

Bighill Creek Documents

Rees, Kerry 1987

A fisheries phase II survey of Bighill Creek

Study Area: Bighill Creek

Method: aerial survey, onsite survey, electrofishing survey, spawning survey

- Bighill Creek flows SW through the open prairie north of Cochrane, through the town of Cochrane, and enters the Bow River opposite the mouth of Jumpingpound Creek – several springs feeding it halfway up give it a stable water supply.
- Water treatment plant situated 200m upstream from mouth; alum is added to backflush during spring has resulted in one documented fish kill.
- Agriculture activity is moderate to high; industrial activity is low
- Good access near mouth (3 km upstream) and Big Hill Springs Prov. Park; elsewhere private land with limited access.
- Relatively small/short stream length with only moderate potential as a trout fishery

Factors limiting trout populations:

- Upstream – ephemeral stream
- Middle - heavy grazing and beaver damming causes siltation, widening, loss of cover
- Lower – thick silt deposits, heavy macrophyte growth, lack of suitable spawning gravels

Recommendations:

- Streambank fencing to limit cattle crossing and trampling
- Selective beaverdam removal (barriers to fish movement/spawning)
- Channelize water flow in a meandering pattern with instream structures to remove silt and create cover
- Remove log jam (barrier to fish movement from Bow River)

MacDonald, W.H. 1950

Report on Big Hill Springs experiment 1950

Study area: Bighill Springs

Method: rearing experiment

Experimental rearing facility cut short due to cold weather making duties inconvenient

Reasons for experiment:

- other rearing facilities are not having much success
- Fish and Game groups are not technically qualified to help with hatching and rearing
- chief obstacle to rearing fish in Big Hill Springs is assumed to be the low water temperature

Borutski, D. 1980

Big Hill Creek streambank evaluation

Study area: Bighill Creek

Method: onsite survey

- Below fork, the creek meanders through grassy bottomland, flows through a small wooded valley, and the Town of Cochrane before its confluence with the Bow River;
- Riparian vegetation consists of grass, willow, alder, shrub
- East fork flows through marshy lowland; man-made dirt dam is a barrier to fish movement and limits flow.
- West fork originates from a series of cold water springs and provides a continuous supply of water
- Entire length flows through patented lands and over 50% is regarded as a high fencing priority
- Upper reach – heavy cattle grazing, heavy siltation, unstable banks, heavy beaver activity
- Lower reach – light grazing, good shade cover, stable banks, some channelization, beaver activity moderate siltation, high recreational use
- Fishery habitat has been destroyed by the indirect effects of land use activities; unlikely to be a great fishery due to small size and high angling pressure
- Creek would benefit with streambank fencing program, beaver control, removal of excess silt
- Bad relationship between landowners and recreationalists

Cunningham, E.B. 1963

The proposed stream improvement project on Bighill Spring Creek

Study area: Bighill Spring Creek

Method: electrofishing, onsite, stream improvement project

- Bighill Creek was once known as a good trout producer; no longer capable of sustaining a trout population
- Deterioration caused by removal of brush along the creek, intensive grazing and bank trampling, causing stream widening, siltation, increased water temperatures
- Tentatively chosen as site for stream improvement work by the **Hook and Hackle Club of Calgary** – fencing off streambanks to protect from grazing and trampling (include gravelled lanes to allow cattle access to water); planting willows for shade, cover and bank stabilization; improvement devices (baffles, deflectors, etc)
- Major obstacle to project is acquiring landowner permission; possible compensation through tax easements on the land, or purchase or lease of right-of-way along creek.
- Success on this stream would serve as an excellent showcase to demonstrate what can be done
- (project was not approved – August 1966)

McDonald, Dennis 1969

Fish Kill – Bighill Springs Creek

Study area: Bighill Springs Creek

Method: onsite

- Fish kill was observed on Bighill Springs Creek at 4:30pm on June 17, 1969, in a 200-yard portion of the stream between the water treatment plant and the Bow River.
- Partially collapsed air bladders of three trout; burst belly cavity of many suckers
- Backwash of filters at water treatment plant at 4:00 pm on June 17, 1969 led to aluminum sulphate and sediment washing into the stream (this backwash occurs twice a month, over past 11 years).
- No water samples available

Psikla, E.J. 1962

Big Hill Springs

Study area: Big Hill Springs

Method: angling surveys

- Creek receives very heavy angling pressure; angling success has become very poor
- New beaver activity immediately north of Cochrane; this area still has overhanging trees and banks
- Upstream towards Bighill Springs Prov. Park there is a heavy amount of cattle grazing which has affected bank growth and condition adversely
- Seven miles of fishable water with no access problems
- Request for biological test to ascertain the condition of the stream; and from that draw management scheme to improve sport fishery.

