

Beaver populations and possible limiting factors in Rocky Mountain National Park, 1999.

David Mitchell, Jennifer Tjornehoj, and Bruce W. Baker

U.S. Geological Survey, Midcontinent Ecological Science Center,
Fort Collins, CO 80525-3400

A survey of North American beaver (*Castor canadensis*) activity and the limiting factors of beaver habitat was conducted on the major waterways within the St. Vrain, Big Thompson, Cache la Poudre, and Colorado drainages in Rocky Mountain National Park, Colorado from August 9, 1999 through November 8, 1999. The survey was conducted by David Mitchell, Jennifer Tjornehoj, and Bruce Baker.

Streams were surveyed by foot to locate current and past beaver activity, including lodges, bank dens, food caches, dams, trails, cuttings, stumps, scent mounds, scat, and sightings. Current activity was distinguished from past activity by fresh sign such as mud, cuttings and stumps, pungent scent mounds, active trails, broken ice, scat, and sightings. 1:3600 arial photographs and past surveys were used to help locate potential beaver habitat. Limiting factors of beaver habitat within the drainages surveyed were recorded using the guidelines below.

Estimates of beaver populations from survey data are an index to the actual population. The accuracy of this index depends on the time of year streams are surveyed. Beavers are more active during the months of October and November as they repair dams and lodges and gather a food cache in preparation for winter, thus surveys in these months are least likely to misinterpret sign of activity and thus are likely the most accurate index. For example, some sites that appeared inactive in August appeared active in November. In contrast, an area that is active in August may be abandoned for the winter.

In this survey we used the number of active beaver sites or colonies to estimate the population. Colonies were defined as separate areas that always contained a foraging area sometimes contained one or more active lodges, food caches with fresh cutting, dams with fresh cuttings or recent activity, scent mounds, slides, or tracks. Multiple colonies along a stream reach typically were separated by at least 100 meters. In contrast to previous surveys, we did not multiply number of lodges by 6 and burrows by 2 to estimate population, primarily because a single colony (family unit typically with 6 beaver) can have multiple lodges or dens.

We quantified limited factors from visual estimates without the aid of specific measurements. Utm coordinates of active lodges were obtained using a Garmen 12 GPS unit and are plus or minus 5 – 50 meters.

Limiting Factors Guidelines

A. Shrub browsing by ungulates

- 0 – none No obvious (<1%) clipped leaders on riparian shrubs (willow, alder; lower North St. Vrain), no aspen barked by elk.
- 1 – light <10% of leaders clipped, plants full with long leaders, some aspen barking.
- 2 – moderate 10-40% clipped. A few plants hedged at meadow edge.
- 3 – heavy 40-60% clipped. General appearance hedged.
- 4 – severe >60% clipped. Most plants hedged; only protected leaders out of reach not clipped (Moraine Park).

B. Composite channel condition/suitability for beaver

- 0 – not suitable; too steep (>6% slope); too much or not enough water.

- 1 – swift moving main channel, suitable in few areas.
- 2 – main channel has few braids or side channels, slow moving, low banks.
- 3 – main channel braided or side channels numerous and flowing (Hallowell Park).

C. Shrub/tree cover in suitable area

- 0 – none, or <1% cover (Moraine Park meadow).
- 1 - <50%
- 2 - >50%
- 3 – total cover except water; 90-100% (N. St. Vrain).

D. Shrub/tree composition

% by species- note if herbaceous cover is limiting

E. Channel width (meters)

ST. VRAIN DRAINAGE

Roaring Fork – 20 AUG 99

Eastern park boundary upstream for about 1 km. The surveyed area was mainly covered in grasses and willow. We found no current signs of beaver. Signs of past occupation of this area were evident including old cuttings, dams grown over with grasses, and ponds. Browsing by elk is light, including some browsed willow leaders. Upstream of the surveyed area the slope of the drainage steepens and vegetation turns to conifer.

The creek flowed through three distinct meadows within the park boundary. The first meadow, upstream of the park boundary, is incised, braided and thick with willow. This meadow seems like good beaver habitat. Moving upstream, the creek then opens up into a larger meadow with fewer willows and more grasses. There is an abandoned beaver pond in this meadow. While this meadow could also support beaver, there are fewer willow, the creek is less channeled and has steeper banks than the first meadow. The creek then passes through steeper terrain and again opens up to a meadow covered mostly with grasses. This area is not suitable for beaver. Within the past few years beaver were released on the Roaring Fork east of the park boundary. Bryan Michener has more information on the beaver released in this area. Beavers have been observed east of highway 7 on the Roaring Fork outside of the park boundary.

Limiting Factors for Roaring Fork

From eastern park boundary, upstream for 1 km; 20 AUG 99

- A. 1 – light. <10% of leaders clipped, plants full with long leaders.
- B. 3 – Slow moving; meadow
- C. 2 - >50% Grasses and willow
- D. 90% willow, 10% grasses and conifer.
- E. 0.5-2m

North Cabin Creek – 20 AUG 99

North Cabin Creek from the St. Catherine church about 0.5 km west of the park boundary. No current activity was found on N. Cabin Creek. West of the park boundary is a meadow with signs of historic beaver occupation. Old dams overgrown with grasses and willow were found in the meadow. Numerous old and weathered cuttings were also found in this area. The creek runs through willow thickets with stagnant water approximately 20 cm. deep on the north side of the creek. This area seems suitable for beaver. The ungulate grazing was moderate including hedged willows. Upstream of the surveyed area the meadow ends and vegetation turns to conifer.

There are currently beavers living at the confluence of North and South Cabin Creeks in the area surrounding St. Catherine Church. This area is outside of the Park's boundary.

Limiting Factors North Cabin Creek

From park boundary to 0.3 miles west (end of meadow beginning of conifer); 20 AUG 99

- A. 2 10-40% clipped. A few plants hedged at meadow edge. Moderate grazing on willow especially on edges, thickets, and solitary shrubs
- B. 3 Marshy meadows
- C. 2 >50% Thick willow and grasses
- D. 90% willow, 10% alder and grasses
- E. 1-2m

North St. Vrain; 11-13 AUG 99

East park boundary at CR 84W upstream to the first RMNP bridge crossing the North St. Vrain. The creek has a main channel that meanders through the meadow. There are also braids and beaver channels that create a network of water through the meadow. Some of the channels are flowing while others are stagnant. The meadow is approximately 0.5 km wide. The creek splits the meadow into two (North and South) sections.

On the north side the willows are very dense and the beaver channels are numerous. Fresh cuttings were found throughout this area. Two lodges were found that showed fresh signs of beaver. The first (utm 453780E, 4452000N) had a dam with fresh cuttings and mud and the remains of last years food cache by the lodge. The second active lodge is located on the north edge of the meadow (utm 453625E, 4451960N). This lodge is quite old and weathered with fresh cut willows on top. A third active area with cut aspens, scent mounds and fresh cuttings, was located 150 m at N80E from a lodge (utm 453830E, 4451620N) which at the time of the survey showed no signs of activity.

The south side of the creek sloped gradually up to the south. There is more alder and birch found on the south side. One active area was found on the south side where a burrow was located (utm 453987E, 4451521N). Here a side channel to the south of the main channel was dammed. 200-300 fresh cuttings were found here as well as 2 scent mounds, paths, slides, and cut sticks that were found both debarked and barked. In this area we also found a pile of sticks that may possibly be the beginnings of a lodge.

