Pesticides and You

News from Beyond Pesticides: Protecting Health and the Environment with Science, Policy & Action

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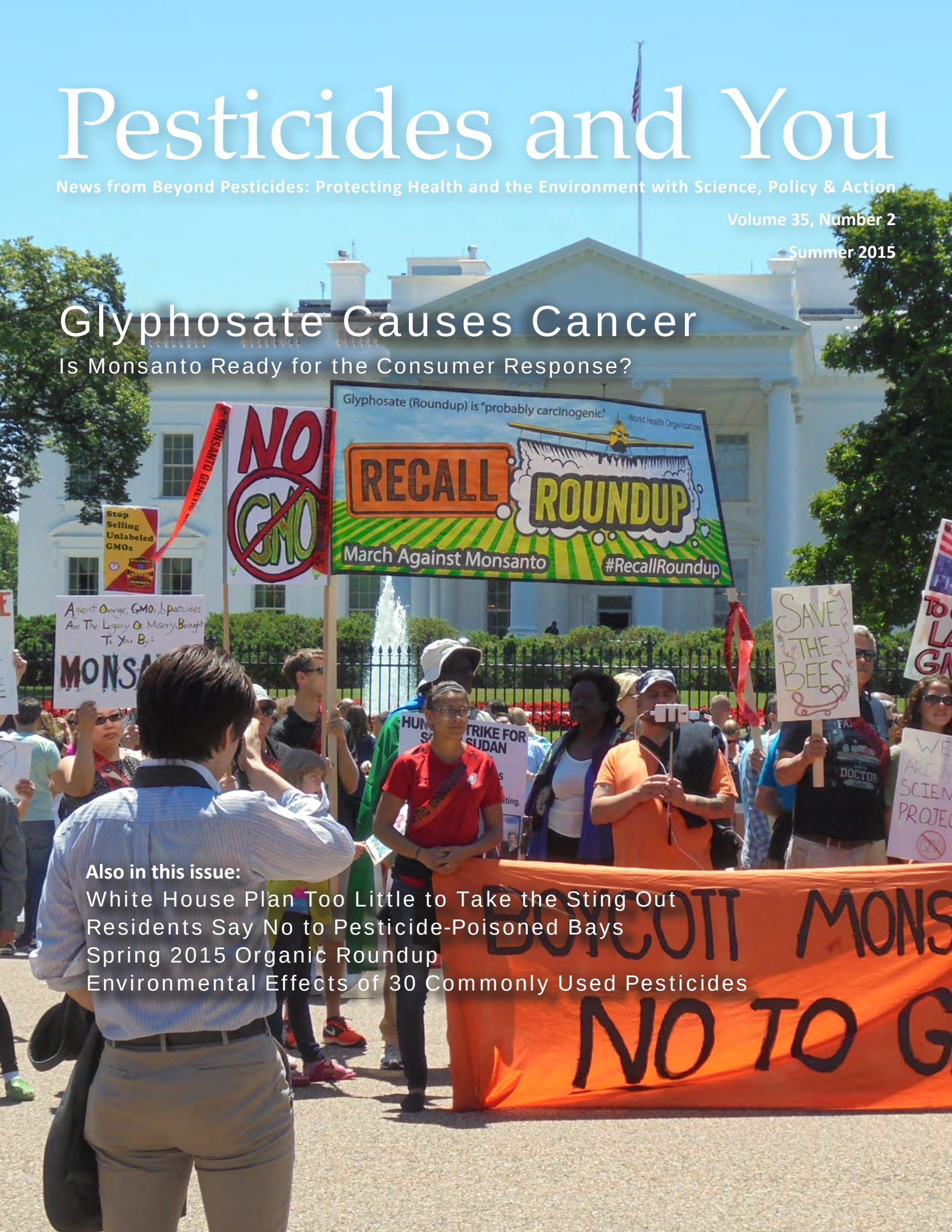
Glyphosate Causes Cancer

Is Monsanto Ready for the Consumer Response?



Also in this issue:

Another One Should Bite the Dust

Why is the cancer causing Roundup (glyphosate) still being used? We are calling for the weedkiller to be taken off the market by EPA and the states, for people to stop using it and exposing their families, and for cities and town to stop its use on public lands immediately.

Roundup's Got Cancer

As of this writing, it has been six months since the International Agency for Research on Cancer (IARC), a branch of the World Health Organization, announced its finding that one of the world's most popular pesticides is a human cancer causing agent based on laboratory animal studies. IARC doesn't reach this conclusion lightly. As we explain in this issue, prior to IARC's classification of a chemical, 17 experts from 11 countries analyze scientific studies and data for about a year before meeting as a working group to reach a consensus on the chemical's status. The group was chaired by Aaron Blair, Ph.D., who ran that National Cancer Institute's Occupation Studies Branch and is the author of over 450 publications on occupational and environmental causes of cancer.

It is rare that human test data exists on a pesticide (the human data often comes from occupational exposure studies). Without human data on glyphosate, IARC gave the chemical its highest rating possible, a Group 2A probably carcinogenic in humans rating. The causal relationship between exposure and cancer is clear. But, the headlines in newspapers across the country at the time proclaimed that IARC ranked glyphosate a *probable* human carcinogen, and that seemed to blunt the story behind the headline –glyphosate is a potent carcinogen.

The glyphosate story that is playing out now seems repetitious of the many stories of failed U.S. pesticide regulation. A chemical is allowed on the market under a weak federal statute that is administered with deference to the presumed, but unproven, benefits of or need for toxic synthetic chemicals, its market share grows to become intertwined in our lives through dietary and nondietary exposure, it is presumed safe and used widely where children and pets live and play, the data on adverse effects builds for years in obscure scientific journals and conferences, and then the information on hazards emerges in the mainstream press, forcing greater public scrutiny and eventual EPA regulatory movement that facilitates voluntary action by the manufacturer to withdraw the chemical from the market. The manufacturer moves on to the next chemical, leaving victims of cancer, neurological damage, respiratory problems, reproductive dysfunction, and learning disabilities in its wake.

It is a story that demands state and local action, while powerful chemical industry interests threaten regulators with litigation and delays that weigh heavily on the agency. In fact, the company with a special interest, in the case of glyphosate –in this case Monsanto– was able in 1991 to convince EPA to change its cancer classification of glyphosate to insufficient evidence of carcinogenicity.

People and local officials deciding how to manage land, from parks to playing fields, schools to golf courses, roadsides to waterways and surrounding areas feel, at best, unprotected and, at worst, betrayed by EPA. We are watching the glyphosate science unfold, just as we watch the decline of pollinators and see an ineffective or unresponsive EPA. That reality is driving more and more communities to define land management programs that adopt organic practices on their public lands, and, in states where their authority is not usurped by state government, issue restrictions on toxic pesticide use on private lands –due to the poisoning and contamination caused by movement of the chemical off the target site through drift and run-off.

All this comes at a time when glyphosate is no longer working on farms across the U.S. Last fall, the state of Texas, on behalf of farmers of 3 million acres of cotton, asked EPA to allow emergency use of propazine, a triazine herbicide in the same family as atrazine, because even though it is not registered for use on cotton it is thought to work. EPA denied the permit because it said that cumulative exposure to triazines was already above acceptable levels.

So, we call for glyphosate use to stop. We do this at the same time that we advance an organic systems approach to weed management, one that adopts soil-building, cultural, mechanical, ecological, and biological practices that typically make the chemical unnecessary.

Defending organic

The strategy that we are pursuing –an organic strategy solution– offers the best hope for sustainability, with a sound federal law with core principles and standards of sustainability that are unmatched by other laws. The organic law enshrines a definition of sustainable that protects, health, the environment, and biodiversity, and seeks continuous improvement through incentives for the most ecologically sound inputs. A big problem is the agency that administers the law, U.S. Department of Agriculture (USDA). Along with a coalition of farm, consumer, environmental and certification groups, we have sued USDA to get its organic program back on track after changing long standing law and process without seeking public hearing and comment. In a decision on another case, a federal court rejected USDA's attempt to block the case from going forward. The judge in the case told the government attorney that it could not change its interpretation of law without public input.

The pace of change is increasing. Roadblocks to change are temporary, as common sense and efforts to avoid unnecessary hazards become the norm in households and towns and cities across the country. Please let us know how we can help as your household and town make the transition to organic.

Jay Feldman is executive director of Beyond Pesticides.

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Cover Photo: March Against Monsanto protest outside of White House in May 2015. The demonstration was part of the third annual protest against the agribusiness corporation taking place simultaneously in 421 cities around the world. Monsanto is the leading producer of glyphosate. Photo Courtesy Ford Fischer/News2Share, www.news2share.com.

