

Case No. 13-72346

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

POLLINATOR STEWARDSHIP COUNCIL, *et al.*,
Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,
Respondents,

and

DOW AGROSCIENCES,
Respondent-Intervenor.

On Petition for Review of an Order of the
United States Environmental Protection Agency

**BRIEF OF *AMICI CURIAE* CENTER FOR FOOD SAFETY; NORTHEAST
ORGANIC FARMING ASSOCIATION INTERSTATE COUNCIL;
NORTHEAST ORGANIC FARMING ASSOCIATION, MASSACHUSETTS
CHAPTER, INC.; NORTHEAST ORGANIC FARMING ASSOCIATION
OF RHODE ISLAND, INC.; NORTHEAST ORGANIC FARMING
ASSOCIATION OF NEW YORK, INC.; MAINE ORGANIC FARMERS
AND GARDENERS ASSOCIATION; DEFENDERS OF WILDLIFE;
FRIENDS OF THE EARTH; CENTER FOR ENVIRONMENTAL
HEALTH; CONSERVATION LAW FOUNDATION; MIDWEST ORGANIC
AND SUSTAINABLE EDUCATION SERVICE; BEYOND PESTICIDES;
PESTICIDE ACTION NETWORK OF NORTH AMERICA; THE SIERRA
CLUB; NATIONAL FAMILY FARM COALITION; AND
AMERICAN BIRD CONSERVANCY
IN SUPPORT OF PETITIONERS SEEKING REVIEW**

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Dated: December 13, 2013

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CORPORATE DISCLOSURE STATEMENT

Amici, Center for Food Safety; Northeast Organic Farming Association Interstate Council; Northeast Organic Farming Association, Massachusetts Chapter, Inc.; Northeast Organic Farming Association of Rhode Island, Inc.; Northeast Organic Farming Association of New York, Inc.; Maine Organic Farmers and Gardeners Association; Defenders of Wildlife; Friends of the Earth; Center for Environmental Health; Conservation Law Foundation; Midwest Organic and Sustainable Education Service; Beyond Pesticides; Pesticide Action Network of North America; The Sierra Club; National Family Farm Coalition; and American Bird Conservancy are all nonprofit corporations, have no parent corporations, and do not issue stock.

Respectfully Submitted,

Dated: December 13, 2013

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INTERESTS OF THE AMICI CURIAE

Amici are nonprofit, public interest organizations with missions of safeguarding public health, fostering sustainable agriculture, and protecting the environment. To this end, *Amici* actively work on reducing the adverse effects of pesticides and ensuring the health of pollinators.

Amici have strong interests regarding the decision of the United States Environmental Protection Agency (EPA) to register sulfoxaflor, as stakeholders whose interests and memberships will be harmed by EPA's approval of sulfoxaflor pesticide products. Further, *Amici* offer the Court a broader perspective surrounding this approval action as part of EPA's larger failings regarding systemic pesticides and their adverse impacts on pollinators.

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perspective surrounding this approval action, as part of EPA's larger failings regarding systemic pesticides and their adverse impacts on pollinators.

Amicus Center for Food Safety (CFS) is a national nonprofit organization dedicated to addressing the environmental, health, and socioeconomic impacts of industrial agriculture, and promoting sustainable alternatives. CFS represents over 375,000 members across the country, including many farmers and beekeepers, as well as consumers. As part of its mission, CFS has a multifaceted pollinator protection program that actively works to reduce the adverse effects of toxic pesticides on pollinators. This program utilizes scientific, policy, educational, legislative, regulatory, and grassroots campaigns to spearhead action from government agencies, policymakers, and the public, to protect food security and the environment by requiring robust analyses of these pesticides' adverse impacts, and suspending or curbing their use as needed. CFS filed comments on EPA's proposed registration of sulfoxaflor.

Amicus Northeast Organic Farming Association Interstate Council (NOFA), established in 1972, is one of the oldest organic farming organizations in the United States. NOFA is a federation of seven independent state chapters in New York, Vermont, New Hampshire, Connecticut, Massachusetts, New Jersey, and Rhode Island with over 6000

farmer, gardener, and consumer members—all of whom depend on a healthy and vibrant bee population for their food supply.

Amicus Northeast Organic Farming Association, Massachusetts Chapter (NOFA/Mass) is a community that includes farmers, gardeners, landscapers, and consumers working to educate members and the general public about the benefits of local, organic systems based on complete cycles, natural materials, and minimal waste for the health of individual beings, communities, and the living planet. NOFA/Mass members care greatly about the survival of bees, and advocate sustainable growing practices that not only conserve but actually renew and improve the environment.

Amicus Northeast Organic Farming Association of Rhode Island (NOFA/RI), formed in 1990, is an organization of farmers, consumers, gardeners, and environmentalists working to promote organic farming and organic land care practices. NOFA/RI fosters a healthy relationship to the natural world through educational workshops, advocacy, and participation in local and regional events. NOFA/RI works to increase the acreage of sustainably and organically managed land and to provide access to local, organic food for all Rhode Islanders.

