

# Level 4 Potential Conservation Area (PCA) Report

Name Little Thompson River at County Line

Site Code S.USCOHP\*23576

## IDENTIFIERS

Site ID 539 Site Class PCA  
Site Alias None

## Network of Conservation Areas (NCA)

<u>NCA Site ID</u>	<u>NCA Site Code</u>	<u>NCA Site Name</u>
-		No Data

## LOCATORS

Nation United States Latitude 401631N  
State Colorado Longitude 1050701W

## Quad Code Quad Name

40105-C1 Berthoud  
40105-C2 Carter Lake Reservoir

## County

## Watershed Code Watershed Name

10190006 Big Thompson

## SITE DESCRIPTION

Minimum Elevation	4,900.00 Feet	1,494.00 Meters
Maximum Elevation	5,740.00 Feet	1,750.00 Meters

## Site Description

Little Thompson Creek begins within the foothills of the Rocky Mountains a few miles south of Estes Park. The low elevation, low gradient river flows through foothills, agricultural lands, and the Town of Berthoud and joins the Big Thompson River near the town of Milliken. The river supports a plains cottonwood (*Populus deltoides*) riparian woodland, once widespread throughout the Great Plains, and a rare relict assemblage of aquatic macroinvertebrate species that probably closely resembles communities found in small transitional (linking foothills and plains) Front Range streams prior to agricultural and residential development (Kondratieff and Baumann 2002). Although most of the lower Little Thompson watershed has been developed for agricultural use, there are no major upstream modifications (e.g., dense urbanization, wastewater treatment plants, dams) in the transitional zone portion of the basin. In contrast, most Front Range watersheds (e.g., Boulder Creek, St. Vrain, Big Thompson, Cache la Poudre) have been modified to an extent that has drastically changed the stream fauna from their historical condition. Examples of the results of these modifications include the reduction in distribution of the South Platte transitional zone fishes northern redbelly dace (*Phoxinus eos*), common shiner (*Notropis cornutus*), brassy minnow (*Hybognathus hankinsoni*), plains topminnow (*Fundulus sciadicus*), Iowa darter (*Etheostoma exile*), lake chub (*Couesius plumbeus*), greenback cutthroat trout (*Oncorhynchus clarkii stomias*), and the extirpation of hornyhead chub (*Nocomis biguttatus*), and blacknose shiner (*Notropis heterolepis*). It is accepted that macroinvertebrates can be used as indicators of stream health. In particular, the numbers of three groups of species. Mayflies (*Ephemeroptera* spp.), stoneflies (*Plecoptera* spp.), and caddisflies (*Trichoptera* spp.), found at a stream site are commonly used as a measure of stream health since many members of these groups are sensitive to human-induced disturbance. All three of these groups are present within the Little Thompson. The mayflies known from the Little Thompson are widely distributed and are typical of low elevation, low-flow streams. Five stonefly species are known from the Little Thompson River, a remarkable number for a Front Range stream of this size. It is likely that many of our Front Range streams historically supported similar fauna. Stoneflies are rarely encountered in Front Range streams at the distance from the foothills that they are in the Little Thompson. The lack of stoneflies in other streams is likely due to siltation, organic enrichment, and other human-induced modifications caused by urbanization. A recent study of streams in Boulder and Fort Collins determined that stoneflies have been extirpated from the small streams of these cities (Zuellig 2001). Additionally, researchers in Denver reported similar results (Alan Polonsky). One of the stonefly species in particular, *Mesocapnia frisoni* (Baumann and Gaufin 1970), is known from relatively few low elevation streams near the Southern Rocky Mountains of Utah, Colorado, and New Mexico and from Kansas and Texas (Baumann and Gaufin 1970, Opler and Kondratieff 1997). In Colorado, the species is only known to occur in the Little Thompson River. It likely that historically *Mesocapnia frisoni* was widely distributed in Colorado but it has undergone severe range reduction due to stream modifications associated with agricultural and urban development. Similarly, two species of caddisflies rarely encountered in Front Range streams, at distances from the foothills found in the Little Thompson