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Battling Weeds on Curbs and Sidewalks

Beyond Pesticides,
My goal is to get the city and schools in my community to transition to all organic for turf care and structural Integrated Pest Management. Right now I'm focusing on getting policies in place and educating the public. I am also looking for practical alternatives to herbicide use on our streets. Approximately 33 miles of curbed areas and some sidewalks and parking lots are sprayed. We sit directly on New Hampshire's Great Bay watershed. I was told vinegar 'didn't work', and that's the only thing they have tried so far since I began this. If you could please send me some suggestions, I would be very grateful.
Diana C., Dover, NH

Hi Diana,
We're very excited to hear about your outreach and education efforts in your community. Weed growth around sidewalks, curbed areas, and parking lots presents unique challenges for city managers working to maintain public infrastructure. While creating and maintaining healthy soil will foster healthy grass and plants that crowd-out weeds in lawns and landscapes, the goal for sidewalks and curbs is often a sterile, plant-free environment. Achieving this is especially difficult because these areas are open to the environment, as wind, rain, and a multitude of other factors inevitably bring soil and plant seeds from yards, gardens, construction areas, etc. into the cracks and crevices of sidewalks and parking lots. Weeds, being the opportunists that they are, have learned to exploit these niche environments. The pesticide industry seemingly relishes in dramatizing what is frankly a very impressive display of plant resiliency. We've all seen the pesticide commercials that anthropomorphize the hardy dandelion, casting it as an invading marauder out to crack your sidewalk and ruin your walkways.

But you don't need a toxic, carcinogenic product like glyphosate-containing Roundup in order to manage sidewalk weeds. Vinegar is unlikely to work unless concentrations with high acetic acid are used. In 2002, the U.S. Department of Agriculture studied the efficacy of vinegar herbicides on common weeds, including lamb's quarters, giant foxtail, smooth pigweed, and Canada thistle. The agency found that vinegar concentrations of 5-10% only killed weeds that were in their first two weeks of life. Older, larger plants needed to be hit with concentrations of 20% acetic acid or more. These concentrations showed an 80-100% kill rate. Note that high concentrations of acetic acid can cause skin irritation and eye damage, so proper use is critical to avoid injury to applicators and bystanders. The same goes for all least-toxic alternative herbicides, including those that use essential oils and fatty acids. When applying these herbicides, attempt to apply as soon as possible after the weed sprouts, make sure to coat the entire target plant, try to apply in warm weather, and check if a repeat application is necessary for larger weeds.

There are even less toxic alternatives available as well. When possible, encourage the town to mow or hand-pick sidewalk weeds. There are some great products, such as the Garden Weasel, which make hand-pulling weeds easy. Some argue these methods won't kill the root, but when mowed or picked early, weeds likely won't have the ability to recover. Another increasingly popular option is the use of "flame weeders," which use propane and a torch wand to literally burn down weeds. As a final consideration, the town may want to consider purchasing a steam weeding machine. These machines use a jet of superheated steam to take care of weeds, and are a highly efficacious method of municipal weed control. Although there is an up-front cost and they're difficult to come by in the U.S., these machines represent a long-term solution. The City of Carrboro, NC, purchased a steam weeder in 1999 and has been using it ever since. "[E]verywhere we used it, it's done a yeoman's job," notes Chris Gerry, Grounds Supervisor at Carborro Public Works Department, on the city's website. "This is the least toxic approach to weeds that I can imagine. Our biggest weed problem is along miles of fences around sports fields and other facilities, and along roadsides where the grass encroaches onto the pavement. The flamer does a good job, but weather conditions have to be right; you can't use it when things are very dry and there's a risk of fire. This you can use just about any time."

Photo by Kate Ter Haar.

Absent a steam weeder, combining the non-toxic and least-toxic approaches listed above, and managing expectations for weeds is likely the best way to manage these tricky areas. For a list of alternative measures, see Beyond Pesticides' Least-Toxic Control of Weeds fact sheet at www.beyondpesticides.org/lawn.

Share With Us!

Beyond Pesticides welcomes your questions, comments or concerns. Have something you'd like to share or ask us? We'd like to know! If we think something might be particularly useful for others, we will print your comments in this section. Mail will be edited for length and clarity, and we will not publish your contact information. There are many ways you can contact us: Send us an email at info@beyondpesticides.org, give us a call at 202-543-5450, or simply send questions and comments to: 701 E Street SE, Washington, DC 20003.

Chemical-Coated Clothing

I attended a scouting event over the weekend where the ground was sprayed with a permethrin insecticide solution before

setting up a campsite. It has been recommended to scouts that to have their clothes function as an insect repellent, soak them in a permethrin solution and allow them to completely dry before wearing. I freaked out when hearing this. After doing some research, I found that this is standard practice in the U.S. military, and EPA says it is safe. I don't understand how using an insecticide that can be considered a nerve agent as a repellent can be considered "safe" for anyone. Am I overreacting?

We have Lyme Disease here in the Midwest, along with West Nile Virus. We have mosquitoes, which are quite ferocious at times. In the summer, the worst are chiggers. I am not sure how to weigh the health risks of the insecticide permethrin vs. West Nile and Lyme disease. How does Beyond Pesticides feel about this?
Devin W., Lenexa, KS

Hi Devin,
We don't believe you're overreacting. Permethrin is a highly toxic insecticide that EPA itself has classified as a possible human carcinogen. The chemical is also a suspected endocrine disruptor, a category of chemicals that interfere with the hormonal system and cause chronic health problems. Further, scientific studies have shown that combining permethrin with the popular insect repellent DEET results in synergistic effects that adversely impact the nervous system and motor skills. In light of this being the practice of a Boy Scout troop, pesticide-treated clothing presents further risks as children and young adults are more sensitive to chemical exposures than adults.

Beyond Pesticides has a long-standing campaign against pesticide-impregnated clothing. While Lyme disease and West Nile virus are serious and legitimate concerns, there are less toxic methods of controlling ticks and mosquitoes than hazardous pesticides. This method puts a focus on prevention, which includes wearing long sleeves and long pants that are tight around the wrists and/or ankles (or, tucking pant legs into socks in high risk areas). A number of retailers sell light-weight bug shirts that protect against a range of biting insects and do not require pesticides. You can also see Beyond Pesticides fact sheet on least-toxic repellents for a list of alternatives to DEET (http://bit.ly/ltrepellents). These methods are much safer, and certainly a better use of funds than the permethrin-treated clothing.

In Remembrance

Environmental Community Loses a Pioneer Researcher and Passionate Advocate, Lou Guillette, Ph.D.

It is with great sadness that we report that Louis Guillette, Jr., Ph.D., died from complications of cancer treatment on Thursday, August 6, 2015. He was 62. Lou was an incredible inspiration, communicator, researcher, and teacher. And, beyond that, he was a truly good guy and beloved among students, researchers, and environmental and public health advocates.

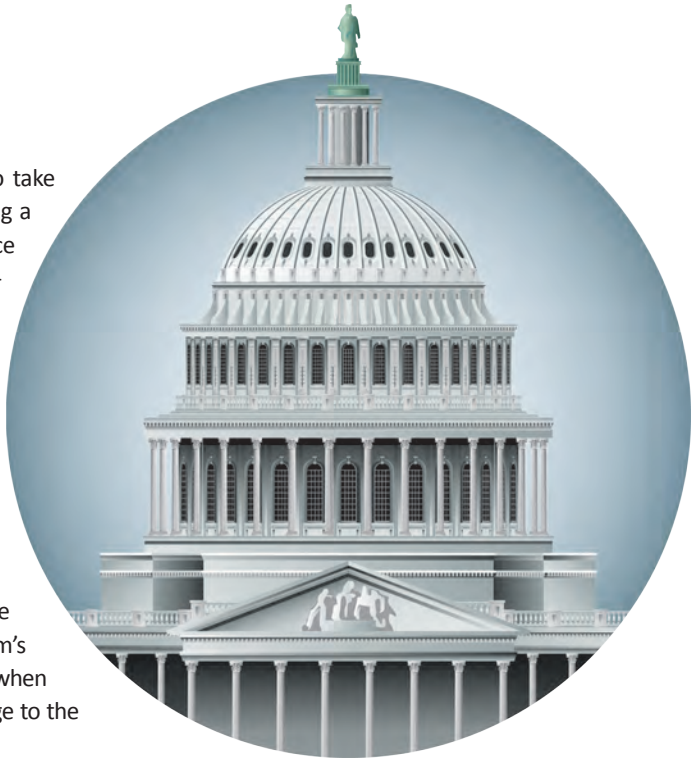
Our understanding of biology is deeper and the world is better off because of Lou. His work revolutionized scientific thinking and showed us the real world consequences of toxic chemical contamination and exposure. The first time that Lou spoke at a Beyond Pesticides' Forum, over two decades ago, he challenged classical toxicology and taught us, with his signature clarity, that our regulations and high dose experimentation missed the mark in assessing low dose exposure to environmental contaminants and their impact on the endocrine system –and what it all means to healthy living systems.