Amicus Northeast Organic Farming Association of New York (NOFA-NY), founded in 1983, is a statewide organization leading a growing

movement of farmers, consumers, gardeners, and businesses committed to promoting sustainable, local, and organic food and farming. NOFA-NY provides education, assistance, and support to regionally-based, sustainable farmers to help them thrive; educates consumers about the value of buying local, organic products; helps consumers connect with regionally-based farmers; works to make local, organic food available to all people; and advocates policies that support a sustainable food and farm system. NOFA-NY promotes the stewardship of the land and the lives that inhabit it. Stewardship encompasses the long-term viability of our natural resource base; the health of consumers; the working conditions of farmers, their families, and workers; the needs of communities; and the welfare of farm animals.

Amicus Maine Organic Farmers and Gardeners Association (MOFGA) has been a leader in the local foods movement since 1971. It is the largest state organic agriculture organization in the country. A membership base of 6500 families, individuals, farms, businesses, and nonprofits helps to significantly influence the conversation about food and farming in the state. The purpose of MOFGA is to help farmers and gardeners grow local and organic food, fiber, and other crops; protect the environment; recycle natural resources; increase local food production;

support rural communities; and illuminate for consumers the connection between healthful food and environmentally-sound farming practices.

Amicus Defenders of Wildlife (Defenders) is a nonprofit organization headquartered in the District of Columbia, with offices throughout the United States. With more than one million members and supporters around the country, Defenders is one of the largest and most effective organizations in the country advocating for the conservation of species and their habitat. Defenders supports new approaches to wildlife conservation that will help keep species from becoming endangered, and employs education, litigation, research, legislation, and advocacy to defend wildlife and their habitat. Defenders is particularly concerned about the impacts of systemic pesticides on the environment and has worked for many years to ensure that wildlife concerns are properly addressed in the pesticide registration process. The aesthetic, recreational, professional, and organizational interests of Defenders and its members, staff, and officers are impaired by EPA's registration of sulfoxaflor without due regard to its impacts on pollinators and other imperiled wildlife.

Amicus Friends of the Earth (FoE) is a national nonprofit environmental organization that was founded in 1969. With offices in the District of Columbia and Berkeley, California, and more than 340,000

members and activists in all fifty states, FoE defends the environment and champions a healthy and just world. FoE's campaigns focus on promoting clean energy and solutions to climate change, keeping toxic and risky technologies out of the food we eat and products we use, and protecting marine ecosystems and the people who live and work near them. FoE U.S. is part of Friends of the Earth International, a global network representing more than two million activists in seventy-four countries. As part of FoE's work to promote a healthy, sustainable, and just food system, FoE is working to protect bees and other critical pollinators that are in decline globally because of the widespread use of pesticides, habitat loss, changing climate, and disease, via research, public education, grassroots campaigns, and policy advocacy.

Amicus Center for Environmental Health (CEH) is a tax-exempt nonprofit corporation with offices in Oakland, California and New York, New York. Founded in 1996, CEH is dedicated to protecting the public from environmental and public health hazards, including harmful pesticides. CEH achieves its mission by working with communities, consumers, workers, government, and the private sector to demand and support business and agricultural practices that are safe for public health and the environment. As part of its mission, CEH and its staff have long been

involved in efforts to combat the negative human health and environmental effects of pesticides and other harmful contaminants in our food system. For example, CEH is a member of Californians for Pesticide Reform, an organization whose mission is to protect public health, improve environmental quality, and expand a sustainable and just agricultural system by seeking to change state and local pesticide policies and practices, and CEH's research director Caroline Cox serves on the California Department of Pesticide Regulation's Pest Management Advisory Committee. The interests of CEH and its members in reducing the harmful impacts stemming from pesticide use are being, and will be, adversely affected by EPA's proposed registration of sulfoxaflor.

Amicus Conservation Law Foundation (CLF) is a New England-based environmental advocacy organization. Since 1966, CLF has used the law, science, policymaking, and the business market to find pragmatic, innovative solutions to New England's toughest environmental problems. CLF's mission is to fight for a healthy, thriving New England for generations to come. CLF's Farm and Food Initiative is tackling some of New England's most pressing environmental and health issues by working to help shape and foster the development of a robust New England regional food system. Toward this end, CLF works with stakeholders to develop and

advance local, state, regional, and national policy that will grow and support resilient regional food systems. The continued existence of healthy pollinators is integral to food system resilience in New England.

Amicus Midwest Organic and Sustainable Education Service (MOSES) is a nonprofit organization that provides education, resources, and expertise to help farmers grow organic. The organization is best known for the annual MOSES Organic Farming Conference, the country's largest conference focused on organic and sustainable agriculture. MOSES also organizes on-farm field days and customized trainings to help farmers learn more about organic production. MOSES's Organic Specialists answer farmers' specific questions through the Organic Answer Line and the Ask a Specialist feature on the MOSES website. This website offers information on nearly every aspect of organic production, as well as access to resources such as the Upper Midwest Organic Resource Directory, the Guidebook for Organic Certification, and more than thirty fact sheets. MOSES also publishes the twenty-four page, bi-monthly Organic Broadcaster newspaper with practical features that provide insights into organic production.