Dams of various ages and states of disrepair were found throughout the surveyed area. Many old beaver ponds that are now stagnant are filling in with grasses and algae. The willows in this area are very dense and browsing by ungulates is minimal.

Limiting Factors for North St. Vrain

From park boundary at CR 84W to first RMNP bridge crossing N. St. Vrain; 11-13 Aug 99

- A. 0 No obvious clipped leaders on any plants. Dense willow and very wet and marshy. Possibly restricting elk movements
- B. 3 Main channel braided and side channels numerous and flowing. Main channel typically too swift for damming, but side channels and braids provide adequate habitat; slope is minimal in this stretch. Main channel is rocky, but side channels are soft, muddy, often stagnant and vegetated.
- C. 3 Total cover except for water; 90-100%, Dense willow
- D. 90% willow, 5% aspen, 5% birch
- E. 0.5 – 7m

Ouzel Creek – 19 AUG 99

We surveyed the area between Ouzel Falls and Ouzel Lake. This area experienced a fire in 1978 burning the area upstream of Ouzel Falls on both sides of the creek. This area is the flattest portion of the stream and possibly may be suitable to beaver once revegetation is adequate. There is currently sparse aspen, conifer, and willow regrowth. The burned area of the creek ends about 0.5 km before Ouzel Lake. Ouzel Lake is not suitable to beaver because the area is composed of conifers.

Limiting Factors for Ouzel Creek

From above Ouzel falls to Ouzel Lake; 19 AUG 99

- A. 0 No obvious clipped leaders on any plants
- B. 2 Above Ouzel Falls the creek flattens out and is slow moving.
- C. 0 None, or <1% cover. Burn area.
- D. Burnt conifers and sparse willow. Aspen and conifer saplings in even amounts.
- E. 2-4m

Sandbeach Creek – 18 AUG 99

Sandbeach Creek confluence with the North St. Vrain Creek upstream to Sandbeach Lake. There are three areas suitable for beaver along this drainage, each with signs of past, but not current activity. These areas are flat with slow moving water and are separated from each other by falls or steep sections with swift water. There is no current activity on Sandbeach creek.

The first and lowest area, just upstream of the falls, we found had six old dams and approximately 100- 200 old aspen cuttings. The cuttings were weathered but tooth marks were still visible. One dam is still holding water creating a small pond about 5m x 10m. Two other ponds (5m x 10m each) remain, one (uppermost pond) with an old food cache. The creek is bordered by primarily alder and willow, aspens and conifers are found NE of the creek. The gentle slope allows beaver access to the aspens.

The second area (utm 450055E, 450928N) is upstream from the steep landslide. The stream levels out here to a meadow where old dams and cuttings were found. One dam is still holding back water. Alder and willow are found sparsely in the meadow and around its edges.

The uppermost area (utm 448814E, 44551219N) is a marsh filled with grasses and willow. The southeastern side of the meadow is very marshy and the creek is split up into many separate channels. Here, the willows are between 1 and 3 m tall and in dense thickets in some areas. Following the meadow upstream to the northwest, the meadow opens up and the willows become sparser and not more than 1 m tall. Here grasses dominate. The meadow is still very wet, marshy and channeled. On the western end is an old beaver pond and lodge (2m high x 3m wide). The lodge appears to have been recently abandoned based on the amount of dirt and dead grasses still remaining. The water level appears to have dropped 10-15cm. A food cache was located near the lodge that has not been recently used. Old dams are found in this area creating small ponds in the main channel.

Limiting Factors for Sandbeach Creek (lower); 18 AUG 99

- A. 0 No obvious clipped leaders on any plants.
- B. 2 Channel varies from steep falls and whitewater to a slow, flat, dammed area.
- C. 2 >50% rocks preventing shrub and tree growth in some areas.
- D. 50% willow, alder and aspen, 50% conifer
- E. 3m

Limiting Factors for Sandbeach Creek (middle); 18 AUG 99

- A. 0 No obvious clipped leaders on any plants.
- B. 2 Flat meadow, single channel runs slowly.
- C. 2 >50% Not many trees in the meadow, but solid around its edges.
- D. 70% alder, 30%willow
- E. 1-2m

Limiting Factors for Sandbeach Creek (upper); 18 AUG 99

- A. 0 No obvious clipped leaders on any plants.
- B. 3 Braided meadow
- C. 2 >50% open meadow and low willows 1-3m high, dense willow at beginning of meadow downstream of pond
- D. 50% willow, 50% grasses, few conifers
- E. Braided channels 1-2m

Hunter's Creek – 17 AUG 99

From the confluence with the N. St. Vrain upstream approximately one mile to a flat area estimated to be at 9600 feet in elevation. There were no areas of current activity found. Most of this creek has steep grades and very rocky/ boulder bottoms. The creek flattens out to one area with past beaver activity (utm 450933E, 4451600N). This area could possibly support a beaver colony although it is quite isolated from other beaver habitat. Old cuttings, a dam and a small pond were found. Three aspen groves with old cuttings were found in this area. The dams that were noted by Jacobson et al. (1981) could not be located.

<p>Limiting Factors for Hunters Creek (middle, utm 450933E, 4451600N); 17 AUG 99</p> <p>A. 0 No obvious clipped leaders on any plants</p> <p>B. 1 Rocky flat spot surrounded by steep falls, speed changes from very swift white water to slow flowing.</p> <p>C. 3 Total cover except water; 90-100%</p> <p>D. 40% aspen, 40% conifer, 10% willow, 10% grass and herbaceous.</p> <p>E. 2-5m</p>
--

Cony Creek/Finch Lake – 23 AUG 99

We surveyed Finch Lake and Cony Creek upstream from Finch Lake for 0.8 km upstream of Finch Lake. These areas do not contain suitable beaver habitat. The vegetation is mostly composed of conifers and most of the creek is steep and rocky. Above Finch Lake the creek flattens out to a meadow where there are sparse willows. No signs of past or present use by beaver were found. The remaining sections of Cony Creek are unsuitable as well due to its steep slope and coniferous vegetation.

BIG THOMPSON DRAINAGE

Beaver Brook – 16 AUG 99

From 0.8 km above the Upper Beaver Meadows trailhead downstream to the park boundary and from the park boundary to the confluence with the Big Thompson. While Beaver Meadows once supported beaver, there is little habitat remaining except for the area at the confluence with the Big Thompson.

Upper and lower beaver meadows are now covered primarily by grasses. Historic beaver activity is still visible by noting patterns of old dam locations in the meadow topography. No other signs were found.

There is a small section of Beaver Brook near the confluence of Beaver Brook and the Big Thompson that is inside the park boundaries. This area contains two lodges. One lodge was inactive and had significant grasses and willows growing from it. The second lodge was newer and seemed to be active in 1998, although there were no fresh sign found. This lodge (utm 4533550E, 4467800N) was built on the boundary line and has barbed wire running through it. There were debarked sticks, grass cuttings, but no food cache or fresh signs were found. Dams have created two ponds. The lower pond surrounding the second (newer) lodge was 50m x 10m and the upper pond was considerably smaller.