Lou's dedication to bringing science to people made him such a special person. We will cherish his talk this past April in capturing the essence of his work and the importance of it to the sustainability of life. It was extraordinary having Lou as the kick-off keynote speaker after participants visited Lake Apopka (Florida), where Lou began researching the dramatic decline in the alligator population in 1985. As a colleague of Theo Colborn, Ph.D., his research showed that there were hormonal abnormalities in Lake Apopka alligators, finding problems with their levels of testosterone and estradiol, reproductive problems, and abnormalities of the testis and the ovary. Lou worked at the leading edge of science worldwide, disclosing that environmental contaminants were acting as hormones.

From 1985 to 2006, Lou was professor in the Department of Zoology at the University of Florida, Gainesville. In 2006, he was awarded an Endowed Chair in Marine Genomic, and appointed Director of the Marine Biomedicine and Environmental Sciences Center, and Professor of Obstetrics and Gynecology at the Medical University of South Carolina.

We will carry Lou's message and advance the changes he urged.

Two Lawsuits Against USDA Aim to Protect the Organic Label



Groups Challenge Major USDA Change to Organic Rule:
On April 8, 2015, organic stakeholders filed a federal lawsuit, maintaining that the U.S. Department of Agriculture (USDA) violated the federal rulemaking process by changing established procedures for reviewing the potential hazards and need for allowed synthetic and prohibited natural substances used in producing organic food. A coalition of 15 organic food producers asked the court to require USDA to open a public hearing and comment period before instituting a rule change.

The lawsuit addresses a rule that implements the organic law's "sunset provision," which since its origins has been interpreted to require all allowed synthetic materials to cycle off the National List of Allowed and Prohibited Substances every five years unless the NOSB votes by a 2/3 majority to relist them. In making its decision, the NOSB must consider public input, new science, and new information on alternatives. In September 2013, in a complete reversal of accepted process, USDA, without public notice, required a 2/3 vote to take a material off the list, changing a process that has been in place since the inception of the organic program.

Groups Sue USDA for Failure to Seek Public Comment on Organic Compost Rule:
On April 14, 2015, the Center for Environmental Health, Beyond Pesticides, and the Center for Food Safety (CFS) filed a federal lawsuit challenging the USDA National Organic Program's (NOP) failure to follow the law when making a substantial rule change to the USDA organic standard.

At issue is the contaminated compost guidance released by USDA, which weakens the long-standing prohibition of synthetic pesticide contaminants. Prior to the new contaminated compost guidance, organic regulations expressly prohibited fertilizers and compost from containing any synthetic substances not included on organic's National List. USDA made this rule without the required rule making process, usurping the public's right to ensure USDA activities are consistent with the *Organic Food Production Act*. In September, the court rejected USDA's motion to dismiss the case, finding that the agency adopted a reinterpretation of key policy.

EPA's Expansion of 2,4-D Enlist Duo Challenged

A coalition of conservation, food safety, and public health groups filed a motion on April 20, 2015 that challenges the U.S. Environmental Protection Agency's (EPA) decision to expand the use of "Enlist Duo" on genetically engineered (GE) corn and soybean crops to nine additional states: Arkansas, Kansas, Louisiana, Minnesota, Missouri, Mississippi, Nebraska, Oklahoma, and North Dakota. Enlist Duo, which contains the toxic herbicide 2,4-D, was approved by EPA to be used on 2,4-D-tolerant crops, despite concerns for human and environmental contamination.

The motion was filed by Earthjustice and Center for Food Safety on behalf of Beyond Pesticides, among other environmental groups. This motion builds on the coalition's earlier challenge of Enlist Duo, which already includes six states (Illinois, Indiana, Iowa, Ohio, South Dakota, and Wisconsin) where EPA first approved the herbicide's use on GE corn and soybean crops. Another legal challenge cites EPA's failure to consult with the U.S. Fish and Wildlife Service (FWS) regarding the impact of the herbicide on two endangered species –the whooping crane and the Indiana bat– with the approval of Enlist Duo for use on GE crops.

The groups are challenging EPA's decision to allow the use of Enlist Duo in 15 Midwestern states because of the serious impacts the powerful new herbicide cocktail will have on farmworkers, neighboring farms, ground and surface water, and endangered species. For instance, 2,4-D, half the mixture of the defoliant Agent Orange, has been linked to serious illnesses, including Parkinson's disease, non-Hodgkin's lymphoma, and reproductive problems. EPA's analyses also demonstrate that the herbicide may affect endangered species, like the whooping crane, Louisiana black bear, and Indiana bat, through consumption of prey contaminated with the toxic chemical.

Petition to Ban Harmful Antibacterial Pesticide Rejected by EPA

In a response that took over five years, the Environmental Protection Agency (EPA) issued its long-awaited response to a Citizen Petition filed by Beyond Pesticides and Food & Water Watch, on May 14, 2015, denying the request to cancel registered products that contain the antibacterial pesticide triclosan. The petition, submitted in January 2010, requested EPA to cancel registered pesticide products that contain triclosan, as well as reassess the risks associated with the chemical under the *Federal Insecticide, Fungicide, and Rodenticide Act* (FIFRA), *Federal Food, Drug, and Cosmetic Act, Clean Water Act* (CWA), *Safe Drinking Water Act*, and *Endangered Species Act* (ESA).

The decision allows this toxic substance to continue to be sold nationwide in common household products, from toys, cutting boards, hair brushes, sponges, computer keyboards to socks and undergarments. The agency did, however, grant one request, and will evaluate and conduct a biological assessment of the potential for effects on listed species under ESA in the ongoing triclosan registration review.

Research indicates that the toxic antibacterial interferes with the action of hormones, potentially causing developmental problems in fetuses and newborns, among other health concerns. In December 2013, the Food and Drug Administration (FDA) announced that the growing body of scientific evidence warranted requiring manufacturers to prove that their antibacterial soaps are safe and effective against bacteria, as product label claims stipulate, but no action has been taken by the agency. The cosmetic uses of triclosan, such as toothpaste and liquid soaps, are regulated by FDA and are subject to a separate petition for which there has been no response since its filing in 2005 and again in 2009.

Public pressure, led by Beyond Pesticides and other groups, has contributed to growing awareness of the dangers of triclosan's use. As a result, several major manufacturers have taken steps to exclude the chemical, including Johnson & Johnson, Procter & Gamble, and Colgate-Palmolive, which reformulated its popular line of liquid soaps, but continues to formulate Total® toothpaste with triclosan. Furthermore, Minnesota became the first state to ban the toxic antibacterial, announcing that retailers would no longer be able to sell cleaning products that contain triclosan, effective January 2017.

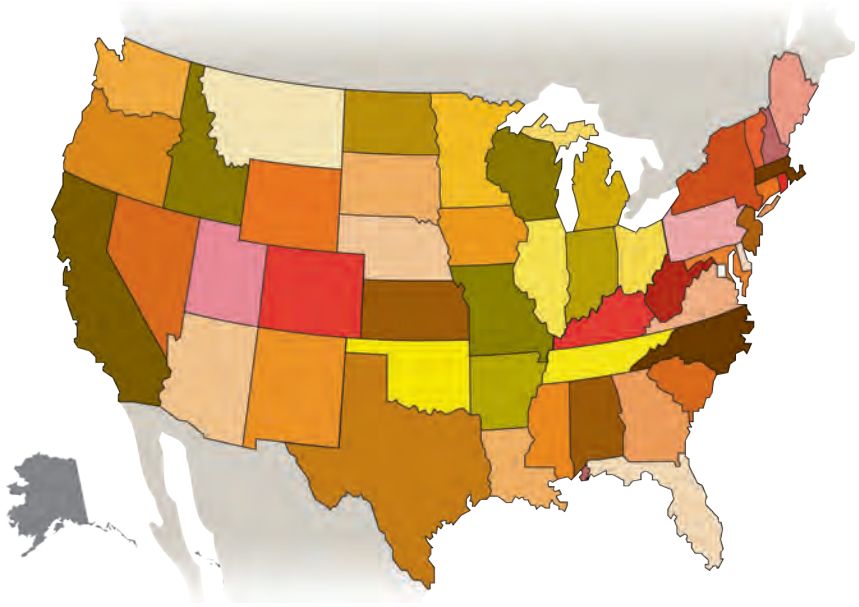
Congress Continues Attacks on Clean Water Act Protections

A federal bill was introduced June 3, 2015, that, if passed, will undermine the U.S. Environmental Protection Agency's (EPA) authority to issue *Clean Water Act* permits for pesticide spraying over waterways. Titled "The Sensible Environmental Protection Act" and introduced by Senators Mike Crapo (R-Idaho) and Claire McCaskill (D-Mo), this bill will reverse a 2009 federal court decision in *National Cotton Council v. EPA,* which directed EPA to require permits from applicators who spray over "navigable waters," as outlined in the *Clean Water Act* (CWA).

