Committee members:

Please vote in favor of HF 921, use of insecticides on state lands prohibited.
I was shocked when I first learned that insecticides were being used on state lands a few years ago and have been working along with others ever since to get this changed. It makes no sense that these state properties that are to be open for public use, are impacted by chemicals harmful to humans, let alone beneficial insects, such as our pollinators. Now that we are seeing increasing declines in pollinators, due in part to the ubiquitous use of pesticides and habitat loss, we have a responsibility to do what we can to make critical habitats healthy for wildlife and humans. The fact that research has now discovered chemicals used in pesticides are now being found in deer spleens, should be a wake up call for action and a strong effort for the responsible stewardship of these resources.

Thank you,
Margot Monson

--
Margot Monson, Entomologist, Beekeeper
22 Ludlow Ave.
St.Paul, MN 55108
651-247-5253

POLLINATOR FRIENDLY ALLIANCE
PO BOX 934, STILLWATER, MN 55082
WWW.POLLINATORFRIENDLY.ORG

Date: February 10, 2023

To: Minnesota House of Representatives, Environmental & Natural Resources Finance and Policy Chair Rep. Rick Hansen and Committee Members

RE: **Support Testimony for Bill #HF921:** ***Use of insecticides on state lands prohibited***

Our Support: Our coalition is comprised of partnering organizations, farmers, biologists, naturalists, and urban and rural Minnesotans**: We support HF921** to prohibit the use of systemic insecticides including insecticide-coated seed on public lands managed by the Minnesota DNR which includes state parks, forests, wildlife management areas, scientific & natural areas, and aquatic management areas.

Prohibiting insecticides that have lethal and sublethal effects on wildlife should not be a question since these public owned wildlife areas are intended to be a refuge for wildlife. Protecting biological diversity and integrity and conserving the system's wildlife are the central tenets of a refuge system's mission. Bill HF921 proposes changes to prohibit harmful insecticides from Minnesota DNR-managed wildlife and natural areas. Of these DNR-managed lands, a subset of 45,000 acres is leased to private individuals for cultivation for profit, primarily GMO corn.

Currently, DNR land management practices follow an integrated pest management (IPM) protocol. In the best scenario if followed IPM protocol will dictate the least toxic methods without chemicals first. However, **following an IPM plan does not guarantee the removal of harmful insecticides and is subject to each individual land manager's and tenant's interpretation.**

The Fish & Wildlife Service and Minnesota's largest county park districts recognized the need to protect wildlife and biodiversity. Thus have phased out land for lease for croplands in waterfowl production areas and on county park lands.

There is concern over pesticide-coated corn as feed. The amount of neonicotinoid on one treated corn kernel is enough to kill a songbird.
https://abcbirds.org/wp-content/uploads/2015/05/Neonic_FINAL.pdf

Recent studies, including **the MnDNR's own study, have found wildlife sickened from harmful residues** from insecticides in plants, in the water, and soil where pesticides seem to persist season to season, and from insecticide-coated seed.
https://static1.squarespace.com/static/623c9365af01026ca2eb4c15/t/63bd804decaf924071e86b26/1673363538860/neonic+exposure+deer+2021+DNR+report.pdf

Pesticide contaminated forage and habitat will contribute to a depleted immune system and an unhealthy animal. The latest research by Dr. Jenks and Dr. Lundgren found **grassland birds, otters and other free ranging animals suffering from systemic insecticide and pesticide coated seed contamination**.
https://www.nature.com/articles/s41598-019-40994-9

Background:
Beneficial insects and pollinators are keystone species that support the entire food web including fish, aquatics, birds, other wildlife, and humans. **Pesticides and especially systemic insecticides and pesticide coated seed are primary drivers of species decline and loss of life-sustaining biodiversity**. Scientists have

been alerting us for decades about climate crisis and species decline. The western monarch population dropped more than 99% since the 1980s. In less than a single lifetime, North America has lost more than one in four of its birds and half of wild animals in the last 40 years. **Insecticides are ubiquitous in our environment, on our food, and in our water.** Songbird decline is driven by loss of insect populations and pesticide use.

