Pollinator Protection Plan Framework

Both native and managed (honey bees, bumble bees, etc.) pollinators are important parts of our natural and agricultural landscapes. Unfortunately both have been experiencing significant challenges in their ability to survive and flourish. Managed and native pollinators face challenges from habitat loss, introduction of invasive plants, climate change, agricultural and residential use of pesticides, monoculture and a host of parasites and disease. The decline of pollinator populations resulting from these causes has reduced genetic diversity. Narrowed genetic plasticity combined with sub-acute, chronic toxicity places pollinator populations in a fragile position. This situation has arisen due to regulatory shortcomings brought by the agri-business community in their efforts to produce food cheaply and their influence on the regulatory process and agricultural practice. This document is an attempt to provide a guide to reverse this process in the Commonwealth of Massachusetts.

There is no single factor that is responsible alone for losses to managed honey bee or native pollinator species, nor is sound protection of pollinators in the hands of any one party or group. Health of all pollinators requires education of, communication and cooperation between many different parties:

- Beekeepers
- County Bee Associations
- Apiary Inspectors
- Farmers
- Pesticide Applicators (home, lawn, garden, mosquito, agricultural, etc.)
- Land Managers (small and large, public and private)
- Homeowners
- Regulators (pesticide, apiary)
- Independent Researchers
- Legislators
- Government Offices (i.e. Environmental Protection, Wildlife, Agriculture, Conservation Commissions etc.).
- Local Land Conservation Organizations and Environmental Organizations.
- Mosquito Control

With this in mind, Massachusetts Beekeepers have established a Pollinator Stewardship plan with the goal of outlining an integrated approach to pollinator stewardship in the Commonwealth. The goal is to identify key areas of concern and areas for future efforts that impact pollinator health.

In order to effectively manage bees and other pollinators in Massachusetts, there is need for an Integrated Pollinator Stewardship Program which should consist of the following:

<u>Regulatory</u>

- Mandate that bumblebee colonies being used for crop pollination are species native to Massachusetts.
- Apiary inspectors should be trained and authorized to take samples of suspected bee kills and submit them for pesticide analysis. Since time is of the essence when collecting samples of bees killed by pesticides, apiary inspectors must be allowed to collect and send in samples of suspected bee kills.
- A formal pesticide assay process should be devised based upon peer reviewed analytical protocols that effectively detects pesticides in bees. The circumstances surrounding all suspicious kills should be immediately investigated by apiary inspectors and pesticide inspectors. All pesticide related kills should be reported in the yearly bee inspection report mentioned below. EPA guidance concerning the collection of bee samples for chemical analysis

should be adopted and followed. Their guidance document can be found at: http://www2.epa.gov/sites/production/files/2013-09/documents/bee-inspection-guide.pdf