The bill's authors claim that the need for water permits is duplicative and expensive, given that pesticide applicators also comply with the *Federal Insecticide, Fungicide and Rodenticide Act* (FIFRA), the law that requires applicators to follow instructions on pesticide labels.

Contrary to the Senators' claims, the CWA permit serves as a valuable tool that lets authorities know what is sprayed and when it is sprayed, so that the public may know what chemicals are used in their waterways and the potential dangers to sensitive aquatic ecosystems. Existing pesticide regulations under FIFRA do not achieve these protections and most agricultural pesticide applications are exempt from CWA permit requirements. The permits do require basic protections for water quality and aquatic wildlife. Applicators must record their pesticide applications and monitor application sites for any adverse incidents, which must be reported. For many states, the cost of the permit is as low as $25.

Already, nearly 2,000 waterways are impaired by pesticide contamination. A 2014 U.S. Geological Survey (USGS) report finds that levels of pesticides continue to be a concern for aquatic life in many of the nation's rivers and streams in agricultural and urban areas. The study, which documents pesticide levels in U.S. waterways for two decades (1992-2011), finds pesticides and their breakdown products in U.S. streams more than 90 percent of the time.



Portland, OR to Protect Pollinators, Bans Use of Bee-Toxic Pesticides

In April 2015, the City Council of Portland, Oregon voted unanimously to ban the use of neonicotinoid insecticides on city-owned property because these pesticides are persistent in the environment, harmful to pollinators, and have been involved in acute bee kills in other areas of the state.

Portland's ordinance was spurred in part by the 2013 death of tens of thousands of bees as a result of the improper use of the neonicotinoids. State officials banned four of the bee-killing insecticides, including imidacloprid, clothianidin, thiamethoxam and dinotefuran from use on Linden trees. In addition to banning the use of neonicotinoids on city property, the ordinance urges private retailers to label any product that may contain these toxic chemicals. However, the ordinance does not immediately apply to two rose gardens in the city. A "pilot program" will be run to find alternatives to using neonicotinoids to kill rose midges. The city has until December 2017 to come up with a sufficient alternative.

Portland's ordinance to ban neonicotinoids on city-owned property follows numerous communities that have taken steps toward creating a safer habitat for pollinators and a healthier environment. In 2014, Eugene, Oregon became the first community in the nation to specifically ban the use of neonicotinoid pesticides from city property. Other communities passed similar bans, such as Skagway, Alaska; Shorewood, Minnesota; and, in Washington State, Thurston County, Seattle, and Spokane. Even school campuses have joined in, with the University of Vermont Law School becoming the first BEE Protective campus after announcing that it was going neonicotinoid pesticide-free. At Emory University, the Office of Sustainability Initiatives not only banned neonicotinoids on campus, but also went a step further by planting pollinator habitats and conducting campus outreach and education on the importance of pollinators. These restrictions on neonicotinoids are especially important because they build pressure at the federal level, and demonstrate to other communities and cities across the country that there are ways to create positive environmental change with their own local actions.

Boulder Passes "Bee Safe" Resolution

On May 7, 2015, the City of Boulder, Colorado joined a number of growing localities in the U.S. to restrict the use of bee-toxic neonicotinoid (neonic) pesticides on city property. The resolution moved forward primarily as a result of efforts by grassroots activists with the local organization Bee Safe Boulder, but also received strong support from city officials.

Under the new resolution, Boulder has committed to the following:
1. Not applying neonicotinoid pesticides to city property;
2. Encouraging "all related parties," including county, state, and federal governments and private individuals to suspend their use of neonicotinoids until a thorough review is completed and a public health and environmental assessment can prove their safety;
3. Seeking out plants and seeds not treated with neonicotinoids, and encouraging all businesses, homeowners, and HOAs within the city to make efforts to ensure no neonic-containing products are sold or used within the city, and;
4. Engaging in efforts to educate the broader community about reducing neonicotinoid pesticides, and encouraging other states, localities, and government agencies to adopt similar policies.

Boulder City is now the first locality in Colorado to pass a comprehensive resolution restricting neonicotinoid use on government-owned property. Because of the state's regressive pesticide preemption law, the city is barred from passing legislation that halts the use of pesticides on private property. In spite of this preemption law, activists at Bee Safe Boulder have had success in getting private individuals to pledge to stop the use of neonicotinoids and other bee-toxic chemicals on their own property. Once one neighborhood forms at least 75 contiguous pledged properties, the group certifies the neighborhood as a "Bee Safe Community."

California Releases New Guidelines for Pesticide Use on Marijuana

In April 2015, California released its first guidelines for the management of pests and use of pesticides on cannabis. Cannabis cultivation in California, particularly in the northern areas of the state, has been associated with rampant use of heavy construction equipment and pesticides to clear land and control pests, resulting in contamination and runoff in local streams, and widespread poisoning of non-target wildlife.

Although growing cannabis on public lands in California has always been illegal, private production of the plant in environmentally sensitive sites has gone largely unregulated, due to the plant's illegal status under federal law, but legally allowed in the state under California's *Compassionate Use Act*.

A 2012 report from the California Research Bureau indicates that because no pesticide products were registered for use on cannabis by EPA, and given that applying a pesticide for an unregistered use is illegal under federal pesticide law, the state could confiscate any medical marijuana crop treated with a pesticide.

However, it was noted that this conflicts with the state's *Compassionate Use Act*, which guarantees ill Californians access to medical marijuana. Thus, it was determined that growers could simply not spray pesticides in order to avoid potential confiscation. The state has not formulated any laws or regulations governing pesticide use on cannabis.

There are indications from the new guidelines that the state is putting a focus on a systems approach to pest control in cannabis production. While not as comprehensive as rules in states like Massachusetts and New Hampshire, which have codified requirements that cannabis growers follow organic practices and create an organic system plan, California's new rules do a good deal to promote a safer trajectory of the state's marijuana industry. See Beyond Pesticides' report at http://bit.ly/cannabisandpesticides.

Colorado Sets the Stage for Pesticide Use in Marijuana Production

In May 2015, the City of Denver, Colorado quarantined tens of thousands of marijuana plants over the suspected use of prohibited pesticides during their production. When legal challenges ensued, the presiding U.S. District Court judge sided with the Denver Department of Environmental Health (DDOH), keeping the quarantine in place and preventing the plants, allegedly worth millions of dollars, from entering the market place. This decision sparked an important dialogue about the use of pesticides on marijuana plants in states that have legalized the crop, absent federal regulations governing the issue.

Because marijuana remains illegal at the federal level, state-level decisions coming out of Colorado on this issue have the potential to set important precedents for pesticide regulation and cannabis production in other states that have legalized marijuana, as highlighted by a report written by Beyond Pesticides this past March. In an effort to make some pesticides available for use, the Colorado Department of Agriculture (CDA) created a list of pesticides whose labels were written in a broad enough manner to potentially include their use on marijuana. Absent federal oversight, however, none of the listed pesticides were tested on marijuana crop specifically, raising public health concerns over their use.

In response to the list published by CDA, Beyond Pesticides responded with a petition challenging the legal basis for the list of allowed pesticides under the *Federal Insecticide Fungicide and Rodenticide Act* (FIFRA) and expressed the position that only pesticides listed under 25(b) of FIFRA should be available for use by growers within the state. These are pesticides that have been determined by the Environmental Protection Agency (EPA) to be of a "nature not requiring regulation" under FIFRA.

Beyond Pesticides continues to work with CDA as well as the contact agencies from other states trying to navigate the regulatory nuances of this emerging area of law.

California Strengthens Pesticide Restrictions Near Schools

After years of campaigning by local activists and a lawsuit filed by parents citing discriminatory practices from policies that led to disproportionate exposure of Latino children to pesticides, the California Department of Pesticide Regulation (CDPR) will now seek to gather input from stakeholders to determine what measures are appropriate to enhance protection of California's school children.

Given that Latino children are more likely to attend schools near areas with the highest use of pesticides of concern, and California's pesticide use has actually increased over recent years, the state will need strong restrictive policies to provide any meaningful protections for school children.

Classroom insect convention. Photo by woodleywonderworks.

According to CDPR, the agency held five workshops from May 28 – June 9 2015 to gather input that will later help craft a statewide regulation on pesticide use near schools, with a focus on improving school pesticide notification procedures and reducing the risk of exposure. In California, many schools have been built on prime agricultural land next to farm operations.

While there are currently state regulations on the use of individual pesticides, CDPR's regulatory framework for restricted pesticides also allows for the establishment of additional rules to address local conditions. However, existing rules for pesticide use near schools are set by county agricultural commissioners and vary considerably. CDPR is considering whether to adopt some of these rules on a statewide basis, as well as other restrictions.

Despite efforts to reduce overall pesticide use, especially those around schools, CDPR reported in May that overall pesticide use in agriculture increased by 3.7 percent between 2012 and 2013. Pesticide use increased by 6.4 million pounds in 2013, especially use of organophosphates, including chlorpyrifos, making for a grand total of 178 million pounds of pesticides used annually. CDPR's efforts to reduce children's risk of exposure to pesticides near schools are an important first step, but to be effective must include strong restrictions on pesticide use near these sensitive areas.

