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ESA Comments to Pollinator Task Force

The Entomological Society of America (ESA) would like to thank you for your leadership of the Pollinator Health Task Force and for the opportunity to provide comments. ESA applauds federal efforts to understand and mitigate declining native pollinator populations. We greatly appreciate the high-level recognition of the importance of pollinator health by the Administration, and we thank the interagency Task Force for working collaboratively on this challenge. ESA looks forward to learning the details of the forthcoming National Monitoring Plan for Native Bees and would welcome the chance to partner with the Pollinator Health Task Force and offer assistance with the release and implementation of the plan.

Tackling this multifaceted, complex problem requires a large-scale, multidisciplinary, nationwide effort that encompasses fundamental research on pollinator biology, applied research on sustainable pollinator, horticultural, and pest management practices, and active communication with the broader scientific community, stakeholders, policymakers, and the general public. The Entomological Society of America is in a unique position to inform this discussion because our society comprises academic, industry, and government researchers, educators at public and private institutions, strong private-sector partners, and a broad range of stakeholders committed to the future of pollinators and of sustainable communities of both wild and cultivated plants.

In response to the questions posed on the Federal Register Docket USDA_FRDOC_0001, Document Number 2017-11554, ESA submits the following comments.

Why is a national monitoring plan for native bees important?
Among more than 100,000 species of animal pollinators, the world's 20,000-plus species of bees are collectively the most important providers of pollination services to flowering plants. Populations of many managed and wild bee species are in decline in the U.S. and worldwide. Declines of managed populations of honey bees (*Apis mellifera*) have been monitored most closely, with U.S. beekeepers losing an average of 30% of their colonies each winter over the past decade. Honey bee declines have been associated with numerous factors, including parasites, pathogens, agrochemical use, and habitat loss and land fragmentation. Wild pollinator populations are more difficult to monitor, but several species show evidence of widespread loss. For example, approximately half of studied U. S. and European bumble bee species have declined in abundance; for several of these species, parasites, pathogens, agrochemical use, and habitat loss and land fragmentation are contributing factors, just as they are for managed bee species. Managed honey bees contribute more than $17 billion annually to crop and seed production in the U.S. alone, but wild bees contribute additional billions of dollars in pollination services; thus, in addition to concerns about plant biodiversity in natural communities, there are significant economic considerations relevant to the development of a national plan for monitoring native bee populations.

What kind of information/data is needed and how will this information be used?
To understand and mitigate the threats to wild pollinator populations, it is necessary to characterize the long-term dynamics of multiple pollinator species in relation to management practices, land use, pathogen and parasite dynamics, invasive species, and climatic and environmental variation. The development of new tools for monitoring and modeling both population dynamics and effects of

different stressors can greatly facilitate achieving this objective, as can coordinating these efforts on a nationwide scale.

Specifically, ESA recommends the following topics be studied to assist in understanding and monitoring the factors affecting native bee populations:

- Research on bee nutrition, including determining the basic nutrient requirements of different bee species, the nutritional composition of pollen from different floral sources, the contributions of floral diversity to bee health, and the effects of environmental contaminants on the food quality of nectar and pollen, could lead to new recommendations for land management practices that could improve native bee health.

- Increasing research and training opportunities in the systematics and classification of native bees will improve monitoring efforts and facilitate development of rapid and reliable identification tools to broaden participation in monitoring efforts.

- Land use research could help determine the benefits of leaving more uncultivated refuges for wild plants, to increase flowering plant biodiversity and the quality of pollinator diets throughout the growing season.

- Research on nesting requirements will help to identify plant species, soil attributes, and other landscape features that attract and support native bees.

- Pesticide research could provide insight into how different agrochemicals, including fungicides, insecticides, and herbicides, affect wild pollinators, and whether their effects are compounded when combined with each other and with other stressors.

- Research on the microbiomes of native bees – the specialized and predictable communities of symbiotic bacteria present in the guts of bees –can enhance understanding of how these bacteria contribute to bee health and whether responses of these microbial communities to environmental stresses adversely affect the status of the bee host.

Thank you again for the efforts of the Pollinator Health Task Force and for providing the opportunity to provide comments. For more information about ESA, please visit http://www.entsoc.org, and do not hesitate to contact ESA Executive Director David Gammel at dgammel@entsoc.org if we can be of assistance in any way as your work on this critical issue moves forward.

ESA is the largest organization in the world serving the professional and scientific needs of entomologists and individuals in related disciplines. Founded in 1889, ESA has more than 6,000 members affiliated with educational institutions, science agencies, private industry, and government.