

Nevada Managed Pollinator Protection Plan

Plant Industry Division

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Introduction

Pollinator health is a high priority national issue due to significant colony losses experienced by Nevada and U.S. beekeepers over the past decade, although there is data to suggest that honey bee numbers are improving in some locations. In his memo, “*Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators*” in June of 2014, the President called attention to the issue of pollinator health and directed federal efforts to reverse pollinator losses and help restore populations to healthy levels. In particular, the memo directed the U.S. Environmental Protection Agency (EPA) to engage state agencies in developing state pollinator protection plans as a means of mitigating the risk of pesticides to bees and other managed pollinators.

The primary purpose of the Nevada Managed Pollinator Protection Plan (MP3) is to reduce pesticide exposure to bees through timely communication and coordination among key stakeholders, including beekeepers, growers, pesticide applicators and landowners. Pesticide exposure can be minimized if pesticide applicators and beekeepers communicate prior to pesticide applications to coordinate activities and allow crop protection products to be used without unreasonable adverse effects to managed pollinators. It is the intent that such open communication will lead to practices that both mitigate potential pesticide exposure to bees and allow for the management of pests. This will also involve collaboration on the selection of a non-chemical pest control method or a reduced risk pesticide product, change to the application timing, or an opportunity for beekeepers to select their own measures (move, cover or other measures) to protect colonies, thereby reducing the chance that managed bees are found in the treatment area. In addition to mitigating risk of pesticides to pollinators, MP3s can also establish clear expectations among stakeholders when a pesticide application needs to be made near managed pollinators. Open communication will not only help build relationships and increase mutual understanding, but also ensure peaceful co-existence and allow all parties to operate successfully.

Scope of Nevada’s Managed Pollinator Protection Plan

Although the scope of the MP3 at the present time is limited to managed pollinators, the protective measures discussed in the plan will help to protect and enhance all pollinator populations. For the purpose of this plan, “managed pollinators” includes any species of pollinators that are managed by humans, be it for pollination services, the production of honey, beeswax, and other products; or for some other purpose. Managed pollinators include hobbyists but do not include those pollinators under formal contract for pollination and other services at the site of application. This is because label restrictions to protect managed bees under contracted services from the potential acute hazards from acutely toxic pesticides are now in place. MP3s are intended to reduce pesticide exposure to managed bees that are adjacent to or nearby a pesticide treatment site where bees can receive exposure via drift or by flying to and foraging in the treatment site. Managed pollinators are primarily honey bees (*Apis mellifera*) but could include other species of bees, such as alfalfa leafcutting bees (*Megachile rotundata*), alkali bees (*Nomia melanderi*), orchard bees (*Osmia spp.*), mason bees (*Osmia spp.*) and some species of bumble bees (*Bombus spp.*). Insect pollinators are needed for fruit trees and the following crops in Nevada: squash, peppers, melons, berries, alfalfa seed and bean seed.

The existing MP3 guidance outlined by the U.S. Environmental Protection Agency (EPA), encourages individual states to define the scope of the plan, based on local issues and concerns.

Although commercial beekeeping exists in the state, it does not play a major role in crop production. Initial discussions with beekeepers indicate that there may be risks to non-managed pollinators and hobbyists; for this reason, we are considering expanding the scope of the plan to protect additional desirable pollinator populations. Although the plan may appear to focus on managed colonies in primarily agricultural situations, some protections for managed bees in non-agricultural settings will be implemented and ultimately will be beneficial for all pollinators.

Nevada’s Regulatory and Voluntary Approach

Regulatory protections now exist in state and federal law. EPA’s, “Proposal to Mitigate Exposure to Bees from Acutely Toxic Pesticide Products” will identify pesticide products considered to be highly toxic to bees and will require pesticide labeling which prohibits foliar application to flowering plants when bees under contract are onsite (unless the application is made in association with a government-declared public health response). Section 12(a)(2)(G) of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and NAC 555.440.4 require applicators to use pesticides only in accordance with label directions. In addition to this, NAC 555.470 requires any pest control licensee who intends to apply any pesticide known to be harmful to bees give 24 hours advance notice to any apiarist having bees on the land or adjacent land by telephone or in person. The current regulation also requires beekeepers to notify pest control licensees about the location of their bee colonies. Although not required, it is highly recommended that beekeepers post, in an obvious place, the name and contact information in or near the apiary to help applicators give notification. Although the regulation needs updating, the notification requirements are sufficient for implementation of this plan.

