BEAVER DISTRIBUTION, ABUNDANCE AND HABITAT CHARACTERISTICS ALONG BIG CREEK DRAINAGE, IDAHO PRIMITIVE AREA

by

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ABSTRACT

During the summer of 1979 a beaver (Castor canadensis) study was conducted along Big Creek, within the Idaho Primitive Area. The purpose of the study was to assess the extent and distribution of resident beavers, as well as describe their associated habitat. Major study emphasis was placed on sections of Big Creek and its major tributaries between Monumental Creek and the Middle Fork of the Salmon River. As time permitted selected areas of upper Big Creek and Chamberlain basin were also investigated, although in less detail.

All stream sections within the main study area were carefully searched and all evidence of beaver was recorded and described. Along lower Big Creek evidence of permanent beaver colonies was generally scarce. Where beaver did exist they were always associated with alder trees (Alnus sp.) and usually willow saplings (Salix sp.). It was felt that the extreme relief of the lower Big Creek area, the swift water velocity and the general lack of preferred beaver forage were primary reasons for the lack of beaver activity noted. In areas where level, marshy alder stands did occur they showed signs of heavy beaver utilization. Along lower Big Creek such areas were generally rare.

However, in the headwater area of Big Creek and the Chamberlain basin evidence of beaver population was wide spread. These areas are characterized by gentler terrain and a greater availability of alder and willow.

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INTRODUCTION

Beaver (Castor canadensi), more than any other species except man, are capable of inflicting change on their environment. This change affects the well being of associated forests, fish and wildlife. It is for this reason that beaver have been the subject of many years of study throughout North America.

Rutherford (1955) studied the environmental relationships of beaver in Colorado forests. His findings demonstrated that beaver have certain environmental requirements and that their occurrence can be predicted on the basis of these factors. Excess stream gradient was determined to be a major deterrent to permanent beaver colonization. Even in areas of high quality food supply a stream gradient of greater than 8% was effective in deterring colonization. A study conducted along Sagehen Creek, in the Sierra Nevada Mountains of California, emphasized the importance of aspen (Populus tremuloides) and willow (Salix sp.) as prinicipal forage in preferred beaver habitat (Hall 1966).

Beaver have been shown to have a well defined social structure and habits. Beaver mate at about 2.5 years of age. The average litter born in spring consists of three to four kits. Average colony size, including young-of-the-year, is nine to ten beaver. These include two breeding adults, three to four yearlings, and the spring born young. In the second year the two year olds are driven from the colony site. This forced dispersal is undertaken by the pregnant female just prior to parturition (Bradt 1947). This social intolerance and subsequent dispersal is the primary mechanism for colonization of unoccupied habitats.

The Idaho Primitive Area is a unique area for wildlife studies, in that it is nearly free from the impact of man. Within the last few years

the presence of a population of beaver had been reported near the Taylor Ranch Research Facility, located within the Idaho Primitive Area. Prior to the undertaking of this study no research had been conducted to assess the site or extent of distribution of this resident population.

The opportunity to study this primitive area beaver population was made possible by the Undergraduate Honorarium Program, established and funded by the College of Forestry, Wildlife and Range Sciences, University of Idaho. The purpose of this study was to collect and record preliminary data on resident beaver populations. It was further the purpose of this study to provide basic information of present status of the population as well as to identify needs for future research.

The specific objectives of this study were:

1) Determine relative abundance and distribution patterns of beaver within the study area.
2) Describe features of associated habitat.
3) Determine use of woody vegetation relative to availability.
4) Determine use of woody vegetation by species, size class, and distance from shore.
5) Conduct a reconnaissance of unexploited habitat within the study area.

STUDY AREA

The study area was located within the Idaho Primitive Area. The University-owned Taylor Ranch Research Facility served as a base out of which the study was conducted (Fig. 1). The area was selected because of its nearly pristine state and because beaver trapping in the area had been closed for ten years prior to the study. The initial study area included

