Insecticide found to have dramatic impact on local rivers

"Keeping that away from the river is going to be a very important thing for the future"

[BY SETH MENSING]

Sometimes, the trick to bringing people back to Gunnison County in the summer is to give them just enough nature, but not too much. Being swarmed by mosquitoes at the peak of the season is about where the line gets drawn. But a seasonal campaign against the biting little beasts, using an insecticide mist around waterways where mosquitoes tend to be, has come with some serious consequences.

Shortly after Colorado Mosquito Control applied the permethrin-based BioMist insecticide in areas around the county in early July, Mark Day of Almont Anglers and others noticed a massive die-off of aquatic insects in the Gunnison River.

The most obvious insect to be killed in the attempt to control the mosquitoes was *Claassenia sabulosa*, a stonefly that lives in the riverbed for two to three years before emerging to mate and lay eggs.

That emergence generally takes place between late July and early August, when Western State Colorado University aquatic biologist Kevin Alexander, Ph.D., had a chance to survey the number of adults making their way to the water's edge.

The stonefly "crawls up on rocks next to the stream, so I can go and count those easily," Alexander said. "There are probably a whole lot of other insects that got killed, but that stonefly was one that I could measure reasonably easily."

In several areas between Almont and Cooper's Ranch on the Gunnison River near Blue Mesa Reservoir, Alexander stopped to count the number of stonefly exoskeletons, or shucks, left behind on rocks by the emerging adults, and a pattern quickly became clear.

"Upstream of about County Road 10 (by the Way Camp sign), we were getting 10 to 15 stoneflies per rock in good habitat. When we got below about North Bridge (just past Garlic Mike's) to about McCabe's, we were getting only about one or two stonefly shucks in good habitat," he said. "Then when we got down to Cooper's and Neversink, we were up to about five or six stoneflies per rock in good habitat."

Alexander doesn't think the fluctuation in the number of stoneflies found throughout the river is solely related to the pesticide spray, but it's clear there was a definite impact.

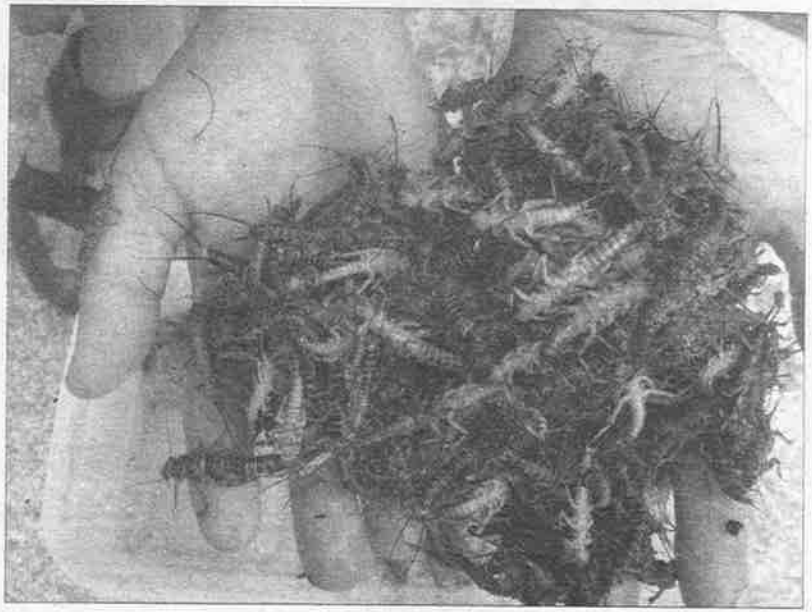
"Now is all that change strictly because of the mosquito spraying? Probably not. There's likely some other stuff going on with issues with town and habitat and things like that, but certainly not to that degree," Alexander said.

But the effects of the die-off will be felt in years to come, since it was clear the stoneflies were affected and they play such a vital role to the stream's ecology. "That is the top invertebrate carnivore in the stream. As many as there were dead, we're talking about a decline in the number of macro invertebrates well into the future," Alexander said. "It's not necessarily going to make trout sick or kill trout, but the functioning of the Gunnison River system is certainly going to be altered."

And while it was obvious that the stoneflies were heavily affected by the insecticide because of their size, smaller aquatic invertebrates that also fill an important niche in the streams were equally affected, Day said.

Permethrin is a neurotoxin that readily kills any insect it comes in contact with. The labeling for BioMist clearly says, "This pesticide is extremely toxic to aquatic organisms, including fish and aquatic invertebrates. Runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to fish and aquatic invertebrates. Do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body."

Day says the insecticide is illegal to use in several states and 11 counties in Colorado. He's hoping Gunnison County quickly adds itself to the list. Even the regulations for the use of the pesticide have been adjusted to require a 450-foot setback from water bodies, as opposed to the 100 foot setback previously in place.



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Gunnison County manager Matthew Birnie says no petitions have been turned into the county, but added application timing and setback had already been discussed with Colorado Mosquito control.

"Certainly we have a pretty well documented insect kill here," said Day, noting the substance that entered the Gunnison River had a "pretty strong" effect upon the system.

"Keeping that away from the river is going to be a very important thing for the future, so keeping the aerial application away from the Gunnison River is a high priority," continued Day. "I've talked to the Colorado Mosquito Control guys and they don't want [the unintended consequences] either."

Day says the Gunnison Board of County Commissioners would review the situation in December, perhaps deciding on the pesticide's future use in the county.

"Remember, everything flows downstream, and in this instance something can be done and we can help protect not only our residents and their jobs, but the ecosystem as well," Day wrote in an email to colleagues and members of the media. "If we do not protect our resources, they will not be here for our future generations, and as someone who is lucky enough to call Gunnison home we need to work together to ensure that this beautiful valley stays this way."