- The apiary inspection program needs to be strengthened with adequate and consistent funding including supplies used in the inspection and reporting process. The program should consist of a full time chief apiary inspector experienced in the keeping of honey bees and identifying honey bee parasites and disease. The chief apiary inspector should appoint 5 seasonal inspectors that have honey beekeeping experience. Seasonal inspectors should work from April 1st through October 31st each and every year. The chief apiary inspector's job should be dedicated solely to the protection and health of honey bees in our state.
- Inspectors should meet minimum requirements regarding knowledge of bee health, beekeeping skills and the ability to work with beekeepers. Apiary inspection is a form of community policing. Inspectors must not only recognize bee problems, but also know the relevant laws and regulations, and be able to work cooperatively with beekeepers while enforcing these laws and regulations.
- The current bee health investigation and reporting system should be converted to an electronic format, and the findings of apiary and pesticide inspectors summarized and documented in an annual public Pollinator Health Report provided directly to all bee associations and should be open to public access. This report should be prepared by the chief apiary inspector and published online the following February. The report should include county by county statistics on winter and summer honey bee losses, disease incidence and documented pesticide damage. The report should also include pesticide use data, numbers of hives, and approximate honey yields. Research and observational data concerning bumblebees use and health as well as relevant information concerning feral pollinators should be included.
- The regulatory barriers to beekeepers under Section 18/Emergency Exemption pesticides for control of mites should be removed only after these products are shown not to result in residues in honey used for human consumption. These pesticides are needed both for effective control and for managing resistance to other commonly used pesticides for Varroa mites. The additive and synergistic toxicity of fungicides and insecticides should be documented through full year studies on entire bee hives. When found to be synergistic or additive the chemical labels should clearly reflect this and they should not be allowed to be tank mixed and applied at the same time.
- A dynamic electronic registry of farming, landscaping and pest control operators that annually use a total of 200 lbs. of active ingredient of all pesticides combined should be established and reported in the annual Pollinator Health Report mentioned above. This should include location files on database layers available to bee keepers, other pesticide applicators and apiary inspectors. It should be noted that a portion of the farming, landscaping and pest control community is leery of having the quantity of pesticides they use recorded.
- The state should participate in a voluntary registration program like driftwatch.org for both beekeepers and pesticide applicators. Alternatively a program like Hive Tracks could be used if a separate program for pesticide application tracking was also established. Pesticide applicators should be required to give registered beekeepers within a 3 mile radius a 48 hour notice before applying pesticides. Failure to notify beekeepers within these areas that result in a bee kill incident should result in a fine and penalties for the applicator.
- Legal Penalties and Attorney General Provisions need to be established for any violations by pesticide applicators improperly using pesticides and killing bees. Spraying conducted in ill weather that causes drifting to other forage area or ground water is prohibited and any offense should be penalized.
- Most pesticides have the ability to adversely impact pollinator health based on rate, timing, and proximity to the hive. The application of pesticides at night when flowers are not in bloom and pollinators are less active should be required. Applying pesticides when pollinators are less active will limit their exposure.

- The determination of when and where to spray pesticides by mosquito control programs should require demonstrating disease agents in vectors and should be as consistent as possible between mosquito control projects statewide. These efforts should focus most heavily on monitoring, removal of larval habitat sources, treatment of larvae (not adults), and when necessary treatment for medically important not simply nuisance mosquitoes (note: most mosquitoes do not spread West Nile virus). Nuisance spraying must not be allowed by State run Mosquito control programs. There must be verifiable mosquito threats from either EEE or WNV that triggers the need for spraying. Regulations pertinent to requests to designate a property as "no spray" relative to state mosquito control projects need to be made less cumbersome. Many projects use informal methods now, which should be the basis of future regulation. People should be able to opt out for multiple years, at any time; forms to do so should be made available and accepted online.
- The value for loss of livestock, equipment and honey produced plus penalties and sanctions need to be put into the law for pesticide applicators that use pesticides improperly and kill bees.
- In order to adequately protect our pollinators, Massachusetts should implement regulations to restrict the use of neonicotinoids. A growing body of scientific evidence shows that neonicotinoid insecticides are highly toxic to honey bees and other beneficial insects. Neonicotinoid insecticides are persistent, meaning that they do not break down quickly in soil. They are water soluble and have been shown by the USGS to have grossly contaminated all major rivers and tributaries in the Corn Belt. Neonicotinoids run off into local watercourses, where they harm aquatic insects. Neonicotinoid insecticides make plants harmful to the beneficial insects feeding on them and have recently been found in 70% of Massachusetts honey and pollen samples. Neonicotinoids are absorbed into plant tissue and are then present in pollen and nectar, making them toxic to pollinators. These regulations should severely limit "Cosmetic Uses" on lawns and gardens, require applicators to notify clients prior to neonicotinoid application on their property and require licensing and training for people using these products. Laws recently passed in Ontario require integrated pest management training for farmers, establishes methods used to assess whether pest problems require the use of neonicotinoid-treated seeds, sets out requirements for the sale and use of neonicotinoid-treated seeds, and tracks the sale of neonicotinoid-treated seed. Similar legislation should be considered in Massachusetts.
- Reference to chronic low level effects should be required on the labels of products where chronic toxicity has been demonstrated.
- Any EPA pesticide label change that includes separate and better protections for managed bees under pollination contract than non-contracted bees must be extended by our state regulatory body to have the same protections apply to all pollinators equally in Massachusetts.