The responsibility to make change must take place in local communities and states. Federal and state governments are sadly reluctant to impose regulations or bans on toxic insecticides evidenced by the 60 years it took to remove toxic chlorpyrifos from our food. Other countries are banning neonicotinoids and other insecticides. Meanwhile our understanding of the science of pesticide devastation continues to grow and hit the media almost daily.

Insecticides are designed to kill insects and unfortunately do not distinguish between target pests and the many beneficial insects also harmed. Systemic insecticides are absorbed into the plant and tree tissues reaching the stem, leaves, roots and flowers. One of the most used systemic insecticides are neonicotinoids which are neurotoxins that have proven lethal and sublethal effects on pollinators, migratory birds, deer, and other wildlife. **Neonicotinoids are listed as a surface water pesticide of concern as they show up commonly in Minnesota streams and groundwater.** Comparison studies show pesticide-coated seed does not increase soy crop yields. In fact, the use of insecticides removes beneficial insects that control pest insects such as beetles thus reducing the total crop yield.

- **Nearly 3 billion bird species are lost in U.S since 1970**, Cornell Lab https://www.birds.cornell.edu/home/bring-birds-back/

- **Over half our grassland birds in Minnesota are gone**, 53% (720 million) https://www.grasslandbirdtrust.org/recent-news/3-billion-birds-lost/

- Biodiversity is a must for all creatures from aquatics to salamanders to birds to mammals but in Minnesota, **our biodiverse wetlands have been drained for corn and soybean row crops**. https://www.sciencedirect.com/science/article/pii/S2214574521000572

- **In Minnesota only 1% of biodiverse prairie remains** which supported most of our native bird, pollinator and animal species. https://www.dnr.state.mn.us/prairieplan/index.html

- Monarch Watch reported this month the **overwintering monarch numbers this year are going to be the all-time lowest numbers ever** (1 hectare or 2.47 acres). https://monarchwatch.org/blog/2022/01/06/how-many-hectares-in-2021-2022/

Please help protect wildlife, their habitats and human health by supporting Bill HF921 to remove these harmful insecticides from public lands managed by the Minnesota DNR.

Thank you.

Additional articles and scientific papers

Effects of Neonicotinoids on Deer, Pheasants, Otters and Other Free-Ranging Mammals, 2022 Study Findings with Dr. Jonathan Jenks: https://youtu.be/qGdHhogZdW0

Nuerotoxic effects of neonics on mammals including humans: PubMed Cen, Ferreiera study: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8395098/

Lax Pesticide Policies are putting wildlife health at risk from neonicotinoids and neonic seed:

https://www.audubon.org/magazine/summer-2021/lax-pesticide-policies-are-putting-wildlife

Minnesota Department of Agriculture, Neonicotinoids *surface water pesticides of concern* (2020)
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Insecticide drift and impacts on grassland wildlife on public lands in Minnesota, Study by Goebel 2021:
https://conservancy.umn.edu/bitstream/handle/11299/219388/Goebel_umn_0130M_22104.pdf?sequence=1

Insecticide Seed Treatments Threaten Midwestern Waterways, Xerces Society (2021):
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Neonicotinoid Causes Autism-Like Symptoms Study, November, 2022. Neurosciencenews.com
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Neonic effects on hummingbirds: English, Sandoval-Herrera study: PubMed Central study
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Pesticides are leading cause of grassland bird declines
https://abcbirds.org/article/new-study-finds-pesticides-leading-cause-of-grassland-bird-declines/

Birds, bees, and aquatic life threatened by gross underestimate of toxicity of world's most widely used pesticide – neonics
https://abcbirds.org/article/birds-bees-and-aquatic-life-threatened-by-gross-underestimate-of-toxicity-of-worlds-most-widely-used-pesticide-2/

Decline in U.S. bird biodiversity connected to neonic poisoning, University of Illinois
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Neonics and decline in bird biodiversity in the US, Yijia, Ruiging study:
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How neonicotinoids, sulfoxaflor and flupradifurone work: PAN, 2016
https://www.pan-europe.info/sites/pan-

europe.info/files/public/resources/factsheets/201609%20Factsheet%20What%20is%20a%20neonicotinoid_Flupyradifurone_Sulfoxaflor_EN_PAN%20Europe.pdf