On the other hand, a non-regulatory approach is built on voluntary best management practices (BMPs) (see discussion, below on critical elements, element # 4). The Nevada state plan will address the critical elements identified below, through the implementation of both regulatory and voluntary approaches. Regulatory tools are referenced but not included in this plan (labeling and state regulation). Voluntary approaches are identified and described in more detail in the MP3.

Seven Elements of the Nevada Managed Pollinator Protection Plan

1. Stakeholder participation process

Stakeholder participation is essential to gain buy-in, build relationships and trust and identify key issues affecting pollinator health at the state level. Stakeholder meetings initiated and facilitated by the NDA, provide opportunities for stakeholders to offer input and recommendations and will do so in the future. Opportunities for a balanced representation from stakeholders during plan development, finalization and maintenance will be available and will involve face-to-face public meetings. Comments on the draft plan prior to being finalized can be submitted at any time during the plan development. A list of stakeholders for the plan includes, but is not limited to the following list of individuals:

Charles Moses, ES IV, NDA
Chris Bramley, Clark County Vector
Jeff Knight, Entomologist, NDA
Joey Toth, Nevada Pest Management Assoc.
Richard Hicks, So. NV Beekeeper Dan
Hetrick, grower
Joy Paterson, UNCE Rick Lattin, grower
Jim Schaffer, Washoe Vector Control
Dr. Del Barber, Northern NV Beekeeper

Debbie Gilmore, Mason Valley Beekeeper
Dr. Robert Leavitt, NDA
Brian Nakaguchi, NDA Board of Agric.
Heidi Kratsch, NCE Northern NV
Angela O’Callaghan, NCE, Southern NV
Scott Cichowlaz, NDA
Keith Jarret, Northern NV Bee Keeper
Jason Cassinelli, Simplot

Mike Morris, Aerial Applicator
Bill Campbell, ITCN
John Warpeha, Washoe Tribes Environmental Department
ccmosquito@cccomm.net; dcmosquito@gmail.com

Sandy Rowley, Beyond Pesticides.org
Sam Sanders, Humboldt Wildlife LLC

2. A method for growers/applicators to know if there are managed pollinators near treatment sites or a near a “pollinator awareness zone”

The MP3 broadly defines the mechanism or means by which a pesticide user will be able to identify the location of managed bee colonies. The specific method for accomplishing this will include a voluntary hive/apiary registration systems that identify locations of colonies geographically or will involve other strategies to visually identify hive/apiary locations (*such as* bee flags) or through a notification system which is now being operated by Washoe County District Health, Vector Control. In some cases, the geographic location information is very specific (*e.g.*, GPS coordinates), while in others, the location is within a township, section, range, in which case the applicator must directly contact the beekeeper to determine the exact location. Many states are utilizing a nationally recognized program known as FieldWatch (www.fieldwatch.com). This could be an option if additional resources become available to implement the MP3. At the present time, a web site will be created for reporting and for accessing information and will be monitored and updated as needed. NDA Entomology staff will construct, update and maintain this site. A data entry form has been designed for this purpose. Pesticide applicators and/or landowners will be able to obtain contact information for owners of managed colonies near a pesticide treatment area. This will include a web-based apiary registration database on the NDA website. The site will maintain an up-to-date phone list and e-mail addresses for beekeepers so that applicators can quickly and easily obtain beekeeper contact information for a given colony.

Available technology can help make the NDA site more user friendly. At the present time, resources are not available to implement these technical improvements. If resources become available, these improvements will be considered. Examples of available technology: locational data may be transformed into a scalable map that is easy to read on devices including smartphones; the area to be sprayed could be searched in the system and every registered hive within the one to two mile zone could be listed and a printable map can be created. It should be noted that some beekeepers will be hesitant to use any system that makes members of the public aware of hive location and the number of hives they have because of conflicts with neighboring beekeepers, concerns with theft and concerns that the bees/hives will be damaged by neighbors that do not like having bees around. Ultimately, bee keepers will have to make their own decisions about posting locational data, since beekeepers are not required to register their hive and include locational data.