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(*Helicopsyche borealis* and *Oecetis inconspicua*), are known from the Little Thompson. It is highly likely that future surveys, if conducted during different seasons, will discover additional species as many life history attributes of the species involved inhibit detection during certain seasons. Because stoneflies distribute only via connected waterways, populations are unable to reestablish once local extirpation has occurred. Therefore, survival of *Mesocapnia frisoni* in Colorado is dependent upon the Little Thompson River population. The Little Thompson is considered a potential candidate for use as a reference stream to compare to other streams along the Front Range to assess regional stream health.

## Key Environmental Factors

*Mesocapnia frisonii*, plains stonefly, is a winter-emerging stonefly that spends its larval (immature) stage in sediments beneath and adjacent to the creek (hyporheic zone). Therefore, siltation of the creek could result in clogging these sediments resulting in extirpation of the stonefly from this reach.

## Climate Description

No Data

## Land Use History

Unfortunately little is known about the historic distribution of aquatic macroinvertebrates of this region prior to irrigated agriculture, which began in the 1860s. It is likely that the effects of urbanization on aquatic macroinvertebrates in the region are similar to the severe effects on the fishes.

## Cultural Features

No Data

## SITE DESIGN

Site Map Y - Yes

Mapped Date 10/21/2008

Designer Culver, D.R.

## Boundary Justification

The boundary encompasses the portion of the Little Thompson Creek above Meadow Hollow. This includes the portion of the creek known to support *Mesocapnia frisoni* as well as the cottonwood riparian forest.

Several private properties were visited during the fieldwork, however digital orthophoto quads were used to delineate the site boundary. The full areal extent of the stonefly population is not known and likely extends upstream from the known occurrence.

Primary Area 1,949.11 Acres

788.78 Hectares

## SITE SIGNIFICANCE

Biodiversity Significance Rank B4: Moderate Biodiversity Significance

## Biodiversity Significance Comments

This site contains a fair (C-ranked) and only known Colorado occurrence of a globally common (G5) but state imperiled (S1) plains snowfly (*Mesocapnia frisoni*). The global distribution of this species is not known. Currently it is documented to occur only in Colorado, Utah, and New Mexico (NatureServe2008). The *Populus deltoides* - (*Salix amygdaloides*) / *Salix (exigua, interior)* plains cottonwood riparian woodland is a globally vulnerable (G3G4/S3) riparian woodland that is in fair (C-ranked) condition. Historically, this plant community dominated the Great Plains riparian systems, but is now found in patches. The surrounding landscape has been utilized for agriculture and ranching for decades. The riparian corridor has been significantly affected by grazing impacts and introduction of non-native plants, several of which are on List A and B of the Colorado Noxious Weed List.

Other Values Rank V2 - High values

## Other Values Comments

Six fish species including creek chub (*Semotilus atromaculatus*), longnose dace (*Rhinichthys cataractae*), fathead minnow (*Pimephales promelas*), longnose sucker (*Catostomus catostomus*), white sucker (*Catostomus commersoni*) and green sunfish (*Lepomis cyanellus*) were documented in the Little Thompson on May 22, 2001. Results of this survey are similar to those conducted by the Colorado Division of Wildlife in 1982 and 1997. All species captured are native and common in streams along the Front Range corridor. Additionally, only a few fish out of several hundred captured showed signs of parasites or infection, indicating a healthy community. Creek chub were the most abundant species captured. Although common shiner is not known from the Little Thompson it is possible that it may occur in areas of the river that have not been investigated based on historical distributions. This state threatened species typically inhabits cool transitional zone streams in the South Platte Basin.

