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A full list of Coalition members is
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www.honeybeehealthcoalition.org

March 16, 2015

To: Pollinator Health Task Force and US Department of Agriculture
From: Honey Bee Health Coalition
Subject: Recommendations regarding actions to increase and improve forage and habitat for honey bees and other pollinators through USDA conservation programs, public-private partnerships, and research

On February 10, 2015, the Honey Bee Health Coalition (the Coalition) shared with the Pollinator Health Task Force (Task Force) and US Department of Agriculture (USDA) a set of draft recommendations regarding actions to increase and improve forage and habitat for honey bees and other pollinators through USDA conservation programs, public-private partnerships, and research. Coalition members appreciated the opportunity to discuss these draft recommendations with USDA and EPA representatives during a conference call on February 13, 2015; we thank all who attended and provided feedback. As a follow-up to that discussion, the Coalition has prepared and attached our final recommendations for submission with this letter today. In this letter, we address key discussion points from the call and invite continued discussion and collaboration.

The Coalition is a broad, diverse public-private partnership that brings together beekeepers, growers, researchers, government agencies, agribusinesses, conservation groups, manufacturers and brands, and other key partners to improve the health of honey bees and other pollinators (a full list of members is found at www.honeybeehealthcoalition.org). On the February 13th call, USDA representatives asked whether these recommendations have the buy-in of the various members. The answer is yes. The Coalition recommendations have been developed with input and review from our Forage and Nutrition Working Group and Steering Committee. We believe that the unique, consensus-based nature of these recommendations reflects the importance of their implementation to a wide variety of stakeholders.

The Coalition shares the strong interest of the President, the Task Force, and USDA on topics related to honey bee forage and nutrition, including a commitment to identify and implement ‘strategies for developing affordable seed mixes, including native pollinator-friendly plants, for maintenance of honey bees and other pollinators,’ to ‘substantially increase both the acreage and forage value of pollinator habitat in the Department [of Agriculture]’s conservation programs, including the Conservation Reserve Program,’ and to encourage ‘the use of conservation practices that benefit native and managed pollinators, including, to the extent practicable, practices that maximize benefits for honey bees.’ (Presidential Memorandum – June 2014 and 2014 Farm Bill).

Coalition members recognize and applaud recent and current efforts to improve honey bee and pollinator habitat through USDA conservation programs. However, **our recommendations highlight key areas for improvement that the Coalition believes are necessary to ensure that these programs succeed in increasing the quality and quantity of pollinator forage and habitat.** As we discussed, several of the recommendations are complementary and interdependent. For example, increasing the diversity and nutritional quality of seed mixes used in USDA programs requires a robust, expanded eligible species list and an increase in the minimum number of species required in seed mixes. Cost-effectiveness and impact also depend on appropriate calculation of seeding rates using PLS per square foot rather



than PLS pounds per acre, as detailed in our recommendations. The Coalition also urges research to support better understanding of forage quality. Finally, the success of the conservation programs ultimately depends on effective landowner outreach and improved capacity at the local level to address enrollment requests.

USDA representatives noted on the call that many of these recommendations are already under consideration or, in some cases, are in the process of being implemented. We recognize and appreciate this; in fact, ***all of our recommendations are already in place within USDA in some states. However, they are not in place in many of the geographies identified as most important for honey bees and other pollinators. The Coalition thus urges faster action in order to implement key changes that will substantially improve honey bee and pollinator forage through USDA conservation programs in all states.***

It was also discussed by USDA during the call that many decisions are made at the state level, and that State Technical Committees provide an avenue for engagement on state-by-state conversations. While recognizing the structure of the Natural Resources Conservation Service (NRCS) and its state-level approach, the Coalition urges the need for centralized conversations and actions on critical issues impacting all states – particularly those identified as most important for honey bees and other pollinators and where many of the Coalition’s recommendations are not in place. At the national level, NRCS, FSA and USDA have an important role to play in helping to initiate discussions in key states and among stakeholders to address these recommendations. ***To this end, the Coalition would welcome the opportunity to present its recommendations to State Conservationists, and would appreciate assistance at the national level to coordinate and schedule such a presentation – either during the Conservationists’ regular monthly call or at another time.***

The Coalition also would like to emphasize its sincere interest in continued dialogue with the Task Force and with USDA. Currently, representatives of U.S Environmental Protection Agency (EPA), USDA Agricultural Research Service (ARS), and USDA Office of Pest Management Policy (OPMP) participate in an *ex officio* capacity within the Coalition. The Coalition encourages USDA NRCS, Farm Service Agency (FSA), and National Institute of Food and Agriculture (NIFA) to also participate and help all partners build multi-stakeholder solutions for bee forage. We also welcome collaboration through a dedicated private-public working group. Our existing Coalition Forage and Nutrition Working Group could incorporate new representation or a separate forum could be established. In all cases, we are familiar with Federal Advisory Committee Act (FACA) and are confident that the collaboration we are proposing would not trigger FACA requirements as a barrier for engagement. Similarly, we are aware of privacy concerns associated with data sharing and believe that these can be addressed while still facilitating important information exchange on lessons learned through various forage projects conducted by private and public entities. As a parallel example, NRCS has participated actively for many years as a member of Field to Market: the Alliance for Sustainable Agriculture. This participation advances collaborative, multi-stakeholder sustainability solutions and on-the-ground projects in a context that promotes partnership, information exchange, and continuous improvement without creating a formal, Advisory Committee context and while still protecting data privacy of landowners. ***The Coalition invites NRCS, FSA, and NIFA to each involve one or more representatives in the Coalition’s Forage and Nutrition Working Group.***



The Coalition would once again like to thank all who participated in our conversation on February 13, 2015, and would like to offer advance appreciation for consideration of these final recommendations. Coalition members share a common mission of promoting the health of honey bees and other pollinators, productive agriculture systems, and thriving ecosystems. We look forward to continued dialogue and future collaboration to support this mission, and hope that Task Force members and USDA will join us in accelerating collective impact through private-public partnership.