Amicus Beyond Pesticides is a national nonprofit corporation that promotes safe air, water, land, and food, and works to protect public health and the environment by encouraging a transition away from the use of toxic

pesticides. With the resources of Beyond Pesticides made available to the public on a national scale, Beyond Pesticides contributes to a significant reduction in unnecessary pesticide use, thus improving protection of public health and the environment. As a part of its mission, Beyond Pesticides launched a national BEE Protective campaign, a national public education effort supporting local action aimed at protecting honey bees and other pollinators from pesticides and contaminated landscapes.

Amicus Pesticide Action Network North America (PANNA) is a national nonprofit organization based in Oakland, California. For over thirty years, PANNA has worked to replace the use of hazardous pesticides with healthier, ecologically-sound pest management. PANNA provides scientific expertise, public education, and access to pesticide data and analysis, policy development, and coalition support to more than 100 affiliated organizations in North America. PANNA has more than 100,000 members across the United States and is an independent regional center of Pesticide Action Network International, a coalition of public interest organizations in more than ninety countries. PANNA members, including farmers and beekeepers, live, work, and recreate in areas of the country where pesticides are applied, and in which pesticide drift and transport occurs. PANNA has a strong interest in ensuring that EPA protects pollinators, public welfare, and the

environment from pesticide contamination as well as a long history of advocacy to EPA on this issue.

Amicus The Sierra Club is a national nonprofit organization of approximately 600,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club's concerns encompass the regulation of toxic pesticides and protection of pollinators. The Sierra Club's particular interest in this case and the issues which the case concerns stem from the Sierra Club's goals to protect the health of the people of the earth and to maintain a healthy and diverse ecosystem through the use of sustainable methods of food production.

Amicus National Family Farm Coalition (NFFC) is comprised of twenty-six grassroots member organizations striving to empower family farmers, ranchers, fishermen, and rural communities by reducing the corporate control of our food system. NFFC seeks to establish farm and food policies that are socially, economically, and environmentally just. Therefore, the long-term sustainability of seeds, pollinators, air, water, and

soil is essential to NFFC's mission.

Amicus American Bird Conservancy (ABC) is a 501(c)(3) not-for-profit membership organization whose mission is to conserve native birds and their habitats throughout the Americas. ABC acts by safeguarding the rarest species, conserving and restoring habitats, and reducing threats, while building capacity in the bird conservation movement. The ABC Pesticides Program aims to protect wild birds and other wildlife from hazardous pesticides. Strategies include working to cancel or restrict the most dangerous pesticides; developing and supporting cutting-edge science, including evaluating and monitoring of pesticide impacts; and serving as an information and advocacy hub in close coordination with the National Pesticide Reform Coalition. In 2013, ABC produced the state-of-the-art review on impacts of neonicotinoid insecticides on birds, aquatic invertebrates, and other wildlife. ABC joined CFS, Beyond Pesticides, and other groups in filing comments on EPA's proposed registration of sulfoxaflor.

SUMMARY OF ARGUMENT

One in every three bites of food we eat depends on a crop pollinated by honey bees (*Apis mellifera*).¹ Ninety percent of all flowering plants require pollinators to reproduce.² Yet, disturbingly, bees and other pollinators are experiencing alarming population declines, with many colonies dying and disappearing altogether. One manifestation of this phenomenon is known as Colony Collapse Disorder (CCD). According to EPA and the United States Department of Agriculture (USDA), U.S. beekeepers have lost an estimated ten million hives since 2006, creating an estimated loss of two billion dollars and putting “great pressure” on sectors of the agricultural economy.³

The precipitous decline of bees and other pollinator populations is

¹ Renée Johnson, Cong. Research Serv., RL 33938, *Honey Bee Colony Collapse Disorder 1* (2010), available at <http://www.fas.org/sgp/crs/misc/RL33938.pdf>.

² Janet N. Abramovitz, *Putting a Value on Nature's "Free" Services* 11 *World Watch Mag.* 10, 16 (1998), available at www.worldwatch.org/system/files/EP111B.pdf.

³ USDA, Report on the National Stakeholders Conference on Honey Bee Health (USDA Report) 1-2 (Oct. 15–17, 2012); EPA, *USDA and EPA Release New Report on Honey Bee Health*, Newsroom (May 2, 2013), <http://yosemite.epa.gov/opa/admpress.nsf/0/E04602A5E7AA060685257B5F004A12D3>.

alarming, even in isolation. But that ignores, as legendary radio broadcaster Paul Harvey would say, “the *rest* of the story.”⁴ Bees and other pollinators are the *sine qua non* of agriculture and food production. The United Nations estimates that of the roughly 100 crops that provide the vast majority of the world’s food, seventy-one percent are bee-pollinated.⁵ Bee losses mortally injure beekeepers and farmers livelihoods and at the same time gravely threaten the agricultural economy and food supply.

Moreover, many of the same stressors that adversely impact bees also threaten the existence of numerous other species, including other pollinators like birds and butterflies, other beneficial insects, and aquatic and terrestrial invertebrates. Because bees are an indicator species whose well-being reflects overall environmental health or crisis, their decline portends irreparable harm to the broader environment.

Scientists have linked the drastic declines in honey bee and other pollinator populations to systemic pesticides, and more specifically, to a

⁴ The Associated Press, *Paul Harvey, Talk-Radio Pioneer, Is Dead at 90*, N.Y. Times, Feb. 28, 2009, available at <http://www.nytimes.com/2009/03/01/nyregion/01harvey.html>.

