Pollinator Stewardship Council
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United States Department of Agriculture
Animal and Plant Health Inspection Service
Dr. Jim Warren, Environmental Protection Specialist
Environmental and Risk Analysis Services, Policy and Program Development
Regulatory Analysis and Development, PPD,
APHIS, Station 3A-03.8
4700 River Road Unit 118,
Riverdale, MD 20737-1238

Re: APHIS grasshopper and Mormon cricket suppression activities, APHIS-2016-0045-0001

Dear Dr. Jim Warren,

The Pollinator Stewardship Council welcomes the ability to comment on the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) to suppress rangeland grasshopper populations in 17 Western States: Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.

The Pollinator Stewardship Council finds your suppression proposal narrowly focused, and pre-determined to favor narrow action. The proposed applications of highly toxic pesticides, labelled deadly to beneficial insects that protect crops from pest insects is contradictory to promoting the health of managed and native pollinators. Your document states "The best grasshopper management strategies are preventative in nature and are long-term efforts that are designed to head off, rather than combat, outbreaks."

Your document's Table of Contents lists "Alternatives Considered but not Included in this EIS." This implies a pre-determined pest outbreak control, heavily focusing upon synthetic chemical control only. All of the pesticide chemicals proposed by APHIS are labelled bee toxic pesticides. These pesticides will impact honey bees and native pollinators, killing generations of pollinators, and other beneficial insects.

The APHIS document clearly states, "Nearly 400 species of grasshoppers are known to inhabit 17 Western States (Pfadt, 2002). Although as many as 15 to 45 grasshopper species may be found in an area, only about a dozen species cause economic damage to rangeland, grasses, and surrounding crops (Appendix A)." However, what is the economic damage to the honey bee industry, as well as the loss of pollination services to pollinated plants (and therefore the crop yield) when these bee toxic pesticides are used? Control of one type of insect, impacts all insects, and those mammals and avian species that feed on insects. The narrow concern of economic loss to rangeland also does not consider other agricultural stakeholders' economic losses. In trying to control a pest for one stakeholder, economic loss is caused to another stakeholder.

APHIS cannot rely on State Pollinator Plans (MP3s) or state registrations of beekeepers as the former carries no enforceable language and the latter does not exist in every state. FieldWatch, an online crop and honey bee registry, only exists in seven of the 17 states which will be impacted by grasshopper and cricket controls: California, Colorado, Kansas, Nebraska, Montana, New Mexico, and South Dakota (https://driftwatch.org/map). Relying on state registries of beekeepers for notification has not been proven to protect honey bees and the beekeeping industry. Never addressed in the "48 hour notification of beekeepers to move bees away from pesticide applications," is where beekeepers are to move their bees so they can continue to "graze?" Once the majority of crop pollination has concluded each season, more than 500,000 managed bee hives move to the Montana, Nebraska, North and South Dakota areas to graze the landscape and make a honey crop. Your proposed grasshopper and cricket controls will severely impact one third of the commercial honey bees used for crop pollination.

According to your document, the life cycle of the grasshoppers and crickets occurs across temperature ranges and the growing season. Therefore, in order to control grasshoppers and crickets at every life stage, which spans the bloom periods of pollinator attractive plants, you propose applying the bee toxic pesticides Carbaryl, Chlorantraniliprole, Diflubenzuron, and Malathion across spring and summer which will also kill managed and native pollinators and other beneficial invertebrates. The APHIS Impact Statement acknowledges the damages these pesticides will cause to plants, seed dispersal, pollination, and beneficial invertebrates, but continues to promote the singular remedy of pesticide application.

The APHIS Environmental Impact Statement dedicates two pages to "alternative" methods to control outbreaks. As the document stated, "The best grasshopper management strategies are preventative in nature and are long-term efforts that are designed to head off, rather than combat, outbreaks."

Preventative management strategies are cost effective for all stakeholders, from farmers and ranchers, to policy makers. As a strategy the alternatives should be promoted for the long-term. The use of *Mycoinsecticides and Microsporidia is a long term strategy to reduce outbreaks.* However, adding diflubenzuron to increase the "efficacy" is still problematic for pollinators. Insect growth regulators placed in the ecosystem for one insect, regulate the growth of beneficial insects. The loss of 80,000 colonies of honey bees during almond pollination in 2014 due to a mix of fungicide and insect growth regulator was real-world science that was devastating to beekeepers. As responsible land managers, USDA-APHIS cannot continue to release a chemical into the ecosystem when the "mechanism by which diflubenzuron increases efficacy of fungal pathogens is not well understood." If the "mechanism" is not well understood, more research needs to be conducted before releasing the mechanism into the environment.

The control of grasshoppers and crickets should be a long-term strategy, and while *Mycoinsecticides* may act slowly, they are a better tool for control of grasshopper pests in the long run. Costs will be reduced when solutions are applied less often. Temperature affects all controls, as well as outbreaks of pests. We cannot place the ecosystem in more and more jeopardy, due to a desire for inexpensive, short-term, short-sighted mechanisms for pest control, as in total it will cost more. It will cost more in the lives of beneficial insects. It will cost more in reduced vegetation growth and reproduction. It will cost more money due to repeated chemical applications. One solution, in this case pesticide application, is not the sole solution for all geographic areas, climate, crops, wild lands, and the 400 species of grasshoppers and the Mormon cricket across these seventeen states. While the Mormon cricket may be more difficult to control with biologicals, APHIS has dismissed these two alternatives and has not promoted Integrated Pest Management practices.