Limiting Factors for Beaver Brook –

from 0.5 miles upstream from Upper Beaver Meadows trailhead to Upper Beaver Meadows trailhead; 16 AUG 99

- A. 4 Aspen severely barked.
- B. 0 not suitable; too steep, banks too high
- C. 1 <50%, sparse aspen, birch and alder. Upstream area coniferous.
- D. 25% aspen, 25% birch, 25% alder, 25% conifer
- E. 0.25-1m

Limiting Factors for Beaver Brook-

Beaver Meadows trailhead to Bear Lake road; 16 AUG 99

- A. 4 >60% clipped. Most plants hedged; only protected leaders out of reach not clipped, aspen heavily barked, vegetation is significantly shorter than that in neighboring exclosures
- B. 2 slope is suitable, but channel is very narrow with steep banks.
- C. 0 open meadow with grasses
- D. 90% grass, 5% willow, 5% aspen
- E. 0.25-1m

Limiting Factors for Beaver Brook –

Bear Lake road to park boundary; 16 AUG 99

- A. 2 moderate, aspen barked, some willows clipped.
- B. 1 too steep some rocky areas
- C. 2 >50%
- D. 25% aspen, 25% conifer, 25% birch, 25% willow
- E. 0.5-1m

Limiting Factors for Beaver Brook-

from park boundary to Big Thompson; 16 AUG 99

- A. 1 light.
- B. 2 main channel dammed
- C. 2 >50%
- D. 90% willow, 10% birch
- E. N/A – area in park boundary is pond or marsh

Wind River – 25 AUG 99

Wind River from the East Portal upstream to the Storm Pass trail intersection. Most of the old beaver ponds on the Wind River are now grown over with grasses and dry. The uppermost pond, at the uppermost end of the north fork of the Wind River still exists (utm 448765E, 4462240N), but is stagnant and seems to be the beginning of the Wind River as no water runs into it or above it from in or around the aspen grove noted by Stevens (1980). Willows and grasses are growing in the areas where old dams are located. Most of the willow in the area seems to have grown in since the abandonment of the old beaver ponds as they show no signs of beaver cuttings. The cuttings that were found are very weathered, and tooth marks not visible.

Limiting Factors for Wind River-
from East Portal to storm pass trail intersection; 25 AUG 99.

- A. 2 Aspen barked, willow not heavily impacted, some leaders clipped
- B. 2 Channel is suitable where water is flowing but the upper end is drying up.
- C. 1 <50% dense willow in some areas (old dams) separated by grassy meadows (old ponds)
- D. 80% willow, 10% alder, 10% aspen
- E. 0.5-2m

North Fork – 26 AUG 99

North Fork from the North Fork trailhead at the end of Dunraven Glade (CR 51B) to Aspen Meadow campsite. The North Fork trail follows the creek for about four miles through the National Forest Comanche Peak Wilderness Area before reaching the eastern RMNP boundary. About 2.5 km into the park is the N. Boundary Trail junction. We surveyed up to the Aspen Meadow campsite approximately 1.5 km upstream of the trail junction.

There were two areas of old activity found. The first is just downstream of the North Boundary Trail and North Fork creek junction. Here we found old cuttings and a meadow with old dams grown over with grasses. The creek ran swiftly through this area of willows, shrubs, and conifers. The second area was a large meadow about 0.8 km long that stretched between Halfway campsite and Aspen Meadow campsite. The creek ran on the north side of this meadow. The meadow was very moist, swampy and full of willow. There were sparse conifers dotting the meadow. Many old cuttings were found in the meadow and also along side the creek. Remnants of three beaver ponds were found in the meadow; all stagnant, muddy, and grassy. The creek did not braid through the meadow.

The creek steepens and vegetation turns to conifer to the west of Aspen Meadow and east of Kettle Tarn campsites. These campsite locations can be found on the RMNP Trails Illustrated map, but not the USGS quad map.

Limiting Factors for North Fork –
from Kettle Tarn campsite to Aspen Meadows campsite; 26 AUG 99.

- A. 1 <10% of leaders clipped, plants full with long leaders
- B. 2 swift current, small section of main channel braided
- C. 2 >50% dense willow and grasses
- D. 70% willow, 30% shrubs and grasses
- E. 1-3m

Upper Glacier Creek and tributaries- 24 AUG 99

We surveyed Nymph Lake, Dream Lake, Lake Haiyaha, and upper Glacier Creek from Icy Brook confluence downstream to Alberta falls. No signs were found at any of the lakes, although it looks as though there may have been beaver historically below Dream Lake. Habitat does not exist for beaver in any of these lakes. The vegetation is primarily conifer.

On the stretch of Glacier Creek between the confluence of Icy Brook and the North Longs Peak trail there were 2 areas with old cuttings and dams but no fresh signs of beaver. The creek is braided through one meadow with conifers, just downstream of the confluence of Icy Brook and Glacier Creek. No signs of beaver, past or current, were found here. Though the slope and channel condition was not limiting, there were no willow or aspen in this meadow.

The creek then braided through a second meadow with willow and old signs of beaver (utm 445566E, 4460779N). Old cuttings and an old beaver pond were found in this area. This area seems suitable to beaver although the food and building resources may be limited. Towards the intersection of Longs Peak trail a second area possibly suitable for beaver was found. Here, on the NW bank of the creek is a large willow stand. The stand is saturated with water and the creek seems to flow through the willows.

A ranger noted he had not seen beaver above Glacier Basin in 15 years.

Limiting Factors for upper Glacier Creek –
from the confluence of Icy Brook to the North Longs Peak trail bridge; 24 AUG 99

- A. 1 <10% of leaders clipped.
- B. 2 Some meadow with braided marshy areas, also swift moving creek, creek flows through flat sections with suitable channel for beaver.
- C. 2 >50% willow, grass and conifer in some areas, just conifer and grass in others
- D. 80% conifer, 20% willow
- E. 0.5-6m

CACHE LA POUFRE DRAINAGE

Cache La Poudre- 30 AUG 99, 15 SEP 99

From the Cache La Poudre headwaters at Poudre Lakes downstream to the Chapin Creek confluence; from the Park border below the Hague creek confluence upstream to the Chapin Creek confluence.

Poudre Lakes to Chapin Creek: The ponds shown on the USGS 7.5 min topographic map and noted by Packard (1947) have dried up and only a few are recognizable by the grass that has grown in where the ponds once were. The meadow surrounding the river is covered about 50% by willow and 50% by grasses. The willow is very low to the ground about knee high (or 0.5m). I think the species of willow is why it is stunted although we did notice elk browsing as well. Packard (1947) noted arctic willow as the species. The surveyed area was between 9,760 ft. and 10, 800 ft. We found old pine stumps cut by beaver near the Chapin Creek confluence.

Chapin Creek to Hague Creek: The channel of the Poudre does not braid and mainly has a rocky bottom. The slope is small and conducive to beaver. There were no signs of past beaver ponds or dams above Hague creek. The one active area found on the Poudre was across from the confluence of Hague Creek. Here on the west side of the Poudre, 2 dry scent mounds and an active beaver trail were located by a stagnant pool and a lodge that had no fresh signs on it. The lodge itself was collapsed in one place, exposing the inside chambers of the lodge. No fresh cuttings were found anywhere on the Poudre from its headwaters to the Northern Park boundary.

A fisheries ranger working with Chris Kennedy from the Fish and Wildlife Service said he had not seen beaver on the Poudre in 15 years. He also mentioned that introducing beaver into this area might conflict with their efforts reintroducing greenback cutthroat trout.

