

# Arapahoe Snowfly



Parks & Open Space

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**Figure 1: Arapahoe snowfly (*Arsapnia arapahoe*) adult**  
*Capnia gracilaria*  
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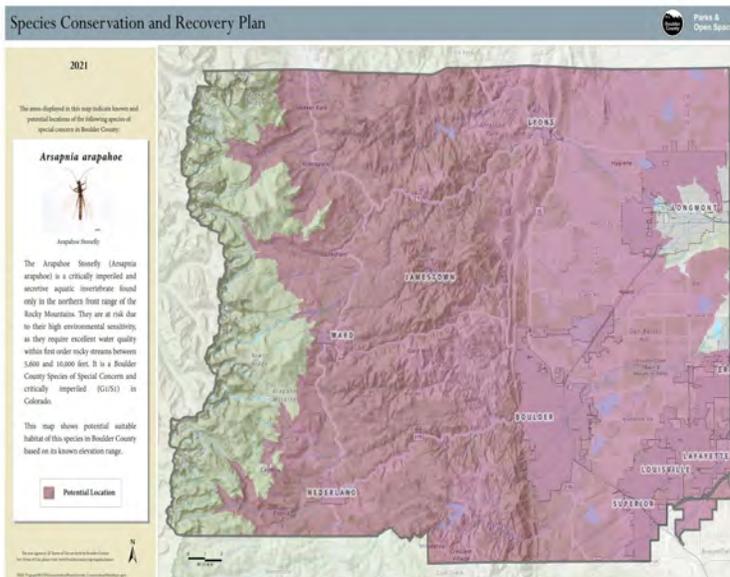
## Species Description

*Species:* Arapahoe snowfly (*Arsapnia arapahoe*)

Adults have a dark colored body, roughly 0.2 inches long. Wings are generally the same length as the body and fold back behind the abdomen. When in flight, they appear slow and clumsy.

*Habitat:* Arapahoe snowfly is primarily found in mountainous streams between 1<sup>st</sup> and 4<sup>th</sup> orders at elevations between 5,000 and 7,000 feet. Historically, they have been found in lower elevation perennial streams, but because of extensive development and changes to water regimes, these areas are typically no longer suitable. Within the streams, they prefer substrates of pebbles, cobble, and bedrock, in areas with vegetation comprised of cottonwood, willow, and box elder.

## Distribution & Range



## Background

The Arapahoe snowfly is a rare species of snowfly at risk due to its limited range to only 12 areas in Colorado, four of which are in Boulder County. High sensitivity to environmental changes puts snowfly populations at risk.

Note: As of 2019, this species was determined to be an F1 hybrid between two widely distributed taxa in areas of range overlap. While this genetic assessment lends clarity to this hybrid's origins, it should be noted that snowfly species overall are relatively rare, and good indicators of stream health. Conservation measures are therefore important to implement for the sake of these rare macroinvertebrates.

## Threats

*Climate change:* Arapahoe snowfly populations are highly sensitive to any environmental change, including increase in temperature because of climate change, wildfires and reduction of snowpack.

*Forestry practices:* The pesticide used to treat other invasive species like the mountain pine beetle has the same effect on other invertebrates like the Arapahoe snowfly especially when applied near streams.

*Habitat loss:* Construction of dams, culverts, and bridges prevents the dispersal of the Arapahoe snowfly into new streams.



**Figure 3** Arapahoe snowfly (*Arsapnia arapahoe*) adult

© Young, N.E., Fairchild, M., Belcher, T. *et al.* Finding the needle in the haystack: iterative sampling and modeling for rare taxa. *J Insect Conserv* **23**, 589–595 (2019). <https://doi.org/10.1007/s10841-019-00151-z>



**Figure 2** Arapahoe snowfly (*Arsapnia arapahoe*) adult  
Arapahoe snowfly. (Photo: Boris Kondratieff.)

## Management Considerations

*Habitat preservation:* Prioritize preservation of stream habitat and associated vegetation in areas of predicted occupancy based on habitat characteristics.

*Recreation:* Review new and existing trails adjacent to streams and emphasize buffer zones and reduce trail crossings.

*Forestry practices:* Control pesticide usage to minimize runoff into streams. Conduct forestry management practices such as thinning and controlled burns to counteract large wildfire and subsequent debris flows.

*Grazing:* Exclude grazing practices in occupied habitat.

Info on hybridization analysis for reference:

Young, Michael K.; Smith, Rebecca J.; Pilgrim, Kristine L.; Fairchild, Matthew P.; Schwartz, Michael K. 2019. Integrative taxonomy refutes a species hypothesis: The asymmetric hybrid origin of *Arsapnia arapahoe* (Plecoptera, Capniidae). *Ecology and Evolution*. 9: 1364-1377

**Disclaimer:** This summary is not a complete guide to conservation and/or recovery of the species. For more information, please read the full report on our website.

2021

The areas displayed in this map indicate known and potential locations of the following species of special concern in Boulder County:

## *Arsapnia arapahoe*



Arapahoe Stonefly

The Arapahoe Stonefly (*Arsapnia arapahoe*) is a critically imperiled and secretive aquatic invertebrate found only in the northern front range of the Rocky Mountains. They are at risk due to their high environmental sensitivity, as they require excellent water quality within first order rocky streams between 5,600 and 10,000 feet. It is a Boulder County Species of Special Concern and critically imperiled (G1/S1) in Colorado.

This map shows potential suitable habitat of this species in Boulder County based on its known elevation range.