⁵ Food & Agric. Org. of the U.N., *Protecting the Pollinators*, Agric. & Consumer Prot. Dep’t Spotlight (Dec. 2005), <http://www.fao.org/ag/magazine/0512sp1.htm>.

category of systemic pesticides known as neonicotinoids. Sulfoxaflor is a systemic pesticide with the same mode of action as neonicotinoids, and one that EPA determined is “very highly toxic” to bees. Petitioners’ Excerpts of Record (PER) at 195. EPA’s registration of sulfoxaflor will introduce yet another systemic and highly toxic insecticide into the environment, intensifying the ecological crises of CCD and other pollinator losses.

Accordingly, *Amici* respectfully submit this Brief in support of Petitioners, requesting that this Court vacate EPA’s decision to register sulfoxaflor. Far from being supported by the required substantial evidence, EPA’s decision is contrary to the record evidence, and in violation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). EPA failed to rigorously examine the uses and impacts of sulfoxaflor, particularly in light of the environmental stressors already faced by pollinator populations. Further, EPA’s decision considers only the alleged benefits of sulfoxaflor, while wholly ignoring the significant costs that registration will have on the agricultural economy, food security, and the environment. As such, EPA failed to show that the registration of sulfoxaflor will not cause any “unreasonable adverse effects on the environment.” 7 U.S.C. § 136a(c)(5)(C). For these reasons, *Amici* respectfully request that this Court set the registration aside and remand.

ARGUMENT

I. SULFOXAFLOR AND OTHER SYSTEMIC NEONICOTINOID PESTICIDES

Scientists link many CCD symptoms to indiscriminate use of systemic pesticides, a type of pesticide that includes neonicotinoids like sulfoxaflor.

When applied, plants absorb systemic pesticides, which then spread through the plant's vascular system and express through the plant's tissues, including flowers, pollen, and nectar. Pollinators are thus exposed to systemics through numerous routes, including pollen and nectar, planting dust, residue from foliar applications, guttation (expressed fluid) droplets on contaminated plants, and contaminated soil and water.⁶ Systemic pesticides can persist in plant tissues, soil, and the environment for months or even years, and may build up after repeated applications, extending the time and means of

⁶ See, e.g., Jennifer Hopwood et al., *The Xerces Soc'y for Invertebrate Conservation, Are Neonicotinoids Killing Bees?* (2012), available at http://www.xerces.org/wp-content/uploads/2012/03/Are-Neonicotinoids-Killing-Bees_Xerces-Society1.pdf; Andrea Tapparo et al., *Assessment of the Environmental Exposure of Honeybees to Particulate Matter Containing Neonicotinoid Insecticides Coming From Corn Coated Seeds*, 46 *Envtl. Sci. & Tech.* 2592, 2592-99 (2012); Vincenzo Girolami et al., *Translocation of Neonicotinoid Insecticides From Coated Seeds to Seedling Guttation Drops: A Novel Way of Intoxication for Bees*, 102 *J. Econ. Entomology* 1808, 1808-15 (2009).

exposure.⁷

Neonicotinoids, a category of systemic pesticides, so named because they act on the nicotinic acetylcholine receptor in insects, have significant lethal and sub-lethal effects on bees. Dozens of independent, peer-reviewed scientific studies have documented various negative impacts, including, *inter alia*, damage to foraging behavior and increased worker bee mortality,⁸ homing failure,⁹ increased susceptibility to pathogens,¹⁰ and reduced colony growth rate and queen production.¹¹ Like the neonicotinoids already in use, sulfoxaflor acts on the nicotinic acetylcholine receptor in insects. PER 186.

When EPA first approved neonicotinoids, beekeepers began to

⁷ Hopwood et al., *supra* note 6, at 6.

⁸ Richard Gill et al., *Combined Pesticide Exposure Severely Affects Individual- and Colony-level Traits in Bees*, 491 *Nature* 105, 105-08 (2012).

⁹ Dave Goulson, *An Overview of the Environmental Risks Posed by Neonicotinoid Insecticides* 50 *J. Applied Ecology* 977, 977-87 (2013); Takashi Matsumoto, *Reduction in Homing Flights in the Honey Bee *Apis mellifera* After a Sublethal Dose of Neonicotinoid Insecticides*, 66 *Bull. Insectology* 1, 1-9 (2013).

¹⁰ Jeffery S. Pettis et al., *Pesticide Exposure in Honey Bees Results in Increased Levels of the Gut Pathogen *Nosema**, 99 *Naturwissenschaften* 153, 153-58 (2012).

¹¹ Penelope R. Whitehorn et al., *Neonicotinoid Pesticide Reduces Bumble Bee Colony Growth and Queen Production*, 336 *Sci.* 351, 351-52 (2012).

document various disturbing bee behaviors—“bees not returning to the hive, disoriented bees, bees gathered close together in small groups on the ground, abnormal foraging behavior, the occurrence of massive bee losses in spring, queen losses, increased sensitivity to diseases and colony disappearance”—now known to be symptomatic of CCD.¹² More recently, governments and experts are placing neonicotinoids under increasing scrutiny because scientists have now specifically identified systemic neonicotinoids as a primary contributing factor to this ecological crisis. Multiple studies now link the symptoms identified by beekeepers nearly a decade ago with exposure to neonicotinoids. These studies demonstrate the adverse effects of neonicotinoids on bees, including “disorientation, reduced communication, impaired learning and memory, reduced longevity, and reduced feeding, which *strongly* support that [neonicotinoids] may be one of the *major* factors involved with the onset of CCD.”¹³ Based on such risks, European Union member states approved a two-year moratorium on the use of certain

¹² Jeroen P. van der Sluijs et al., *Neonicotinoids, Bee Disorders and the Sustainability of Pollinator Services*, 5 *Current Op. Environ. Sustainability* 293, 294-95 (2013).