Please feel free to contact the Coalition's facilitator with questions, comments, or concerns. We look forward to the proposed meeting with State Conservationists as well as the addition of appropriate representatives to the Coalition's working groups. Please contact our facilitator to coordinate these arrangements:

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**Honey Bee Health Coalition
Recommendations to the Pollinator Health Task Force regarding
Actions to Increase and Improve
Forage and Habitat for Honey Bees and other Pollinators through
USDA Conservation Programs, Public-Private Partnerships, and Research**

March 2015

Executive Summary

The Honey Bee Health Coalition (the Coalition) appreciates the opportunity to provide the following recommendations to President Obama’s Pollinator Health Task Force (Task Force) regarding conservation programs, practices, partnerships and research that will benefit native and managed pollinators and maximize benefits for honey bees. These recommendations build upon those submitted by the Coalition to the Task Force in November 2014. The Coalition also welcomes the opportunity for continued and ongoing private-public dialogue and partnership on these topics.

The Coalition’s recommendations are summarized below. Additional detail, context, and rationale are provided following this executive summary.

1. Recommendations for Increasing the Acreage, Nutritional Value, and Affordability of Honey Bee Forage and Pollinator Habitat in US Department of Agriculture (USDA) Conservation Programs

The Coalition recommends that USDA – at the national and state level – take steps to allow more flexibility for seed species selection and preparation to improve and increase the quality and quantity of cost-effective honey bee forage on USDA conservation program lands. Specifically:

- A. When developing planting rate guidelines, eliminate the use of seeding rates for seed mixtures that are expressed as Pure Live Seed (PLS) pounds per acre. Use, instead, the more updated and appropriate PLS per unit area (e.g., PLS seeds per square foot). Further, where not already in use, adopt and use an approved USDA ‘Seed Calculator’ in creating balanced conservation program seed mixtures and determining appropriate mixture planting rates.

- B. Allow, at the national and state level, the use of a broader range of species adapted to a geographic area. Streamline approaches across national, state and county levels to encourage a greater consistency in allowance of introduced, non-invasive species. Eliminate geographic restrictions on seed sourcing for forage projects on agricultural lands to enable increased access to cost-effective and highly diverse seed mixtures.
- C. Increase the minimum requirements for pollinator plantings in all conservation programs to 15 pollinator-friendly forb species and encourage the use of highly diverse seed mixtures.
- D. Implement seed establishment practices that allow a broader range of establishment options including dormant seedings in the fall and no-till drill seeding rather than disking prior to seeding.
- E. Leverage the public and private sector to raise awareness of the availability and benefits of utilizing USDA conservation programs that promote pollinator health – including at the USDA County Service Center level – in order to improve enrollment and maximize acreage against the level allocated by the programs.
- F. Continue stakeholder engagement and internal federal agency consultation to evaluate and improve these conservation programs to benefit honey bees and other pollinators.

2. Recommendations Regarding Public-Private Partnerships for Promoting, Establishing and Evaluating Honey Bee Forage

The Coalition recommends the following public-private activities through which departments and agencies represented in the Pollinator Health Task Force can engage to increase coordination, communication, and acceleration of forage project implementation:

- A. Support public-private partnerships for implementing honey bee forage on agricultural lands. Engage on projects and through a public-private working group to encourage communication, coordination, and sharing of lessons-learned, benefits and results from projects. Through these activities, inform and inspire new projects and future program improvements.
- B. Support a public-private mapping platform to share information about current forage projects, identify where additional forage is needed, and identify new partner opportunities for honey bee forage projects.

3. Recommendations Regarding Honey Bee Forage and Nutrition Research

Building upon our recommendations to the Task Force (November 2014), the Coalition recommends the following regarding honey bee forage and nutrition research:

- A. Support science to inform seed specifications for USDA conservation programs as well as seed specifications for other forage projects. Provide oversight and coordination on research on: a) honey bee forage preferences AND nutrition of various plants, b) optimal seeding rates for specific species to promote seeding diversity, and c) issues related to managing competitiveness certain forage plants preferred by honey bees.
- B. Support research and development for nutritional supplements and nutritional supplement assessment to support commercial honey bees when forage is lacking.

Introduction

The Honey Bee Health Coalition (www.honeybeehealthcoalition.org) is a public-private partnership that brings together beekeepers, growers, researchers, government agencies, agribusinesses, conservation groups, manufacturers and brands, and other key partners to improve the health of honey bees and other pollinators. Launched in June 2014, its vision is **Healthy Bees, Healthy People, Healthy Planet**. The Coalition's mission is to collaboratively implement solutions that will help to achieve a healthy population of honey bees while also supporting healthy populations of native and managed pollinators in the context of productive agricultural systems and thriving ecosystems. The Coalition accelerates collective impact to improve honey bee health in four key areas: forage and nutrition, hive management, crop pest management, and outreach, education, and collaboration.