Kaua'i, Hawai'i Activists Met with Some Success

In May 2015, Kaua'i County Councilmember Gary Hooser returned from agrichemical giant Syngenta's shareholder meeting in Basel, Switzerland, where he addressed the company and its stakeholders on the corporation's lawsuit against the small Hawaiian island of Kaua'i.

The Councilmember indicates that, although the company is unlikely to meet his request to drop its lawsuit against Ordinance 960, which generally creates buffer zones prohibiting pesticide use around schools, hospitals, and parks, the trip overall was a success.

At the meeting, Councilmember Hooser brought a straightforward message to the corporation and its shareholders. "Withdraw the lawsuit from the County of Kaua'i, honor and comply with our laws. Treat us with the same respect, the same dignity and the same protections that you give the people of Switzerland. Do not spray chemicals in my community that you cannot spray in your own community," he said. The Councilmember was referencing the use of the herbicides atrazine and paraquat, chemicals which are banned from use in Switzerland, but sprayed constantly and even found in drinking water in Hawai'i communities.

In a related matter, it was announced that a federal court awarded over $500,000 to 15 Kaua'i residents who launched a lawsuit (separate from the one above) against another agrichemical company on the island, DuPont Pioneer. Residents won on grounds of property damage and loss of use and enjoyment of their property after being subject to the incessant blowing of pesticide-laden red dust from the company's Waimea Research Center field. The verdict indicates that the "seriousness of the harm to each plaintiff outweighs the public benefit of Pioneer's farming operation."

Kaua'i, along with Maui and the Big Island, have been locked in legal battles with agrichemical corporations after successfully passing modest reforms aimed at limiting their residents exposure to the pesticides sprayed on genetically engineered (GE) crops grown in the state. Chemical companies claim that local governments are preempted from enacting pesticide legislation more restrictive than Hawai'i state law.

Spring 2015 Organic Roundup

By Terry Shistar, Ph.D.

The National Organic Standards Board (NOSB) Spring 2015 Meeting in San Diego contained some highpoints in materials review and a failure in process that has been so critical to public trust in the organic label and growth of the market.

On the bright side, the NOSB showed a willingness to remove materials from the national list, resulting in the denial of seven petitions, out of 10 considered. The NOSB voted on 12 materials due to sunset in 2016 and voted to remove five. The overall statistics on materials votes –which the Organic Trade Association applauded as "in line with a no-growth trend to the National List," obscures serious problems in process, including future process about how "inert" (potentially hazardous) ingredients and contaminated inputs will be handled.

Crop Materials –2016 Sunset

The NOSB voted against delisting (under USDA announced policy change, the board no longer votes to relist, making it more difficult to remove materials form the list) two crop materials –ferric phosphate and hydrogen chloride (HCl). Beyond Pesticides supported the delisting of the snail poison ferric phosphate because it is ineffective without the synergist EDTA, which is harmful to earthworms. The Crops Subcommittee (CS) chair misrepresented the research on toxicity to earthworms as consisting of a single questionable study. In fact, the CS had requested and received a review from the USDA Agricultural Research Service, which confirmed the adequacy of that study, as well as another that supported its conclusions. Although the CS says that EDTA will be reviewed as part of the "inerts" review process, that process is proceeding at a snail's pace.

Beyond Pesticides supported the relisting of HCl for delinting cottonseed before planting, in spite of the hazardous nature of HCl, but because progress is being made in the development of mechanical delinting. Organic cotton growers are advocating a switch to mechanical practices. The delisting of HCl at this point would not affect the development of the mechanical alternative, but would prevent organic cotton growers from finding seed. The CS sent a clear message that it expects that the mechanical alternative will be commercially available before the next sunset review in five years.

Photo by wikimedia user HerbertT.

Methionine –A Setback for Change to Natural Practices

The NOSB considered a petition to increase the amount of synthetic methionine allowed in organic poultry feed, reversing the policy of past boards to step down the allowed synthetic methionine. This petition was considered at the Fall 2014 NOSB Meeting and sent back to the Livestock Subcommittee (LS) for reconsideration when a significant minority of the board indicated that it could not support the motion without an expiration date that incentivizes the transition to natural practices and feed. Despite the fact that the expiration date was a key reason that the full board returned the material to subcommittee for reconsideration, the LS did not bring forth a motion on an expiration date, having neglected to consider the issue in its meetings. A minority report was brought to the full board on the expiration date issue, which enabled consideration of the issue. (Without a minority view the issue would have been considered "untimely" by the National Organic Program (NOP) and could not have been considered for a vote by the board.) The report also summarized some scientific research not considered by the majority. (In fact, the majority opinion did not cite any scientific support for its proposal.)

The Organic Foods Production Act (OFPA) requires a two-thirds majority of the NOSB to recommend listing of a material on the National List, and a two-thirds majority to keep it on the list at sunset. NOP has referred to this as a "tyranny of the minority." However, supermajority requirements gener-

Protecting the Label through Litigation

Groups Challenge Major USDA Change to Organic Rule

On April 8, 2015, organic stakeholders filed a lawsuit in federal court, maintaining that the U.S. Department of Agriculture (USDA) violated the federal rulemaking process when it changed established procedures for the "sunset provision" to allow synthetic materials to remain on the National List unless the National Organic Standards Board (NOSB) votes them off. The rule change was a complete reversal by USDA of the long standing policy that requires all materials to be removed from the list and reviewed by the NOSB before relisting, without the customary public process outlined by the *Organic Food Production Act* (OFPA), and the *Administrative Procedure Act*. The plaintiffs in the case include: Beyond Pesticides, Center for Food Safety, Equal Exchange, Food and Water Watch, Frey Vineyards, La Montanita Co-op, Maine Organic Farmers and Gardeners Association, New Natives, Northeast Organic Dairy Producers Alliance, Northeast Organic Farmers Association Massachusetts, Ohio Ecological Food and Farm Association, Organic Consumers Association, Organic Seed Growers and Trade Association, PCC Natural Markets, and The Cornucopia Institute.

Groups Sue USDA for Failure to Seek Public Comment on Organic Compost Rule

On April 14, 2015, the Center for Environmental Health, Beyond Pesticides, and Center for Food Safety also filed a federal lawsuit challenging the USDA National Organic Program's (NOP) failure to follow the law in making a substantial rule change to the USDA organic standard. At issue is the contaminated compost guidance released by USDA, which weakens the long-standing prohibition of synthetic pesticide contaminants. The new guidance radically changes organic requirements, allowing organic producers to use compost materials treated with synthetic pesticides, a rule the USDA made without the required rulemaking process. The court rejected a government motion to dismiss the case in September, recognizing that USDA had changed an allowance of what contaminated compost could contain without an opportunity for public comment.

ally have very specific purposes –often, ironically, connected with a concern over a tyranny of the majority, and in the case of organic, ensuring that the decisions of the board do not alienate any of the three key sectors –consumers, farmers, and environmentalists.

The drafters of OFPA recognized that some interests in the organic community could hold more power than others. In the words of James Madison, in *The Federalist Papers*, they recognized that, "A landed interest, a manufacturing interest, a mercantile interest, a moneyed interest, with many lesser interests, grow up of necessity in civilized nations, and divide them into different classes, actuated by different sentiments and views. The regulation of these various and interfering interests forms the principal task of modern legislation, and involves the spirit of party and faction in the necessary and ordinary operations of the government." So, the authors of OFPA took two steps: (1) they created a decision making board that balanced interests, and (2) they required a supermajority of 2/3 for decisive votes.

In the words of the Senate report:

> *The membership of this board was carefully selected to provide a balance of interests. There was debate during the hearing on S. 2108 regarding appropriate representation on a Board with such great power in setting standards. Some people argued that the Board should be industry-dominated to ensure continuation of the kind of high quality standards associated with organic farming and which make sense from a production viewpoint. Other people argued that industry representation on the Board would be inappropriate and present conflict of interest problems. As a result, the Committee restructured the Board so that the farmers and handlers involved in organic production receive six representatives, equal to the consumer and environmental organizations, which together also receive six representatives. A single retail member raises the membership total to thirteen. [The House amendment added two more members –a certifying agent and a scientist—to bring the total to 15 on the Board, and the Conference adopted the House version.] In order for any motion to carry, a two-thirds vote is required. If all members are present and voting nine [ten in the final version] votes are required for a successful motion. Requiring a two-thirds vote, the Committee believes, will adequately prevent any one interest from controlling the Board.*

What about the view that the supermajority requirement creates the possibility for the "tyranny of the minority"? The fact that is not taken into consideration by adherents of the "tyranny of the minority" position is that OFPA is not neutral with respect to most decisions made by the NOSB. As stated in the Senate report,

> *Most consumers believe that absolutely no synthetic substances are used in organic production. For the most part, they are correct, and this is the basic tenet of this legislation. But there are a few limited exceptions to the no-synthetic rule and the National List is designed to handle these exceptions.*
>
> *The Committee does not intend to allow the use of many synthetic substances. This legislation has been carefully written to prevent widespread exceptions or "loopholes" in the organic standards which would circumvent the intent of this legislation. The few synthetic substances that are widely recognized as safe and traditionally used in organic production are explicitly cited in the bill as potential items to be included on the National List of the Board and the Secretary approve of their use.*

The National List consists of "exemptions" to the general rule that synthetic substances are not permitted in organic production and nonsynthetic substances are permitted. Thus, it is consistent with the intention of OFPA framers to require a supermajority in order to list a synthetic as an exemption to the general rule.

