October 15, 2007

The U.S. Fish and Wildlife Service should take immediate action to emergency list the Sacramento Mountains checkerspot butterfly [*Euphydryas anicia cloudcrofti* (Ferris and Holland 1980)] as federally endangered due to immanent, new threats of aerial spraying to control the native Janet fir looper, *Nepytia janetae*, by the Village of Cloudcroft and Otero County on City, County, and private lands within the butterfly's habitat. The Sacramento Mountains checkerspot butterfly is an extremely narrow endemic, found only in mountain meadows between 7900 and 9000 feet within a 6 mile radius of the Village of Cloudcroft. The substance to be sprayed is a genetically engineered bacterium, *Bacillus thuringensis* var. *kurstaki*, (Btk) with the commercial name of Foray 48B. Ordinary *Bacillus thuringensis* (Bt) is a common bacterium, naturally found in the air and soil. When Bt is genetically modified to create the variety, *kurstaki*, it becomes toxic to Lepidoptera (all butterflies and moths). If Lepidoptera ingest it they die.

Currently, the Village of Cloudcroft and Otero County plan to spray Btk in an adhering substance laced with glucose, benzoic acid, water, and other thickening, sticking, and stabilizing "inert" ingredients from a helicopter over the areas known to contain the fir looper. The goal of the spraying is to reach as much plant surface as possible to kill looper larvae feeding on fir and spruce tree species. We are concerned about the fate of the Sacramento Mountains checkerspot butterfly and all other active Lepidopteran larvae in the vicinity (up to 2000 moth and butterfly species inhabit the Sacramento Mountains – approximately 140 butterflies and 1860 moths) because the substance to be sprayed is designed to kill feeding larvae of ALL members of the order Lepidoptera.

The threat is compounded because the area slated to be sprayed is in the heart of the butterfly's restricted global range. Many of the lands in the Village and the County are adjacent to and surrounding meadows currently occupied by actively feeding larvae of the Sacramento Mountains checkerspot butterfly. Of the meadows that currently are occupied by the Sacramento Mountains checkerspot butterfly, all fall within the 6 mile radius of Cloudcroft and larvae in those meadows will be fatally impacted by the Btk spraying. These meadow complexes occupied by the butterfly in the spray zone currently contain the highest numbers of individual butterflies and represent the majority of the entire population of this rare butterfly species.

After several years of severe drought in the Sacramento Mountains, Sacramento Mountain(s) butterfly populations are in the process of making a comeback, as indicated by the above average numbers of adults this summer, including the number of larval tents and larvae observed this fall. This increase is in response to the moister conditions over the past year. This period of the life cycle of the butterfly species is critical because the larvae are consuming as much plant material as possible in order to store energy and endure the winter. Given that this is a feasting phase for the larvae, prematurely spraying Btk before the larvae go into a diapause state (their winter hibernation period brought on by colder, shorter days) has the potential to wipe out most of the population in a life phase where they are most vulnerable to a biological control agent such as Btk.

The U.S. Fish and Wildlife Service and the U.S. Forest Service, who have been monitoring the status of the butterfly, are aware that the looper populations have a boom and bust population cycle and are right now far into the declining phase of this cycle.. It is apparent to biologists that the spraying may not even be necessary and could possibly wipe out the natural predators of the looper (typically parasitoid wasps or flies that consume eggs or larvae) as predator populations build to help eradicate the looper. Despite understanding the futility of spraying, the Forest Service has agreed to assist with spraying using guidelines provided by the Fish and Wildlife Service in order to demonstrate their willingness to work with the local community. Although these federal agencies have recommended conducting looper spraying only when the Sacramento Mountains checkerspot butterfly larvae will be inactive and in diapause, the Village of Cloudcroft and Otero County are planning to spray when the Sacramento Mountains checkerspot butterfly is still actively feeding, thereby endangering the species.

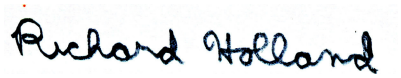
The Village of Cloudcroft and Otero County claim that they are employing spatial buffers recommended by the Fish and Wildlife Service to protect the occupied meadows. Yet, Btk has the capacity to reach the butterfly in several ways: 1) aerially as it lands on host plants within a week after the spraying; 2) through dermal contact in the soil, as it can remain in soil for up to a year; 3) as it is taken up systemically by host plants from contaminated soil and water, with possible detrimental effects to larvae consuming these plants; 4) as Btk potentially conjugates with Bt genes naturally occurring in meadows, transferring genes between bacterial strains with the possibility of replication throughout the soil of the genetically modified genes causing death to larvae. Additional synergistic or additive effects of Btk in the environment are not fully understood and could further threaten the Sacramento Mountains checkerspot butterfly and all other butterflies and moths in the community.

On a final note, spraying Btk has even wider consequences than the chance of devastating populations of the Sacramento Mountains checkerspot butterfly. We believe the Village of Cloudcroft and Otero County are pushing for spraying Btk for the fir looper without a full awareness of impacts to human and ecosystem health and the tourism industry. Skin, eye, upper respiratory tract, and gastrointestinal irritations have developed in some people, as well as aggravation of asthma, allergies, and incidence of miscarriages, when exposed directly to Btk spray or large spray deposits (Watts 2003). Effects to humans from the "inert" ingredients include: contact dermatitis, eye and respiratory sensitivity, anaphylaxis, abdominal pain, diarrhea, and overall hypersensitivity and irritation (Watts 2003). Ratinhalation studies of Btk and its inert ingredients demonstrated adverse effects at all doses studied (Watts 2003). Furthermore, failure to find neurological and autoimmune impacts does not necessarily mean that they could not exist in some people, particularly infants, the elderly, those with weakened immune systems, and chemically sensitive people. New Mexico is known for its areas of uncontaminated natural beauty, such as those found in the Sacramento Mountains. As the public learns more about the potential effects of Btk, families may be less inclined to bring their children to explore a forest tainted needlessly by a genetically engineered bacterium with unknown consequences.

Environmentally, spraying Btk can directly wipe out beneficial pollinators and indirectly eliminate predatory insects that play roles in maintaining ecosystem function. Beyond the aesthetic value of communing with beautiful butterflies and moths in one's garden, these insects are pollinators as adults and help maintain floral diversity in the landscape. A decline in attractive insects and flowers would not boost the tourism industry in Otero County. Moreover, parasitoids that naturally prey on loopers have faster life cycles than their looper hosts or prey. If the looper is suddenly, artificially wiped out just when the parasitoid populations are growing, the parasitoid populations could crash before they have a chance to reproduce. If maintenance of these parasitoids is not allowed, these beneficial predators could be entirely lost, leaving residents with the problem of having to spray permanently. Lastly, application of Btk can contaminate open water sources and be transported into water tables and downstream within watersheds. Potable water sources are extremely valuable at the top of the Sacramento Mountains and the lack of water availability has forced the Village of Cloudcroft to adopt a program of recycling sewage into gray water, indicative of the extreme value of water atop this mountain community.

We request the Sacramento Mountains checkerspot butterfly be emergency listed to postpone or prevent the spraying of Btk in the butterfly's habitat, to save the genetic diversity in butterfly populations potentially impacted from spraying, and to ensure the survival of the butterfly. As immediate, cumulative, and long term effects from spraying Btk are unknown, it is best to select an approach that will do the least amount of harm to not only this unique butterfly species, but also to other Lepidoptera, human residents, and the ecosystem as a whole.

Sincerely,



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