Limiting Factors for the Poudre River -

Poudre Lake to confluence of Chapin Creek; 30 AUG 99

- A. 2
- B. 2 Meanders throughout meadow, one main channel.
- C. 2 Low willows.
- D. 100% willows, coniferous edges
- E. 0.5m – 2.5m

Limiting Factors for the Poudre River -

Chapin Creek to Hague Creek; 15 SEP 99

- A. 2.5 some areas were hedged while others untouched.
- B. 2 for most of the stream reach the channel is wide and shallow (0.25- 0.5m deep) with a rocky bottom consisting of rocks 10 – 30 cm diam. There is a section about 0.75 km above Hague Creek confluence where the Poudre becomes very rocky, steep and swift with a 3m water fall- this lasts for less than 1 km and then returns to meadow.
- C. 2
- D. 50% willow, 20% shrubs (shrubby cynquefoil), 30% grasses Willows are knee to waist high in places (0.5-1.5m high).
- E. 5-8m

Hague Creek – 16 SEP 99

From confluence with the Cache La Poudre upstream to the end of meadow at approximately 10,400 ft in elevation.

Hague creek is an open meadow of willow and grasses from the desolation campsite upstream to approximately 10400 ft. with the exception of a 0.75 km stretch of stream that flows through a steep section with falls, steep canyon walls, and surrounded by conifer at approximately 14,300 ft.

Willows cover about 65% of the meadow with grasses covering the other 35%. Active and historic beaver colonies are located throughout Hague Creek.

100m downstream from the Flatiron campsite, there is a large abandoned beaver complex. There are 25+ dams ranging from 5m wide and 1m tall to 1m wide and 20 cm tall. The dams seemed to be in a state of disrepair, with water flowing through and around the dams. The water level seems to have dropped 0.3 m. Two abandoned lodges were found in this complex. One lodge (utm 438950E, 485021N) is 4m x 1.5m and has grasses and willow shoots growing from it. There are no signs of current activity at this lodge. The second lodge is 35 m upstream from the first lodge at an angle of N225W. The second lodge is 1.5m x 1m. this lodge has caved in a bit and the mud has washed away from the old willow cuttings on it.

25m downstream from the Flatiron campsite and 75m upstream from the previous observation there is an abandoned lodge (2m x 1m) on the south side of the creek with mud washed away from the old willow cuttings on it. Old dams by the lodge are in a state of disrepair. A pool has dried up exposing 0.75m of mud around it. There are no fresh cuttings on the dams or lodge.

75 – 100m upstream of the confluence of Mummy Pass Creek on Hague Creek there is a dam with 75% fresh cuttings (utm 441293E, 4484423N). 4m downstream of the dam there is a food cache and possibly the beginnings of a lodge. All the cuttings in this area are willow and 75% still have green leaves on them. There are beaver trails in this area and 2 fresh scent mounds were found. 2 inactive dams, about 50 fresh cuttings, beaver trails, a scent mound and a burrow with 2 entrances were found on the south bank 40 – 50m upstream from this area.

A lodge was found with no fresh cuttings or mud and debarked sticks were found in the south channel (utm 441446E, 4484602N). Beaver trails leading from top of lodge to water. Fresh scent mounds found 20m upstream.

A series of dams, fresh cuttings, debarked sticks, flooded area, pond, beaver trails, and 2 scent mounds were found (utm 441664E, 4484534N). There were approximately 15 small 0.5m dams and one large dam 5m x 1m creating a pool behind it. This large dam has 90% old and weathered cuttings and 10% fresh willow cuttings. 20m upstream of the large dam there is a den on the SW side of the Creek with weathered cuttings on the entrance. 75-100m upstream of the large dam there is an old weathered lodge (utm 441755E, 4484412N) and 2 blown out weathered dams none have fresh cuttings or activity. The water level has dropped approximately 0.3m here.

4m wide dam across main channel of Hague Creek with 40% fresh cut sticks and 60% old weathered sticks on it (utm 441840E, 4484296N). Old and fresh cuttings are in the area.

Beaver complex with 3 lodges, dams and cuttings (utm 483560E, 4484296N). 10m wide dam creating a pond 10m x 20m. 3 lodges within 5m of each other: the northernmost lodge is 1m x 1m, the middle lodge is 1m x 0.5m, and the southernmost lodge is 1m X 1m. No fresh cuttings or mud on lodges. Approximately 12 fresh cuttings were found on the dam. Approximately 5 fresh willow cuttings by the water's edge near the lodges. Water is 10cm below top of dam.

Hague Creek shows the cyclic nature of beaver activity ranging from dams grown over with grasses to recently abandoned ponds and complexes to active colonies. Although there are elk grazing in the Hague creek meadows, it seems that there is still plenty of willow for the beaver to access. The trees and shrubs are 100% willow.

Limiting Factors for Hague Creek from Desolation Campsite to 10,400ft elevation. 16SEP99

- A. 2
- B. 2-3
- C. 2 (100% willow)
- D. 65% willow, 35% grasses
- E. 2m-3m

Willow Creek 17SEP 99

No signs of beaver activity were found on Willow Creek, although it is evident that beavers have occupied this area in the past due to the terrain. Willow Creek seems to have an abundant amount of willows growing in the open meadows although the species of willow is very small, thin and weak compared to the willows in other parts of the park at lower elevations. The willows were hedged and not more than 1m high.

Limiting Factors for Willow Creek 17SEP99

- A. 3 willows were hedged heavily and none grew to over 1m tall.
- B. 2 the main channel meanders through meadows at a gradual flat slope. There is one main channel with a rocky bottom.
- C. 2
- D. 60% willows, 40% grasses
- E. 2-3m

Colorado River Drainage

Onahu Creek from Onahu Creek trailhead to Longmeadow; 31 AUG 99

There are two possible areas suitable for beaver in this stretch. The first is a group of meadows downstream of the upper Onahu campsite. These meadows showed signs of past occupation including old cuttings, but are currently not suitable as the willows are few and sparse. The willows that are growing are less than 0.75m high.

The second area is the Longmeadow area and is not currently suitable for beaver as the meadow is made up of mostly grasses with few willows around its edges.

Limiting Factors for meadows downstream of Upper Onahu campsite. 31AUG99

- A. 2 willows knee high – some browsing, still leaves on many shrubs.
- B. 2 Cannel seems suitable, meanders as a single channel through meadow. Old beaver channels found, stagnant but holding water.
- C. 0-1 grassy with few willow (70% grass, 30% willow)
- D. 100% willow
- E. 1m-3m

Onahu Creek from 100m upstream of Trail Ridge Road to the Confluence of the Colorado River; 1-2 SEP 99

Onahu Creek from 100 m upstream of Trail Ridge Road to the confluence with the Colorado River.

10 m upstream of Trail Ridge Road there is an active lodge (utm 428240E, 4463260N), fresh cuttings, 2 active dams, barked sticks, and cut grasses. The lodge is 2m x 2m and had one fresh cutting on it. The mud, dirt, and cuttings on the lodge seem to be from fall 1998. There are freshly cut sticks within 2-3m of the lodge. There was no substantial food cache found, but there are many debarked sticks (approximately 0.5m long) on the bottom of the pond by the lodge. There are fresh and old willow cuttings in the area, as well as many beaver trails, slides and cut channels that appear to be in use judging from the matted grasses.

The first dam (downstream from the lodge) creates a pool that floods 2 sides of the lodge. This dam had 5-10% fresh cuttings on it. The second dam is upstream from the lodge and seems to be this season's creation. 80% of the cuttings on this dam are fresh. It is possible that there is a burrow upstream of the second dam, judging by the many slides and holes in the area. 250m upstream from this active area there is a cluster of old cuttings.