Regarding the process in the LS, the subcommittee failed to address the charge it was given by the board, including full discussion of an expiration date and the science supporting the majority view.

The process suffered another setback when the NOSB Chair Jean Richardson allowed board member Harold Austin to vote via Skype from his hospital bed. While we are sympathetic to a health emergency, Robert's Rules of Order is very clear, as pointed out by NOSB member Colehour Bondera, that absent members may not vote unless "expressly stated in the bylaws." No such allowance is stated in the Policy and Procedures Manual or any other document governing NOSB meetings. Nick Maravell walked out of the room, refusing to take part in this illegal process, and the resulting 10-4-1 voted attained the necessary two-thirds majority to pass the motion. While the vote would have reached the same conclusion had Mr. Austin been present, the lack of attention to legal NOSB process has become thematic in the last several years, which has sparked outrage from organic community members on key issues.

How is the New Sunset Process Working?

USDA's new sunset process involves changes in review and deci-

Future Challenges

"Inerts"

Action on "inert" ingredients has been stalled, with most meetings of the Inerts Working Group having been cancelled. However, the National Organic Program (NOP) reported on meetings with EPA's Safer Choice (formerly Design for the Environment) program. The Safer Choice program has compiled a "Safer Chemical Ingredient List" (SCIL) that has categories based on functional uses, a number of which include uses of so-called "inert" ingredients in pesticide products –chelating agents, polymers, preservatives and antioxidants, solvents, and surfactants, for example.

Each of these functional groups has its own criteria for inclusion on the list. For example, the Safer Choice criteria for surfactants look at rate of biodegradation, degradation products, and level of aquatic toxicity, and require that surfactants with higher aquatic toxicity demonstrate a faster rate of biodegradation without degradation to products of concern.

NOP would like the NOSB to review the SCIL and consider referring to it for inerts review. However, the SCIL was not developed using OFPA criteria. NOP acknowledges this and says,

> *EPA criteria is [sic] comprehensive regarding environmental and health impacts. NOSB could additionally provide oversight review for other OFPA criteria regarding compatibility and alternatives. NOSB would continue to provide oversight review of EPA SCIL program at each sunset period.*

It will be a challenge to ensure that the SCIL is used in a way that complies with OFPA. Historically, EPA's review of potentially hazardous substances has been risk-based, as opposed to OFPA's hazard-based requirements. EPA does not have a functioning definition of endocrine-disrupting chemicals that would allow it to evaluate materials. Furthermore, use of a list that was developed for a different purpose may fail to account for hazards that appear in the pesticide use. For example, the criteria for surfactants were developed for use in cleaning products, where aquatic degradation and toxicity to aquatic organisms are the main concerns. The behavior of surfactants when sprayed on crops may bring additional concerns such as impacts on soil organisms that have not been addressed.

Ideally, the NOSB could interface with the Safer Chemical program by contracting with EPA to evaluate materials according to OFPA criteria. (This was an earlier proposal.) Given that the review of "inerts" will now be progressing without a member of the NOSB with the experience of Beyond Pesticides, our oversight of the process will be crucial.

Contaminated Inputs

The CS proposed a plan to look at potentially contaminated inputs in organic production by feedstock or pathway –manure, yard waste, hay or straw, etc. Potential contaminants of each feedstock would be examined for the likelihood they could survive prescribed treatments, such as composting, as well as ways to avoid or mitigate the contamination. The plan provoked much public comment calling for the prohibition of manure from conventional livestock –especially confined animal feeding operations (CAFOs) –in organic production. Commenters produced long lists of potential contaminants in CAFO-sourced manure. On the other hand, many organic producers depend on manure from non-organic farms. There will be a temptation to avoid dealing with inputs like contaminated manure, whose impacts on organic crops is not as obvious as the impacts of persistent herbicides. In addition, protecting organic producers from all of these contaminants will require action outside of the NOSB and NOP that may not be welcomed by USDA.

sion making. While there have been improvements in scientific review process, the decision making process is still broken.

On the positive side, subcommittees requested and received updated technical information concerning many of the 198 listings that will be considered in fall 2015 for 2017 under the five-year sunset review process for allowed synthetic materials. Technical reviews were posted to the NOP website as they were approved by the relevant subcommittees. However, the subcommittee handling of the technical information was mixed. Technical reviews contain much detailed information about each substance. NOSB members who are not on the reviewing subcommittee, as well as the general public, rely on the subcommittee to digest that information and provide a concise summary. The vehicle used for the summary has customarily been an annotated checklist considering requirements of OFPA. It is important that this summary of the information be provided before the first of the two meetings at which the sunsetting materials are discussed, because any substantive comments presented after that meeting are considered "untimely" under the new sunset process. The CS provided checklists (clear assessments by legal criteria) for 17 of its 41 sunset 2017 materials; the Handling Subcommittee provided a link, which was broken, to one checklist; the subcommittee did not provide any checklists, only summaries.

The NOSB meeting also provided evidence of the need to be able to annotate or change the restrictions of a listing during the sunset process. The NOSB noted that several handling materials were on the wrong list. The Board also noted that other listings might require annotations –such as the removal of bacteriophages from microorganisms and some limitation on the use of fish oil. The lack of the ability to annotate (based on a policy determination by NOP without any public input) during the sunset process remains a major obstacle to fine-tuning the National List and providing an incentive to adopt organic and natural alternatives.

The voting process is still inconsistent with OFPA. Motions to delist were brought from subcommittee, and required a two-thirds board majority to pass. However, no sunset vote was close enough that the change made a difference.

On the Agenda for the Fall 2015 Meeting

The next opportunity to weigh in on organic standards is the National Organic Standards Board Fall Meeting, held October 26-29, 2015, in Stowe, Vermont. This meeting is filled with annotation proposals, petitions, and 2017 Sunset Materials discussions. Public comments are accepted through October 5, 2015. Below are some of the more pressing matters, for more detailed information, see http://bit.ly/NOSBaction. [Public comments can be made at the meeting or through a webinar on October 13 and 20, 2015. Deadline to sign up is October 8, 2015.]

Inerts: The Crops and Livestock Subcommittees have proposed to let other government lists govern without adequate NOSB oversight and review an annotation that would abdicate NOSB responsibility for reviewing "inerts." Beyond Pesticides is seeking improved oversight of allowed chemicals, and the reversal of nonylphenol ethoxylates (NPEs). So-called "inert" ingredients in pesticide products are neither chemically nor biologically inert. They are designed to enhance the pesticidal activity of pesticide products and can have toxic properties that do not meet the standards of the *Organic Foods Production Act* (OFPA).

Micronutrient annotation: Beyond Pesticides opposes the annotation change proposed by the Crops Subcommittee because it encourages the use of synthetic micronutrients without empirical evidence to demonstrate need. While the CS correctly points to methods other than soil testing to document soil deficiency, we disagree with the intention of the CS to allow "proactive" use of synthetic micronutrients. We disagree with the use of "professional crop advisors and agronomists who know the nutrient needs of specific crops and regions and will write recommendations for correction before the problem of deficiency occurs" because such opinions are not necessarily based on evidence at the site, and because it is contrary to OFPA.

Laminarin: Beyond Pesticides opposes the proposal to classify laminarin as nonsynthetic, which would permit its use without examination of hazards. Not only do we believe that the manufacturing process qualifies this material as a synthetic material, but there are also issues of health and safety that the board should evaluate as it moves forward in determining whether these materials should be recommended for allowance in organic production. Laminarin is extracted from seaweed and is also found in fungi. Laminarin works by amplifying natural plant defenses and by increasing the concentration of anti-herbivore and antifungal metabolites, such as the toxic chemical solanine in potatoes.

Seaweed Extracts: Beyond Pesticides supports the CS proposals to classify seaweed extracts as synthetic and deny the petition for listing on §601. Seaweed extracts, such as laminarin (above), must be classified as a synthetic substance if they are extracted as described in the petitions. Sulfuric acid is added during the extraction process for these materials. It is neutralized with sodium or potassium hydroxide in a later step. While the reaction of sulfuric acid and sodium/potassium hydroxide neutralizes the acid, thus "removing" that effect, it does not remove the sulfur. Sodium or potassium is also added. Thus, sodium sulfate or potassium sulfate is a net addition. It is the remaining material at levels that are of technical concern or that have technical effect that requires the classification of this material as a synthetic. Removal is not the same thing as eliminating the function while creating an added substance in the material.