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Monarch butterflies on verge of extinction
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Abbreviated list of supporting partners:
Audubon, Minneapolis Chapter
Audubon, River Valley Chapter
Bee Safe Minneapolis
Beyond Pesticides
Friends of Mississippi River
Friends of Roberts Bird Sanctuary
Friends of Scientific and Natural Areas
Great River Coalition
Humming for Bees
LONA, Legacy of Nature Alliance
MEP, Minnesota Environmental Partnership
Minnehaha Falls Landscape
Minnesota Center for Environmental Advocacy
PAN, Pesticide Action Network
Pollinator Friendly Alliance
Pollinate Minnesota
Saint Paul Audubon Society
Sierra Club North Star Chapter
Xerces Society for Invertebrate Conservation

contact: Laurie Schneider laurie@pollinatorfriendly.org, 651-503-9904

Roots Return Heritage Farm LLC

Carver, MN
E-Mail: rootsreturn@gmail.com

Date: February 11, 2023

To: Minnesota House of Representatives, Environmental & Natural Resources Finance and Policy Chair

Rep. Rick Hansen and Committee Members

RE: Support Testimony for Bill #HF921: *Use of insecticides on state lands prohibited*

Greeting Representatives:
My farm is comprised of natural and organic practices direct to consumer food production, allowing biodiversity, soil health, water quality benefits for the environment and subsequent MN River Valley National Refuge close by. I submit my support for HF921 to prohibit the use of systemic insecticides including insecticide-coated seed on public lands managed by the Minnesota DNR which includes state parks, forests, wildlife management areas, scientific & natural areas, and aquatic management areas.

Prohibiting insecticides that have lethal and sublethal effects on wildlife should not be a question since these public owned wildlife areas are intended to be a refuge for wildlife. Protecting biological diversity and integrity and conserving the system's wildlife are the central tenets of a refuge system's mission. Bill HF921 proposes changes to prohibit harmful insecticides from Minnesota DNR-managed wildlife and natural areas. Of these DNR-managed lands, a subset of 20,000 acres is leased to private individuals for cultivated crops for profit, primarily GMO corn and soy.

Currently, DNR land management practices follow an integrated pest management (IPM) protocol. In the best scenario if followed IPM protocol will dictate the least toxic methods without chemicals first. However, following an IPM plan does not guarantee the removal of harmful insecticides and is subject to each individual land manager's interpretation. The Fish & Wildlife Service and Minnesota's largest county park districts recognized the need to protect wildlife and biodiversity. Thus, have phased out land for lease for croplands in waterfowl production areas and on county park lands.

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state governments are sadly reluctant to impose regulations or bans on toxic insecticides evidenced by the 60 years it took to remove toxic chlorpyrifos from our food. Other countries are banning neonicotinoids and other insecticides. Meanwhile our understanding of the science of pesticide devastation continues to grow and hit the media almost daily. The responsibility to make change must take place in local communities and states.

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Please help protect wildlife, their habitats and human health by supporting Bill HF921 to remove these harmful insecticides from public lands managed by the Minnesota DNR.

Sincerely,

Lori D. Cox,
Roots Return Heritage Farm LLC owner

Additional articles and scientific papers

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Birds, bees, and aquatic life threatened by gross underestimate of toxicity of world's most widely used pesticide – neonics https://abcbirds.org/article/birds-bees-and-aquatic-life-threatened-by-gross-underestimate-of-toxicity-of-worlds-most-widely-used-pesticide-2/

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Monarch butterflies on verge of extinction, https://www.nationalgeographic.com/animals/article/monarch-butterflies-near-extinction

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U.S. Senators petition to remove pesticides from National Wildlife Refuges https://secure.everyaction.com/Lwq_f7dn00mugBKAYlfLNw2?contactdata=&emci=706aa919-861a-ed11-bd6e-281878b83d8a&emdi=ea000000-0000-0000-0000-000000000001&ceid=

DEPARTMENT OF NATURAL RESOURCES

Wildlife Research: Annual Project Progress Report

Exposure of white-tailed deer to neonicotinoids by ecoregion in Minnesota

Project Investigator(s): Eric Michel, Patrick Hagen, Michelle Carstensen, John Buchweitz[1], Jon Lundgren[2]