50m downstream of Trail Ridge Road there is an old blown out dam

Approximately 200 m downstream from Trail Ridge road and 75 m west of the trail, there is an inactive lodge. The lodge is 2m x 1m. The bottom of the lodge is overgrown with grasses and the top half is no longer covered with mud. No fresh cuttings were found on the lodge although grass cuttings were found in the pond adjacent to the lodge and one willow had been cut near the lodge. The area has several old dams, one which is blown out and at least three holding water.

There is a second old abandoned lodge and dam 100m downstream from this lodge. The lodge is grown over with dirt and grasses.

Lodge looks old but fresh cuttings were found in the willows by the lodge. 2 dams are maintaining the pond with one losing water. There is a large beaver channel W of the lodge that is 0.3m deep and 0.25-0.5m wide. The lodge is 2.5m x 1m. There are no fresh cuttings or fresh mud on the lodge (utm 428061E, 462859N).

500m downstream there are old beaver ponds SW of the main channel. Active beaver slides / matted grasses were found on the old dams grown over with grasses. The ponds are stagnant. Fresh cuttings were found in this area.

A series of active and fresh dams, cuttings and slides were located up and downstream of where the power lines cross the Onahu. Approximately 100 debarked sticks were located in this area. There is a lodge downstream of 5 fresh, active dams. 30m downstream of where the power lines cross the Onahu, on the SW bank, there is the start of a new lodge (utm 427916E, 4462179N).

There are many stagnant beaver ponds and channels on the Onahu. This shows the cyclic nature of the beaver here. The current population seems to be taking advantage of two main areas: one upstream of Trailridge road and the second where the power lines intersect. Downstream of the power lines there are no fresh signs of beaver activity. There are many historic signs of lodges, dams, channels, ponds and cuttings throughout the stretch and it still seems to be suitable beaver habitat.

Onahu Creek from 100m upstream of Trail Ridge Road to the Confluence of the Colorado River;

- A. 1
- B. 3 there is one main channel and many beaver-cut side channels
- C. 2+ with herbacious
- D. 100% willow
- E. Main channel 2-4m

Beaver Creek 13 SEP 99

Beaver Creek converges with the Colorado River in the Kawuneeche Valley. From downstream of Trail Ridge Road to the Colorado River, Beaver Creek is very suitable for beaver. There are abundant signs of past occupation including old dams and beaver ponds. There are also two areas of current activity.

The two areas are separated by 150m of dammed and slowly moving stream. The first area starts at the confluence with the Colorado where there are 3 dams, 2m wide by 0.5m tall. Upstream 20m from these dams is a dam 12m wide by 2m tall which creates a pond 20m x 20m. On the North side of this pond is a lodge 3m x 2m x 1m (utm 427995E, 4471728N). There are no fresh cuttings on the lodge but there are beaver trails and scent mounds by it. 4m from the lodge at N10E, there is an old abandoned den that has caved in. There are fresh cuttings within 100m of the lodge.

The second area is upstream from the first about 150m. This area has fresh scent mounds, old, well established beaver ponds, approximately 100 fresh cuttings, and many slides and trails.

Limiting factors for Beaver Creek in the Kawuneeche Valley; 13 SEP 99

- A. 2-3 some shrubs hedged
- B. 3 old beaver ponds and channels, some flowing
- C. 1-2 ponds and herbacious cover remaining area
- D. 95% willow, 5% alder
- E. 1-6m, channels and flowing beaver ponds

Baker Gultch Creek

Surveyed from the dirt road crossing the creek approximately 100 upstream of the confluence with the Colorado to where the Bowan / Baker trail crosses the creek. This stretch of Baker Creek showed signs of both present and past inhabitation of beaver.

From the dirt road near the confluence of the Colorado, on the west side of the Kawuneeche Valley, an active colony can be seen. Here there is an active colony with an active dam 2m tall by 15m wide (utm 426788E, 4464500N) creating a pond approximately 100 x 100m and a flooded and marshy area extending significantly further from the pond. This dam has 15% new, fresh cuttings and 85% old, weathered cuttings. There is also fresh mud on the dam. There are small dams surrounding the pond.

There is a lodge 2m tall x 3m wide x 4m long 75m north of the large dam. The lodge has fresh mud on it. There are two large food caches SE of the lodge. There are many channels extending from the pond. There is an elk enclosure on the west edge of the flooded area (N320W from large dam). The water from the flooded beaver pond and channels is 3m from enclosure and could possibly flood into enclosure in the future.

There is an abandoned lodge and abandoned dams (utm 426678E, 4464735N) upstream of a large pond.

Three abandoned dams with water slowly flowing through them were found at 426274E, 4466388N. There were no new cuts on the dams.

Just downstream from the Bowen / Baker trail on Baker Creek there are two more active beaver colonies. The one further downstream (utm 426375E, 4466771N) is located on the north east side of the creek. No fresh cuttings were found here but the many small (1-3m long) dams north of the lodge were in good repair creating a flooded area linked by channels.

Upstream of this complex, there is very active beaver colony. Here there are three lodges, dams, two ponds and two food caches. One small lodge (1m x 1m x 1m) is built into the dam (25m long) that is creating the large upper pond (100m x 30m). There is also a large amount (250-300 pieces) of scat in the water by this dam. On the NW side of the pond there is a second lodge (utm 426306E, 4466823N). This lodge is quite long and low to the ground (0.5m tall x 5m long x 1m wide). There is a food cache in the water next to this lodge. In between these two lodges, in the center of the pond, there is a second, large food cache with fresh cuttings in it. There is a third lodge on the NE side of the pond that is approximately 1m x 1m x 1m. The primary source of building material here is mud and willow.

The entire stretch of Baker Creek shows a long history of beaver activity. Many old, historic beaver ponds and dams, now grown over with grasses and willow, can be located in the terrain surrounding the creek. Grazing ranges from areas that are heavy with many willows hedged and leaders clipped to areas that are moderate with little grazing.

Limiting Factors for Baker Gultch Creek – from the dirt road crossing the creek approximately 100 upstream of the confluence with the Colorado to where the Bowan / Baker trail crosses the creek.
12OCT99

- A. 2
- B. 2-3,
- C. 1
- D. 100% willow and grasses
- E. 1m-2m

Colorado River

Southern Park boundary upstream to Onahu Creek confluence; 3 SEP 99

The first area of current beaver activity is found downstream of CR491 (utm 427832E, 4458290N). Here there is an abandoned dam in a 2m channel on the east side of the Colorado River. There are also two lodges; one on either side of the channel, both abandoned. There are approximately 50 fresh cuttings in this area. 75m upstream from this area is an area (utm 427832E, 4458350N) with many beaver trail leading from the E bank of the Colorado to patches of abundant fresh cuttings. These trails can be followed over dry ground for 40 – 50m to the east to fresh cuttings. The beaver trails also led to holes with water in them approximately 30cm wide near the bank of the Colorado, possibly leading to burrows. On the east side of the Colorado south of CR491 there are fields full of willow. These “fields” seem to have once been moist and wet but are now dry. Channels leading from the Colorado to these fields also now dry. South of this activity the beaver habitat decreases.

50m upstream from CR491 there is an abandoned lodge on the east bank of the Colorado.

There is an old abandoned lodge (utm 427993E, 4459026N) that is very weathered on the west side of the east channel of the Colorado. The lodge is 2m tall x 4m wide. There were no fresh cuttings found in this area.

The area between CR491 and Onahu Creek had no current activity. Some suitable habitat exists.

Limiting Factors for Southern Park boundary upstream to Onahu Creek confluence.
Onahu Creek confluence to the gaging station. 3SEP99.