"The results for the GIPM program have been provided to managers of public and private rangeland and are available at: www.sidney.ars.usda.gov/grasshopper/index.htm. The website provides information on ways to manage grasshopper populations in the long-term, such as livestock grazing methods and cultural control by farmers. In addition, APHIS issued the GIPM User Handbook, available at the following website: https://www.sidney.ars.usda.gov/grasshopper/Handbook/index.htm. The handbook covers biological control, chemical control, environmental monitoring and evaluating, modeling and population dynamics, rangeland management, decision support tools, and future directions."

While, IPM has had "varying success in rangeland management, and some have been associated with the prevention, control, or suppression of harmful grasshopper populations on rangeland," your document negates this solution stating "landowners may apply labeled insecticides that the Program does not use which could result in increased risk to the environment." The fear of a landowner misusing a product is not a reason for APHIS to promote their use of a pesticide across the ecosystem. That fear implies farmers and ranchers are not using pesticides per the label.

The 2006 paper, *Sustainable management of insect herbivores in grassland ecosystems: new perspectives in grasshopper control* by USDA researcher David H. Branson presents the "fundamental problem in the current approach to managing grasshoppers is the reliance on an inappropriate conceptual model as a basis for understanding grasshopper population dynamics." Concerning the use of insecticides for grasshopper control Branson exclaims the "comprehensive economic models suggest that traditional insecticide control programs for grasshoppers are cost-effective only under very restrictive conditions (Hewitt and Onsager 1983, Onsager and Olfert 2000). New chemical agents and application practices to reduce application rates of active ingredients rarely reach beyond benefit—cost ratios supporting economic justification for treatment (Onsager and Olfert 2000)."

"A paradigm shift regarding the conceptual framework underlying grasshopper population dynamics and management tactics is needed to encourage alternative approaches. The underlying conceptual basis of grasshopper management can be viewed as a three-tiered system of outbreak prevention, intervention, and suppression." (Branson 2016)

1. Prevention can be sustainable, both economically and environmentally.

2. "Preventative approaches have the potential to be effective in preserving the biodiversity that can have beneficial effects on a variety of ecological processes (Joern 2000)."
3. "Preservation of biodiversity inherently maintains organisms that act as naturally regulating agents.

It is important to *prevent* an outbreak of crickets and grasshoppers, instead of suppressing an outbreak. Control comes from quality land management wherein prevention is the key to preserving biodiversity which in turns preserves the ecosystem. Paraphrasing Branson, prevention is the critical first step.

Branson, et al, *"argue the goal of sustainable and preventative management of grasshoppers is feasible and holds great promise. First, it is not necessary to understand all biotic and extrinsic interactions in the near term. Instead, we simply need to find complementary grassland management techniques that slow nymphal development, reduce survival and reproduction, or simply decrease year-to-year variability in those life history characteristics. Such approaches will greatly decrease the likelihood of grasshopper outbreaks. Second, the immediate effects of management tactics need not be dramatic to bring about large reductions in pest densities. Onsager (1987) demonstrated that because of their cumulative nature, small changes in mortality and development rates can result in large differences in grasshopper densities over the course of a season, and subtle adjustments in such rates through management activities appear feasible. Third, for a given type of habitat management, the same underlying ecological mechanisms are likely to interact in largely predictable ways. A challenge will be to understand how differences in weather among sites influence the action of underlying mechanisms. Comparative research is needed on habitat management practices and the underlying ecological processes across a range of ecosystem types. Finally, researchers and managers must pay additional attention to the many facets of range management in addition to pest insect management. As suggested by Fuhlendorf and Engle (2004), we need to develop rangeland management strategies that simultaneously benefit multiple objectives by searching for ecological indicators that serve many functions. Grasshopper outbreaks are an intermittent, cyclical problem, and no one will manage rangeland with the primary goal of reducing grasshopper outbreaks. Rather, we must develop mutually beneficial rangeland management strategies that minimize pest outbreaks and promote biodiversity while satisfying the needs of the grazing industry."*

Conclusion

"The best grasshopper management strategies are preventative in nature and are long-term efforts that are designed to head off, rather than combat, outbreaks." The Pollinator Stewardship Council encourages the USDA-APHIS to re-evaluate the alternative methods for grasshopper and cricket control. Control of these rangeland pests can be obtained through prevention. Habitat manipulation to improve grassland conditions, increasing plant production, "increasing plant biodiversity, and improving economic benefits for ranchers" and similar land management objectives, excluding chemical pesticides, are compatible with grasshopper and cricket management.

Sincerely,

Michele Colopy, Program Director

References

Draft Environmental Impact Statement, Rangeland Grasshopper and Mormon Cricket Program Environmental Assessments, USDA-APHIS, December, 2018, https://www.aphis.usda.gov/plant_health/ea/downloads/2018/rangeland-grasshopper-mormon-cricket-draft-eis.pdf

University of Notre Dame. "Clues about grasshopper population explosions." ScienceDaily. ScienceDaily, 27 February 2011. www.sciencedaily.com/releases/2011/02/110225142832.htm

Carbaryl, Fact Sheet, National Pesticide Information Center, http://npic.orst.edu/factsheets/carbarylgen.html

Malathion,Fact Sheet, National Pesticide Information Center, http://npic.orst.edu/factsheets/malagen.html

Chlorantraniliprole, Pesticide Fact Sheet, Environmental Protection Agency, https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-090100_01-Apr-08.pdf

Diflubenzuron, Extension Toxicology Network, Pesticide Information Profile , http://pmep.cce.cornell.edu/profiles/extoxnet/dienochlor-glyphosate/diflubenzuron-ext.html

Sustainable Management of Insect Herbivores in Grassland Ecosystems: New Perspectives in Grasshopper Control, David H. Branson, Anthony Joern, and Gregory A. Sword, Bio Science, September 2006, Vol. 56 No. 9, https://academic.oup.com/bioscience/article/56/9/743/262934