.

It is possible that the piles of metallic debris and rusting cans abandoned at Chitistone Pass are leaching metals into the water table, small creeks and the lake at the pass.

(4) Do a survey of breeding birds at the Chitistone Pass area, concentrating on birds around the large lake at Chitistone Pass. There appears to be several bird species at the pass which may require high alpine lake habitat for breeding.

High alpine lake habitat may not be that abundant in WRST. It is not known how much human disturbance these breeding birds can tolerate before breeding success is affected.

(5) As a part of a future Backcountry Management Plan, consider limiting the number of groups allowed to hike the trail yearly if there is a significant increase of resource degradation associated with visitor use of the trail. Alternatively, consider limiting the number of people in a group allowed to hike the trail. Research has shown that the proportional amount of damage done to a trail by a group increases as the size of the group increases.

Appendix 1. Chitistone Trail segment data.

Trail Segment	Milepost (miles) ¹	Segment Length (miles)	Elevation Range (feet)	USGS Quad ²	Camp site	Clear Water Avail	Fire-wood	River Crossings
1	0.0	0.0	4500	C-3	Y	Y	Y	0
2	2.5	2.5	4500-4500	C-3	N	Y	N	0
3	4.6	2.1	4500-5800	C-3	N	Y	N	0
4	6.2	1.6	5800-5800	C-3	Y	Y	N	0
5	8.2	2.0	5800-4800	C-3	Y	Y	N	0-1
6	10.0	1.8	4800-4200	C-3, 4	Y	N	N	1
7	11.2	1.2	4200-5000	C-4	Y	Y	N	0
8	12.8	1.6	5000-4700	C-4	Y	Y	N	0-1
9	13.5	0.7	4700-3700	C-4	Y	Y	N	0
10	14.3	0.8	3700-2900	C-4	N	Y	Y	0
11	15.3	0.3-1.0	2900-3100	C-4	Y	Y	Y	0-1
12	16.2	0.9	3100-3100	C-4	Y	Y	N	2
13	20.6	4.4	3100-2600	C, B-4	Y	Y	Y	1-2
14	21.8	1.2	2600-2500	B-4	Y	Y	Y	0
15	25.3	3.5	2500-2300	B-4	Y		Y	1
16	25.3	0.0	2300	B-4	Y	N	Y	0

¹ Measured from Lower Skolai Lake Airstrip to the Glacier Creek Airstrip.

² McCarthy 1:63,360 quadrangle.

Appendix 2. Latin and common names of vegetation species.

Latin Name ¹	Common Name
<i>Aconitum delphinifolium</i>	northern monkshood
<i>Actaea rubra</i>	red baneberry
<i>Alectoria</i> sp.	(lichen)
<i>Alnus</i> sp.	alder
<i>Alnus crispa</i>	green alder
<i>Arctostaphalos rubra</i>	red bearberry
<i>Artemesia Tilesii</i>	Tilesii's wormwood
<i>Aster sibiricus</i>	Siberian aster
<i>Betula</i> sp.	birch
<i>Betula glandulosa</i>	shrub birch
<i>Calamagrostis canadensis</i>	bluejoint
<i>Carex</i> sp.	sedge
<i>Carex Bigelowii</i>	Bigelow sedge
<i>Carex Lachenalii</i>	hare's foot sedge
<i>Cassiope tetragona</i>	mountain heather
<i>Cetraria</i> sp.	(lichen)
<i>Cladina</i> sp.	(lichen)
<i>Cladonia</i> sp.	(lichen)
<i>Dactylina</i> sp.	(lichen)
<i>Dryas Drummundii</i>	yellow dryas
<i>Dryas integrifolia</i>	white dryas
<i>Dryas octopetala</i>	dryas
<i>Equisetum arvense</i>	common horsetail
<i>Epilobium angustifolium</i>	fireweed
<i>Epilobium latifolium</i>	dwarf fireweed
<i>Hedysarum alpinum</i>	alpine sweet vetch
<i>Heracleum lanatum</i>	cow parsnip
<i>Hierochloe alpina</i>	alpine holy grass
<i>Hylocomium</i> sp.	feather moss
<i>Hylocomium alaskanum</i>	feather moss
<i>Mertensia paniculata</i>	tall lungwort
<i>Oxyria digyna</i>	mountain sorrel
<i>Oxytropis campestris</i>	northern yellow peavine
<i>Peltigera malacea</i>	(lichen)
<i>Petasites frigidus</i>	arctic sweet coltsfoot
<i>Picea glauca</i>	white spruce
<i>Poa alpina</i>	alpine blue grass
<i>Polemonium acutiflorum</i>	acutish Jacob's ladder
<i>Populus balsamifera</i>	balsam poplar
<i>Potentilla fruticosa</i>	shrubby cinquefoil
<i>Rachomitrium</i> sp.	(moss)
<i>Rachomitrium canescens</i>	(moss)
<i>Ranunculus</i> sp.	buttercup
<i>Rhizocarpon</i> sp.	(lichen)
<i>Salix</i> sp.	willow
<i>Salix alaxensis</i>	feltleaf willow

¹ Following Hulten, 1968.
Appendix 2 cont.