The Northern Nevada Beekeepers Association website maintains an up-to-date contact list of beekeepers willing and available to pick up swarms and to remove established colonies from structures. Since there is not a similar single list for southern Nevada, it is recommended that individuals who are willing to collect swarms in southern Nevada include their contact information on the Northern Nevada Beekeepers Association website (this is already being done). Nearly all of the swarms and unmanaged colonies in Clark County are Africanized. For that reason, the recommendation has been to destroy the swarms. However, any effort to save these swarms would enhance the honey bee population. Beekeepers who collect these swarms are required to re-queen them as soon as possible under existing state law and in doing so, will help to reduce, to a certain extent, the spread of the Africanized bee.

3. A method for growers/applicators to identify and contact beekeepers prior to application.

A critical element of an MP3 is the ability for a pesticide applicator to contact beekeepers with colonies near a treatment area to alert them of a pending treatment. Beekeepers, in turn, need a reasonable time period to take action to protect their colonies if necessary. Applicators should give at least a 24-hour notice to any managed pollinator contact which is near the application site. This has typically been defined as an area within a one to two-mile radius of the treatment site in agricultural areas; in urban settings, an abutting or adjacent area to application site will be considered near. These sites will be classified as “pollinator awareness zones”. This is often done by moving colonies temporarily to a protected location or by temporarily netting hives. As stated earlier in this document, it will be up to beekeepers to identify the method they use to protect their bees.

Contact information for managed colonies should be placed on hives so that applicators can reach beekeepers to notify them of planned pesticide applications that include cell phone, text message and e-mail. Beekeepers will still have the responsibility of notifying licensed applicators of the location of their colonies as directed by NAC 555.470. If applicators notify beekeepers 24 hours in advance of pesticide treatment, parties can discuss and decide upon the steps to protect the managed bees in the defined area while still allowing management of the pest(s).

4. Inclusion of best management practices (BMP’s) to minimize risk of pesticides to bees

The intended goal of the MP3 is to be the framework for communication needed to encourage growers and pesticide applicators to mitigate risk of pesticides to bees while adequately managing pests. State MP3s that have been developed to date include other best management practices (BMPs) to minimize risk of pesticides to bees. These sorts of BMPs can be effective in mitigating risk of pesticides to managed bees and should be included in state plans. Examples of BMPs include controlling flowering weeds in a crop, making applications when bees are less active (such as after dusk or before dawn), using application methods that are more targeted (such as drip irrigation), using products less toxic to bees when possible, minimizing or reducing pesticide drift, utilizing Integrated Pest Management (IPM) and other approaches. BMPs will and have been developed with the assistance of the University of Nevada Cooperative Extension (UNCE) specialists, crop producers, beekeepers, industry, and other stakeholders. Many web-based resources, such as fact sheets (see page 10, below, education and training), are now available.

The primary BMP that will be used to mitigate the risk of pesticides to pollinators will be using registered pesticides consistent with product labeling. The plan will stress the need for label compliance, not only with persons making pesticide applications near managed pollinators, but also with beekeepers who use pesticides in hives.

Agricultural Extensions, Researchers, and State Dept.’s of Agriculture advise to prevent bee poisonings by pesticide exposure:

- ✓ Avoid spraying crops when they are in bloom
- ✓ Avoid spraying when the bees are most active
- ✓ Reduce pesticide drift
- ✓ Use less toxic compounds
- ✓ Avoid using pesticides that come in the form of dusts, wettable powders or micro-encapsulated pesticides
- ✓ Use pesticides with a low /short Extended Residual Toxicity (ERTs)
- ✓ Use IPM to decrease the overall number of pesticide applications.



Bee kill in almonds due to a tank mix

The MP3 discusses voluntary measures that can be taken to increase pollinator populations and improve pollinator health. However, there are existing pesticide label restrictions and state/federal laws which are being enforced that ensure pesticides are used safely and do not result in adverse health or environmental effects. The pesticide label and pesticide laws apply to both professional and non-professional pesticide applicators.