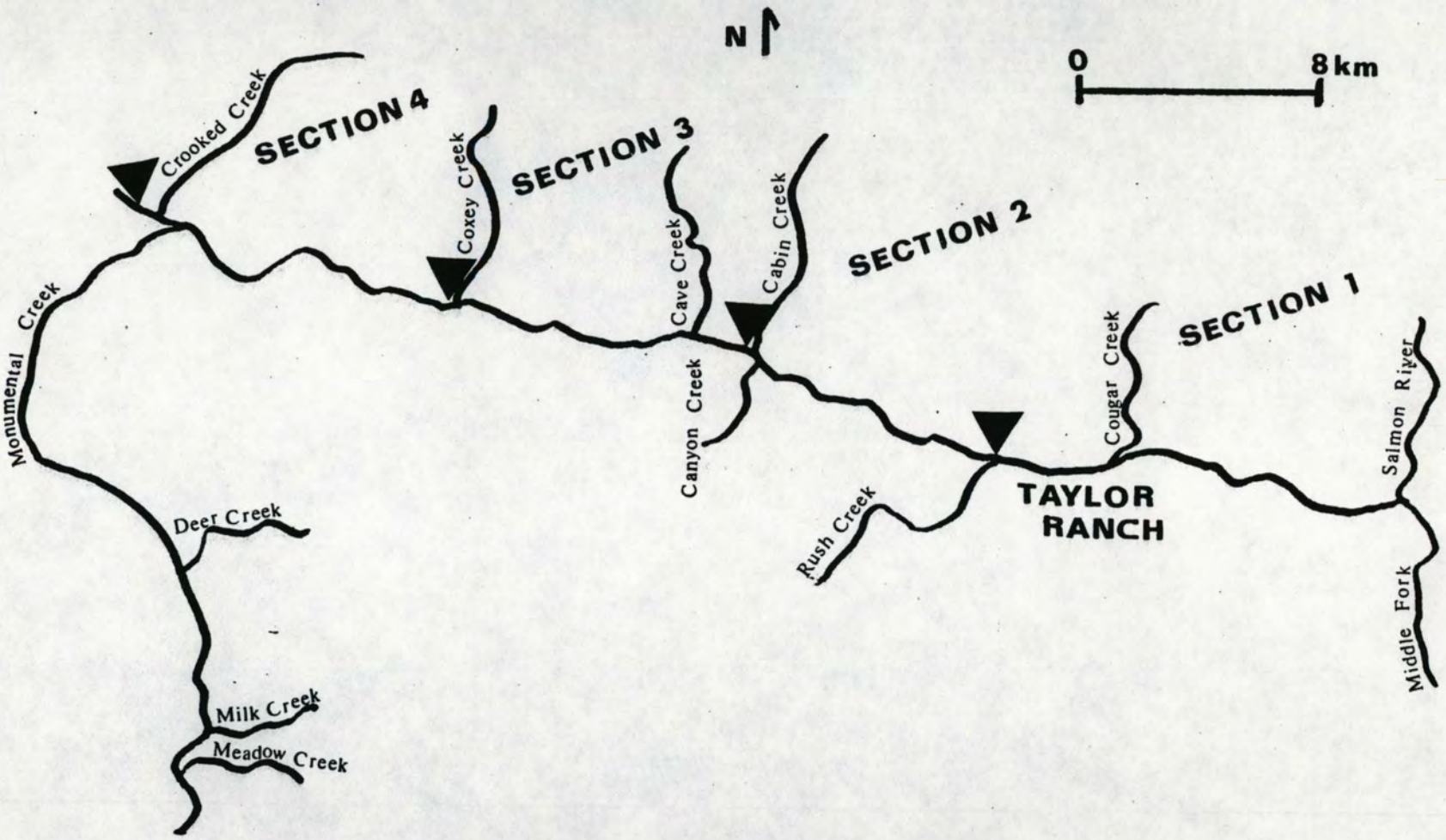

Fig. 1. Four sections comprising the main study area along Big Creek drainage, Idaho Primitive Area.

portions of Big Creek from Monumental Creek to the Middle Fork of the Salmon River. The study area was later expanded to include the entire length of Big Creek and all its major tributaries.

Big Creek is a major tributary of the Middle Fork of the Salmon River. Originating in the mountains near Big Creek Ranger Station, Big Creek flows east through the center of the Idaho Primitive Area and is fed by numerous tributary streams. Big Creek consists of approximately 64 km with elevation varying between 1707 m at the headwaters and 914 m at its mouth. Big Creek drains mountainous areas of extreme relief. Its deep and narrow canyon is formed by steep hillsides, cliffs and talis slopes. Stands of coniferous timber are primarily confined to north aspects and stream bottoms, while south facing slopes are primarily sagebrush (Artemisia) associations. The summer climate in the Big Creek drainage is hot and dry. Precipitation varies from an average of 76 cm in upper Big Creek to less than 51 cm along the lower Middle Fork (Rice 1971, reported in Seidensticker 1973).

All field work and data collection were conducted between 21 May and 6 August, 1979.

PROCEDURES AND METHODS

On May 23 I began a systematic search of all stream courses within the study area. My first objective was to travel the entire study area assessing the extent and site location of active beaver colonies. Mode of travel within the primitive area is restricted to foot travel or horseback. The initial covering of the study area required considerable time due to extremely dense shrub growth in and along stream banks. Stream banks were carefully searched one section at a time. Each time a site

of past or present beaver activity was encountered its position was marked on a map of the area. Any sign of present beaver activity was noted, and freshly cut trees were marked with paint to assist in determining active beaver sites (Hall 1966).