Latin Name ¹	Common Name
<i>Salix arbusculoides</i>	little tree willow
<i>Salix glauca</i>	grayleaf willow
<i>Salix lanata</i>	wooly willow
<i>Salix planifolia</i>	diamond-leaf willow
<i>Salix polaris</i>	polar willow
<i>Salix reticulata</i>	netleaf willow
<i>Saxifraga</i> sp.	saxifrage
<i>Saxifraga bronchialis</i>	spotted saxifrage
<i>Saxifraga tricuspidata</i>	prickly saxifrage
<i>Senecio lugens</i>	black-tipped groundsel
<i>Shepherdia canadensis</i>	soapberry
<i>Solidago multiradiata</i>	northern goldenrod
<i>Stereocaulon</i> sp.	(lichen)
<i>Thamnotia</i> sp.	(lichen)
<i>Umbilicaria</i> sp.	(lichen)
<i>Vaccinium</i> sp.	blueberry
<i>Vaccinium uliginosum</i>	alpine blueberry
<i>Viburnum edule</i>	highbush cranberry

¹ Following Hulten, 1968.

Appendix 3. Vegetation types of Chitistone Trail segments.
 Trail Segment Vegetation Types¹

1	Tall willow shrub Willow dwarf shrub tundra Mesic forb herbaceous
2	Open tall scrub Closed tall scrub Bryoid lichen
3	Dryas dwarf shrub tundra Willow dwarf shrub tundra Ericaceous dwarf shrub tundra Mesic forb herbaceous Wet forb herbaceous
4	Wet bryophyte Alpine herb-sedge Alpine herbs Mesic forb herbaceous Wet forb herbaceous Willow dwarf shrub tundra Dryas dwarf shrub tundra
5	Willow dwarf shrub tundra Dryas dwarf shrub tundra Dryas-lichen dwarf shrub tundra Low scrub Tall scrub
6	Open tall willow shrub Seral herbs
7	Willow dwarf shrub tundra Dryas dwarf shrub tundra Ericaceous dwarf shrub tundra
8	Dryas dwarf shrub tundra Willow dwarf shrub tundra Ericaceous dwarf shrub tundra
9	Dwarf shrub tundra Low scrub Mesic graminoid herbaceous Wet graminoid herbaceous Mesic forb herbaceous Wet forb herbaceous

¹ Following Viereck et al, 1986.

Appendix 3 cont.

Trail Segment	Vegetation Types ¹
10	Low scrub Tall scrub
11	Tall scrub Seral herbs
12	Unvegetated
13	Low scrub Tall scrub Broadleaf forest Mixed broadleaf and coniferous forest
14	Open balsam poplar forest Closed tall-alder willow shrub Mixed forest Tall scrub Low scrub
15	Mixed forest Tall scrub
16	Broadleaf woodland Poplar-spruce mixed woodland Tall scrub

¹ Following Viereck et al, 1986.

Appendix 4. Inventory of refuse abandoned at Chitistone Pass.

The debris found at the Chitistone Pass area is spread out over an area of approximately 1/2 square mile. The majority of it is aggregated into the ten main sites listed below. It is probable that there are more piles of refuse in the Chitistone Pass area than those listed here. In addition to the piles, there is miscellaneous debris scattered between these sites, including: broken glass, plastics, cans and pieces of wood and canvas. It is estimated that cleanup would take a crew of two to three people, eight to ten days to collect and bag the refuse in preparation for sling loading by helicopter.

Numbers refer to debris pile sites. Refer to Figure 4, a map of refuse abandoned at Chitistone Pass for approximate locations of debris piles.