Training/education of pesticide applicators is equally important. Professional pest control applicators are required to complete an annual program of continuing education to maintain their professional credentials and have many opportunities to attend training and become familiar with the pesticide regulatory framework. For example, Vector control professional would fit into this category. The Nevada Department of Agriculture and the UNCE have implemented a pesticide safety training and certification program for professional applicators in the State of Nevada. Information about the program can be found at:

- <http://www.unce.unr.edu/programs/sites/pesticide/>
- http://agri.nv.gov/Resources/FAQs/Plant_Industry_-_Environmental_Services/

However, there is really no good, “one size fits all” training/educational tool for non-professional applicators. Bee exposure to pesticides in the urban setting sometimes happens when a property owner or homeowner applies insecticide to control pests on ornamental flowers and gardens. Typically the bee loss is not significant but possibly could be avoided through public education reminders of the best timing for application or suggestion of alternate control methods.

Training/education of homeowners and non-professional pesticide applicators on safe pesticide use offers a major challenge. Solutions include distribution of safety brochures through pesticide dealerships/markets and utilizing the UNCE outreach programs. UNCE offers the best option of educating homeowners through Master Gardener and other related community horticultural outreach programs designed for the general public. Information on UNCE programs can be found at:

<https://www.unce.unr.edu/>

Although not a complete list, other educational resources available (including those that are being utilized now) are listed below.

- USDA: USDA Technical Note No. 9, February 2014: “Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using IPM and Other Conservation Practices”
- U.S. Environmental Protection Agency ○ <http://www2.epa.gov/pollinator-protection>
- Nevada Department of Agriculture
 - http://agri.nv.gov/Plant/Environmental_Services/Environmental_Services_Home/
 - http://agri.nv.gov/Plant/Entomology/Entomology_Home/
 - <http://agri.nv.gov/uploadedFiles/agrinvgov/Content/Plant/Entomology/AfricanizedHoneyBee.pdf>
 - <http://agri.nv.gov/uploadedFiles/agrinvgov/Content/Media/2014-08-bees.pdf>

While the use of pesticide is a risk factor that should be addressed, the single focus on pesticide use might encourage blame of losses to pesticide only. It should be noted that, for Nevada managed pollinators, agricultural pesticide use may not be the major issue for managed colonies in Nevada. Issues that are likely larger for managed pollinators in Nevada include the movement of managed colonies into and out of the state bringing with them pathogens or pests that do not occur or rarely occur in colonies that do not travel and competition for resources when large migratory colonies pasture here. Nectar flows are difficult to predict and competition can overwhelm smaller colonies

that are stationary when large migratory hives are brought in and there is not enough forage available for all the bees; competition leads to robbing behavior and other close bee to bee interaction which can spread disease and pests, and established pests and diseases or combinations of established pests, disease, pesticide exposure, lack of forage resources and competition all in combination may be responsible for hive losses when any single factor would not cause losses.

Common diseases are widespread in Nevada at the present time. Regulatory measures may be the only way to address diseases and any specific issue related to pollinator health and disease management. Again, regulatory issues are mentioned but not addressed in this plan. The NDA Pollinator Protection Plan was developed based on EPA guidance where priority is given to pollinator protection from pesticides, since the risks of legal pesticide use and impacts on pollinators are still being researched.

5. Plan for public outreach

State MP3s will only be successful if there is formalized adoption of the plan. Once finalized, and effort will be made to publicize the MP3 and its recommendations/requirements not only to key stakeholders but to the general public as well. Meetings will be held with organized stakeholder groups, trade associations, commodity groups and beekeeping organizations. Public outreach and advertisement of the plan will take place on NDA website for easy access by the public.