- A. 1
- B. 1
- C. 1-2
- D. 75% willow on banks of Colorado, 25% conifer.
- E. 3m-4m

Onahu Creek to Gaging Station 15 OCT 99

There are abandoned beaver ponds E of the Colorado 200m upstream of the confluence with Onahu Creek.

On the west side of the Colorado (utm 426944E, 4462983N) there is a series of abandoned beaver ponds. Here, two dams seemed to be recently abandoned as the dams were holding back water to form ponds and the water was at the top of the dam. All the other dams and ponds seem older as they were grown over with grasses. No fresh cuttings were found in the area. A beaver skeleton was found by the second most northerly pond (utm 426944E, 4462983N).

Directly under a power line on the west bank there is an abandoned lodge (utm 427425E, 4463663N). The lodge is 1m tall x 2m wide x 3m long.

There is an abandoned beaver pond on the east side that seems recently abandoned, as the dam is still intact and holding back water. The dam has no fresh mud or cuttings. No current signs of beaver are in the area. (utm 427382, 4463906)

Limiting Factors for Colorado River – from Onahu Creek to Gaging Station. 15OCT99

- A. 2
- B. 1-2 some side channels(beaver cut) off the main channel.
- C. 1 10%-40%
- D. willow along the river, flows through conifers at sections.
- E. 3-5m

Gaging Station to Never Summer Ranch; 21 OCT 99

The area south of the road to Never Summer Ranch is grazed heavily by ungulates. Here, open fields of grasses border the river. This stretch seems to have been effected most by the ranches and land use practices. It is evident that humans manipulated the land here. Ditches can be found west of the Colorado and south of the Never Summer Ranch. It is not certain if the ditches were used for draining the fields or irrigating them. Many areas that once may have supported beaver are now open fields, lacking willow, that were used for agriculture or cattle grazing and are now grazed by elk.

Throughout the stretch between the Gaging Station and the Never Summer Ranch, there are signs of past occupancy by beaver including old blown out dams, channels cut into the river banks, and weathered cuttings. There is one beaver complex that seems to be abandoned more recently than the

rest found at utm 427178E, 4465348N. This complex is on the east side of the river and is made up of two one-meter wide channels. In these channels there is a lodge 1m tall x 2m x 2m made of 100% willow cuttings.

Limiting Factors for Colorado River from Never Summer Ranch to Gaging Station. 21OCT99.

- A. 2-3 Depending on the area within this stretch the grazing ranged from 2 to 3. Parts were hedged within reach of the ungulates and other parts were not effected as much.
- B. 1-2 one main channel. Beavers have cut side channels in the past to create better channel suitability.
- C. 1 10% willow and 90% grasses.
- D. Willow followed alongside the river. At a few places the river borders conifers on the east side of the valley.
- E. 2m - 4.5m

Never Summer Ranch to Timber Creek Campground; 13 OCT 99

A 4 wheel drive road branches off to the NW from the road leading to the Never Summer Ranch from Trail Ridge Road. On the west side of the Valley, by this 4wd road, there is an active beaver colony (utm 427056E, 4469309N). There is an active lodge with fresh mud, cuttings, and grasses on it. The lodge is 2m tall x 4m wide x 3m long. There are two food caches by the lodge with fresh cuttings in them. There is a dam 100m long and 0.5m tall south of the lodge creating a pond. Scat was found in the water by the dam.

Upstream from this area approximately 100m there is a small dam and a grove of cut alder on the west side of the valley. Approximately 200m upvalley from the Never Summer Ranch beaver site there is a pile of cut sticks in a historic beaver pond.

There is a very active area on the Colorado downstream from the Timber Creek campground at utm 427220E, 4469582N. There is a series of many small dams to the west of the river creating a wide, flooded area. There is a dam across the Colorado (utm 427220E, 4469582N) that is 8m across and 1.5m tall. Piles of debarked sticks and fresh stumps were found in the flooded area. There is a lodge and food cache approximately 60m upstream from the dam crossing the Colorado River. The lodge is on the west bank of the river and is 1m tall x 3mwide x 3m long. There are two food caches 5m apart by the lodge. Upstream from the lodge approximately 60m there is a second dam crossing the Colorado.

Limiting Factors for Colorado River from Timber Creek campground to Never Summer Ranch. 13OCT99.

- A. 1-2
- B. 3
- C. 2
- D. 80% willow, 10% alder
- E. 1m (channels) – 4m (Colorado River)

From Timber Creek Campground upstream to Colorado River trailhead; 5NOV99

Upstream from Timber Creek at utm 427976E, 4470497N there is a series of six beaver ponds east of the Colorado River. These ponds are historic and active. In this area, there are small dams (< 1m long) with fresh cuttings. On The first pond (southernmost) there is a dam 3m wide with fresh mud on 30% of dam and approximately 12 fresh cuttings. This dam creates a new pond about 3m x 6m. Also in this area are many fresh cut alders and willows, debarked sticks, fresh scent mounds, channels and trails.

Due west of the Trail Ridge Road "beaver ponds" pullout there is a dam across the Colorado on the west side of the valley. The dam (utm 427896E, 4470894N) is 7m wide and 1m tall. The dam has fresh and old cuttings on it. There was fresh scat in the water by the dam. Upstream 7m from the dam on the

east bank there is a bank den with sticks piled over the water entrance to the den. Fresh cut alder stumps and cuttings (30) were found 10m downstream from the dam on the N side of the river.

There is an abandoned lodge (2m x 2m x 2m) and dams in a channel branching from the Colorado at utm 427870E, 4470606N. No fresh cuttings or food cache were found in this area.

Downstream of the confluence with beaver creek there is a dam across the Colorado (utm 427825E, 4471355N). Dam is 5m wide 0.3m tall and is made up of 50- 75% fresh willow and alder cuttings. There are active trails in the area and >100 alder and willow stumps. There are alder branches in the river about 30-50m upstream from the dam.

Approximately 250m downstream from the Colorado River trailhead there is a dam built halfway across the Colorado River. The dam is 5m wide and the River is about 10m wide. The dam is made up of 75% alder cuttings. There are fresh stumps and trails in the area.

There is a small food cache on the SW corner of an historic beaver pond at utm 427818E, 4472102N. The cache is 0.5m x 1m and there are 30+ debarked sticks in the water by the cache. There is a small active dam on this pond in the middle of an historic dam grown over with grasses. The water in this historic pond is not stagnant but runs through a small active dam. There are 10 beaver trails in the area of this pond. There are fresh alder cuttings in the area. There are 13 historic beaver ponds in the meadow on the west side of the Colorado west of the Colorado River trailhead. There is a significant amount of alder in this area that is available for beaver use but is not currently being utilized. There were 50+ alder cuttings found in the area. The willow in this area is hedged but the alder is barely touched by grazing.

In general, in the Kawuneeche Valley, when alder is available for beaver to use for building, they seem to prefer it to willow. In other words, it seems that beaver will use alder for building before willow if they are both available. This seems to show the most between the Never Summer Ranch and the Colorado River trailhead.

Limiting Factors For Timber Creek Campground upstream to Colorado River trailhead; 5NOV99

- A. 2-3
- B. 1- Colorado River, 3- west of meadow by Colorado River trailhead
- C. 2
- D. 85% willow, 15% alder
- E. 1-6m

Colorado River Trailhead to 200m upstream of Lulu Creek; 14 OCT 99

There is no current beaver activity on the Colorado River upstream of the Colorado River trailhead. However, there are many signs of past occupation of this area.

