QUESTIONS AND ANSWERS FOR THE ARAPAHOE SNOWFLY 90-DAY FINDING

What are the conclusions of the U.S. Fish and Wildlife Service regarding the petition to list the Arapahoe snowfly?

The Service completed a 90-day finding on a petition to list the Arapahoe snowfly under the Endangered Species Act (ESA). After evaluating all of the scientific information described or cited in the petition and information readily available in our files, we concluded that the petitioners provided substantial information indicating that listing may be warranted. Therefore, we are initiating a full status review to determine if listing the species is warranted.

What is a 90-day finding?

A 90-day finding is an initial review to determine whether or not a petition presents substantial information indicating that listing might be warranted under the ESA, thereby necessitating a full status review of the species. The standard for "substantial information" is the amount of information that, when reasonably viewed in light of all information available in the petition and in our files, tends to show that the listing action may be warranted.

What specifically does the Service look at to determine if listing may be warranted?

We conducted an analysis of the information the petition provided regarding five factors specified in the ESA. The five factors include: (A) the present or threatened destruction, modification or curtailment of a species' habitat or range; (B) overutilization for commercial, recreational, scientific or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting a species' continued existence. The petitioners presented substantial information indicating that listing the Arapahoe snowfly may be warranted based upon factors A and E. Specifically, information regarding potential impacts from recreational use, grazing, spraying carbaryl to control the mountain pine beetle, roads, and small population size was substantial.

What does an Arapahoe snowfly look like?

The Arapahoe snowfly is a species of insect in the order Plecoptera (stonefly). Adults are dark-colored and have a body length and wing length of approximately 0.2 inch. The immature stage (nymph) has not been described.

How does an Arapahoe snowfly live?

The Arapahoe snowfly has a 1-year lifecycle that requires aquatic habitat while it is a nymph and terrestrial habitat as an adult. In late winter, adults emerge from beneath stream ice, fly upstream, and mate. Females detach an egg mass onto the water. The eggs hatch in early spring. As water temperatures rise, the nymphs burrow into the stream substrate and undergo a period of dormancy. When water temperature drops in late fall, the nymphs complete their development into adults.

Where do Arapahoe snowflies live?

The Arapahoe snowfly has only been found in two small tributaries (Elkhorn Creek and Young Gulch) of the Cache la Poudre River in the Front Range of the Rocky Mountains of Colorado. Both sites are on Forest Service lands. The species has not been found in Young Gulch since 1986, and may no longer occur at this site.

How many Arapahoe snowflies are there?

We do not know exactly how many Arapahoe snowflies exist, but during surveys on Elkhorn Creek conducted from 2007-2009, only 5 of the 500 snowflies in that genus (*Capnia*) that were collected were Arapahoe snowflies. Therefore, the species appears quite rare at its only known location.

Why should we care about the Arapahoe snowfly?

Many details regarding the life history of the Arapahoe snowfly are not yet known because it is inconspicuous and lives most of its life either in the stream substrate or under the ice. However, stoneflies typically require clean, cold, well-oxygenated streams or rivers. They are very sensitive to pollution. Therefore, their presence can be an indication of a healthy stream ecosystem.

Does recreation affect the Arapahoe snowfly?

Both Elkhorn Creek and Young Gulch are popular with hikers, mountain bikers, horseback riders, cross-country skiers, and campers. Both streams have associated trails that cross the streams many times. Trail usage can cause erosion that leads to sediment deposition in the stream. This sediment can clog the pore spaces in the stream substrate, which degrades the habitat required by Arapahoe snowfly nymphs. Trail usage can also result in fecal deposition from humans, dogs, and horses, which can cause algal blooms and reduce the concentration of dissolved oxygen in stream water. Stoneflies require high levels of oxygen in the water. Consequently, the Arapahoe snowfly may be adversely affected by reduced concentrations of dissolved oxygen. A growing local human population and a newly expanded parking area at Elkhorn Creek indicate that recreational usage of these areas is likely to increase in the future.

Does grazing affect the Arapahoe snowfly?

There are three active grazing allotments in the Elkhorn Creek watershed, including one directly upstream from known Arapahoe snowfly habitat. Cattle favor riparian habitat and can increase soil erosion and fecal deposition into streams, causing effects similar to those caused by recreational activities.

Does spraying insecticide affect the Arapahoe snowfly?

In recent years, outbreaks of mountain pine beetles have killed millions of trees in Colorado. In an effort to control these outbreaks, the Forest Service is spraying an insecticide known as carbaryl in the Elkhorn Creek watershed. Carbaryl can be deposited in streams via aerial drift or runoff from adjacent uplands. Carbaryl is very highly toxic to aquatic invertebrates, including stoneflies. In a healthy population, unaffected insects living upstream could compensate for any mortality, but a species with a very small range, such as the Arapahoe snowfly, could potentially be extirpated.

Do roads affect the Arapahoe snowfly?

The construction, use, and maintenance of roads can result in increased erosion into nearby streams. We are not aware of any roads in the Young Gulch watershed, but in the Elkhorn Creek watershed, there are at least 5 stream crossings. The U.S. Forest Service has concluded that roads and trails are causing increased run-off and erosion into Elkhorn Creek, which places the watershed at risk.

Does having a small population size affect the Arapahoe snowfly?

The Arapahoe snowfly apparently has a small population size and limited distribution. This makes the species more vulnerable to extinction from impacts caused by known stressors such as recreation, grazing, spraying insecticide, and roads. Unexpected natural catastrophes such as flood, fire, and drought could also extirpate the species.

What other factors may affect the Arapahoe snowfly?

Other potential stressors include tree thinning, controlled burns, dewatering, septic systems, barriers to dispersal, regulatory mechanisms, and climate change. However, there was not enough information available to conclude that these stressors were likely impacting the Arapahoe snowfly.

Why do the conclusions of this 90-day finding differ from an earlier 90-day finding published in 2009?

In 2009, we published a 90-day finding for 165 species, including the Arapahoe snowfly, which were part of a 206 species petition. We concluded that substantial information was not available indicating that listing may be warranted for those 165 species. The 206 species petition did not adequately describe potential threats or link those threats to potential impacts to the species. The current petition provides more detailed information regarding potential threats and their likely impact on the Arapahoe snowfly.