There has been some discussion indicating that pesticide/pollinator incidents are not being reported or are under-reported. Incident data is needed, not only to investigate whether a pesticide application was a contributing factor to the incident, but also to use this data as part of the ongoing research related to the possible link of pesticides to Colony Collapse Disorder (CCD) and/or poor bee health. Suspected bee poisoning incidents can be reported to U.S. EPA, using the following internet link: beekill@epa.gov. Incidents reported to EPA will be forwarded to the appropriate state agency (NDA in Nevada) for follow-up. An alternate reporting website can be found, using the Ecological Incident Reporting Portal website of the National Pesticide Information Center (NPIC). NPIC is a free pesticide information resource located at Oregon State University and is funded by the U.S. EPA. NPIC's purpose is to gather information and answer the wide range of pesticide related questions that citizens, industry and government agencies have related to the use of pesticides. The e-mail address of NPIC is npic@ace.orst.edu and the alternate bee incident reporting link is <http://pi.ace.orst.edu/erep/>.

6. Process to periodically review and modify each plan

The pollinator protection plan is meant to be a dynamic document that will be periodically reviewed and updated. Revisions will be based on stakeholder feedback so that the plan ultimately leads to better relationships among the stakeholders and less pesticide exposure to bees. Once finalized, the plan will be reviewed and modified at least once every three years. A public stakeholder process to evaluate the effectiveness (see item #7, below) of the MP3 and to make modifications will be developed.

7. A mechanism to measure effectiveness of an MP3

The objective of this MP3 is reduced exposure to pollinators through enhanced communication and collaboration among stakeholders. The MP3 will include measures over time that can be used to determine whether the objective of reduced exposure of pollinators to pesticides is being met. Although not yet developed, measures can be quantitative or qualitative. Once measures are developed, the collection of data to track measures will be dependent on available resources. Nevada will continue to work with U.S. EPA and other stakeholders to discuss appropriate measures for the

effectiveness of state MP3s. Examples of measures could include such things as changes in behavior (e.g. improvements in levels of communication and cooperation among stakeholders), changes in pesticide exposure to bees, changes in overall pollinator health or other metrics. It is unlikely that any single measure will be available to definitively measure the effectiveness of an MP3. It is highly likely that a number of measures will have to be developed. The U.S. Environmental Protection Agency has been assisting states with pollinator protection activities and is now working with states to develop metrics to measure program effectiveness.

Optional elements of the plan that will be considered

Since pollinator protection plans are designed specifically for the state where they are being developed, we have the option to include some optional elements beyond the critical elements outlined above. These can be discussed at stakeholder meetings. Additional elements to consider for the MP3 may include the following:

1. Communication with the UNR Cooperative Extension (UNCE) and Restricted Use Pesticide (RUP) Dealerships (also see training discussion, below).

Many landowners utilize representatives from RUP dealerships and agricultural extension specialists for input on cropping and pest management decisions. These individuals are often aware of local pest pressures and crop protection needs not only at the field level but also at a landscape level.

Dealerships and UNCE are important partners in integrating crop protection and pollinator protection beyond just the individual field. Regular communication to explore and develop strategies on how the expertise and input of dealer representatives and UNCE can be utilized in pollinator protection efforts. UNCE can also serve a role in engaging stakeholders, disseminating technical information, facilitating discussions, and educating the public on plans.

2. Crop-specific or site-specific plans

Different plants have different plant protection needs and different pollinator risk mitigation strategies. Therefore, it may be beneficial to develop separate or modified MP3s for specific cropping/ornamental systems. In addition, strategies to ensure communication and cooperation, as well as to reduce pesticide exposure, may vary significantly between agricultural and non-agricultural settings. Discussions with stakeholders may demonstrate a need or benefit to do so.

3. Include recommendations for more formalized agreements between beekeepers, crop producers and property owners, especially in situations with a financial agreement.

In some situations, beekeepers place hives on private property without contractual agreement or landowner compensation. However, there are other cases, even when managed bees are not present for pollination services, in which there is a financial agreement between the beekeeper and landowner (*e.g.*, the beekeeper compensates the landowner for use of their property).

Written contracts or other written agreements between beekeepers and growers/pesticide applicators, when there is a financial relationship, may be beneficial. These agreements should include elements such as contact information; expectations, roles, responsibilities, and notification requirements when pesticide applications need to be made; expected plant protection needs and practices; specifications regarding hive location; specifications regarding time frames for placement and removal of colonies; and specifics related to financial arrangements and compensation. Verbal agreements are made in many cases, but exchange of contact information is still critical and should be documented.