# Level 4 Potential Conservation Area (PCA) Report

Name Little Thompson River at County Line

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## LAND MANAGEMENT ISSUES

### Land Use Comments

The plant diversity and composition along the Little Thompson River has been modified during the long agricultural history of the area. The understory is dominated by smooth brome (*Bromus inermis*), a European pasture grass planted for grass hay, and by other non-native species including cheatgrass (*Bromus tectorum*) and whitetop (*Cardaria* sp.). Also present are native wetland plants including horsetail (*Equisetum arvense* and *Hippochaete* sp.), spikerush (*Eleocharis* sp.), and bulrush (*Schoenoplectus acutus*). The overstory includes native plains cottonwood (*Populus deltoides*) and many non-native trees including Siberian elm (*Ulmus pumila*), crack willow (*Salix fragilis*), and Russian olive (*Elaeagnus angustifolia*). Native shrubs present at low percent cover include coyote willow (*Salix exigua*) and snowberry (*Symphoricarpos* sp.).

### Natural Hazard Comments

No Data

### Exotics Comments

Leafy and myrtle spurge, diffuse and spotted knapweed, Canada and musk thistle, common and moth mullein, houndstongue, and dalmation toadflax were documented during CNHP's field survey in 2008.

### Offsite

The adjacent uplands are primarily agricultural or have recently been converted to residential use. The dominant grass in the area is smooth brome with other introduced, non-native pasture grasses. Vertebrate wildlife using the Little Thompson River and surrounding uplands include Red-tailed Hawk, Swainson's Hawk, Bald Eagle (winter), Great Blue Heron, black-tailed prairie dog, red fox, coyote, deer, beaver, and raccoon.

### Information Needs

No Data

## ASSOCIATED ELEMENTS OF BIODIVERSITY

<u>Element</u>			<u>Global</u>	<u>State</u>	<u>Driving</u>
<u>State ID</u>	<u>State Scientific Name</u>	<u>State Common Name</u>	<u>Rank</u>	<u>Rank</u>	<u>Site Rank</u>
17930	<i>Mesocapnia frisoni</i>	A Stonefly	G5	S1	Yes
24670	<i>Populus deltoides</i> - ( <i>Salix amygdaloides</i> ) / <i>Salix</i> ( <i>exigua, interior</i> ) Woodland	Plains Cottonwood Riparian Woodland	G3G4	S3	Yes

## REFERENCES

<u>Reference ID</u>	<u>Full Citation</u>
162738	Baumann, R.W. and A.R. Gaufin. 1970. The Capnia Projecta Complex of Western North America (Plecoptera: Capniidae). From the Transactions of the American Entomological Society 96: 435-468.
192692	Doyle, G.A., S.L. Neid and R.J. Rondeau. 2005. Final Report: Survey of Critical Biological Resources, Larimer County, Colorado. Colorado Natural Heritage Program, Fort Collins, CO.
192675	Kondratieff, B. C. and R. W. Baumann. 2002. A review of the stoneflies of Colorado with description of a new species of Capnia (Plecoptera: Capniidae). Transactions of the American Entomological Society 128(3):385-401.
195073	NatureServe. 2008. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <a href="http://www.natureserve.org/explorer">http://www.natureserve.org/explorer</a> . (Accessed: 2008 ).
195190	Neid, S., J. Lemly, K. Decker and D. Culver. 2009. Final Report: Survey of Critical Biological Resources in Boulder County 2007-2008. Colorado Natural Heritage Program, Fort Collins, CO.
162296	Opler, Dr. P.A., and Dr. B.C. Kondratieff. 1994. Status of special concern or sensitive species of Colorado Lepidoptera and aquatic insects. Completion report to Colorado Natural Areas Program, contract 530-854.
198275	Polonsky, A. ND. Unpublished Data. City of Denver.
158297	Zuellig, R.E. 2001. Macroinvertebrate and fish communities along the Front Range of Colorado and their relationship to habitat in the urban environment. M.S. Thesis. Colorado State University. 316 pp.

## ADDITIONAL TOPICS

### Additional Topics

Original site design by Doyle, G.A. 2001-06-26.

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## VERSION

Version Date 10/21/2008

Version Author Culver, D.R.

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