150m upstream from footbridge over the Colorado, a trail junction, and the opposition creek confluence, (utm 427799E, 4473420N) there are three abandoned beaver ponds and channels. The willow is grazed heavily here and alder seem abundant (>50 trees).

Downstream from Shipler Park, at utm 427927E, 4474102N, there is an abandoned dam across the Colorado River. The beaver built this dam over a large 0.5m diameter tree that had fallen (without the help of the beaver) across the river.

Shipler Park (utm 427713E, 4475229N) had 8 abandoned and stagnant beaver ponds and accompanying dams. The dams were grown over by willow and grasses. The willows in Shipler Park were moderately hedged and covered approximately 25% of the meadow.

The Lulu City meadow once supported a population of beaver, evident by the terrain and remaining stagnant beaver ponds. There are no beavers currently occupying the meadows by Lulu City. The meadow has very little willow and is covered primarily with grasses, utm 42794E, 4475229N.

Limiting Factors for Colorado River Trailhead to 200m upstream of Lulu Creek; 5NOV99

- A. 2
- B. 2-3
- C. 1
- D. meadows in lower section = 85% willow, 15% alder; Lulu City meadows = 100% willow
- E. lower = 4-5m. Lulu City = 1m

East Inlet; 8 NOV 99

There are meadows in the lower reaches of the East inlet that once supported beaver. There are no beaver currently occupying this stretch. Old dams, ponds, cuttings and channels are visible from the East Inlet trail. A ranger noted that there are two areas of beaver activity on Paradise Creek in Paradise Park.

Limiting Factors for the East Inlet, lower meadows; 8NOV99

- A. 0
- B. 2 The creek meanders through the lower meadows. Old dams ponds and channels evident.
- C. 1
- D. 100% willow and herbacious cover, aspen on slopes
- E. 2-6m

North Inlet; 30 SEP 99

Summerland Park on the North Inlet.

There is a dam (utm, 432845E, 44566775N) across the North Inlet 30m downstream from the trail leading to the Summerland Park campsite. The dam can be seen from the North Inlet trail. The dam is 7m wide and made primarily out of willow. Approximately 30 debarked sticks are used in the dam and 5 debarked sticks are in the water by the dam. There are 20% fresh cuttings in the dam. The water from this dam is inches from flooding the 4WD road leading to Summerland Park. 2m upstream from the dam there is a burrow. Fresh slides, 2 trails scent mounds, and 50+ fresh willow cuttings are upstream 30m from the dam. On the south bank 30m upstream from the dam there is a food cache. Two beavers were observed swimming simultaneously at this site.

There is a lodge approximately 2m x 2m x 2m with grasses growing from it at utm 432428E, 4456390N. There is an old food cache 15 upstream from the lodge. 100 upstream there is a second abandoned lodge (2m x 1m x 1m) on the west side of the creek.

There is an abandoned bank lodge with no mud on it on the west side of the creek at utm 432726E, 4456515N. 200m upstream there is a second abandoned lodge (1m x 3m x 3m) on the west side of the creek.

There is an abandoned dam, burrow, and food cache on the north channel at utm 432845E, 4456775N. There were debarked sticks found here but no fresh signs of beaver activity. 100m upstream there is an abandoned lodge and dam system.

There is an active site at utm 433100E, 4456707N. There is a dam with 30% fresh willow cuttings across the main channel of the North Inlet. The dam is 75% across the 5m-creek channel. Fresh trails and willow cuttings are in this area.

25m upstream from this area there is an active burrow and a fresh food cache on the west side of the creek. Debarked sticks were found at the entrance to the burrow and a beaver was observed nearby.

Summerland Park is a very flat meadow supporting willow and herbaceous growth. Both past and current activity is evident in the meadows.

The following drainages were surveyed by David Mitchell in February and March 1999 as part of an independent study course taken at CU, Boulder. Areas that were found to be active were revisited in October and November 1999. Limiting Factors were recorded for these areas where beavers were currently active. The areas where beavers were not currently active were not revisited. Descriptions of habitat are included for these areas rather than limiting factors.

Cow Creek

Cow Creek from Eastern park boundary to 500m upstream from Mcgraw Ranch. 26OCT99

There is an abandoned lodge 1m tall x 3m x 2m, a series of 3 abandoned dams, and old cuttings at utm 457865E, 4475663N.

There is an active dam with fresh cuttings and mud (utm 457762E, 4475655N. Scat is in the water by the dam. By the bank of the creek there are recently cut willow and alder stumps. 5m upstream of the dam there are debarked sticks and scat in the water, which are the signs of a nearby bank den or burrow. 20 upstream there is a series of three active dams. The first is 3m wide with 75% fresh willow and alder cuttings. There are fresh willow and alder stumps by the creek here. There are approximately 45 pieces of scat in the water by this dam. Continuing upstream 5m, on the south side of the creek there is a dam 1m wide made from 100% fresh cuttings and mud. Continuing upstream 15m there is a dam 3m wide with 10% fresh willow cuttings.

Approximately 100m downstream from the bridge crossing Cow Creek that leads to the Cow Creek trailhead (utm 457635E, 4475605N) there is a dam 10m wide with 40% fresh cuttings. Scat is in the water by the dam. There is a food cache on the N side of the creek. Fresh alder and willow stumps, trails, and scent mounds were also found there.

5m downstream from the trailhead bridge, there are 2 dams each approximately 9m. Debris from the culvert was removed and placed by the dam. The beaver seemed to have used this debris to create the beginnings of a bank lodge on the south bank. There is fresh scat by this dam and den.

100m upstream from the bridge, there is a series of dams, ponds and a lodge. This area was active in the winter of 1998-1999 and still seems to be active now.

Limiting factors for Cow Creek/ Mcgraw Ranch to Eastern park boundary. 26OCT99

- A. 1 light browsing. Most leaders full.
- B. 3
- C. 2
- D. 50% willow, 50% alder
- E. 0.5m- 3m

Big Thompson River

Cub Lake trailhead to Fern Lake trailhead on the Big Thompson River. 27OCT99.

Directly south of the second pullout before the Fern Lake Trailhead there is an area that had an active beaver colony in the winter of 1998-1999 and now is abandoned. The dam that spanned the main channel of the Big Thompson (utm 446682E, 4467100N) washed out in the spring runoff and the beaver have not built it back. The ponds have drained and there are no new cuttings or signs of current activity. Since water levels have dropped here you can see a bank den and debarked sticks on the North bank of the Big Thompson where the channels converge.

Limiting Factors for the Big Thompson River from Cub Lake trailhead to Fern Lake trailhead. 27OCT99

- A. 2
- B. 1-2 Main channel has blown out last years dam but there are 2 side channels here.
- C. 2
- D. There is a mixture of willows, alder and conifer here
- E. The main channel is 2m-4m wide.

Limiting Factors for Moraine Park (exclosure area) on the Big Thompson river

- A. 4
- B. 2 many side channels exist but are not flowing
- C. 0-1
- D. 95% willow, 5% alder
- E. 0.5-3m

Cub Creek

Lodge (utm 447466E, 4466633N) was active in winter 1998-1999. The food cache that is now present is not made of fresh cuttings and seems to be last years cache. There are no fresh cuttings found in the cache or on the lodge. No fresh mud was found on the lodge. The lodge is 2m tall x 2.5 x 2.5. The pond east of the lodge is 7m x 30m

Limiting Factors for Cub Creek. 27OCT99.