Residents Say NO to Pesticide-Poisoned Bays ...and Shellfish

Public outrage forces officials to reverse decision to spray

By Nichelle Harriott

The power of consumer outrage should never be underestimated. This spring, when word got around that Washington's Department of Ecology ("Ecology") approved a permit that would allow the neonicotinoid imidacloprid to be sprayed in Willapa Bay and Grays Harbor to control burrowing shrimp, and would essentially contaminate the oyster beds and the oysters the state was trying to protect, consumers, environmental organizations, and prominent local chefs spoke out against the application. Neonicotinoids are the family of pesticides linked to declining health of bees, butterflies, birds, and aquatic organisms. Phone calls, emails, and social media involving shellfish customers voicing their displeasure at being served potentially contaminated oysters caused the local oyster growers association and Ecology to pull the permit.

In this part of the Pacific Northwest, the shellfish industry is important, injecting an estimated $270 million or more into the region's economy, and providing jobs for many. Washington's tidelands, especially those in Willapa Bay, have been particularly productive for more than 100 years. But over the last few decades, oyster harvests have been reduced, and shellfish growers blame the burrowing shrimp (ghost shrimp, *Neotrypaea californiensis*, and mud shrimp, *Upogebia pugettensis*) for threatening the industry. The creatures burrow into shellfish beds, making the beds too soft for shellfish cultivation. Their burrowing churns the tidelands into a sticky muck, smothering the oysters.

For several years, Ecology allowed the use of carbaryl, a carbamate insecticide, to help control the shrimp, but the pesticide is a highly toxic, older generation chemical that many would like to see phased out, and attempts have been made to do so. After several years of deliberations and studies, Ecology identified imidacloprid as its preferred choice for eradicating the shrimp. According to the agency, imidacloprid disrupts the burrowing shrimps' ability to maintain their burrows. A risk assessment conducted by Ecology concludes that, "The proposed use of imidacloprid to treat burrowing shrimp in shellfish beds located in Willapa Bay and Grays Harbor is expected to have little or no impact on the local estuarine and marine species. . . and will not significantly impact human health."[1] Ecology and members of the shellfish industry believe that imidacloprid is a "safer" choice compared with carbaryl.

Imidacloprid Safer? The Science Does Not Say So

But recent studies on this chemical and its chemical class, neonicotinoids, find that it is anything but a 'safer' option. Neonicotinoids have gotten a lot of attention due to their association with pollinator decline. They are known to be highly toxic to bees, impairing their navigational, learning/behavioral and foraging abilities, and impacting their immune system, making them more susceptible to diseases and parasites. A mounting body of science shows that, even at low levels, these chemicals can impact bees. And like bees, neonicotinoids are also toxic to aquatic invertebrates. Since imidacloprid is water soluble, it poses even greater danger to aquatic organisms. Its persistence and largely irreversible mode of action in invertebrates make it particularly dangerous in these ecosystems. A 2015 scientific review by Christy Morrissey, PhD, Pierre Mineau, PhD, and others, on the impacts of neonicotinoids in surface waters from 29 studies in nine countries finds that these chemicals adversely affect survival, growth, emergence, mobility, and behavior of many sensitive aquatic invertebrate taxa, even at low concentrations.[2] Neonicotinoids were also recently evaluated by a large panel of international experts chartered under the International Union for the Conservation of Nature (IUCN), which found that these chemicals have "wide ranging negative biological and ecological impacts on a wide range of non-target invertebrates in terrestrial, aquatic, marine and benthic habitats."[3]

Ecology received extensive public comments during the comment period for the proposed imidacloprid permit. Comments submitted by the Xerces Society, supported by Beyond Pesticides and other environmental organizations, finds that Ecology failed to consider existing published research that demonstrates the potential for wide-range ecological damage from imidacloprid; that the risks, coupled with the lack of data on how imidacloprid will impact sensitive marine environments warrant greater caution. The groups warned that existing data shows imidacloprid's potential to damage the rich marine ecosystems of Willapa Bay and Grays Harbor. Further, the comments note, imidacloprid's impact on these key species can also cause a cascading trophic effect, harming the fish, birds, and other organisms that rely on them for sustenance.

Picking oysters by hand at low tide, Willapa Bay, Washington, October 1969. Photo from NOAA Fisheries collection.

Federal Agencies Also Raise Concern

But environmental organizations were not the only ones to raise concerns about the use of imidacloprid. The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) voiced many concerns over the application of imidacloprid to the bays. Among them include concerns surrounding the large size of the area to be treated. NMFS believes that the proposed acreage should be reduced because of many unknowns regarding impact to other aquatic and terrestrial biota. Further, NMFS states that the burrowing shrimp are native to the region and play an important role in the natural ecosystem. The agency also voiced concern for the green sturgeon –a "species of concern" under the *Endangered Species Act* (ESA), and the potential direct and indirect impacts to its food sources in the designated critical habitat. The agency believes that effects and damages will not be limited to the treatment sites.

Similarly, the U.S. Fish and Wildlife Service (FWS) also expressed reservations over imidacloprid use. FWS wrote Ecology expressing its opposition to the imidacloprid permit, citing a lack of scientific information regarding fate and transport, efficacy, persistence, and effects to non-target organisms. It went on to dispute claims that shrimp control improves biodiversity, citing the possibility of significant alterations occurring to the bay's ecosystem without burrowing shrimp control, and disagreeing with Ecology's conclusion that "no significant adverse impacts" would be expected.

So Just How Did the Imidacloprid Permit Come to Be?

The permit (a National Pollutant Discharge Elimination System (NPDES) permit under the *Clean Water Act*) to use imidacloprid to control burrowing shrimp came at the request of the Willapa-Grays Harbor Oyster Growers Association.[4] Imidacloprid, when it was first registered in 1994 by the U.S. Environmental Protection Agency (EPA), did not have a registered aquatic use. Therefore, in 2012 Willapa-Grays Harbor Oyster Growers Association petitioned EPA to allow imidacloprid's use for intertidal oyster beds to control burrowing shrimp. This represented a new use for imidacloprid. EPA approved the petition. The petition for new use was issued as a conditional registration on June 6, 2013 for the imidacloprid products Protector 0.5G and Protector 2F, which can only be used in Willapa Bay-Grays Harbor, according to the product labels.[5] The label for Protector notes, "This product is toxic to wildlife and highly toxic to aquatic invertebrates." The risk assessment conducted by EPA for this new use states, "The proposed use of imidacloprid on oyster beds in WA can result in residential exposure via potential contact with residues in oyster bed water or sediment during recreational swimming," including Native American tribes and subsistence farmers.[6] In accordance with the law, the agency also established tolerances for imidacloprid residues in or on fish at 0.05 parts per million (ppm), and in fish-shellfish, mollusk at 0.05 ppm.[7]

Public Backlash, Permit Withdrawal

Washington residents did not like the thought of a bee-toxic chemical being sprayed in their bays, and the backlash was swift. Calls went into the largest shellfish producer in the country, Taylor Shellfish, which soon thereafter withdrew its support for the permit. The loss of support from Taylor Shellfish, a major member of Willapa-Grays Harbor Oyster Growers Association, meant that the association no longer had the backing to move forward with the pesticide application. Ecology approved the imidacloprid permit April 16, 2015 and less than one month later it was withdrawn. In a press release issued May 3, 2015, Ecology states, "One of our agency's goals is to reduce toxics in our environment," said Ecology Director Maia Bellon. "We've heard loud and clear from people across Washington that this permit didn't meet their expectations, and we respect the growers' response."

Out of Balance!

Could habitat restoration reverse ecosystem damage that leads to pesticide use?

Willapa Bay is a shallow estuary in the southwest corner of Washington State that many believe to still be pristine. But human activity has affected the bay, throwing the delicate ecosystem off balance, leading to the loss of some native predators, an increase in invasive species, and slumping oyster productivity. In the mid-1800s, logging began altering stream morphology and increasing sediment load. Effluent from pulp mills was also dumped into waterways, impairing water quality and contributing to the decline of fish populations like salmon and sturgeon. Floodplains were cleared for agriculture and then later urbanized, leading to a loss of the natural riparian vegetation.[8] At the same time, the native Washington oyster, *Ostrea lurida*, also known as the Olympia oyster, began to decline due to over-harvesting and declining environmental quality. This lead oystermen to import the Pacific oyster from Japan that has thrived in the region. Artificial oyster beds were also created to help boost productivity.