1. Refuse includes a ten foot section of radio tower.
2. Refuse includes: a small dump of tools with files, bits, pliers, 2 foot long metal anchors, canvas, glass, plastic jugs, closepins, large mouse traps, small battery, 3-in-one oil, wire, nails, soldering paste, black hose and rubber boots. The debris covers approximately 100 square feet.
3. Refuse includes: two aviation gas cans and several plastic jugs. At this site, there are rocks partially submerged in water which are stained red.
- 4a. This debris pile is located at the base of the hill upon which sites 4a, b and c are located. Refuse includes: 1 to 2 dozen aviation gas cans, numerous food cans, a garbage can and broken bottles, weighing collectively 100 to 200 pounds.
- 4b. Refuse includes: a sunken burn barrel, several iron stakes and scraps of both charred and uncharred wood.
- 4c. There were three piles of debris at this location.
 - Middle group, this was the site of an old camp. Refuse includes: iron stakes, aluminum poles, rebar and wood debris. At this site some trenches have been dug and there are rocks in broken rings.
 - Eastern group, refuse includes: numerous aluminum and steel stakes and poles, electronic parts, bottles, wire, cans, batteries, an anemometer, medical supplies (bottles and syringes) and a shovel head. This pile has been incompletely burned and it is possible that some soil may need removal.

Appendix 4 cont.

- Northern group, this site was the location of the cook tent. Refuse includes: spice cans, bottles, broken bottles, cans, aluminum pieces, iron stakes, canvas tent remnants, clothes pins, cleaning pads, charred wood, orange paint on rocks and a paint soaked brush. Some soil here may need removal because of possible contamination.

5. Refuse includes: a formation of iron stakes, wood, cord and wooden poles.

6. Refuse includes: two 4' x 4' pieces of plywood staked down with several additional stakes and some pieces of wire.

7. This is the site of an old camp. Refuse includes: three aviation gas cans, bits of string, an aluminum pot and a pair of pants.

8. Refuse includes: more than four dozen aviation gas cans, food cans, bottles, charred wood and some medical refuse. This site has approximately 450 to 550 pounds of debris spread over an area of over 900 square feet.

9. This site was the location of the generating station. Refuse includes: two dozen motor oil cans, four cans of oil that are still full, several stakes, poles and pieces of metal and a one hundred pound LP cylinder. At least one partially buried copper wire runs north from this site towards the main camp at site 4.

10. Refuse includes: the remnants of an antenna tower, stakes and wire.

Appendix 5. Bird species observed on the Chitistone Trail
between 8/1/90 and 8/8/90¹.

To simplify listing the avifauna observed on the Chitistone Trail, the 16 Trail
Segments used in this report were lumped into three groups:

- 1 - 3 Skolai Airstrip to Chitistone Pass
- 4 - 10 Chitistone Pass to the Chitistone River
- 11 - 16 Chitistone River to the Glacier Creek Airstrip

1 - 3	4 - 10
Willow ptarmigan	Green winged teal
Semipalmated plover	Scaup sp.
Common snipe	Surf scoter
Water pipet	Northern harrier
Northern shrike	Semipalmated plover
Wilson's warbler	Red-necked phalarope
American tree sparrow	Spotted sandpiper
Snow bunting	Least sandpiper
Redpoll	Baird's sandpiper
	Yellow-billed magpie
	Swainson's thrush
	American robin
	Water pipet
	White crowned sparrow
	Dark eyed junco
	Snow bunting
11 - 16	Bird species observed by other groups
Spotted sandpiper	Bald eagle
Upland sandpiper	Golden eagle
Gray jay	Mountain bluebird
Yellow billed magpie	
Common raven	
Boreal chickadee	
Swainson's thrush	
American robin	
Varied thrush	
Yellow rumped warbler	
Wilson's warbler	
White crowned sparrow	
Dark eyed junco	
Redpoll	

¹ Following Peterson, 1990. Bird species are listed in phylogenetic order.

Appendix 6. Photograph and Trail Segment cross reference.

Ken Faber and Tim Duncan will provide the park with labeled slides they took while on the Chitistone trip.