<u>Beekeepers</u>

- Beekeeping clubs should continue encouraging knowledgeable beekeepers to participate in education and training programs so that all beekeepers have the opportunity to understand parasites, mites and pathogens and are familiar with control strategies and Integrated Pest Management (IPM) methods.
- There is currently very good classroom training, mentoring and continued field training of beekeepers provided by county bee associations to members. Hands on bee inspection demonstrations should be continued by all clubs. This type of hands on after classes training is very helpful in showing the beekeepers what to look for in a hive. Apiary inspectors should participate in the education process of beekeepers to help explain diseases that may be present in a hive and help further the education of the beekeeping community.

- Apiary inspectors should be encouraged to educate beekeepers concerning the problems found in their hives during an inspection. This should be done in a time effective manner modeled after community policing. An effective bee inspection program is dependent on cooperation between bee inspectors and beekeepers.

Pesticide Applicators

- Pesticide inspectors should educate applicators concerning the toxic mechanisms, and environmental movement and fate of the materials they apply.
- Pesticide Applicators must receive expanded training on protecting pollinators from pesticides /herbicides and information concerning local forage areas where bloom is attractive to pollinators.
- All Chapter 61 lands or activities should be free of practices or applications that injure bees.
- Require that anyone paid to apply pesticides (including general use insecticides or herbicides) be licensed and trained. Applicators should be trained in groundwater contamination by pesticides and herbicides, uptake of these materials by non-target flora, and techniques to protect pollinators from exposure.
- Require that property owners be notified of the product ingredients and toxicity of all pesticides applied to their property. Massachusetts should subscribe to Drift Watch and require pesticide applicators to use it.
- Pesticide applicators should NOT apply any spray or ground pellets in adverse weather conditions under any circumstances, and should only apply bee toxic pesticides at night, when flowers are not in bloom and bees are not foraging. Penalties should be put in place for applicators who do not comply.
- Pesticide applicators should be aware of the potential for ground water contamination and therefore require they register for monitoring of such.
- Require applicator education concerning the general principles of sub-acute and chronic toxicity. Pollinator safety should become part of the curriculum for obtaining a pesticide license and certification from MA DAR.There is a need for applicators to understand the concepts behind sub-acute, chronic toxicity and best management practices relative to bees and other pollinators to protect their own health as well as pollinators.
- Beekeepers and pesticide applicators need to be aware of where each other's activities are taking place. Beekeepers should notify adjacent farmers of bee hives on their property to the best of their ability and farmers should notify nearby beekeepers when they are applying pesticides and of their spraying schedule.
- Protections need to be put in place for all bees and pollinators from pesticides, not just managed bees under contract for pollination.
- There should be a voluntary electronic hive registration system available to pesticide applicators and regulations that include penalties for killing hives that are registered including restitution of loss of livestock, loss of equipment from chemical contamination from spraying and loss of the value of the livestock product.
- All bees and pollinators must be equally protected from pesticides not just managed bees under contract for pollination.

Protection of Non-Agricultural Apiaries

In addition to Massachusetts policy to promote and protect commercially managed agricultural pollinators, Massachusetts recognizes the valuable contributions of noncommercial and non-agricultural apiaries in the protection and promotion of pollinators. Unlike agricultural beekeepers, non-agricultural beekeepers often have limited or no ability to move colonies and face unique challenges. It shall be the policy of Massachusetts to protect and promote non-agricultural beekeepers and apiaries as follows:

- Recognition of the fact that Massachusetts citizens have enjoyed the freedom to keep honey bees in the Commonwealth for hundreds of years without local fees and regulation beyond common law and statutory nuisance laws and that such freedom shall continue.
- The continuation of a strong apiary inspection program adequately funded and staffed by a chief apiary inspector and staff with substantial beekeeping experience.
- Regulation of the application of pesticides in order to protect apiaries that cannot be moved.
- Protection of urban and suburban apiaries by regulation of consumer use of pesticides as previously described in this plan.
- Promotion of statutes to protect noncommercial and non-agricultural beekeepers with reasonable immunity for ordinary apiary activities and the collection and preservation of honey bee swarms and feral colonies in the Commonwealth.
- Promotion of further policies that shall encourage and enhance the efforts of individual and organizational non-commercial and non-agricultural beekeepers to create and maintain healthy apiaries.