Active sites were determined by the presence of fresh droppings, tracks and new cutting activity occurring between visits. Stream depth and width were recorded at all active sites. Vegetation sampling was conducted by the Belt Transect Method (NAS-NRC 1962). Sampling belts were 5 m in width and 25 m in length. In the cases where vegetation extended less than 25 m from the stream, length of plots were adjusted accordingly. If beaver activity was present on both sides of the stream each side was sampled by a 25 m belt. Each 25 m belt transect was divided into five, 5 m subplots. All vegetation data was recorded within these subplots.

Belt transects were placed through each site, beginning at the bank and running perpendicular to the stream course. In areas of widespread beaver activity, three sampling belts were taken. However most sites were restricted to one side of the stream and small enough to require only one sample belt. On small sites one sample belt included a large portion of the active area. All stems greater than .2 cm were identified and counted. Special notation was made on cut trees. Tree diameters were measured at a height of 30 cm, except for cut trees which were measured at the height of the cut. Maximum distance which beaver were cutting from the stream site was measured at each site. All physical signs of beaver including droppings, tracks and actual sighting were noted to provide information on colony size. After collection of data had been completed a general site description was written. Surrounding forest vegetation was identified and described. The presence or absence of dams, ponds, lodges and bank dens were carefully described. The nature of the stream section adjoining

the colony site was also described. After the original study area had been investigated and studied, time remaining was used to investigate bordering areas. Time did not permit detailed investigation of the expanded area, so specific areas of reported beaver activity were selected. General site descriptions included apparent levels of present beaver activity, associated tree species and site characteristcs. Areas investigated within the extended study area included portions of upper Big Creek and selected drainages in the Chamberlain basin (Fig. 2).

RESULTS

BIG CREEK SITE DESCRIPTIONS

Evidence of permanent colony sites was scarce, although scattered signs of beaver existed throughout most of the study area. Beaver distribution and associated habitat within the study area will be discussed by stream sections (Fig. 1).

Section 1

This section, approximately 14 km in total length, consists of Big Creek and its tributaries between the Middle Fork of the Salmon River and the Taylor Ranch. The easternmost segment of Section 1, from Big Creek gorge to the Middle Fork, is characterized by swift flowing white water. In this section talis slopes grade abruptly into the narrowing stream course. Vegetation along this section is limited to a narrow band of shrubs and a few persistent trees anchored between the rocks at stream's edge. Prinicipal tree species noted in this section were Douglas fir (Pseudotsuga menziesii) and mountain mahogany (Cercocarpus ledifolius).

A few white alder (Alnus rhombifolia) and water birch (Betula occidentalis) were also present in small, localized groups. This section contained no evidence of past or present beaver activity with the exception of a few scattered cuttings directly at stream's edge.