In November 2014, the Honey Bee Health Coalition submitted comments to the Pollinator Health Task Force. These comments included priorities related to hive management, forage and nutrition, crop pest management, and cross industry collaboration and communication. The recommendations related to forage and nutrition as summarized in these comments include:

November 2014 Coalition recommendations to the Task Force:

FORAGE AND NUTRITION: Ensure honey bees – especially those in and around production agriculture – have access to a varied and nutritious diet.

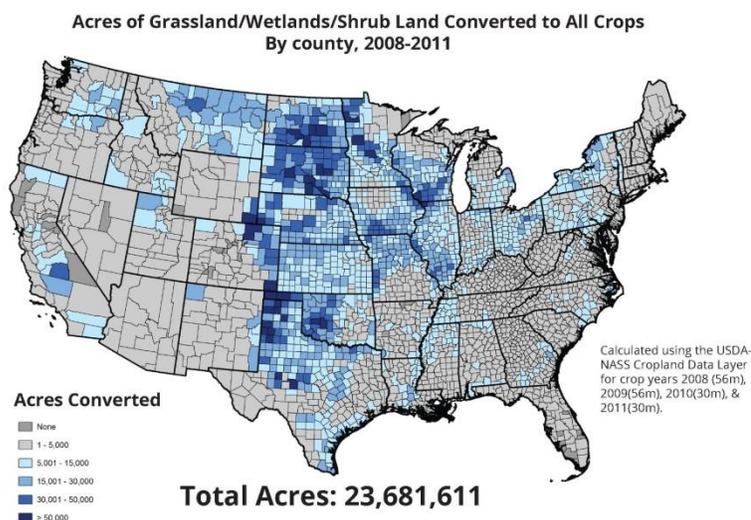
- Increase the acreage and nutritional value of forage plantings in the US Department of Agriculture's conservation programs specific to honey bees, including the Conservation Reserve Program (CRP), by adopting science-based and stakeholder-informed seed specifications and technical guidelines that encourage planting more affordable, varied forage for honey bees.
- Support science to identify appropriate specifications and engage diverse stakeholders – including beekeepers, crop producers, conservation interests, seed producers, researchers, and other stakeholders– in the identification of appropriate seed specifications for USDA conservation programs.
- Support and engage in public-private demonstration projects that show and quantify the agronomic, economic, and ecosystem service co-benefits of honey bee forage for a variety of stakeholders, building the 'win-win' case for bee forage on private lands.
- Increase forage opportunities and the nutritional value of forage for honey bees on other private and public lands. Work with government agencies, NGOs, and other stakeholders to coordinate expansion and maintenance of new foraging landscapes in key beekeeping regions of the country.
- Support research and development for nutritional supplements to support commercial honey bees when forage is lacking.

In response to an invitation to provide more detailed recommendations regarding forage and nutrition – and especially seed specifications for USDA conservation programs - the Coalition is providing the following suggestions and ideas for consideration. These recommendations are interconnected and are collectively intended to increase and improve forage and habitat for honey bees and other pollinators through USDA conservation programs, public-private partnerships, and research. Coalition members welcome the opportunity to discuss these ideas with Task Force members, USDA staff and others in order to better understand perspectives on opportunities and constraints. We welcome the chance to further refine ideas and suggestions after learning perspectives on these initial proposals.

1. Recommendations for Increasing the Acreage, Nutritional Value, and Affordability of Honey Bee Forage and Pollinator Habitat in USDA Conservation Programs

The drastic decline of availability of high quality forage for honey bees in key locations of the country, temporally and spatially, is a significant contributor to the decline in honey bee health. (See *Report on the National Stakeholders Conference on Honey Bee Health, National Honey Bee Health Stakeholder Conference Steering Committee, October, 2012, p. 22. (Stakeholders Report)*, and *Presidential Memorandum -- Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators, June 20, 2014, Introduction, paragraph 2. (Pres. Mem.)*).

Land use changes including the loss of Conservation Reserve Program acreage and the conversion of native prairies and rangelands to crop land is a primary driver in this loss of quality forage. See, for example, USDA-NASS Cropland Data maps reflecting acres of grassland/wetlands/shrub land converted to all crops by county, 2008 to 2011:



As described in our November 2014 comments to the Task Force, the Coalition recommends an increase in the acreage and nutritional value of forage plantings in the US Department of Agriculture’s conservation programs specific to honey bees – including the Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP) – by coordinating government agency support and adopting science-based and stakeholder-informed seed specifications and technical guidelines that encourage planting more affordable, varied forage for honey bees. There is wide agreement across many stakeholders and researchers that improved nutrition on USDA conservation program land, particularly in the upper Midwest and Great Plains, would have an immediate, beneficial impact on reversing colony losses. Further, stakeholder and scientific input into seed mixes that are most nutritious and cost-effective will improve these programs. To this end, the Coalition sees opportunity for enhancement and improvement of current programs.