Improvement/Expansion of Forage

- Partnerships with all agencies overseeing public lands should be encouraged to incorporate pollinator habitat into their operations. There is a need to expand populations of plants suitable for bee/pollinator forage in areas such as highway medians and other widened road ways as well as under power lines. This necessitates requiring such areas not be sprayed with pesticides or herbicides. Pesticides and herbicides should not be used and mechanical methods alone should be used to clear power lines. Provide legislation to MA DOT to execute wildflower plantings in medians and along highways.
- Encourage farmers to plant beneficial flora to grow in areas that are typically suppressed by herbicides provided such areas are not subject to drift or runoff from treated fields.
- Provide benefits and opportunities for farmers and other organizations which manage land (golf courses, power lines, etc) to plant forage plants.
- Provide a habitat assessment tool through research for native pollinators.
- There may be opportunities for the service industry (lawn care, landscaping) to promote homeowner planting of bee/pollinator forage material.
- Many beekeepers have expressed a desire to de-list certain invasive species such as purple loosestrife. DAR should look at the entire list to see if there is any flexibility in the current criteria for delisting invasive plant species that are beneficial to pollinators.
- UMass, the nursery/floriculture industry, landscapers, and others should work on improved forage for bees, the adoption of organic practices and the decreased cosmetic use of pesticides, especially neonicotinoids.
- Fund and continue research on local factors that impact bee health such as:
    - Quantity and type of forage.
    - Timing of parasite control applications.
    - Encouraging local queen rearing initiatives.
    - Factors relevant to the promotion of sustainable, local survivor stock.
- MA NRCS should be encouraged to further expand opportunities for financial support for pollinator habitat and growers and eligible landowners should seek out these opportunities. NRCS has been expanding support for Monarch butterflies, honey bees and native pollinators. Partner with MA NRCS (Natural Resource Conservation Service) on incorporating pollinator habitat into future and current conservation plans of private forestlands. Many foresters are opening up a mosaic of small clear cuts in forest. These areas could be seeded with high-value pollinator plants.

Research

- Research must continue on the impact and mechanism of the actions of pesticides, parasites, bacterial and viral diseases on bee health.
- Because of the value of all bees to crop production, evaluation of pesticide risk and development of reduced risk IPM techniques needs to focus on both honey bees and native bees.
- Bee clubs should be encouraged to develop their own queen rearing initiatives. Locally bred populations of bees leads to local adaptations and the resultant spreading of the gene pool. This is perhaps the best method to mitigate gene pool narrowing in part caused by agricultural monoculture. It is also the most likely avenue for reestablishing feral honey bee colonies.
- Truly independent research concerning the long term effects, mechanisms and current environmental contamination of MA terrestrial and aquatic habitats by neonicotinoid insecticides should be funded.

Coordination

A committee of pollinator stakeholders should be enjoined to meet quarterly. Stakeholders include those whose activities have or may have direct impacts on bee health. Beekeepers including a minimum of 2 representatives from each beekeeping organization as appointed by the president of their organizations, government research institutions, pesticide applicators, land managers, apiary inspectors, farmers etc., with Massachusetts beekeepers being the majority vote in the group should maintain ongoing discussion on:

- Relevant studies
- Legislation
- Status of collaborative efforts
- Training and coordination of pesticide applicators
- Current problems and strategies.

The results of these discussions should be made public so policy-makers and others understand the broader perspective on these issues.

Further Roles of the Pollinator Stewardship Group

- Massachusetts beekeepers will play a dominant role in this group, either as a commercial, sideliner or hobbyist beekeepers in the state.
- The health and monitoring of managed hives will be documented by the inspection program and published annually.
- The governmental role in this group should be driven by either the Dept. of Environmental Protection or the Fish and Wildlife Department and the Department of Agriculture should be removed from developing or overseeing our state's Pollinator Protection Plan Framework.
- Protecting pollinators from pesticides and restricting the use of neonicotinoids in the state.
- The collaboration initiated by this group can act as the basis for continued discussion, education, advice, and implementation of pollinator health efforts.
- Any pollinator plan must be approved by the majority of the beekeeping clubs with in Massachusetts.

The collaboration of all parties will be difficult due to their competing financial interests. However, it is essential to ensure success of the Pollinator Stewardship Plan as mandated by the “National Strategy to Promote the Health of Honey Bees and other Pollinators.”