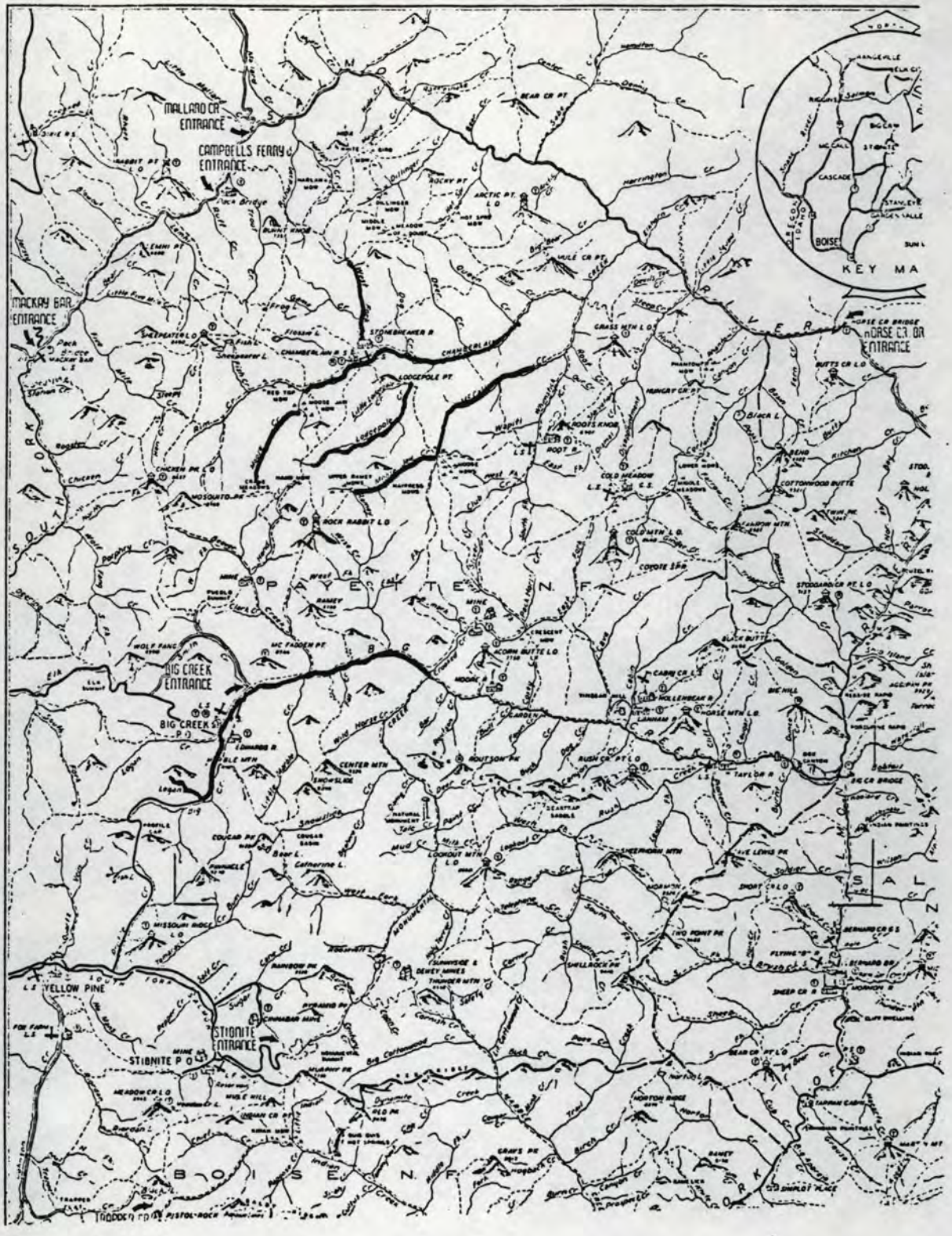

Fig. 2. Extended study area including the upper Big Creek and selected drainages within the Chamberlain basin.

The first substantial evidence of beaver activity in Section 1 was found along the north side of Big Creek approximately .2 kilometers east of Cougar Creek. The site was very small, the area of activity was a low, spring-fed marsh 20 meters by 18 meters. This area was 5 meters removed from the white water section of Big Creek.

The principal tree species associated with this site were alder, birch and red osier dogwood (Cornus stolonifera). I first noted and marked the site in late May. At that time I found several fresh cuttings on birch and alder. Subsequent visits throughout the study convinced me that the site had been abandoned sometime that spring and was no longer active. Because the site had been recently active the vegetation data was considered relevant. This small site appeared to have been worked by beaver at least seasonally for a continuous period of years. This assumption is based on the presence of beaver-cut stumps in varying stages of decomposition. I was unable to date the time of cutting, but several years of weathering were represented by the cuttings. The most frequently cut tree at this site was white alder, followed by red osier dogwood. Only a few cuts were observed on birch. A second site of beaver activity within Section 1 was located approximately .4 km east of the Taylor Ranch. Along this section Big Creek widens and assumes a depth of .30 m to 1.37 m. The bank slope is much more gradual at this site. A near level, sandy beach area borders the stream's edge. The sandy banks support a very dense vegetation cover consisting primarily of white alder, water birch, red osier dogwood and Rocky Mountain maple (Acer glabrum). Prominent shrub species in this area were ninebark (Physocarpus malyaceus), service berry (Amerlanchier alnifolia), syringa (Philadelphus lewisii) and choke cherry (Prunus virginiana).

Beaver maintained activity throughout the summer, having two active bank dens on the north side of Big Creek. The bank dens were about 15

meters apart and both entered the bank under the extensive root system of white alder trees. Water level at the den entrances varied between 16 cm and 23 cm throughout the summer. The water level dropped considerably throughout the summer, following the spring runoff season.

Close observation of this site revealed numerous cut stems of varying ages. While fresh cuts were restricted to white alder and dogwood within 5 m of the shore, old cuts on water birch and Rocky Mountain maple were noted as far as 22 m.

The Taylor Ranch property marks the westernmost boundary of Section 1. In mid-May, prior to my arrival, a beaver had been observed working along the south bank of Big Creek. It had been cutting willow from a small stand at camp's edge. On May 24 I painted and identified approximately 12 willow stems cut in that location. After the initial marking no further cutting activity was observed. A bank search along that section revealed very old beaver cuttings on the north side of Big Creek opposite the Taylor landing field. In addition, several old beaver lodges were found.

In summarizing Section 1, I concluded that beaver activity was extremely light. During the study only one active site, consisting of two bank dens, was identified. All tributary streams into Big Creek within Section 1 were carefully investigated. These small, narrow, down plunging streams showed no sign of beaver activity. Section 1 totally lacked quaking aspen (Populus tremuloidiei) and contained very little willow.