Thompson, G.E. 1977

Big Hill Springs Creek

Study area: Big Hill Springs Creek downstream of Highway 1A

Method: electrofishing, onsite survey

- Electrofishing yielded over 200 yoy MNWH, 1 RNTR, 1 BLTR, 1 MNWH in the upstream sections of creek and only suckers in the upstream portions.
- Downstream: banks have extensive brush and are stabilized
- Upstream: banks are severely trampled by cattle and are in high unstable condition
- Culvert between mouth and Hwy 1A crossing causes siltation at both ends; may be blocking upstream movement of MNWH

Sosiak, Al 1986

Effects of the Lochend Project on Bighill Creek

Study area: Bighill Creek from the provincial park to the mouth

Method: electrofishing, spawning surveys, onsite surveys

- Within park – 14 BKTR, 3 trout redds
- Downstream of park – 1 BKTR
- Upstream of Cochrane – 1 BNTR
- Near mouth – 3 BNTR, 8 MNWH
- Main factors limiting fish production are silt deposition, lack of cover, cattle damage along banks, impoundment by beavers and stream channelization.

- To remedy these problems would require streambank fencing, beaver removal and control and instream structures to remove silt and provide cover.
- Proposed Lochend project would totally eliminate flow from parts of watershed upstream from provincial park, (this section is normally ephemeral) and would contribute to reduced flushing during spring runoff, which would reduce the effect of efforts to remove silt from the system.

Recommendations:

- Fisheries enhancement would require considerable effort, but none of the problems are insoluble
- Nearness of creek to major population centre and assured water supply from springs make this creek worthy of enhancement effort.
- Recommend that project only proceed if an adequate flushing flow is provided in the spring.

Lowe, D. 1989

Bighill Creek, Phase II Technical Report, Recommendations

Study area: Bighill Creek

- Portion of creek upstream with confluence with the springs has no fisheries potential
- Portion between springs and mouth has low-medium fisheries potential
- Fisheries activities that could take place on the creek include population estimates prior to habitat development, and documentation of the use of the lower section by Bow River fish
- Habitat activities that could take place include removal of log jam (barrier to potential migrants from Bow River), selectively remove beaver dams with shallow ponds to provide free flowing sections, and create an 'entertainment fishery' within the provincial park, with no fishing allowed (Fish and Game, Scouts)

Recommendations:

- On this creek gains are small and costs would be high; other streams in Central Region have greater and better fisheries potential - priority should be given to these streams.

Forestry, Lands and Wildlife 1990

Potential Big Hill Creek fish contamination by creosote-related compounds, near the Town of Cochrane

Study area: Bighill Creek

Method: onsite, fish sampling

- Alberta Environment reported the presence of creosote-related compounds in Bighill Creek in August 1990. In November 1990, ten WHSC were collected for testing. Concentration levels of contaminants in the fish were found to be very low.
- Alberta Environment is satisfied that the situation of seepage of creosote-related compounds is now under control. No contaminants were ever detected in water samples from Bighill Creek or the Bow River.

Sosiak, Al, 1996

Agricultural impacts on Jumpingpound and Bighill Creeks

Study area: Jumpingpound Creek – Reach 1, and Bighill Creek

Method: Water sampling

- Water quality in Jumpingpound Creek was generally good during low flow, with little evidence of agricultural impacts.
- Nutrients, coliforms, turbidity and suspended sediment were much higher in Bighill Creek, and base metals frequently exceeded Canadian Water Quality Guidelines; higher nutrients, coliforms and suspended sediment may reflect livestock impacts, or urban runoff.
- No evidence of significant impacts on the Bow River due to loadings from either creek during low flow in summer; higher loadings and potentially higher impact could occur during periods of high local runoff.
- Water quality is generally acceptable in both creeks during low flow; some evidence of impacts on water quality due to high runoff.
- It is not possible to clearly establish whether these episodes of degraded water quality are due to livestock operations or whether the water quality in these creeks has deteriorated over time.

Recommendations:

- Impacts of agriculture on both creeks could be determined by frequent sampling during early spring runoff upstream and downstream from livestock wintering sites, and in the Bow River upstream and downstream of Jumpingpound Creek – automated sampling would be the most effective sampling method.