- A. 2
- B. 2-3
- C. 2
- D. 65% alder, 35% willow
- E. 1-2m

Boulder Brook upstream of Sprague Lake. 27OCT99

There is one active area here at utm 448387E, 4463055N. There is a dam approximately 30m wide creating a pond 30m x 30m. there is fresh cut willow and alder on the dam and scat in the water by the dam. There are other cuttings, trails and dams downstream of this site.

Limiting Factors for Boulder Brook upstream of Sprague Lake. 27OCT99

- A. 1
- B. 3
- C. 2-3
- D. 50% alder, 50% willow
- E. There are many channels, old beaver channels and old beaver ponds, creating channels of different widths from 1m- 5m.

Mill Creek/ Hallowell Park. 30OCT99

Limiting Factors for Hallowell Park. 30OCT99

- A. 1
- B. 3
- C. 2-3
- D. 100% willow
- E. 2-3m

Fall River - alluvial fan to Endovalley picnic area; 1NOV99

There is a lodge (utm 444778E, 4473544N) 1m tall x 3m x 2m on NE channel. Fresh mud and sticks on lodge. There is a food cache on the W side of the lodge. A slide comes down from the top of the lodge into the water. Newly frozen ice is broken where the slide enters the water.

20m S of the lodge there is a bank den on the E side of the channel. Sticks are piled over the den's air hole. Debarked sticks and scat are in the water by the entrance to the den.

There is one main dam and multiple smaller dams at this site. The main dam is S of the lodge and is 1.5m tall and 7m long. The dam is made from 10% new cuttings. There is scat in the water by the dam.

Limiting Factors for Fall River - alluvial fan to Endovalley picnic area; 1NOV99

- A. 1-2
- B. 2-3 in the active area, beavers have created side channels, old dry channels are evident throughout.
- C. 2
- D. 80% willow, 10% alder, 10% other (shrubby cynquifol)
- E. 1-2m below dam, 4+ m above dam

Active Beaver Sites Winter 1998-1999

During February and March 1999, the North Fork of the Big Thompson, Cow Creek, Fall River, Hidden Valley Creek, Big Thompson, Cub Creek, Mill Creek, Glacier Creek, Boulder Brook, and Wind River were surveyed in RMNP for signs of current beaver activity. The following summary is a list of active beaver sights found during February and March 1999. The elevations included refer to the location along the drainage where beaver activity can be found.

Cow Creek

- 7800 ft. elevation, 9 dams, 2 caches, 1 lodge, 1 burrow

Fall River

- 8575 ft. elevation, 1 lodge, 1 dam, 1 food cache

Big Thompson

- 8130 ft. elevation, 6 dams (1 spanning Big Thompson), aspen, willow and alder cuttings here.

- 8090 ft. elevation, Moraine Park elk enclosure site.

Cub Creek

- 8110 ft. elevation, food cache, lodge, burrow, broken hole in ice by lodge

Mill Creek

- 8400 ft. elevation, 3 lodges, 1 food cache, 14 dams.

- 8180 ft. elevation, 5 dams, 1 food cache, 1 bank den

Boulder Brook

- 8720 ft. elevation, 5 dams, 1 food cache

The following is a summary of possible beaver habitat found on the creeks surveyed during February and March 1999, including Cow Creek, Fall River, Hidden Valley Creek, Big Thompson, Cub Creek, Mill Creek, Glacier Creek, and Boulder Brook.

Cow Creek

There are signs of past beaver occupation including cuttings and abandoned dams from the eastern park boundary upstream to approximately 8140 ft. in elevation. There seems to have been a large colony at 8140 ft. in elevation; large abandoned dams and aspen stumps are both abundant in this area. The aspen that seems to have supported this abandoned colony is "used up" and there has not been sufficient regrowth to support a new colony. There are a few cuttings found above 8140 ft. in elevation but the slope becomes quite steep and there is less willow and aspen available.

Fall River

The section of Fall River downstream of the alluvial fan and the confluence of Roaring River has supported beaver in the past. The habitat is currently not great for beaver unlike the section upstream of the alluvial fan. There is one main channel that has steep banks. There is willow available in small amounts, which is also grazed heavily by elk. There are old cuttings and lodges found along the banks. It is possible that the 1982 flood affected the beaver habitat downstream of the Roaring River. Upstream of the Endovalley picnic area the beaver habitat decreases as the slope increases and the vegetation turns primarily to conifers.

Hidden Valley Creek

Hidden Valley Creek has supported beaver up until approximately five years ago. There are currently no beaver on Hidden Valley Creek. Signs of old activity can be seen from the turn of to the Hidden Valley ski area road downstream to approximately 9000 ft. in elevation. This stretch is primarily composed of willow meadows separated by areas of conifers. Aspen, birch, and alder are sparse and found by the edges of the meadows.

Big Thompson River

The stretch of the Big Thompson was surveyed from the eastern park boundary upstream through Moraine Park to an abandoned beaver pond west of the confluence of the Windy Gultch drainage at approximately 8180 ft. in elevation. In the past this stretch has supported 144 beavers (Packard 1947). The area downstream of Moraine Park and upstream of the eastern park boundary shows signs of beaver such as old weathered stumps, but the habitat seems marginal as the creek is flowing fast and there are very large boulders scattered throughout. Moraine Park itself currently has possible habitat as the channels are many and braided and there is a very small slope. The willow in Moraine Park is sparse and hedged by elk, which is making the habitat marginal for beaver. Upstream of Moraine Park the habitat changes. There are more conifers, aspen, and alder and the creek flows mainly through one main channel. There are signs of past occupancy in this stretch as recent as winter-spring 1999.

Mill Creek

Mill Creek is not suitable for beaver from the confluence with Glacier Creek upstream to the Ranger Cabins at 8180 ft. elevation. The slope is steep and the water too swift for beaver. The tree composition in this stretch is primarily conifers. 25m upstream from the ranger cabins there is an active beaver colony. Here, the habitat is suitable for beaver. The creek flattens out and willow is abundant. Beaver were introduced into Hallowell Park in the 1980's and now seem to be healthy and thriving. In Hallowell Park, Mill Creek is braided, marshy and thick with willow. Upstream of Hallowell Park, the habitat varies from steep, rocky sections with conifers and some aspens to small, flat meadows composed of willow, alder and some aspen. The flat areas are suitable for beaver. Old weathered stumps were found in these areas.

Cub Creek

Cub Creek is suitable beaver habitat. The creek is terraced with old abandoned dams and ponds. The primary tree species are alder and willow and are both abundant. The creek is braided and slow

moving. An active colony was observed in winter-spring 1999 at 8110 ft. in elevation. This colony did not appear to be active in fall 1999.

Glacier Creek

There was no current activity on Glacier Creek during winter- spring 1999. There are a few locations where beaver could colonize. One location is at 8840 ft. in elevation. The other locations are upstream from the Boulder Brook confluence and downstream from the Sprague Lake picnic area road. In these few spots the creek flattens out and there is abundant willow and alder. The rest of glacier creek is swift moving and bordered by conifers.

Boulder Brook

Between the confluence with Glacier Creek and Sprague Lake there are a number of small ponds and meadows. There are no beaver currently occupying these meadows, but there is an adequate supply of willow to support a colony. The area around and upstream of Sprague Lake is suitable habitat for beaver. There is abundant willow and alder and the creek is very braided. There is currently one beaver colony above Sprague Lake. There is an abandoned colony at 10000 ft. in elevation. There is abundant aspen regrowth there.