Section 2

Section 2 included an approximate 9.7 km section of Big Creek from Rush Creek west to Cabin Creek. Rush Creek begins at the Taylor Ranch and flows north to become one of the larger tributaries of Big Creek. Rush Creek can best be described as a swift flowing, white water mountain

stream. Prior to the undertaking of this study residents at the Taylor Ranch had reported an active beaver colony located on Rush Creek, about .4 km from the mouth of Big Creek. Large dead falls and stream debris had effectively split Rush Creek into two smaller channels. Beaver activity was concentrated on the easternmost channel. The principal tree species associated with this area were white alder, black cottonwood (Populus trichocarpa), water birch, red osier dogwood, Rocky Mountain maple and black hawthorn. There were a few scattered willow saplings in the area.

When I first investigated this site in late May I noted a beaver dam which had been recently broken by the high water. Persons at the Taylor Ranch confirmed that the dam had been intact and flooding upstream areas just days before my investigation. In addition to the main dam there were two smaller dams directly downstream, both of which were also in disrepair. Beaver cutting on alder and dogwood at this site was extensive. Approximately half of all alder growing within 25 m of the stream had been cut. Large cottonwood trees in the area had been ringed by beaver but none had been felled. No new cutting activity occurred at the site during the study period. The dams were not rebuilt and frequent visits to the site suggested this once very active site had been abandoned. Beaver had been known to be active at that site for over a year. Causes for emigration of beaver from this site were not evident.

Close examination of the 6.5 km section of Rush Creek above the colony site showed no evidence of beaver activity. Below the dam site, at the mouth of Rush Creek, there were several fresh beaver cuttings. This area on the west bank of Rush Creek supported a small, dense stand of willows. The willow stand, consisting of only about 75 rooted stems, was located in a level grassy meadow 10 m from Rush Creek. Ten willow stems in this stand had been cut, while alder and birch which grew closer to the stream remained unused. Close investigation of the stream banks

adjacent to the willow stand revealed no dens or lodges. It was assumed that beaver associated with the dam site directly upstream were responsible for the cuttings. This willow stand represented an unusually abundant amount of willow relative to the area.

Big Creek, west of Rush Creek, is characterized by a gentler stream slope than Section 1. The stream, while still swift, forms generally a wider, level bottom channel. Level bench areas are common along the north side, although steep banks occur along many sections. Tree species associated with this stream section include Douglas fir, white alder, water birch, mountain mohogany, Rocky Mountain maple, choke cherry, hawthorn and cottonwood. Some willow saplings occur along the high waterline but to a very limited degree. Intensive search of this stream section indicated absence of established beaver residence, though light cutting activity occurred all along the stream edge. The primary tree species selected by beaver was white alder. Periodic visitation of this area indicated that the amount of cutting activity observed in late spring did not continue through the summer.

Cabin Creek flows south through Cabin Creek meadow to its junction with Big Creek. Cabin Creek meadow delimits the western boundary of Section 2. The large meadow is ringed by thick deciduous vegetation.

Tree species present are white alder, black cottonwood, hawthorn, Rocky Mountain maple and willow. The most abundant tree in the area is white alder. Willow in the area are small saplings of diameters less than 1.3 m. Along the mouth of Cabin Creek, and on the south bank of Big Creek opposite the Cabin Creek confluence, recent beaver sign was found. A small marshy pond created at the mouth of Canyon Creek also showed signs of recent beaver activity. The marsh formed by Canyon Creek is directly across Big Creek from Cabin Creek. At this site alder trees and small

willow saplings were being cut.

Three cottonwood trees had been felled across the mouth of Cabin Creek. These trees which nearly dammed Cabin Creek were not utilized by beaver. Information obtained from Forest Service personnel indicated that beaver had been very active through early spring. Old cutting evidence on alder, willow and cottonwood in Cabin Creek meadow and Canyon Creek marsh was extensive. Information provided by local outfitters indicated that the area had once been abundant with beaver. Beaver dams at the mouth of Cabin Creek provided ample irrigation in some years to keep the meadow green throughout the dry summer.

Beaver cutting in the area did not continue throughout the summer. A 8 km survey of upper Cabin Creek revealed no sign of beaver.

In summary, while stream characteristics of Section 2 are milder than Section 1 and vegetation is more abundant, the area did not appear to support permanent beaver populations. The possible exception was the Cabin Creek -Canyon Creek area, which was relatively inactive during the study's duration.

Section 3

Section 3 includes Big Creek and tributary streams between the west end of Cabin Creek meadow and Coxey Hole. Stream characteristics along this 9.7 km section are extremely variable between swift flowing white water and calmer flow conditions. While the south bank remains typically abrupt, the north bank features many level basin areas. Talis slopes still constitute the major feature of Big Creek banks although soil banks are not uncommon in some areas. Vegetation through this area is as described for Section 2 with the addition of mountain mohogany.

Scattered cuttings, primarily on alder and the few willow present, were noted throughout the section. Cuttings were restricted to less than

5 m from stream banks, and no colony sites were associated with the activity.