The Coalition recognizes and applauds the steps taken through the establishment of CP-42 for pollinator habitat in 2012, which allocates 100,000 acres for this practice, as well as the creation of CRP-775 in 2014, which established \$8 million in financial incentives for Michigan, Minnesota, North Dakota, South Dakota, and Wisconsin farmers and ranchers who establish new habitats for declining honey bee populations on existing CRP grasslands.

Coalition members are also heartened that the U.S. Congress and the President have encouraged USDA to carry out its conservation programs in a manner that “*maximizes benefits for honey bees*” (2014 Farm Bill, 16 USC 3844(h)) and to “*substantially increase both the acreage and forage value of pollinator habitat in the Department’s conservation programs, including the Conservation Reserve Program, and provide technical assistance, through collaboration with the land-grant university-based cooperative extension services*” (Pres. Mem., Sec. 3(g)).

Coalition members are concerned, however, that the acreage and nutritional value of forage plantings for honey bee habitat in USDA conservation programs are often inhibited by outdated USDA state seeding specifications that result in excessively high-cost mixtures of limited nutritional value.

- A. *Recommendation:* When developing planting rate guidelines, eliminate the use of seeding rates for seed mixtures that are expressed as Pure Live Seed (PLS) pounds per acre. Use, instead, the more updated and appropriate PLS per unit area (e.g., PLS seeds per square foot). Further, where not already in use, adopt and use an approved USDA ‘Seed Calculator’ in creating balanced conservation program seed mixtures and determining appropriate mixture planting rates.**

Conservation Program seeding mixtures in many key states for honey bee forage are frequently created using outdated, range-based seeding specifications that were developed with and require the use of planting rates in Pure Live Seed (PLS) pounds per acre for the seed mixture. Planting rates in PLS pounds per acre cannot be derived until all of the species components have been chosen, and this cannot be determined until current seed availability and financial goals have been established. Therefore these types of range-based seeding specifications are less effective and appropriate for today’s pollinator habitat plantings. Pollinator habitat needs a high diversity of species, and those forb species come with a much wider range of seed sizes than the typical range species. Seed sizes can vary from rather large to extremely small (for example, 10,000 to 10,000,000 seeds per pound). Planting rate recommendations expressed in PLS pounds per acre can result in plantings that are too dense or too sparse, depending on the species used in the mix. For example, if mixture A contains 200,000 pure live seeds per pound and mixture B contains 1,000,000 pure live seeds per pound, a planting rate of 5 PLS pounds per acre would result in 1,000,000 seeds per acre for mixture A and 5,000,000 seeds per acre for mixture B. Mixture A is being seeded at 23 PLS per square foot and mixture B at 115 PLS per square foot – a difference of 92 pure live seeds per square foot. Therefore, it is recommended that seeding rates be expressed in Pure Live Seeds per unit area (e.g. PLS per square foot). Significantly, some of the most important states to honey bee health and honey production have not yet made these updates to their USDA seeding specifications.

Current USDA conservation program seeding specifications in some states create conflicting or competing seeding requirements that make it difficult for resource professionals designing seed mixtures to create cost-effective and high quality honey bee forage mixes. One example would be the Minnesota NRCS seeding specifications that on one hand require a “*Minimum grass seeding rate will be 5.0 PLS lb/ac*” in pollinator plantings (Native habitat development for pollinators [327] Biology Jobsheet

#16, Minnesota NRCS) which conflicts with USDA FSA guidance that requires, “*seeding mixes shall include no more than 25 percent grasses based on pure live seeds per square foot*” (USDA-FSA Notice CRP – 687). These conflicting seeding requirements will likely produce seed mixtures with inflated costs, that are less attractive to producers and provide reduced pollinator habitat benefits. Overall, it is recommended that the USDA national and state guidelines be consistent and incorporate planting rate recommendations that will result in more cost-effective, high quality forage.

Further, the adoption and use of an appropriate, USDA approved ‘Seed Calculator’ will aid in the creation of balanced conservation program seed mixtures. A significant consideration in the formulation of a balanced mixture is the seed size of each species. Additional characteristics that should be considered are plant size, bloom time, aggressiveness and cost per acre. Once species components have been chosen, planting rates can be calculated in PLS pounds per acre, and then the appropriate amount of seed mixture (PLS ounces or pounds) needed for a project can be determined and acquired. Examples of these seed calculators already exist within both the USDA and the private sector, including seed calculators developed to evaluate PLS per square foot. We understand that there has been discussion within USDA regarding the creation of a USDA seed calculator for use by USDA staff and potentially other stakeholders for several years. Such a tool would enable staff to better design seed mixture recommendations that are balanced, cost effective, have a higher diversity, and provide increased quality pollinator habitat.