Report Date: 6/30/2022
Fiscal Year: 2022
Phase of Project: Phase I

Project Summary

Neonicotinoids (neonics) are a widely used insecticide found in North America and worldwide. Although neonics are considered safer than previous insecticides because of their specificity to receptor sites in insects, recent research has shown they can cause negative effects for many avian and mammalian species. In a recent feasibility study assessing exposure of free-ranging white-tailed deer (*Odocoileus virginianus*) to neonics, the Minnesota Department of Natural Resources (MNDNR) found 61% of deer across the state were exposed to ≥1 neonic. Further, nearly a third of exposed deer had neonic concentrations in their spleens consistent with adverse health effects, including decreased fawn survival, reported from a captive study. Our goal for fall 2021 was to further quantify deer permit areas (DPAs) with low and high neonic concentration. We collaborated with about 1,770 deer hunters from 12 DPAs (Figure 1) within the farmland, transition, and forest ecoregions during the fall 2021 hunting season and received 474 tissue samples. We received an additional 22 samples opportunistically collected from the metro area (DPA 701). We found evidence of neonic contamination in 94% of submitted samples with 64% of samples having a concentration ≥ 0.33 ng/g (the level documented to negatively affect fawn survival in a captive study; Burheim et al. 2019).

Goals and Objectives

Our goal was to assess exposure of free-ranging white-tailed deer to neonics in 3 ecoregions in Minnesota by collaborating with deer hunters to obtain spleens from harvested deer in select DPAs. Our specific objectives were to:

1) Select a subset of DPAs within each ecoregion in Minnesota to focus collection efforts and achieve statistically valid sample sizes.

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[1]College of Veterinary Medicine, Michigan State University; [2]Ecdysis Foundation

2) Solicit deer hunters in a "Citizen Science" approach to obtain spleen samples from harvested deer for neonic screening and relevant metadata.
3) Estimate exposure of deer to neonics across ecoregions in Minnesota using an enzyme-linked immunosorbent assay (ELISA) test.
4) Identify high, medium, and low neonicotinoid exposure areas within each ecoregion as potential future study sites. We will consider high levels to be >0.33 ng/g of neonics and low to be <0.165 ng/g (Burheim et al. 2019).

Highlight of Annual Accomplishments

Fieldwork, Lab, and Other Activities

We collaborated with about 1,770 deer hunters from 12 DPAs within the farmland (237, 295, and 296), transition (241, 214, 239, and 240), and forest (604, 172, 171, and 179) ecoregions in fall 2021 (Figure 1). Hunters requested 235, 858, and 677 sampling kits from the farmland, transition, and forest ecoregions, respectively and submitted 48, 283, and 143 spleen samples from these ecoregions, respectively. We also opportunistically sampled 22 spleens from the metro area (DPA 701). We subsampled hunter-submitted spleen samples and sent them to Michigan State University (MSU; East Lansing, MI to assess neonic concentrations via ELISA and mass spectrometry analysis.

Data Summaries

We classified 10 of 13 DPAs sampled as having high concentrations of neonics with the remaining three DPAs being classified as having medium concentrations (Table 1) from hunter-harvested spleens, indicating neonic exposure is ubiquitous across our study sites. The transition zone had the overall highest mean concentration ($\bar{X}$ = 0.68 ng/g, SD = 0.54, N = 283; Table 2) with three of four ecoregions having reported means greater than the 0.33 ng/g threshold.

Major Successes, Hurdles, and Other Lessons Learned

We observed several successes during the fall 2021 data collection effort. We established relationships with local conservation groups to help solicit hunter participation and assembled nearly 4,000 sampling kits in August to distribute to participating hunters. We received 496 useable spleen samples across 13 DPAs sampled in 2021. All spleens were directed to the Farmland Wildlife Populations and Research Group (FaWPRG) in Madelia where they were subsampled by FaWPRG biologists. We then sent subsamples to the Veterinary Diagnostic Laboratory at MSU via the University of Minnesota.

Although we collected valuable data from this effort, we observed several hurdles during the process. First, we were unable to solicit hunter participation prior to the opening of archery season because the communication plan was significantly delayed. We needed to further engage stakeholders (e.g., Minnesota Department of Agriculture) prior to soliciting hunters. This undoubtedly decreased the number of participants and subsequently, spleens available for analysis. Faculty at MSU were also delayed in completing their analyses due to shortages in the supply chain and unavailability of materials needed to determine neonic concentrations. Finally, neonic exposure appears to be ubiquitous across our study sites indicating our original study design of

comparing fawn survival and adult movements between areas of low neonic exposure to areas of high neonic exposure is infeasible.