Cave Creek, which flows south to Big Creek, showed past beaver activity. The site was approximately .4 km from the mouth of Cave Creek. The area, best described as a wide basin, was heavily overgrown in alder and willow. Remains of an old dam suggested that the narrow stream, now swiftly flowing, had at one time flooded the basin. With the exception of two fresh cuts on alder, all remaining cuts were identified as old. The presence of the two fresh cuts suggested recent or present occupation by at least one individual. No other sign of beaver occurred on the 8.0 km section of Cave Creek.

A second site of beaver activity within section 3 was located between Doe and Garden creeks on the north side of Big Creek. Along this section Big Creek is wide and relatively shallow. A sharp bend in the creek forms a relatively calm counter current pool. Directly upstream on the north bank a level, marshy, spring-fed area showed heavy use by beaver. All alder had been reduced to cut stumps whereas hawthorn was relatively unused.

A lodge, constructed of beaver cut-sticks, was positioned on the outside stream bend between the north bank and a large rock. The lodge was nearly .91 m high and 1.5 m across. The alder and willow adjacent to this site were almost totally depleted. Absence of fresh cuttings later in the summer indicated that this site had become inactive. A third area of beaver activity within section 3 was located approximately .4 km east of Coxey Hole. A log jam near the south bank of Big Creek created a water diversion, which flowed around a small island supporting a small, dense clump of alder. Beaver were utilizing the log jam and the gentled current between the island and south bank. Beaver had one small dam which created a pool about 46 cm deep. Cutting on alder and a few willow saplings indicated that the site was presently active.

On three separate occasions I had brief opportunities to observe beaver within Section 3. On all occasions the beaver were unaware of my presence. In late May I observed an average size adult traveling upstream several hundred yards below the lodge site. The other two sightings were in late summer and both beaver were traveling downstream.

In summary of Section 3, a slightly greater availability of alder and willow in this section appears to encourage some occupation by beaver, though stream characteristics and food supply did not constitute good beaver habitat.

Section 4

Section 4 is delimited by Coxey Hole to the east and Monumental Creek to the west, and is the westernmost extent of the original study area. This stream segment represents approximately 8.0 to 9.7 km. In Section 4 stream banks are extremely steep and rocky. Vegetation, consisting mainly of dogwood, Rocky Mountain maple, hawthorn and a few alder, is generally confined to a narrow (about 5 m) belt along the stream edge. Wider areas of vegetation are found in the meadows of old homesteads. I was unable to find evidence of beaver activity along this stream section. A small stand of willow growing on the north bank of Big Creek, east of Acorn Creek, was my first opportunity to examine an undisturbed stand of willow. Willow throughout the entire study area were generally saplings of diameter less than 2.5 cm. This uncut willow stand, growing adjacent to a swift section of Big Creek, had attained diameters greater than 8 cm.

Monumental Creek and Crooked Creek, both major tributaries of Big Creek, enter Big Creek at the westernmost boundary of the original study area. Monumental Creek, which flows north, is by volume the largest tributary of Big Creek within the study area. Monumental Creek is characterized by

high velocity and very steep gradient. In an approximate 9.7 km stretch of lower Monumental Creek no sign of beaver activity was found. Quaking aspen occurred in association with alder.

The characteristics of upper Monumental Creek differ greatly from those described for the lower section. Near the headwaters of the creek the canyon widens and becomes almost flat. Flow velocity is greatly reduced as the stream meanders through the large basin. Level marshy areas along stream edge are grown up in willow and suggest suitable habitat for beaver. Willow is by far the most abundant vegetation in this section, though alder, lodgepole pine (Pinus contorta) and a few aspen are also present. Extensive cutting on the willow is evident through this section, and stem diameters of less than one inch were typical. Small marshy ponds along Monumental Creek between Meadow and Milk creeks were characterized by abundant old beaver cuts. A few fresh cuts on willow suggested that at least one beaver was working the area.

Evidence of present beaver activity was generally lacking along upper Monumental Creek, although the marshy conditions appeared suitable for occupation. Reduction of mature willow vegetation by prior beaver occupation may be an important factor. Deer Creek, a tributary stream of Monumental Creek, was the site of an old beaver dam. The dam, approximately 12 m long, held a small pool of water near the mouth of Deer Creek. Willow and alder in the area were completely depleted and several lodgepole pine had been cut. The absence of fresh cutting suggested the site was abandoned. A small beaver pond with a lodge in its center was located at the mouth of Camp Creek. Willow and alder in the area were extensively cut over, suggesting that the site had at one time been very active.

Time was not adequate to investigate all drainages within the upper Monumental Creek area. However, Crooked Creek, which flows south into Big Creek, was by far the stream of greatest beaver activity within the

study area. This tributary is lower in stream volume and velocity than Monumental Creek. Many wide, nearly level basin areas are found within the lowest 13.0 km of the creek, and signs of concentrated beaver activity was located approximately .8 km from the mouth.