Bibliography

- Barrett, B. and L. Inafuku. 1981. Goat Creek Trip Report. Unpublished trip Report. WRST, Glennallen, AK 99573.
- Denton, G. H. and W. Karlen. 1977. Holocene Glacial and Tree-line Variations in the White River Valley and Skolai Pass, Alaska and Yukon Territory. Quaternary Research 7, 63-111.
- Hulten, E. 1968. Flora of Alaska and Neighboring Territories. Stanford: Stanford University Press.
- Marcus, M. G. 1974. The High Mountain Environment Project: Chitistone Pass Region, Alaska and Mt. Logan, Yukon. Icefield Ranges Research Project, Scientific Results. 4:1-11.
- Murray, D. F. 1968. A Plant Collection from the Wrangell Mountains, Alaska. ARCTIC. Journal of the Arctic Institute of North America. 21:106-109.
- Peterson, R. T. 1990. A Field Guide to Western Birds, 3rd ed. Houghton Mifflin Company, Boston. 432 pp.
- Scott, R. W. 1974. Alpine Plant Communities of the Southeastern Wrangell Mountains, Alaska. Icefield Ranges Research Project, Scientific Results. 4:283-306.
- Scott, R. W. 1974. Effect of Snow Duration on Alpine Plant Community Composition and Distribution. Icefield Ranges Research Project, Scientific Results. 4:307-318.
- Scott, R. W. 1974. The Vegetation of Chitistone, Skolai and Frederika Valleys, Alaska. Icefield Ranges Research Project, Scientific Results. 4:331-337.
- Scott, R. W. 1974. Floristic and Ecological Phytogeography of the Southeastern Wrangell Mountains, Alaska. Icefield Ranges Research Project, Scientific Results. 4:339-353.
- Stevenson, D. and P. Flanagan. 1982. The Goat Trail/Skolai Creek Trail Trip Report. Unpublished trip report. WRST, Glennallen, AK 99573.
- Viereck, L. E., C. T. Dyrness and A. R. Batten. 1986. The 1986 Revision of the Alaska Vegetation Classification. USDA Forest Service Gen. Tech. Rep. PNW-106.

Some comments and changes on the Chitistone Trail Info sheet.

DISTANCE: Approximately 25 miles one-way, or 50 miles round trip.

ACCESS: From Gulkana, Chitina, or McCarthy via local air taxi service to Lower Skolai Lake Airstrip and Glacier Creek Airstrip.

ROUTE: From the Lower Skolai Lake Airstrip, it is a 1300 foot climb to Chitistone Pass. From the pass, the route follows a highly scenic and rugged alpine valley.

Camping on the margin of the large lake at Chitistone Pass is not recommended so as to avoid disturbing fragile vegetation communities and breeding bird populations. The Goat Trail can be picked up on the northerly side of the valley, although the actual trail may not be apparent for some distance beyond the pass.

The narrow Goat Trail crosses some difficult and steep scree slopes, and careful footing is of utmost importance. There are two parallel Goat Trail routes, an Upper and a Lower Goat Trail. While the Upper Goat Trail must still be traversed with the utmost of care, it is generally less dangerous than the Lower Goat Trail.

The Lower Goat Trail has several rockslide areas which can be very dangerous to cross and thus an attempt should be made to locate the upper Goat Trail. When hiking the Chitistone Trail south down the Chitistone Canyon, the Upper and the Lower Goat Trails diverge just past the midway point of the hike. After crossing an unnamed creek (McCarthy Quad C-4, Township 4S, Range 18E, Section 5), the trail ascends steeply up a dirt slide area which has a 45° slope, then continues zigzagging for a short ways up the slope. At the end of the zigzag portion, the trail winds around a bend and can be seen to be continuing across more scree slopes. While it may not be obvious, the divergence between the Upper and the Lower Goat Trail is visible at this point. Approximately 30 feet beyond this point, the Upper Goat Trail branches off and ascends at a steeper angle. The color of the rock formations in this section can aid in locating the Upper Goat Trail. In this area, the Lower Goat Trail traverses through an area of black volcanic rock. Once the Upper Goat Trail branches off, it passes through a red and a sandy colored sediment layer above the black layer. The Lower Goat Trail beyond this point is extremely dangerous due to very steep slopes, a narrow, unstable trail and rockslides which periodically obliterate the trail. The Upper and the Lower Goat Trails eventually join again and travel around the head of the Chitistone canyon.

The Chitistone Trail/Goat Trail then descends to the canyon floor along the north side of the Chitistone River. Here, one must cross to the south side of the Chitistone River. Generally, this is accomplished by crossing the creek which proceeds from Chitistone Falls and then crossing the terminus of the Chitistone Glacier. Great care should be taken when traversing the glacier. The other option is to cross the Chitistone River during rare occasions when flow conditions permit.

Once across the river, the route follows the Chitistone Canyon to the southwest, crossing a rockslide area and sections of dense brush before reaching Toby Creek.

Toby Creek must be forded, and it can be a fairly difficult crossing during periods of high water. Hiking upstream several miles to find a safer crossing may be necessary. From Toby Creek it is a 4 mile hike to the Glacier Creek Airstrip.

Numbers refer to debris pile sites, Appendix 4.