



BEYOND PESTICIDES

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Statement of Beyond Pesticides

Massachusetts Department of Fish and Game

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Representatives of the Massachusetts Department of Fish and Game, we appreciate the opportunity to comment on the proposed Biodiversity Conservation Goals and stress the importance of adopting regulations that protect and enhance biodiversity, public health, and climate resilience. Beyond Pesticides and co-signers are in support of Governor Healey's leadership on the intersection of these monumental issue areas with a forward-thinking vision to integrate holistic policy solutions across the Commonwealth of Massachusetts.

This document is being submitted by Beyond Pesticides and on behalf of the XX organizations listed below.

We urge the Commonwealth of Massachusetts, in developing the Biodiversity Conservation Goals, to adopt a broad government-wide strategy that establishes biodiversity protection and enhancement as a basic tenet for all programmatic decisions going forward. In this context, the following issues, among others, stand out as emblematic of issues that require attention under the Commonwealth's Biodiversity Conservation Goals: (i) Ecologically-based mosquito management requirements, (ii) aggressive efforts and chemical restrictions to protect pollinators and stave off the "insect apocalypse" and wildlife decline, and (iii) organic land management practices for all Commonwealth lands in accordance with defined practices and allowed substances in conformance with the federal National Organic Program's National List of Allowed and Prohibited Substances.

In the face of federal stagnation on biodiversity protections, the leadership of state and local governments are critical to the ongoing disregard of escalating ecosystem deterioration. The United States has yet to sign or ratify the United Nations Convention on Biological Diversity as of the last Convention of Parties in 2022, despite ratification by 196 nations worldwide.¹ The health of soil and microbial life, air, waterways and coastlines, pollinators and insect populations, ecosystems and farmland, is at stake. In a 2024 opinion piece published in *The Lancet*, one of the oldest running and internationally respected public health journals, researchers declare "the imperative role of comprehensive research and conservation strategies has never been as pressing."²

It is critical that the Commonwealth of Massachusetts take a broader approach in response to the cascading impacts of biodiversity collapse, the climate crisis, and public health threats that defines the current ecological crisis with the large body of peer-reviewed scientific findings and the following goals:

1. Mosquito management must adopt measures that recognize the benefit of preventive strategies, which establish source reduction programs that manage breeding sites on public lands and educate on the management of private lands, employ programs for larval management with biological controls, and eliminate the use of toxic pesticides.
2. The prohibition of systemic insecticides and treated seeds, including neonicotinoids, must include programs that disclose information on the use of all pesticides in the Commonwealth through a virtual database, educational opportunities to instruct the public on accessing this information, and coordinate with universities and experts to provide readily available information and scientific literature on the adverse effects of toxic pesticides.
3. Land management on public lands must adopt regenerative organic principles and organic certified practices and products, including hospitals, higher education institutions, schools, and parks, among other areas to transition to an alternative, viable system that prioritizes long-term health of the public, ecology, and economy.

Main Recommendations

In alignment with the values and input of frontline communities, scientists, farmers, farmworkers, and advocates across the Commonwealth, we recommend that the following be incorporated into the Biodiversity Conservation Goals:

Task the Executive Office of Energy and Environmental Affairs, in consultation with relevant offices, to:

1. Adopt an ecologically based mosquito management plan that emphasizes aerial and ground spraying prohibitions by 2030.
2. Prohibit the use of toxic petrochemical fertilizers, pesticides and pesticide treated seeds, including neonicotinoid insecticides, on public lands by 2030.
3. Adopt the National List of Allowed and Prohibited Substances, in alignment with National Organic Standards (CFR 7 U.S.C. 6517)³, as the official allowed and prohibited inputs for public lands by 2030.
4. Emphasize and identify interagency coordination to ensure Commonwealth programs are coordinating under the goals, correcting for past problems with interagency communication and contradictory programming.

These goals are not the ceiling for policy actions needed to meet the challenges but demonstrate a starting point to address the mounting crises on our doorstep.

Ecologically Based Mosquito Management Plans

Many of our degraded wetland systems contribute to the spread of mosquitoes. Instead, a shift to more public education and more proactive wetland education would preserve these habitats, including mosquito predators. Pyrethroid insecticides are the chemicals of choice for pest management strategies, particularly for transmission of mosquito-borne dengue fever, arbovirus, Zika, malaria, among other diseases. Unfortunately, studies show that reliance on pyrethroids jeopardize agencies' ability to protect the public against these diseases in common mosquito species (*Aedes aegypti* and *Culex quinquefasciatus*), leading not only to genetic mutations that cause rapid resistance, but also female mosquitoes learning how to evade spraying through smell.⁴ There are decades of expert research, model policies, and information around mosquito control and mosquito-borne diseases to draw upon.⁵

Legislators are considering the policy on this matter. An existing bill, S.445/H.845, incorporates the second goal (mentioned above) that we support in concept. Advocates in our network were disappointed that agency participants in the Mosquito Control for the 21st Century Task Force⁶ did not support the recommendations banning aerial spraying and allowing municipalities to opt out of ground spraying,⁷ decisions that – if approved – ignore documented evidence of adverse impacts of the movement of pesticides through the air, streams, and soil.