We learned several things from fall 2021 data collection efforts. For example, we have revised our previous communications plan well in advance of fall 2022 and are proactively and consistently seeking comments from leadership so we can obtain approval well before we need to communicate with the general public about our results or data collection. Also, the information we gained about neonic exposure being ubiquitous on the landscape is allowing us to refine our experimental design and sampling methodology for fall 2022 to decrease overall sample size but, in turn, better understand seasonal exposure to neonics and which tissues are best to collect to detect neonics.

Literature Cited

Berheim, E., J. Jenks, J. Lundgren, E. Michel, D. Grove, and W. Jensen. 2019. Effects of neonicotinoid insecticides on physiology and reproductive characteristics of captive female and fawn white-tailed deer. Scientific Reports 9(1): 4534. https://doi.org/10.1038/s41598-019-40994-9

Tables and Figures

Table 1. Mean neonicotinoid concentration (ng/g) and concentration categories for each of 13 deer permit areas sampled during the 2021 fall hunting season in Minnesota, USA.

DPA	Mean Neonicotinoid Concentration (ng/g)	SD	N	Concentration Category
171	0.29	0.09	12	medium
172	0.45	0.35	44	medium
179	0.38	0.24	45	high
214	0.45	0.31	42	high
234	0.72	0.73	9	high
237	0.67	0.74	5	high
239	0.75	0.62	72	high
240	0.59	0.51	61	high
241	0.77	0.54	108	high
295	0.66	0.98	26	high
296	0.37	0.31	8	high
604	0.46	0.40	42	high
701	0.30	0.12	22	medium

Table 2. Mean neonicotinoid concentration (ng/g) and concentration categories for each of four ecoregions sampled during the fall 2021 deer hunting season in Minnesota, USA.

Region	Mean Neonicotinoid Concentration (ng/g)	SD	N	Concentration Category
Farmland	0.62	0.82	48	high
Forest	0.42	0.32	143	high
Metro	0.30	0.12	22	medium
Transition	0.68	0.54	283	high