¹³ Tahira Farooqui, *A Potential Link Among Biogenic Amines-based Pesticides, Learning and Memory, and Colony Collapse Disorder: A Unique Hypothesis*, 62 *Neurochemistry Int'l* 122, 132 (2012) (emphases added).

neonicotinoids in 2013.¹⁴ Alarminglly, EPA still has not addressed these risks. A 2012 study found that EPA consistently approved neonicotinoid pesticide registrations despite its own scientists' repeated concerns, and concluded that EPA "has not been heeding the warnings of its own toxicologists."¹⁵

Registration of sulfoxaflor represents a continuation of this disturbing practice.¹⁶ Introducing yet another systemic and highly toxic insecticide into the environment will exacerbate the problems faced by bees and other pollinators, and create new synergistic effects.

¹⁴ Eur. Comm'n, *Bees & Pesticides: Commission Goes Ahead with Plan to Better Protect Bees* (May 30, 2013), http://ec.europa.eu/food/animal/liveanimals/bees/neonicotinoids_en.htm. This decision came after the European Food Safety Authority released a report identifying "high acute risk" to honey bees from neonicotinoids. Eur. Food Safety Auth., *EFSA Identifies Risks to Bees from Neonicotinoids* (Jan. 16, 2013), <http://www.efsa.europa.eu/en/press/news/130116.htm>.

¹⁵ Pierre Mineau & Cynthia Palmer, Am. Bird Conservancy, *The Impact of the Nation's Most Widely Used Insecticides on Birds* 65 (2013), available at http://www.abcbirds.org/abcprograms/policy/toxins/Neonic_FINAL.pdf.

¹⁶ See also Brief for Petitioner at 8-17 (discussing EPA's decision to register sulfoxaflor, five months after recommending conditional registration and further studies).

II. EPA HAS NOT SHOWN BY SUBSTANTIAL EVIDENCE THAT SULFOXAFLOR'S REGISTRATION WILL NOT CAUSE UNREASONABLE ADVERSE EFFECTS ON THE ENVIRONMENT

Registration of sulfoxaflor creates significant costs and risks of harm to the bees and pollinators that are essential to natural ecosystems and the agricultural economy. None of the benefits that EPA alleges sulfoxaflor will bring outweigh these costs. PER 198-99.

Before granting a pesticide registration, EPA must determine that the pesticide will not cause any “unreasonable adverse effects on the environment.” 7 U.S.C. § 136a(c)(5)(C). FIFRA requires EPA to determine whether a pesticide will cause such effects by weighing the economic, social, and environmental costs, along with the benefits, of any pesticide. *Id.* § 136(bb). EPA’s conclusion must be supported by substantial evidence. *Id.* § 136n; *see, e.g., Nw. Food Processors Ass’n v. Reilly*, 886 F.2d 1075, 1079 (9th Cir. 1989).

EPA’s own studies show that sulfoxaflor is highly acutely toxic to individual bees. PER 195. Further, EPA could not “preclude risks to developing brood or long-term colony health.” PER 37. Moreover, there is increasing evidence that other neonicotinoid pesticides are contributing to

the honey bee CCD crisis and alarming declines in native pollinators.¹⁷

Beyond these pollinators, studies show that neonicotinoids can cause direct and indirect mortality risks to birds, aquatic invertebrates, and ecosystems more generally.¹⁸ EPA failed to show how sulfoxaflor's purported benefits would outweigh these significant and potentially irreparable risks.

A. EPA ignores the threats that systemic pesticides pose to food production and security, and the costs they impose on the agricultural economy.

FIFRA's statutory command to balance the benefits and costs of the use of any pesticide requires EPA to examine the impacts that sulfoxaflor's toxicity to bees will have on the production of crops that require bee pollination, not merely the purported benefits that sulfoxaflor will allegedly provide to growers. PER 199.

EPA completely failed to do this critical analysis. *See, e.g., Universal Camera Corp. v. Nat'l Labor Relations Bd.*, 340 U.S. 474, 487-88 (1951)

¹⁷ *See e.g.,* Whitehorn et al., *supra* note 11, at 351-52; Siyuan Lu et al., *Design, Synthesis, and Particular Biological Behaviors of Chain-opening Nitromethylene Neonicotinoids with Cis Configuration*, 60 J. Agric. & Food Chemistry 322, 322-30 (2012); Mickaël Henry et al., *A Common Pesticide Decreases Foraging Success and Survival in Honey Bees* 336 Sci. 348, 348-50 (2012); Cédric Alaux et al., *Interactions Between Nosema Microspores and a Neonicotinoid Weaken Honeybees (Apis mellifera)*, 12 Evtl. Microbiology 774, 774-782 (2010).