- B. *Recommendation:* Allow, at the national and state level, the use of a broader range of species adapted to a geographic area. Streamline the approaches across national, state and county levels to encourage greater consistency in allowance of introduced, non-invasive species. Eliminate geographic restrictions on seed sourcing for forage projects on agricultural lands to enable increased access to cost-effective and highly diverse seed mixtures.**

Current USDA seeding specifications in some states often do not allow the use of key plant species in pollinator conservation program plantings. While CRP-775 specifically directs that states “*shall establish seed mixes with preference given to native species and/or introduced, non-invasive species (such as alfalfa) providing honey bee habitat benefits,*” many states subsequently limit or prohibit the availability of these introduced, non-invasive species that are beneficial for honey bees as well as for other native pollinators. This similarly occurs in the implementation of CP-42, which directs, “*Though wildflower, legume, and/or shrub species planted are encouraged to be native, beneficial introduced flowering plants (for example, alfalfa and clover) may be part of the seeding mix. Each introduced species is encouraged to make up no more than 10 percent of the pure live seed mixture with a total of introduced flowering plants encouraged to not exceed 20 percent of the pure live seed mixture.*” CP-42’s allowance of introduced flowering plants is encouraging, however its recommended limitation to 20% of the seeding mixture as well as further subsequent limitation at the state level means that, ultimately, the mixes often allowed and planted in key honey bee forage states do not optimize nutritional quality for honey bees and other pollinators. In some cases, states even limit seeding mixtures to the use of native plant species in their plantings, resulting in a narrow and less diverse set of options for creating nutritious forage mixes.

One such example would be the inability to use Common Milkweed (*Asclepias syriaca*) in seeding mixtures in Illinois, Kansas, Missouri, North Dakota, Ohio, Tennessee, Texas and Wisconsin. As a common, inexpensive and highly nutritious plant to add to seeding mixtures, this plant is critical to the life cycle of Monarch butterflies (*Danaus plexippus*) and should be available for use in all conservation program seedings in these most critical states in the Monarch butterfly range.

Similarly, yellow sweetclover and white sweetclover (*Melilotus officinalis* and *Melilotus albus*) are frequently excluded from seeding mixtures. However, honey bee forage experts at the October 2014 USDA Honey Bee Forage Summit frequently cited sweetclover's value – when appropriately utilized – as a cost-effective, long-blooming and highly nutritious forage resource for honey bees. Appropriate use of sweetclover can be informed by further research (see Recommendation 3-A, below).

The result of these and other examples of USDA state-level seeding specification constraints is that many states offer a very limited number of forb species that can be considered when creating conservation program seeding mixtures. In addition to the impacts of these approaches for pollinator nutrition, this limitation often creates stresses on seed vendors to have adequate and cost-effective seed supplies, discourages seed vendors from acquiring additional non-USDA approved species in their inventory, and decreases the pollinator benefits of the conservation program seeding mixture.

Some current USDA state seeding specifications have addressed this limitation very simply and effectively by allowing the use of forb species in seeding mixtures that are documented to occur within the state in the accepted plant key and distributional map authority for the state. Additionally, the USDA Plants Database would be another resource that could provide documentation about species known to occur in a state and county. If applied universally, this simple update to USDA state seeding specifications would dramatically increase the number of forb species available for seeding mixtures from a small, limited number to a list that is hundreds of species long. Where this update is currently in place in USDA seeding specifications, resource professionals can now create highly diverse seeding mixtures at cost effective prices and seed vendors have the opportunity and incentive to offer a much wider range of available species to producers and landowners. The update also enables determination of noxious or invasive status at the local level and enables county offices to work with seed vendors in selecting the most appropriate mixes for use in these programs. Expansion of the current national specifications to allow additional species at the state level, and requirements for states to allow introduced, non-invasive species would dramatically improve the ability to implement high quality honey bee forage as well as monarch butterfly habitat through these programs.

Finally, current specifications often include geographic restrictions on seed sourcing for forage projects on agricultural lands. While these sourcing restrictions are important for restoration projects, they are too restrictive for fulfilling pollinator habitat objectives on agricultural lands. Specifications requiring seed sourced within a small radius from a planting site often results in seed requirements that are costly, difficult to find, and nutritionally less valuable for pollinators than other seeds that could be sourced from a larger radius. Elimination of these geographic restrictions on seed sourcing for forage projects on agricultural lands would enable increased access to cost-effective and highly diverse seed mixtures.

The approaches recommended here are already successfully in effect in several states within USDA. Expansion of these approaches will increase the positive impact of USDA pollinator conservation programs in all states. Each of these recommendations is also made with recognition that individual landowners interested in participating in USDA programs will continue to work with county offices – as they do now – to address questions regarding seed mixtures and select appropriate mixtures to ensure that they are meeting their farm or ranch objectives. State Invasive Plant Councils and USDA's Animal and Plant Health Inspection Service can also provide resources to address stakeholder questions on specific species in seed mixtures, and further research and data collection are encouraged where needed to answer these questions (see recommendation I, below). By encouraging more flexibility in

USDA conservation programs to use a broader range of species adapted to a geographic area, the Coalition is ultimately encouraging USDA to empower producers with a broader range of choices regarding seed selection that can be made in collaboration with resource professionals.

C. *Recommendation:* Increase the minimum requirements for pollinator plantings in all conservation programs to 15 pollinator-friendly forb species and encourage the use of highly diverse seed mixtures.

The current minimum number of species required by USDA pollinator conservation programs is also of concern as it often results in lower diversity mixtures with less forage value. CRP-775 states that “*a minimum of 3 species, and up to a maximum of 8 species, of honey bee-friendly grasses and flowering plants, including wildflowers and legumes, be established.*” CP-42 specifies, “*seeding mixes shall contain a minimum of 9 species of pollinator-friendly flowering plants, including wildflowers, legumes, and/or shrubs*” (USDA-FSA Notice CRP – 687).