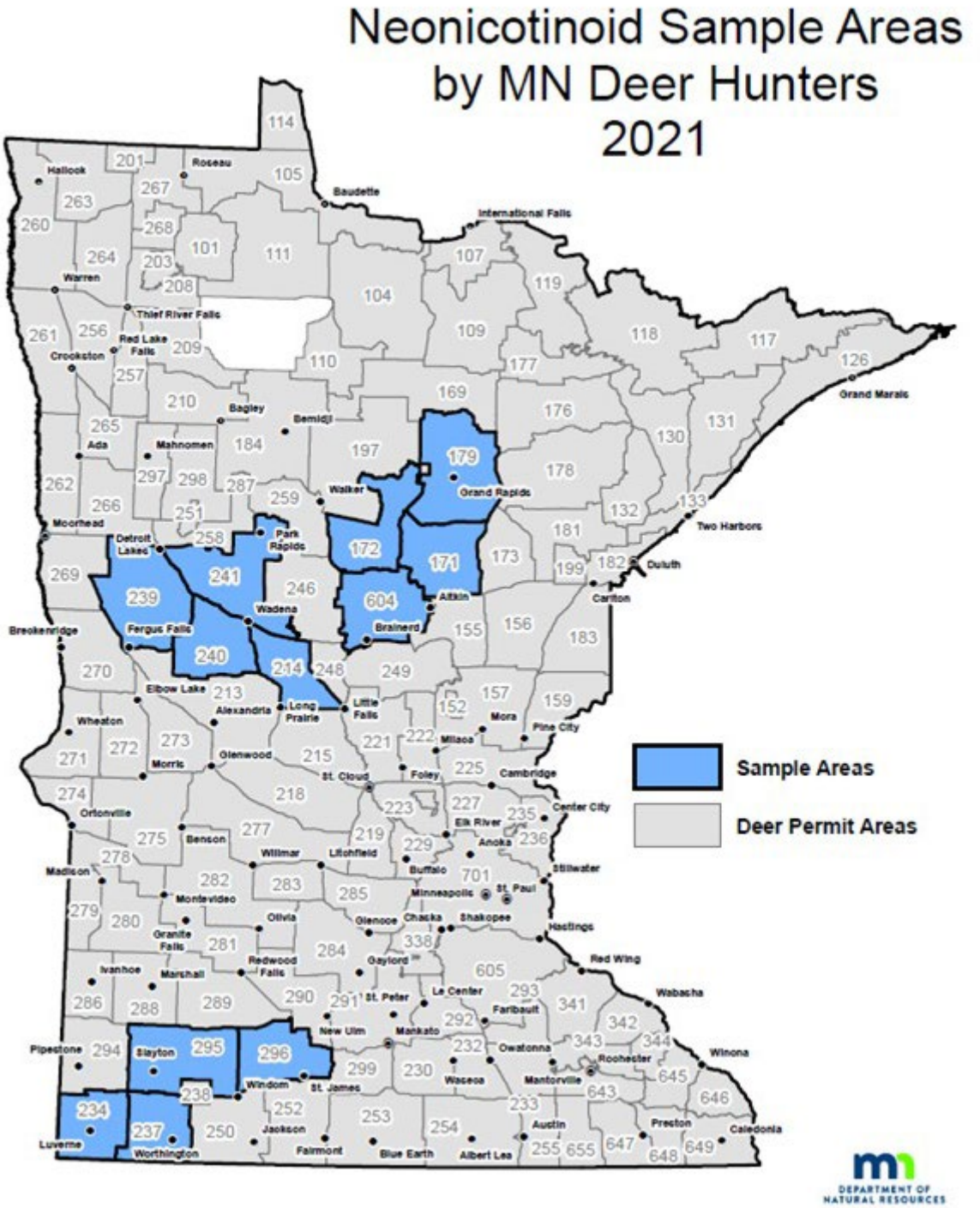

Figure 1. Deer permit areas (DPAs) selected to solicit deer hunter participation to provide hunter-harvested spleens during the 2021 deer hunting season in Minnesota, USA.

Date: February 11, 2023

To: Minnesota House of Representatives, Environmental & Natural Resources Finance and Policy Chair Rep. Rick Hansen and Committee Members

From: Minnesota Environmental Partnership Pollinator Cluster

RE: Support Testimony for Bill #HF921: Use of insecticides on state lands prohibited

Minnesota is not immune to the biodiversity crisis that's impacting the entire planet. Human activity especially industrial agriculture has drastically altered the state's landscape and severely reduced the variety and populations of many mammals, birds and insects. The statistics are familiar and depressing:

- Eastern monarch butterfly populations have declined by more than 80% over the past two decades. (Center for Biological Diversity, Feb 2021)
- Grassland bird species such as meadowlarks and bobolinks have declined by more than half since 2000 and in Minnesota are now locally extinct in large parts of the historic range. (Cornell University)
- The population of the once common American bumble bee is down 90%. (USFWS)

In Minnesota, the last and best grasslands, forests, and wetlands are on public lands. **State forests, state parks, Wildlife Management Areas (WMA's) and Scientific and Natural Areas (SNA's) are the only refuges for many species.** Therefore, proper management of those lands is critical to preventing the worst of the extinction crisis and a reasonable management step is the immediate elimination of systemic insecticides and pesticide coated seed.

One of the most pernicious pesticides are neonicotinoids. 95% of Minnesota seed corn and at least 50% of soybean seed is coated with neonics. The systemic insecticide is absorbed into every part of the plant tissue making the entire plant toxic. But not all of the pesticide stays in the plant. Because neonicotinoids are very water soluble, much of the pesticide applied to seed comes off in the soil and washes into streams and wetlands harming aquatic insects. During planting, the seed coating easily abrades from the seed kernel and spreads over large areas by wind. And most ominously, neonicotinoids stays in the environment for years due to its long half-life.

Neonic coated seeds are easily found and then ingested by foraging birds and other animals. Research has shown that a single neonic treated kernel of corn is enough to kill a jay sized songbird. Other research has indicated that even sub-lethal doses in birds interfere with metabolism, migration, fat deposition and reproduction. Systemic insecticides such as neonicotinoids are harmful at lethal or sublethal levels to pollinators, other beneficial insects and birds.