Researchers have found viable alternatives⁸ to pesticide use for pest management, such as utilizing beneficial insects that prey on pest insects. Creating habitat for these insects includes planting different flowers that attract syrphid flies—which are known to consume various garden and on-farm insect pests—in Massachusetts and the surrounding New England area.

Neonicotinoid and Systemic Insecticides

There is a need to adopt an integrated pest management approach, with the criteria that the permissible pesticide use is consistent with systemic insecticide prohibitions and the National List of Allowable and Prohibited Substances.

Insects, particularly pollinators, are under existential threat from neonicotinoid (neonic) insecticides and neonic-treated seeds. A study published earlier this year in *PLOS One* found that globally, populations rates are projected to decline by as much as 30 to 50 percent within the next two decades.⁹ In Midwestern states, the coveted monarch butterfly (*Danaus plexippus*) saw precipitous declines in abundance beginning in 2003—coinciding with increases in neonicotinoid use on commodity crops.¹⁰ A meta-analysis of the last three decades of studies indicates impacts on pollinator anatomy leading to colony collapse and developmental issues that undermine the reproduction of bees.¹¹

As of 2024, there are five states—Maine, New Jersey, Nevada, New York, and Vermont—that have passed legislation to eliminate, with some exceptions, the use of neonicotinoid pesticides for outdoor nonagricultural purposes.¹² Seven additional states—California, Colorado,

Massachusetts, Maryland, Minnesota, Rhode Island, and Washington—have prohibited the homeowner use of neonicotinoids and only permit licensed operators to spray.¹³

The casual use of toxic chemicals has led to unintended consequences, including pesticide resistance in mosquitoes¹⁴ and antibiotic resistance in humans.¹⁵ Meanwhile, research shows that organically managed systems sequester more carbon dioxide per acre than chemical intensive operations, as well as reducing acidification of the environment, net greenhouse gas emissions, energy use, and biodiversity loss.^{16 17}

Advocates implore the Commonwealth will go further than this “whack-a-mole” approach of individual and class-wide bans of pesticides and subsequent use of replacement toxic pesticides. The solution? Adopt a holistic transition in alignment with organic land management practices and restrict allowed materials to the National Organic Program’s National List of Allowed and Prohibited Substances.

National List of Allowed and Prohibited Substances

With the passage of the *Organic Foods Production Act* in 1990, the National Organics Standards Board (NOSB), a statutorily mandated independent advisory board to the U.S. Department of Agriculture (USDA), is tasked an oversight function and the determination of acceptable inputs—including pesticides—that do not jeopardize biological health in water, soil, and living beings. The National List of Allowed and Prohibited Substances, if adopted as the only acceptable list of substances, inputs, nonsynthetic fertilizers, and pesticides on public lands, would instantaneously prohibit the use of most toxic pesticides with documented adverse health effects currently on the market. The List is subject to an NOSB public hearing and comment and the federal rulemaking process.

Pesticide mixtures, including insecticides, are proven to have existential impacts on ecosystem integrity. Even at individually low levels found in aquatic ecosystems, researchers build on existing literature that demonstrates how groups of pesticides cumulatively amplify as they move up through the food chain. This exposure adversely affects fish,¹⁸ microorganisms,¹⁹ amphibians,²⁰ mammals,²¹ and sensitive ecosystems like coral reefs.²²

USDA identifies 4.89 million acres of organic-certified land in the United States as of 2021²³—with potentially millions of additional acres that adopt practices consistent with organic land management practices and principles. Communities and institutions across the nation are determined to move beyond the rampant use of toxic materials as chronic illness soars and ecosystems are left in a troubling state.

As you consider the development of these Goals, supported by the scientific findings and citations in this statement, we urge that recognition be given to the dire need to improve safeguards concerning not just neonicotinoids—hazardous insecticides that harm pollinators, birds, wildlife, soil and aquatic organisms, and human health, as well as contaminate surface

and drinking water—but also set forward-thinking policies and regulations that replace all toxic pesticides with organic land management principles and approved inputs.

Interagency Coordination

There are currently examples in which various programs within a department are not consistent with the stated objectives of the Biodiversity Conservation Goals. For example, various departments within the Executive Office of Energy and Environmental Affairs—including Department of Agricultural Resources—lead the Growing Wild program, which is designed to “reverse the loss of biological diversity, foster and protect endangered species,”²⁴ but at the same time support widespread routine use of pyrethroid pesticides, for example, that are extremely toxic to those species and ecosystems.