This activity site, covering a little less than .4 ha, was characterized by numerous cuttings alder and willow. As many as four dams were present. Three of the dams were in varying stages of disrepair and were assumed to be secondary dams. The main dam, approximately 12 m in length, had been partially washed out by high water. Five fresh cuttings on alder and several fresh repairs to the main dam suggested the site had been recently reoccupied. The dam, though broken through in several places, still maintained ponds and flooded adjacent low areas. Willow appeared to grow more abundantly at this site than elsewhere in the study area, but was present only as saplings less than 2.54 cm in diameter.

A second beaver site was found upstream near the confluence of Bismark Creek and Crooked Creek. The site appeared to be very old and abandoned. The wide basin in this area was vegetationally similar to the previous site. Several dams were present. The main dam, though old, had successfully diverted Crooked Creek to create a new stream channel. Willow and alder in the area appeared to be regenerating in the absence of beaver.

The largest area of beaver activity within the study area was in Crescent Meadows along Crooked Creek, a meadow densely covered with willows. Not less than 100 old bank dens and lodges were found throughout the site. The remains of several major dams suggested that a large portion of Crescent Meadows had been flooded at one time. During the time of my investigation Crescent Meadows was dry and Crooked Creek was flowing unrestricted within its banks. The remains of a large dam at the lower end of Crescent Meadows measured nearly 3.5 m in height and 29 m across. On close investigation of stream banks, I found several active bank dens as evidenced by green

cache. The area was apparently still occupied although evidence of past activity levels suggested that use had declined considerably. It is important to note that willow, by far the most abundant vegetation in the site, appeared to have been drowned out. Unlike other sites, the willow had not been reduced by cutting. Instead, it stood dead in thick clumps, suggesting that prolonged flooding had occurred. Alder, present in lesser quantities, had also been utilized. An approximate 1.6 km stream section associated with Crescent Meadows showed nearly continuous beaver signs. Two smaller beaver sites were located above Crescent Meadows. The first was approximately .8 km up Crooked Creek. As many as ten small beaver dams created numerous water pools within the narrow basin. The principal vegetation utilized at this site was willow, followed by alder. Willow at this site was extremely depleted, with the mean diameter of standing stems less than 1.3 cm. Alder was also greatly depleted. Fresh cutting signs and repairs to several dams led me to conclude that this site was active.

The last site observed within the 13.0 km section of Crooked Creek was approximately 2.4 km above Crescent Meadows. This was a relatively small site, with activity limited to less than .2 hectare. This site contained two small dams, one of which was under repair. A second small pond, approximately 1 m deep, was located above the first. Willow and alder were the tree species associated with the site, although the willow had been almost completely depleted by cutting. Numerous fresh cuts were confined to alder and to a less extent red osier dogwood, which was also present.

EXTENDED STUDY AREA

Upper Big Creek

The remaining portion of Big Creek within the primitive area lies between Monumental Creek and Smith Creek. Two sites of beaver activity were located along this stream section. The first was located in a marshy site at the mouth of Ramey Creek, along Big Creek's north bank. A lodge was present, but the site appeared to be unoccupied when visited. Associated tree species were willow, alder, birch and lodgepole pine.

The second site was a small pond surrounding a large beaver lodge located approximately 1.2 km east of Smith Creek. The site, 5 m from the north bank of Big Creek, was extremely cut over by beaver. The primary vegetation present was willow, which was greatly depleted. I saw one adult beaver and one subadult at the site during a 3 hr observation period.

The headwater areas of Big Creek are geographically quite different from those sections which lie within the primitive area. The Big Creek ranger station and the settlement that surrounds it lie in a vast, gently rolling valley. Beaver activity through this area is extensive. Along Big Creek and in associated marshy ponds, 40 hectares of beaver habitat occur.

Beaver dams and lodges were common in these areas. Numerous dams were noted on Big Creek above Logan Creek. The principal vegetation associated with this area was willow. Primarily, willow was scarce and of small diameter. No evidence of cutting occurred on quaking aspen which were located approximately 50 m away. Lodgepole pine had been previously cut by beaver as evidenced by old, rotting cut stumps. At the time of my work beaver activity appeared to be extremely reduced. Of the numerous dams present on Big Creek, only two were freshly mended. Beaver activity was also noted several kilometers from the mouth of Logan Creek. Evidence of beaver use along Logan Creek was similar to that

at the Big Creek site.

Chamberlain Basin

The Chamberlain basin lies north of Big Creek in the north central section of the primitive area, with elevation varying between 1,400 and 2,300 m (Seidensticker 1973). The gently rolling terrain of the basin is characterized by numerous large meadows and meandering streams.