Too often, the minimum number listed in seeding specifications becomes the default ‘standard’ that is used. Early results of an ongoing, USDA-FSA sponsored review of the CP-42 practice show that seeding mixtures established with a higher diversity of forb species benefited more pollinator species than did seeding mixtures established with the minimum number of forb species (Personal communication from Vicki Wojcik Pollinator Partnership in a recent update provided to the North American Pollinator Protection Campaign Forage Workgroup via conference call).

Increasing the minimum required number of forbs in a CP-42 seeding mixture to 15 pollinator-friendly flowering plants, and similarly increasing the minimum requirements for CRP-775, would have significant impacts in increasing the effectiveness of the programs for ensuring the establishment of high quality honey bee and pollinator forage. The Coalition recognizes that inclusion of 15 pollinator-friendly forb species in seed mixes will be more challenging in some regions where less species are available based on current specifications as well as climate. On the other hand, inclusion of a minimum of 15 species will be easily accomplished in others where this number could be far exceeded based on current specifications and/or number of species adapted to a geographic area. Successful implementation of this recommendation is thus related to implementation of Recommendation B, above. Allowance and use of a broader range of species in seed mixes combined with an increase in the minimum required number of species will significantly increase the diversity and nutritional value of seed mixes for pollinators.

D. *Recommendation:* Implement seed establishment practices that allow a broader range of establishment options including dormant seedings in the fall and no-till drill seeding rather than disking prior to seeding.

In several of the states that are the most important for honey bee foraging habitat, USDA seeding specifications provide direction that limits several of the best establishment practices. Seeding specifications to establish high diversity pollinator habitat should allow the use of dormant seedings and broadcast seeding and should eliminate field disking requirements prior to establishment.

Highly diverse seeding mixtures typically contain species that require stratification in order to break seed dormancy for germination. Allowing establishment using fall, dormant seeding techniques has proven to be highly successful for pollinator habitat seedings and increase germination rates for species with dormancy.

Seeding specifications frequently require or encourage the producer to use field disking prior to seeding. The use of this technique comes with the likelihood of significantly increasing the weed competition with the planted seeding mixture. Soil disturbance is a proven incentive for early successional plants and encourages competition with the newly planted pollinator habitat. High diversity seeding mixtures planted with an approved no-till drill into an existing cover crop have proven to be highly successful USDA seeding specifications in many states.

In situations where field disking is used, producers should have the option to also use broadcast seeding applications in a fall, dormant seeding. Pollinator mixtures often contain species where the individual seed size is so small that planting the seed deeper than 1/16" will negatively affect the seed germination. The use of species with small seed size in a conventional seeding application that plants the seed deeper than 1/4" may have a high likelihood of decreasing the germination rates of the seeding mixture.

E. Recommendation: Leverage the public and private sector to raise awareness of the availability and benefits of utilizing USDA conservation programs that promote pollinator health – including at the County NRCS level – in order to improve enrollment and maximize acreage against the level allocated by the programs.

CP-42 and CRP-775 are great steps forward in encouraging the planting of forage and habitat for honey bees and other pollinators. The recommendations provided above would help to improve the quality and cost effectiveness of forage created through these programs and are already in use in many USDA state seeding specifications. However, ultimately, the effectiveness of these programs will rely on interest, willingness and ability of landowners to enroll. CP-42 encourages establishment of pollinator habitat for producers and has thus far (as of December 2014) cumulatively enrolled approximately 22,000 acres of 100,000 maximum acres for the program (Conservation Reserve Program Statistics – December 2014 http://www.fsa.usda.gov/Internet/FSA_File/deconepager2014.pdf). There is ample opportunity to raise awareness and enrollment in the program as well as to increase capacity for USDA to work with those interested in enrollment.

Recent allowances for CRP-775 for mid-contract management changes and incentives to plant honey bee forage on existing CRP lands are an excellent first step toward engaging producers that are already enrolled in CRP, but need to be better used and also expanded to include more than the 5 states identified. The Coalition encourages USDA to work at the national, state, and county level with private stakeholders and USDA staff to raise awareness about the availability of this opportunity and the need for its use. Private stakeholders – including NGOs, associations, and companies – have large networks through which they can enhance outreach and increase awareness. A coordinated public-private outreach strategy with appropriate messaging on the benefits of enrollment and guidance for how to enroll in programs can help increase landowner participation. The Coalition welcomes the opportunity to work in partnership with USDA to raise awareness across our diverse members and their constituents.

In addition to increasing awareness of available conservation programs, there is a need to overcome current capacity challenges and enrollment barriers that have been reported by landowners and private stakeholders at the local level. Successful implementation will depend on adequate capacity and funding to ensure that USDA can accommodate interested and qualified landowners. Further, there may be future opportunity to expand the opportunities presented in CRP-775 to new enrollees and additional states, thus further increasing the availability of honey bee habitat incentives for new enrollees.

- F. *Recommendation:* Continue stakeholder engagement and federal agency consultation to evaluate and improve USDA conservation programs to benefit honey bees and other pollinators.**

The Coalition appreciates the opportunity to discuss with USDA and other federal partners its ideas and recommendations, and encourages continued public-private dialogue to discuss opportunities, share and evaluate results, and continuously improve USDA programs for the benefit of honey bees, native pollinators, and a wide variety of agricultural stakeholders.