Robust Biodiversity Conservation Goals will address gaps in U.S. Environmental Protection Agency (EPA) regulations that threaten the safety of residents and ecological stability of the Commonwealth of Massachusetts. These gaps include critical shortcomings in EPA ecological risk assessment that include, but are not limited to, underestimating risks of pesticides on pollinators,²⁵ failure to quantify the alleged economic benefits of pesticide use,²⁶ noncompliance with the *Endangered Species Act*,²⁷ and cumulative exposure to numerous pesticides.²⁸

Conclusion

We appreciate that the Commonwealth of Massachusetts is considering biodiversity conservation in a multifaceted framework. Executive Order 618 charges the Commissioner of the Department of Fish and Game to “recommend biodiversity conservation goals for 2030, 2040, and 2050 and strategies to meet those goals, including coastal and marine biodiversity conservation, to halt and reverse the loss of the variety of species and habitats of Massachusetts” and “conduct a comprehensive review of the existing efforts of all executive department offices and agencies to support biodiversity conservation in Massachusetts.”²⁹

Massachusetts has often played a leadership role in protecting public health in the context of pesticide use. We applaud Governor Healey’s proclamation to establish May 12-18 as Multiple Chemical Sensitivity (MCS) Week,³⁰ joining with other states that recognize public health threat that pesticide pose.

At a time of cascading and intersecting public health, biodiversity, and climate crises, we must stop the use of toxic petrochemical-based pesticides that are found to cause harm. At the same time, we must also move toward an approach that incentivizes sustainable practices that do not necessitate these chemicals to meet pest management goals. Our recommendations above serve as a baseline of policy priorities that the Commonwealth must adopt to advance a holistic vision for preserving and enhancing biological diversity, health, and climate resilience.

We would be happy to work with the Department of Fish and Game to achieve these broader health and sustainability goals going forward. With the adoption of these proposed goals, we urge the Commonwealth to act in the context of eliminating damaging pesticides that can be replaced by practices and materials compatible with the environment and public safety.

Thank you for the opportunity to comment.

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Endnotes

¹ Beyond Pesticides. 2024. Group Says Broader Biological Evaluation of Rodenticides Needed to Protect Endangered Species. <https://beyondpesticides.org/dailynewsblog/2024/01/group-says-broader-biological-evaluation-of-rodenticides-needed-to-protect-endangered-species/>

² Cena Hellas and Massimo Labra. 2024. Biodiversity and planetary health: a call for integrated action. [https://doi.org/10.1016/S0140-6736\(24\)00292-7](https://doi.org/10.1016/S0140-6736(24)00292-7)

³ Pub. L. 101-624, title XXI, §2118, Nov. 28, 1990, 104 Stat. 3946; Pub. L. 102-237, title X, §1001(6), Dec. 13, 1991, 105 Stat. 1893; Pub. L. 109-97, title VII, §797(b), Nov. 10, 2005, 119 Stat. 2165. <https://www.govinfo.gov/app/details/USCODE-2023-title7/USCODE-2023-title7-chap94-sec6517>

⁴ Beyond Pesticides. 2024. Study quantifies Cost of Pesticide Resistance, While Advocates Chart a Course Beyond Pesticides. <https://beyondpesticides.org/dailynewsblog/2024/05/study-quantifies-cost-of-pesticide-resistance-while-advocates-chart-a-course-beyond-pesticides/>

⁵ Beyond Pesticides. 2024. Safer Mosquito Management: Tools for Change. <https://www.beyondpesticides.org/resources/mosquitos-and-insect-borne-diseases/tools-for-change>

⁶ Massachusetts Mosquito Control for the Twenty-First Century Taskforce. 2024. Recommendations. <https://www.mass.gov/doc/recommendations-of-the-mosquito-control-for-the-twenty-first-century-task-force/download>

⁷ Massachusetts Mosquito Control for the Twenty-First Century Taskforce. 2024. <https://www.mass.gov/info-details/application-for-municipality-opt-out-of-srmcb-spraying>

⁸ Bass et al. 2024. The molecular determinants of pesticide sensitivity in bee pollinators. *Science of The Total Environment*. <https://doi.org/10.1016/j.scitotenv.2024.170174>

⁹ Deynze et al. 2024. Insecticides, more than herbicides, land use, and climate, are associated with declines in butterfly species richness and abundance in the American Midwest. *PLOS One*. <https://doi.org/10.1371/journal.pone.0304319>

¹⁰ Ibid.