Pesticide harm is moving up the food chain. A Recent DNR study found neonicotinoids in white tailed deer at levels surpassing study results from South Dakota State University (SDSU). **These ongoing studies linked neonic contamination to behavior changes, reduced reproductive organ size and low fawn survival rates.** Subsequent research at SDSU found that **neonics negatively affect the survival of pheasants and research conducted by Charlotte Roy of the Minnesota DNR and Da Chen of Southern Illinois University found unexpected high levels of neonics in Minnesota sharp tailed grouse and prairie chickens.**

Minnesota Wildlife Management Areas (WMA) and Scientific and Natural Areas (SNA) are especially critical in sustaining biodiversity. Those public lands were purchased by sports people and other taxpayers for the protection and future viability of wildlife and must be kept free of harmful pesticides.

Our strong support for HF 921 boils down to this*: **It is simply wrong for the state to use or allow the use of wildlife killing pesticides on public lands intended to be a refuge for wildlife and biodiversity.***

Thank you for the opportunity to comment on Bill HF921.

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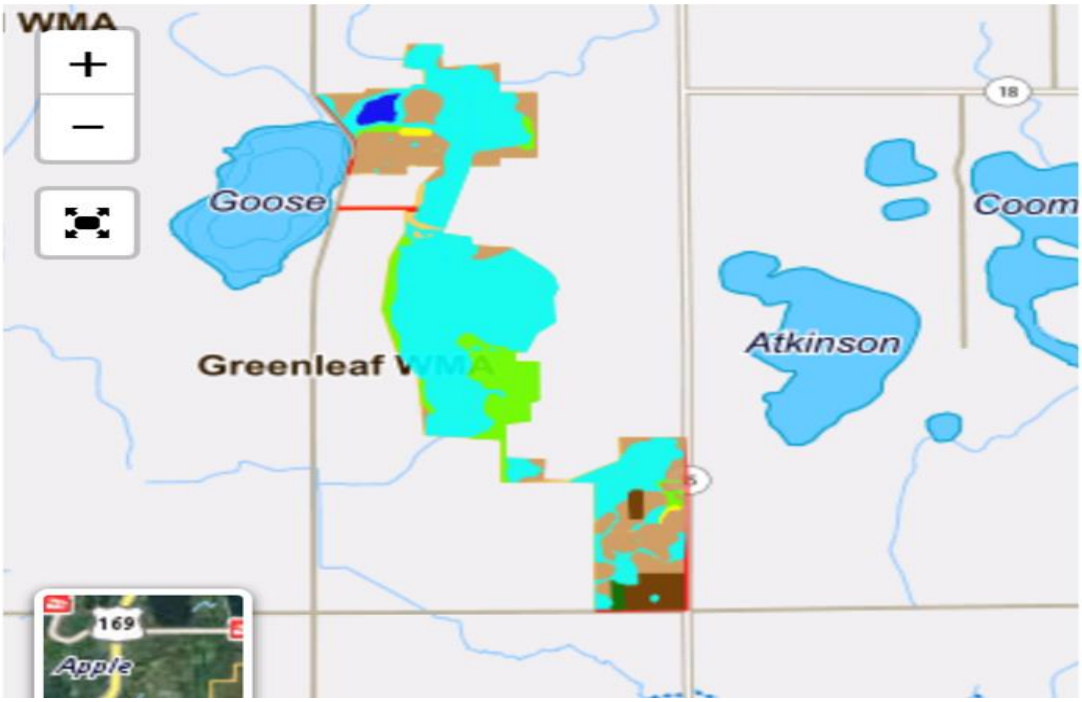
Five Map/Photos of Greenleaf Wildlife Management Area, Meeker County:

The photos, taken in 2022, show the farmed areas of the WMA (dark brown on the map).
Map credit: 2022, Minnesota DNR.



1. **Greenleaf Wildlife Management Area. The sign indicates the same seed variety as planted on adjacent private agricultural land.** (Photo: August 2022, Greg Larson)

2. **Greenleaf Wildlife Management Area.** (Photo: August 2022, Greg Larson)

3. **Greenleaf Wildlife Management Area** (Photo: October 2022, Greg Larson)

4. **Greenleaf Wildlife Management Area after corn harvest** (Photo: November 2022, Greg Larson)