¹⁸ Mineau & Palmer, *supra* note 15, at 5.

(holding that “the substantiality of evidence must take into account whatever in the record fairly detracts from its weight”). Instead, EPA offers only that sulfoxaflor will bring “some benefits . . . when compared to the alternatives,” and ignores the significant costs that its registration of sulfoxaflor will impose. PER 199. While EPA’s “Risk Benefit Determination” focuses on sulfoxaflor’s purported ability to help food production by eliminating target species, PER 199, it disregards evidence that sulfoxaflor will pose grave dangers to the very bees that *facilitate* that food production, *Port of Seattle v. Fed. Energy Regulatory Comm’n*, 499 F.3d 1016, 1035 (9th Cir. 2007) (holding that under substantial evidence review “an agency must account for evidence in the record that may dispute the agency’s findings”). EPA also claims that sulfoxaflor “will be incorporated into Integrated Pest Management programs,” PER 199, but ignores that systemic pesticides are contrary to the principles of Integrated Pest Management, which aim to lessen effects on non-target insects.¹⁹

The role that honey bees fill in agricultural production cannot be

¹⁹ Systemic pesticides are routinely used preemptively, before a need is demonstrated, and by their nature persist in the plant’s vascular system, which exposes non-target species. Integrated Pest Management uses various preventive means only once a need is demonstrated. Hopwood et al., *supra* note 6, at 4.

overstated. Increasingly, industrialized agriculture has come to rely extensively on this single species to provide crop pollination.²⁰ Indeed, certain fruit, seed, and nut crops can see their yields decrease by more than ninety percent in the absence of honey bees.²¹ According to EPA, pollination contributes twenty to thirty billion dollars in crop production annually to the U.S. agricultural economy.²²

Contrary to FIFRA, EPA ignores this important factor and fails to analyze the substantial costs of adversely affecting these invaluable pollinators. *See* 7 U.S.C. § 136(bb) (defining “unreasonable adverse effects on the environment” to include “any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide”) (emphasis added). This overarching failure skews the agency’s review. For example, EPA cites two

²⁰ *See* Rebecca Chaplin-Kramer et al., *Value of Wildland Habitat for Supplying Pollination Services to Californian Agriculture*, 33 *Rangelands* 33, 33 (June 2011).

²¹ Alexandra-Maria Klein et al., *Importance of Pollinators in Changing Landscapes for World Crops*, 274 *Proc. Royal Soc’y B: Biological Sci.* 303, 303–313 (2007).

²² EPA, *USDA and EPA Release New Report on Honey Bee Health*, Newsroom (May 2, 2013), <http://yosemite.epa.gov/opa/admpress.nsf/0/E04602A5E7AA060685257B5F004A12D3>.

grower groups (citrus and apple) in its final registration decision that will purportedly benefit from the use of sulfoxaflor, but does no analysis and makes no mention in the decision that both citrus and apple crops benefit directly from bee pollination. PER 199. Though EPA's Biological and Economic Analysis Division (BEAD) assessed sulfoxaflor's potential benefits to several crops and determined "that honey bees are important in the pollination of citrus," its analysis inappropriately ends there.²³ PER 24. EPA acknowledged this in its response to comments, stating that BEAD's analysis only assessed the benefits, and not the costs of registration of sulfoxaflor. PER 233. Other crops that require or benefit directly from bee pollination include almonds, blueberries, melons, cherries, and squash.²⁴ EPA similarly ignored the costs that more honey bee losses would incur on these crops.

To further illustrate the value of pollinating honey bees, consider

²³ BEAD also assessed fruiting vegetables, cucurbits, and cotton. PER 21-24.

²⁴ Nicholas W. Calderone, *Insect Pollinated Crops, Insect Pollinators and US Agriculture: Trend Analysis of Aggregate Data for the Period 1992–2009*, 7 PLoS One 2 (2012), available at PER 337; see also Chaplin-Kramer et al., *supra* note 20, at 33.

almonds grown in California, which are entirely dependent on honey bees.²⁵ Utilizing nearly sixty percent of all U.S. pollinating bee colonies,²⁶ California almond growers produced nearly four billion dollars in value in 2012 because of bees.²⁷ If bees disappear, so too would California's largest-value agricultural export and eighty percent of the world's almond supply.²⁸ EPA failed to adequately analyze or account for these adverse effects.

Additionally, the economic costs of sulfoxaflor's registration go beyond lost crop production. Pollinator shortages can cause yield and quality reductions and increase production costs, and thus threaten food

²⁵ USDA, Agric. Research Serv., *Honey Bees and Colony Collapse Disorder*, <http://www.ars.usda.gov/News/docs.htm?docid=15572> (last modified Dec. 02, 2013).

²⁶ Hoy Carman, *The Estimated Impact of Bee Colony Collapse Disorder on Almond Pollination Fees*, 14 Agric. & Res. Econ. Update 9, 9 (2011), available at http://giannini.ucop.edu/media/are-update/files/articles/V14N5_4.pdf.

²⁷ USDA, Nat'l Agric. Stat. Serv., *2013 California Almond Forecast* (May 2, 2013), available at http://www.nass.usda.gov/Statistics_by_State/California/Publications/Fruits_and_Nuts/201305almpd.pdf.