2. Recommendations Regarding Public-Private Partnerships for Promoting, Establishing and Evaluating Honey Bee Forage

The Pollinator Health Task Force has specifically requested information on existing public-private partnerships as well as opportunities for new partnerships to augment actions on research, education, and habitat expansion and improvement. The Coalition similarly emphasizes the value of collaborative partnerships for improving honey bee forage and nutrition. In the Coalition's November 2014 recommendations to the Pollinator Health Task Force, we recommended the following:

- Support and engage in public-private demonstration projects on agricultural lands that demonstrate and quantify the agronomic, economic, and ecosystem service co-benefits of honey bee forage for a variety of stakeholders, building the 'win-win' case for bee forage on private lands.
 - a. *These projects should be designed and implemented in partnership with beekeepers, farmers, University extension, conservation groups, and other stakeholders in order to demonstrate the efficacy of seed specifications and quantify agronomic, economic, and ecosystem service benefits. The results of such a project can be used to scale programs by providing the data and strategic messaging needed to encourage stakeholders to partner on forage projects. Real data to demonstrate the positive outcomes and 'win-wins' of honey bee forage projects are needed to make the business case for adoption of pollinator habitat improvements.*
- Increase forage opportunities and the nutritional value of forage for honey bees on other private and public lands. Work with government agencies, NGOs, and other stakeholders to coordinate expansion and maintenance of new foraging landscapes in key beekeeping regions of the country.

These recommendations to the Task Force stem from recognition that we need multiple solutions, and multiple platforms for learning, to tackle the enormous challenge of establishing millions of acres of honey bee forage. USDA conservation programs such as CRP, EQIP and CSP provide significant opportunities to engage landowners in establishing honey bee forage on millions of acres of agricultural lands. As described above, the Coalition sees opportunity for significant improvements in these programs. In parallel, the Coalition also sees significant opportunity in leveraging and scaling private sector and public-private models for forage that exist outside of Farm Bill programs. These programs have flexibilities that Farm Bill programs do not have. Accordingly, they can be used to test alternatives to specifications found in CRP programs and approaches for engaging landowners in new ways.

Ultimately, they have the potential to inform future program modifications for USDA and for other programs. In addition, they can leverage the expertise, knowledge, and networks of the private sector in raising awareness about and encouraging bee forage.

Several excellent examples of private and public-private forage projects already exist. Project Apis m. (PAm) has partnered with Pheasants Forever and Browning Honey Company to form the *Dakota Pollinator Partnership*, which will provide incentives and technical support to producers for the establishment of honey bee forage and monarch butterfly habitat in the Dakotas beginning in the spring of 2015; US Geological Survey will provide monitoring support for the project. The Coalition endorsed and recommended the Dakota Pollinator Partnership as an example of a new and innovative public-private partnership to benefit pollinators.

PAm's *'Seeds for Bees'* program enrolled 150 growers and planted 3,000 acres of honey bee forage in 2014. Pheasants Forever, through a USDA Conservation Innovation Grant (CIG) is also evaluating the compatibility of pollinator habitat and biomass fuel production. Conservation Technology Information Center (CTIC), through a USDA CIG, is bringing together beekeepers and producers to establish and monitor pollinator habitat on and around croplands. These and other examples of private and public-private projects are having important impacts for establishing forage and generating key lessons about what makes forage projects successful – ranging from understanding what it takes to encourage producer enrollment to evaluating the economic, agronomic, and ecosystem service co-benefits of forage projects for pollinators, beekeepers, producers, conservation organizations, and more.

The benefits of all of these efforts – from USDA programs to private sector forage projects – will be enhanced by coordination and collaboration to share learnings and inspire new actions. The recommendations below specifically describe public-private activities through which Task Force members can engage with Coalition members to increase coordination, communication, and acceleration of forage project implementation.

- A. *Recommendation: Support public-private partnerships for implementing honey bee forage on agricultural lands. Engage on projects and through a public-private working group to encourage communication, coordination, and sharing of lessons-learned, benefits and results from projects. Through these activities, inform and inspire new projects and future program improvements.***

Enhanced coordination and acceleration of impact begins with communication. The Coalition recommends the establishment of a public-private working group engaging USDA, USGS, and other agencies, and the diversity of private sector stakeholders engaged in forage projects to share information about their current projects, discuss lessons learned, identify common data and monitoring needs, and identify and implement new partnerships and projects. The Coalition has begun this effort through its own working groups. It also appreciates the opportunity to share its recommendations with Task Force members, and welcomes the opportunity to help coordinate increased engagement of federal agencies in the Coalition's ongoing discussions, pending discussion of interest and scope. ***The Coalition does not envision such a working group as working in a federal advisory capacity (FACA), but rather in a non-binding collaborative atmosphere for exchanging ideas and encouraging reinforcing activities that support mutual goals related to bee forage establishment.***

The Coalition envisions that, through a dedicated, public-private bee forage working group setting, Federal partners can bring expertise, knowledge, and technical resources to bear on motivating and

evaluating new public-private forage activities. These capacities range from monitoring and mapping capabilities to county agents that can help encourage program enrollment in a variety of public-private efforts. Similarly, private sector partners can bring expertise, knowledge, resources, and networks. All of these strengths can be leveraged in programs and projects that complement but are separate from Farm Bill conservation programs, and the collaborative learnings from these groups can help to inform future programs that create ‘win-win’ co-benefits for project participants.