¹¹ Harris-Cypher et al. 2023. A Field Survey of Syrphid Species and Adult Densities on Annual Flowering Plants in the Northeastern United States. *Environmental Entomology*. <https://doi.org/10.1093/ee/nvad016>

¹² Beyond Pesticides. 2024. Vermont Leverages New York Limits on Neonic Insecticides with Deference to Chemical-Intensive Agriculture. <https://beyondpesticides.org/dailynewsblog/2024/07/vermont-leverages-new-york-restrictions-on-neonic-insecticides-with-some-deference-to-chemical-intensive-agriculture/>

¹³ Beyond Pesticides. 2023. States Step In to Restrict Bee-Toxic Pesticides, California the Latest in Absence of EPA Action. <https://beyondpesticides.org/dailynewsblog/2023/11/states-step-in-to-restrict-bee-toxic-pesticides-california-the-latest-in-absence-of-epa-action/>

¹⁴ Al-Amin et al. 2023. Insecticide resistance compromises the control of *Aedes aegypti* in Bangladesh. *Pest Management Science*. <https://doi.org/10.1002/ps.7462>

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- ¹⁵ Khmelevtsova et al. 2024. Effect of Mineral Fertilizers and Pesticides Application on Bacterial Community and Antibiotic-Resistance Genes Distribution in Agricultural Soils. *Agronomy*. <https://www.mdpi.com/2073-4395/14/5/1021>
- ¹⁶ Hashemi et al. 2024. Organic food has lower environmental impacts per area unit and similar climate impacts per mass unit compared to conventional. *Nature*. <https://www.nature.com/articles/s43247-024-01415-6>
- ¹⁷ Jay Squalli and Gary Adamkiewicz. 2023. The spatial distribution of agricultural emissions in the United States: The role of organic farming in mitigating climate change. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2023.137678>
- ¹⁸ da Silva Gomes et al. Behavioral Effects of the Mixture and the Single Compounds Carbendazim, Fipronil, and Sulfentrazone on Zebrafish (*Danio rerio*) Larvae. *Biomedicines*. <https://doi.org/10.3390/biomedicines12061176>
- ¹⁹ Hébert et al. 2021. Widespread agrochemicals differentially affect zooplankton biomass and community structure. *Ecological Applications*. <https://doi.org/10.1002/eap.2423>
- ²⁰ Flach et al. Comparing the effects of three neonicotinoids on embryogenesis of the South African clawed frog *Xenopus laevis*. *Current Research in Toxicology*. <https://doi.org/10.1016/j.crttox.2024.100169>
- ²¹ Chapman et al. 2022. The chemical landscape of tropical mammals in the Anthropocene. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2022.109522>
- ²² Lintner et al. 2024. Impact of pesticides on marine coral reef foraminifera. *Environmental Bulletin*. <https://doi.org/10.1016/j.marpolbul.2024.116237>
- ²³ Skorbiansky et al. 2024. Rising Consumer Demand Reshapes Landscape for U.S. Organic Farmers. USDA Economic Research Service. <https://www.ers.usda.gov/amber-waves/2023/november/rising-consumer-demand-reshapes-landscape-for-u-s-organic-farmers/>
- ²⁴ Massachusetts Department of Agricultural Resources. 2024. Growing Wild Massachusetts. <https://www.mass.gov/guides/growing-wild-massachusetts>
- ²⁵ Shahmohamadloo et al. 2024. Risk assessments underestimate threat of pesticides to wild bees. *Conservation Letters*. <https://doi.org/10.1111/conl.13022>
- ²⁶ Mourtzinis et al. 2019. Neonicotinoid seed treatments of soybean provide negligible benefits to US farmers. *Nature*. <https://www.nature.com/articles/s41598-019-47442-8>
- ²⁷ Beyond Pesticides. 2024. EPA “Mitigation Menu” Called Complex, Raising Doubts about Required Endangered Species Protection. <https://beyondpesticides.org/dailynewsblog/2024/06/epa-mitigation-menu-called-complex-raising-doubts-about-required-endangered-species-protection/>
- ²⁸ Nathan Donley and Robert Bullard. 2024. US pesticide regulation is failing the hardest-hit communities. It’s time to fix it. Brookings Institute. <https://www.brookings.edu/articles/us-pesticide-regulation-is-failing-the-hardest-hit-communities-its-time-to-fix-it/>
- ²⁹ Maura Healey. 2023. No. 618: Biodiversity Conservation in Massachusetts. <https://www.mass.gov/executive-orders/no-618-biodiversity-conservation-in-massachusetts>
- ³⁰ Beyond Pesticides. 2024. Multiple Chemical Sensitivity Recognized by State of Massachusetts <https://beyondpesticides.org/dailynewsblog/2024/05/multiple-chemical-sensitivity-recognized-by-state-of-massachusetts/>