²⁸ Carman, *supra* note 26, at 9.

security.²⁹ Since 2006, beekeepers have lost an estimated ten million bee hives, with a total replacement cost of over two billion dollars borne entirely by beekeepers.³⁰ Over the winter of 2012 and 2013, U.S. commercial beekeepers reported average annual hive losses of approximately forty-five percent of the colonies in their operation, a seventy-eight percent increase in the average loss compared to the previous winter.³¹ As bee losses mount, beekeepers must replace lost bees to fulfill pollination contracts and must raise prices, the costs of which are which in turn passed on to producers, and are then passed on to the consumer.³² EPA did not account for these losses and their effects, in violation of its statutory duty to take into account all “costs and benefits” before registering a pesticide. 7 U.S.C. § 136(bb).

EPA similarly ignores the costs associated with harm to native bees and other wild pollinator species. Many of these species—including many

²⁹ Peter G. Kevan & Randolph Menzel, *The Plight of Pollination and the Interface of Neurobiology, Ecology and Food Security*, 32 *Environmentalist* 300, 302 (2012).

³⁰ USDA Report, *supra* note 3, at 1-2. No insurance or government indemnity programs cover these losses.

³¹ Bee Informed P’ship, *Winter Loss Survey 2012 – 2013: Preliminary Results*, (May 2, 2013), <http://beeinformed.org/2013/05/winter-loss-survey-2012-2013/> (survey in part sponsored by USDA).

³² Carman, *supra* note 26, at 9.

bumble bee species, and other insects such as butterflies, ladybugs and lacewings, dragonflies, and hoverflies—are facing declines comparable to those faced by honey bees.³³ At least four species of North American wild bees have experienced catastrophic declines over the past decade, and two of them may be on the brink of extinction.³⁴ EPA notes that sulfoxaflor exhibits similar toxicity to adult bumble bees (*Bombus terrestris*) as it does to honey bees, but does nothing to weigh this risk in its risk-benefit determination or final registration decision. PER 195. Further, EPA’s risk assessment and final registration decision contain significant data gaps regarding other native bee and non-bee insects, which EPA wholly overlooks. (It should be noted that EPA did not consult with the U.S. Fish and Wildlife Service or the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service before approving sulfoxaflor, with respect to its potential effects on threatened and endangered

³³ See e.g., Chaplin-Kramer et al., *supra* note 20, at 33; Elaine Evans et al., The Xerces Soc’y for Invertebrate Conservation, *Status Review of Three Formerly Common Species of Bumble Bee in the Subgenus Bombus* (2009) available at http://www.xerces.org/wp-content/uploads/2009/03/xerces_2008_bombus_status_review.pdf.

³⁴ Evans, *supra* note 33.

species under Section 7 of the Endangered Species Act. 16 U.S.C. § 1536(a)(2)).³⁵

Like their dying cousins, these wild pollinators are critical to U.S. agriculture and food production, a factor that EPA neglects. *See* 7 U.S.C. § 136(bb); *see also* S. Rep. 970, 92d Cong. 2d Sess., *reprinted in* 1972 U.S.C.C.A.N. 4092, 4095 (EPA must “make a full weighing of competing interests in making its determinations”). For example, in California, the nation’s biggest agriculture-producing state,³⁶ wild pollinators produce an estimated \$937 million to \$2.4 billion per year in economic value.³⁷ Yet, California’s wild pollinators are now least abundant in the areas most likely to be treated with systemic pesticides: “intensive monoculture areas where demand for pollination services is largest.”³⁸ Unsurprisingly, native bee and

³⁵ Comments from Ctr. for Food Safety, to EPA Office of Pesticide Programs, Re: Proposed Conditional Registration of Sulfoxaflor 7 (Feb. 12, 2013), Docket No. EPA-HQ-OPP-2010-0889-0363, *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2010-0889-0363>.

³⁶ Cal. Dep’t Food & Agric., *California Agricultural Production Statistics*, <http://www.cdafa.ca.gov/statistics/> (last visited Dec. 13, 2013).

³⁷ Chaplin-Kramer et al., *supra* note 20, at 37.

³⁸ Ann Brody Guy, Univ. Cal. Berkeley, *Wild Pollinators Worth up to \$2.4 Billion to Farmers, Study Finds*, Univ. Cal. Berkeley News Center (June 20,

pollinator species suffer the same sub-lethal and chronic effects from systemic pesticide use as managed honey bees.³⁹ Introducing another systemic pesticide to the environment threatens to harm these essential pollinators and decrease overall crop production capabilities.

Accordingly, EPA has violated FIFRA by entirely overlooking these significant costs of its registration decision. EPA has not adequately analyzed the unreasonable risks sulfoxaflor poses in the form of bee and other pollinator population losses, and the concomitant costs to the agricultural economy and food system. In so doing, EPA has failed to meet its substantial evidence burden. 7 U.S.C. § 136n(b).

B. EPA failed to consider the impacts of systemic pesticides on the environment and its ecosystems.

Bees are an indicator species, meaning that their well-being is a microcosm of broader ecosystem health. Moreover, bees and other pollinators provide essential ecological services that “are often taken for

2011), <http://newscenter.berkeley.edu/2011/06/20/wild-pollinators-worth-billions-to-farmers/>.