B. Recommendation: Support a public-private mapping platform to share information about current forage projects, identify where additional forage is needed, and identify new partner opportunities for honey bee forage projects.

As described above, great work is already happening on the ground to promote honey bee forage on agricultural lands. Yet individual efforts may not be known to the broader stakeholder community, and new partnership opportunities may be better recognized through a ‘1-stop shop’ that shows what is happening and where new projects are needed. Coordination across the many individual efforts will yield enhanced collective understanding of results and lessons learned. Sharing the stories of current projects in a centralized place will help to spark new projects and scale forage development to meet landscape goals.

The Coalition recommends – potentially as a first activity of the working group proposed above –an interactive and engaging online mapping platform and partnership hub that will create coordination and information-sharing across forage projects focused on improving honey bee health on agricultural lands. The mapping platform would allow public and private partners to share information about current projects and identify areas for future projects.

The platform would utilize a spatial model for identifying specific geographies that are most critical to improving forage for honey bee health. It would provide easy-to-use, map-based tools for stakeholders to help identify areas for voluntary partnership, projects, and investments and to inform targeted programs. Such a model should be based on scientific and stakeholder criteria ranging from apiary suitability (e.g., radius to apiary locations, temporal considerations, etc.) to co-benefits for landowners and other stakeholders (e.g., criteria might consider crop productivity, proximity to other suitable areas for honey bee forage, and co-benefits for other species and ecosystem services).

The mapping platform would also create awareness of project activities and results and identify lessons learned that can be applied and scaled for future efforts. This would occur through contributions of various project implementers. Ultimately, the tool would enable identification of critical gaps and goals related to increasing the extent of forage and forage projects, new projects, and creative funding and partnership opportunities.

More discussion would be needed to determine who would ultimately spearhead or host such a mapping platform. ***The Coalition is fully aware that data privacy concerns of landowners and beekeepers would need to be addressed.*** That said, there is ample opportunity for the public and private sectors to work collaboratively and to each contribute unique expertise to such an effort. For example, at the October 2014 USDA Honey Bee Forage Summit, participants recommended spatial modelling and mapping of current bee forage. Work has been done already at the agency and university level, and further support to complete such work could come from USDA, USGS and others. The private sector can also contribute through information about current projects and criteria for helping to identify prime sites for new public-private projects. Both sectors could contribute in-kind and financial

resources to such an effort. The Honey Bee Health Coalition welcomes the opportunity to help coordinate the development of a mapping platform.

3. Recommendations Regarding Honey Bee Forage and Nutrition Research

Building upon our recommendations to the Task Force (November 2014), the Coalition recommends the following regarding honey bee forage and nutrition research:

A. *Recommendation:* Support science to inform seed specifications for USDA conservation programs as well as seed specifications for other forage projects.

Provide oversight and coordinate research on: a) honey bee forage preferences AND nutrition of various plants, b) optimal seeding rates for specific species to promote seeding diversity and 3) issues related to managing competitiveness of certain forage plants preferred by honey bees. This research should be incorporated into seed specifications. For example, we need to understand the relationship between the plants that honey bees visit and the nutritional quality of those and other plants – are the flowers that are most frequently visited actually the ones that provide nutritional value? The Australian Government Rural Industries Research and Development Corporation report “Fat Bees Skinny Bees” can serve as a model for this research (see: <https://rirdc.infoservices.com.au/items/05-054>). In addition, research can help answer important questions about managing introduced species preferred by honey bees, as well as honey bee competition with native pollinators. The October 2014 USDA Honey Bee Forage Summit produced a range of stakeholder recommendations related to research on nutritional quality of forage as well as forage preferences, forage availability, and managing introduced species (for example, sweetclover). The Coalition recommends that the national research agenda be informed by recommendations from the Summit. Further, while much good research has occurred, is occurring, or is planned, stakeholders and scientists would benefit from approaches that coordinate the development and presentation of findings. Federal agencies can help to translate research findings into actionable messaging and decision support for forage project developers and implementers.

B. *Recommendation:* Support research and development for nutritional supplements and nutritional supplement assessment to support commercial honey bees when forage is lacking.

Commercial beekeeping often necessitates the use of nutritional supplements when forage is lacking due to the specific temporal and spatial realities of where a beekeeper is in his migratory cycle. The October 2014 USDA Honey Bee Forage Summit produced a range of stakeholder recommendations related to research related to nutritional supplements and artificial diets. The Coalition recommends that the national research agenda be informed by recommendations from the Summit and that research results be shared as soon as possible beyond the scientific community – and particularly with the private sector – to encourage their incorporation into improved nutritional supplements for honey bees. The Coalition also recommends that federal agencies work with the private sector to prioritize critical research gaps and identify private-public mechanisms for addressing them.

Conclusion

The Honey Bee Health Coalition appreciates the ongoing efforts of the Pollinator Health Task Force to promote and enhance honey bee forage and nutrition and also appreciates the opportunity to provide and discuss the recommendations contained in this document. The Coalition looks forward to continued and ongoing private-public dialogue and partnership on these topics.