The results of aerial survey of the Chamberlain area were as follows. Beaver dams and lodges were visible from the air and were therefore used to indicate sites of beaver activity. Beaver activity was noted on Chamberlain Creek adjacent to the Chamberlain air field, on Lodgepole Creek, Little Lodgepole Creek, Moose Jaw Creek, West Fork of Chamberlain Creek, Moose Creek and McCalla Creek. Extensive dam systems were present in streams where beaver activity was noted. I counted 14 dams/mile on McCalla Creek north of Moose Meadows. Beaver sites on Chamberlain Creek along the south border of the air strip were more closely examined on foot. During the investigation beaver were extremely active on Chamberlain Creek. I found several dams under construction as well as several large dams flooding surrounding areas. The primary vegetation associated with beaver sites in the Chamberlain basin was willow, alder were few, and quaking aspen were restricted to isolated patches. The Chamberlain basin was determined to be the most beaver populated area surveyed during the study. Unfortunately time was not available to conduct an extensive survey of this area.

VEGETATION USE

The mean diameter of willow present at active sites was 4.8 cm. A comparison of the mean diameter of beaver cutting indicated no size class selection by beaver on alder. Willow was demonstrated to be the second species associated with, and taken by beaver. In upper Monumental Creek

and Crooked Creek areas, where willow was present in greater abundance than alder, it was heavily selected over alder. Red osier dogwood (Cornus stolonifera) of diameters less than 2.54 cm was present in varying quantities at all sites. Beaver cutting was common on dogwood. Other tree species cut by beaver, listed in order of their frequency, were cottonwood, birch, maple, Douglas fir, hawthorn and choke cherry.

DISCUSSION

RESTRICTIONS ON HABITAT QUALITY

Big Creek and its tributaries within the primitive area constitute poor beaver habitat, although beaver do exist in small numbers in some specific locations. The harsh geographical relief, in combination with the scarcity of palatable vegetation, creates at best marginal beaver habitat. Many studies have reported that aspen is the most highly preferred tree species, followed by willow (Swank 1949, Bradt 1947, Hall 1966). In a study along Sagehen Creek, California, Hall noted that aspen was selectively cut until the stand adjacent to the colony was depleted. Following the depletion of aspen, willow was selectively taken as a second staple vegetation. Very little quaking aspen occurs along Big Creek. Willow exists in a few isolated pockets along Big Creek and tributary streams. The rocky talis slopes, which characterize much of Big Creek shorelines, support very little vegetation acceptable to beaver.

In addition to marginal conditions of food supply, stream characteristics within the Big Creek drainage are largely unfavorable for beaver colonization. The shallow, swift moving current in Big Creek provides no opportunity for dam building by beaver. After surveying over 65 km of Big Creek, I found no evidence that beaver had ever constructed a dam at any location below Smith Creek. The rocky nature of Big Creek banks makes construction of bank dens extremely difficult. An additional

problem associated with the utilization of bank dens is the extreme seasonal fluctuation in deep water during spring months, which leaves banks high and dry through the late summer and autumn. During the duration of my study I observed a drop in water level of no less than 61 cm.

Without the protection of deep water ponds, it is doubtful that any beaver could survive the severe freeze associated with Big Creek winters.

SEASONAL MOVEMENTS

The findings of this study were undoubtedly affected by the season in which the field work was conducted. Male beaver, as well as the previous season's kits, often begin to wander in early spring after the ice leaves the waterways. Also during the spring the two year old beaver are leaving the colony site permanently. They seek mates and establish new colony sites in other areas (Hodgdon and Hunt 1953). I believe that much of the fresh cutting I observed along Big Creek during May, which did not continue through the summer, is explained by the dispersal movements of beaver through the area.

The forced emigration of the two year old beaver in the spring has a profound influence of the ecology and distribution of beaver. The emigration of vigorous young beavers provide a systematic method of dispersal. Because beaver resent encroachment the young are forced to seek out and establish themselves in uninhabited areas (Bradt 1947).

There may be yearly recolonization attempts on Big Creek. However, the animals appear to move on during the summer in search of more favorable areas. A few additional cuttings may be added to these marginal sites each season, creating the appearance that beaver had maintained continuous occupancy. It is most likely that areas of concentrated beaver activity upstream provides stocks of dispersing beaver which subsequently travel down into Big Creek.

Census methods are best employed in the fall because beaver often wander in the spring and summer months. Afterward, wandering ceases and beaver activity increases up until the freeze. During the fall an observer can determine active colony sites by the presence of new dams, lodges and canals. In addition to these signs, beaver will be adding fresh greens to their winter food pile (Hodgdon and Hunt 1953).

Aquatic vegetation is the principal food for beaver during the summer. A noticeable decline in the use of trees is evident unless new lodges or dams are being built (Hodgdon and Hunt 1953).

In conclusion I feel that a more accurate assessment of beaver activity could be obtained had the study been conducted in the fall. Information received from personnel of the Taylor Ranch supports this viewpoint in that beaver activity adjacent to the ranch commenced during the fall after my investigation. I therefore recommend that future investigations of beaver status and distribution within the Idaho Primitive Area be conducted during the fall months, when beaver are relatively sedentary.