4. Encourage voluntary planting of vegetation attractive to pollinators (habitat and nesting improvement).

Enlisting the help of property owners to plant vegetation attractive to pollinators and providing possible nesting habitats for wild bee pollinators (such as leafcutter bees and carpenter bees), should be encouraged. For other pollinators, brochures encourage the establishment of native plants like milkweed, in low traffic areas (not roadways or urban walkways) and areas where herbicides and insecticides are not used. There are many resources available to property owners who wish to do this. A partial list of agencies and brochures available can be found, below.

In addition to this, population numbers of the most efficient pollinators (again, such as leafcutter bees and carpenter bees) can be increased by providing or constructing nesting habitat. However, many native species are considered to be ground nesting. For pollinators that are not considered to be ground nesters, nesting structures can be purchased and are commonly found in the United States. Many of these nesting structures are already in place in Nevada.

Training and Educational Resources

- UNCE Publications
 - <http://www.unce.unr.edu/publications/files/ho/2014/sp1407.pdf>
 - <http://www.unce.unr.edu/publications/files/ho/2013/fs1335.pdf>
- UNCE Research Center and Demonstration Orchard
- Xerces Society for Invertebrate Conservation
- Monarch Joint Venture
- USFW brochure “Attracting Pollinators to Your Garden”
- Walker Basin Conservancy
- National Park Service
 - <http://www.nps.gov/subjects/pollinators/additionalresources.htm>
- USDA-NRCS
 - <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/pr/plantsanimals/?cid=stelprdb1256013>

Suggestions have been made to develop new training resources related to identification of common Nevada pollinators and control of nuisance bees in structures. Although not specific to Nevada, this information has been developed in other states. A couple of examples include:

- Clemson University
 - http://www.clemson.edu/extension/beekeepers/factsheets/honey_bee_colony_removal_from_structures.html
- Pollinator Partnership
 - http://pollinator.org/PDFs/Identifying_Native_Bees_PosterFINAL.pdf

Industry groups have been supportive in the development and distribution of BMP’s for pollinator protection. Links to two of the many sites available are as follows.

- National Pest Management Association (NPMA)
 - <http://npmapestworld.org/pollinator/bmps/>
- National Association of Landscape Professionals (NALP)
 - <https://www.landscapeprofessionals.org/images/nalpftp/nalp/advocacy/documents/pollinator-best-practices.pdf>

There has also been a suggestion to develop some information and fact sheets in Spanish. A search of available publications still need to be done. One example of a Spanish Language brochure can be found at: <http://edicionesdigitales.info/abejas/abejas.pdf>

5. Research/ Resource Needs

Resources to fund voluntary measures identified in the MP3 and to fund research related to pollinator health have not been identified. Applied research still needs to be done related to the effect of legal pesticide use on pollinator health. There is also a need to determine if our efforts to improve pollinator health and increase population levels are effective, outside the development of performance measures (discussed on page 7). The University of Nevada-Reno, has shown some interest in conducting research related to pollinator health, and monitoring of population levels would be an important component of any study. Unfortunately, before research can be initiated, funding sources must be identified. NDA will assist research organizations when possible to help initiate and complete projects related to pollinator health.

Some MP3's are available for review from the following sites (with links):

- Utah
 - [http://www.ag.utah.gov/documents/Managed%20Pollinator%20Protection%20Plan%20\(MP3\)%20DRAFT%20for%20Public%20Comment.pdf](http://www.ag.utah.gov/documents/Managed%20Pollinator%20Protection%20Plan%20(MP3)%20DRAFT%20for%20Public%20Comment.pdf)
- North Dakota
 - <http://www.nd.gov/ndda/files/resource/NorthDakotaPollinatorPlan2014.pdf>
- California
 - <http://www.cdpr.ca.gov/docs/legbills/calcode/030203.htm>
 - <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fac&group=29001-30000&file=29100-29103>
- Mississippi
 - <http://www.mdac.state.ms.us/departments/bpi/index.html>
- Florida
 - <http://www.freshfromflorida.com/Consumer-Resources/Florida-Bee-Protection>
- Colorado
 - <http://www.cepep.colostate.edu/Pollinator%20Protection/index.html>