³⁹ Whitehorn et al., *supra* note 11, at 351-52 (finding that bumble bee colonies exposed to field-realistic levels of a neonicotinoid experienced a significantly reduced growth rate and an eighty-five percent reduction in new queens).

granted, regarded as free, generally stable, ubiquitous, and perpetual.”⁴⁰

EPA made this critical mistake by failing to consider pollinators’ crucial service to the environment in its risk-benefit determination.

Bees and other pollinators do much more than *just* feed the planet; they help maintain biodiversity, food production, and human welfare.⁴¹

Pollination is an essential ecosystem service—one of the integrated “interactions between life and its physical environment that allows life . . . to exist.”⁴² Through pollination, bees provide a host of services, such as “seed dispersal, successional changes in plant communities, soil evolution, and nutrient cycling.”⁴³ As such, major losses in bee populations portend and evince major losses in biological diversity and ecosystem health.

Unsurprisingly, systemic pesticides have direct and indirect effects on other non-target species and animals. Systemic neonicotinoid pesticides cause direct and indirect mortality to a wide range of birds and aquatic invertebrates, and have likely contributed to significant declines of grassland

⁴⁰ Kevan & Menzel, *supra* note 29, at 300.

⁴¹ van der Sluijs et al., *supra* note 12, at 294.

⁴² Kevan & Menzel, *supra* note 29, at 300.

⁴³ *Id.* at 305.

birds in North America.⁴⁴ For instance, pesticide use that reduces farmland birds' invertebrate food supply can negatively affect those birds' reproductive success and lead to population declines.⁴⁵ In addition to indirect effects of bee losses, systemic pesticides can directly harm ecosystems and their non-bee inhabitants as well.⁴⁶

Amicus CFS submitted comments opposing EPA's proposed conditional registration of sulfoxaflor, noting its high acute toxicity to saltwater invertebrates and EPA's lack of mitigation measures for potential coastal usages, through labeling or otherwise.⁴⁷ EPA dismissed this high toxicity in its registration decision, characterizing it as only "marginally" exceeding acute risk and makes no mention of these direct adverse effects on aquatic ecosystems in its risk benefit determination. PER 194. Moreover, EPA acknowledges that sulfoxaflor will result in surface and groundwater contamination, but similarly makes no determination how this will effect

⁴⁴ Mineau & Palmer, *supra* note 15, at 6-9, 67.

⁴⁵ *Id.* at 37-38.

⁴⁶ *Id.* at 15 (noting that as early as 2008, EPA had stated that certain neonicotinoids posed a potential "for direct adverse effects on freshwater invertebrates, birds and mammals") (internal quotation omitted).

⁴⁷ Ctr. for Food Safety, *supra* note 35, at 7-8.

aquatic environments. PER 30. That precursor neonicotinoids have contaminated groundwater in levels that “may be totally unprecedented in the history of pesticide registration” makes EPA’s registration of sulfoxaflor all the more troubling.⁴⁸

Continued pollinator losses caused by exposure to sulfoxaflor will harm natural ecosystems and the organisms that rely on them. EPA considered and improperly dismissed direct risks to non-pollinator aquatic and terrestrial organisms, and also ignored the *indirect* and cumulative risks these organisms will confront in the face of further bee losses. Such risks fall within those that EPA must consider when determining whether registering a pesticide will create “*any* unreasonable risk to . . . the environment.” 7 U.S.C. § 136(bb) (emphasis added). As such, EPA did not fulfill its statutory mandate to show by substantial evidence that registration of sulfoxaflor will not cause unreasonable adverse effects on the environment.

CONCLUSION

A pollinator crisis is occurring. This reality requires the utmost protection of our valuable pollinators, and the economies and ecosystems

⁴⁸ Mineau & Palmer, *supra* note 15, at 57.

that they sustain. EPA's approval of sulfoxaflor dangerously ignores the ongoing global ecological crisis occurring to these indispensable organisms and threatens the existence of life on this planet. In making its determination to register sulfoxaflor, EPA inadequately considered, or ignored entirely, sulfoxaflor's harm to pollinators and the significant costs that harm will impose on the agricultural economy, food security, and natural ecosystems. EPA has not shown by substantial evidence that the registration of sulfoxaflor will not cause any unreasonable adverse effects on the environment, as required by FIFRA. Accordingly, this Court should set the registration aside and remand.

Respectfully Submitted,

Dated: December 13, 2013

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**CERTIFICATE OF COMPLIANCE WITH
RULES 29(C)(5), 29(D), 32(A)**

1. Pursuant to Rule 29(c)(5) of the Federal Rules of Appellate Procedure, *Amici* state that (a) no party's counsel authored the brief in whole or in part; (b) no party or party's counsel contributed money that was intended to fund preparing or submitting the brief; and (c) no person—other than *Amici*, their members, or their counsel—contributed money that was intended to fund preparing or submitting the brief.

2. With respect to the type-volume limitations of Fed. R. App. P. 29(d) and 32(a)(7)(B), this brief contains 6111 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii).

3. This brief complies with the typeface requirements of Fed. R. App. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionately spaced typeface using Microsoft Word 2010 in 14-point Times New Roman.

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