Shrimp explosion

Although native to the region, by the early 1920s burrowing shrimp began growing in numbers. Some believe that changes in oystering practices led to the shrimp's success. The natural layer of shell deposits upon which oysters attach is typically removed during harvest, exposing bare sediment, and allowing the shrimp to burrow.[9] This, coupled with the declining predatory fish populations in the bay, led to an explosion in shrimp populations. Early efforts to prevent shrimp from burrowing (graveling, shelling) were not effective, and soon gave way to chemical control options.

Photo of the invasive ghost shrimp (Neotrypaea californiensis) by Flickr User Ken-ichi Ueda.

Invasive vegetation reducing mudflat habitats

According to Ecology, nearly a third of Willapa Bay's 45,000 acres of tide flats are infested with Spartina (*Spartina alterniflora*), an invasive salt marsh grass commonly known as giant cordgrass or smooth cordgrass. Spartina is native to east coast wetlands, but in the Pacific Northwest it has flourished, taking over other native plant species and reducing mudflat areas integral for oysters. Spartina is crowding out habitat for shellfish, birds, juvenile fish, and other wildlife. Thus far, it has displaced 16 to 20 percent of the key habitat for wintering and breeding birds.[10] Other non-native grass, like eel grass, has also taken over mudflats. Chemical treatment for these non-native species has been done for years, further endangering the long-term health of the bay's ecosystem.

Some chemical treatments employed in Willapa Bay:

Chemical	Action	Health Impacts
Carbaryl	to control burrowing shrimp	c, ed, r, n, aq, b
Imidacloprid	proposed to replace carbaryl, permit withdrawn	r, l,br,aq, b
Imazapyr	to control Spartina and eelgrass	gw, l, aq, b
Imazamox	to control eelgrass	br, aq, b
Glyphosate	to control Spartina and eelgrass	c, ed, r,aq

c – cancer, ed – endocrine disruption, r – reproductive, n – neutrotoxic, aq – aquatic toxicity, b – bees, br – birds, l – leacher, gw – groundwater

What can be done?

Several efforts are underway to restore salmon species in the Pacific Northwest, including Willapa Bay. Stream enhancement and restoration improves habitat for fish, amphibians, and invertebrates. These species can help control bountiful populations of burrowing shrimp and aquatic plants. Unfortunately, chemicals have been employed to reduce invasive plant pressures, and the borrowing shrimp. But the use of these chemicals only serves to further threaten the long-term health of the sensitive ecosystem by adversely affecting other non-target species, and potentially creating other out of balance communities. It is important that non-chemical options be explored, such as mechanical removal of invasive plants, and encouraging the revival of native fish and the development of natural oyster beds to suppress shrimp populations.

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White House Plan Too Little
to take the sting out of pollinator decline

On May 19, 2015, the White House released its much awaited plan for protecting American pollinators, which identified key threats, but fell short of recommendations submitted by Beyond Pesticides, beekeepers, and others who stress that pollinator protection begins with strong regulatory action and the suspension of bee-toxic pesticides. The Pollinator Health Task Force, established by President Obama in June 2014, brought together most federal agencies to "reverse pollinator losses and help restore populations to healthy levels," and involved the development of a National Pollinator Health Strategy and a Pollinator Research Action Plan. The Strategy outlines several components, such as a focus on increased pollinator habitat, public education and outreach, and further research into a range of environmental stressors, including systemic neonicotinoid (neonic) pesticides. While recognizing the seriousness of pollinator decline, the Strategy contains no meaningful recommendations on the impact of pesticides on pollinators.

"Waiting for additional research before taking action on neonicotinoid pesticides, which current science shows are highly toxic to bees, will not effectively stem pollinator declines, and is unlikely to achieve the National Pollinator Health Strategy's goal of reducing honey bee losses to no more than 15% within 10 years," said Jay Feldman, executive director of Beyond Pesticides.

Focus on Pollinator Habitat Creation

Pollinators have lost habitat to urban and agricultural expansion. This is especially pronounced among Monarch butterfly populations, which have seen losses of their critical food source, milkweed, from herbicide applications in agricultural areas. As a result, a major component of the federal plan is the creation and stewardship of habitat and forage for pollinators. States are also being encouraged to create their own pollinator protection plans, which will rely heavily on habitat creation, public education, and best management practices. However, without restrictions on the use of neonicotinoids and other systemic pesticides, newly created habitat areas are at risk of exacerbating pesticide contamination and will provide no real safe haven for bees and other pollinators.

EPA Actions Still Fail Pollinators

Thus far, the Environmental Protection Agency (EPA) has undertaken several actions that the agency believes will help protect pollinators. These include a moratorium on new neonic products, amended neonicotinoid product labels, and a new proposal to restrict foliar applications of bee-toxic pesticides in agriculture, when managed bees are on-site and under contract. The federal government's emphasis on creating "physical and temporal space" between the use of pesticides and the presence of pollinators does little to address the chronic, sublethal threat of systemic, neonicotinoid pesticides, which have prolonged residual toxicity on plant and soil surfaces. Because of their persistence, they can remain hazardous for pollinators months and even years after initial application.

"Though mitigating the effects of pesticides on bees is identified as a priority, the actions listed in the Strategy fail to address the immediate threats native and managed pollinators are experiencing from systemic chemicals that persist in soil, water, and the pollen and nectar, which these critical insects feed upon," said Mr. Feldman.

Beyond Pesticides and its allies have called for the suspension of neonicotinoid pesticides, particularly the most widely used and toxic –imidacloprid, clothianidin and thiamethoxam. These pesticides are used in a variety of home and garden products, and most commonly in corn and soybean seed treatment, where they remain in plant tissues, including pollen and nectar, for long periods of time. Along with suspensions of registrations, groups have urged EPA to conduct broader reviews on the impact of these systemic pesticides on other beneficial non-target organisms, including endangered species, and impacts to ecosystem biodiversity.

There are several factors that contribute to pollinator decline. However, it is the neonicotinoid class of pesticides that is receiving the most scrutiny from scientists and beekeepers. A growing number of studies find that even at low levels neonicotinoids impair foraging ability, navigation, learning behavior, and suppress the immune system, making bees more susceptible to pathogens and disease. One 2015 study, performed by the Food and Environment Research Agency (FERA) in the United Kingdom (UK) tracked neonics used as seed treatment for canola across nine different regions in Wales and England and found that mortality rates are 10 percent higher for bee colonies that have high levels of exposure to imidacloprid than for those with low field exposure. This study confirms a direct link between neonicotinoids and honey bee colony losses at a nationwide level. Additionally, EPA reported in 2014 that neonicotinoid-treated soybean seeds are not efficacious and provide no significant yield benefit.

The White House announcement certainly elevates the importance of pollinators and the impact their dwindling numbers will have on U.S. agriculture. One in three bites of food is reliant on pollination, which translates into $20-30 billion to the agricultural economy. But while the action taken is well-meaning, widespread, pervasive, systemic, and persistent pesticide contamination will continue to place bees, both wild and managed, and other pollinator species at risk.

Relying on Voluntary State Plans Not Enough for Pollinator Protection

EPA has noted that state pollinator plans, known as Managed Pollinator Protection Plans (MP3s) are a means to enhance communication and risk mitigation, so that local expertise can be used to identify customized solutions to mitigate pesticide risks to bees. To this end, states are being encouraged by EPA to develop MP3s, bringing together various stakeholders at the state level.

Several critical elements for a successful MP3 have been recommended by various stakeholders, including grower/applicator communication, public outreach, best management practices (BMPs), and periodic review and modification of plans. While state input is valuable and necessary, improved communication and BMPs as recommended for these MP3s are only voluntary and not enforceable. In fact, state mitigation measures will not be tied to proposed or existing federal product labeling. Thus, relying upon individual states to respond to pollinator risks is inadequate.

Additionally, MP3s are limited to managed pollinators not under contracted pollination services at the site of application. This means that the recommended BMPs and increased grower/applicator communication, as outlined in state MP3s will only pertain to managed hives not under contract, leaving wild and native bees with minimal protection under these plans. As of now, no federal or state mitigation strategy or policy has specifically addressed risks wild/native pollinators, given that these species continue to forage in treated fields, even when managed bees are not there. Furthermore, data suggests that certain native bee species are more sensitive to pesticides than honey bees.[1]

Beyond Pesticides' Recommendation for State Plans

1. **Restrict the sale and use of neonicotinoids and neonicotinoid-coated seeds**
   These pesticides have prolonged residual toxicity and can contaminate pollen, nectar, honey,[2] as well as persist in soil and surface waters, affecting other beneficial terrestrial and aquatic organisms. To truly protect pollinators and other organisms from these hazards, states should move to limit the sale and use of neonicotinoid products, including the sale of treated seeds and seedlings.
2. **Create pollinator habitat that is also free of pesticide contamination**
   States should implement statewide planting of pollinator-attractive native vegetation, including milkweed, along highway corridors, rights-of way, parks and natural areas, and facilitate collaboration with USDA's Natural Resources Conservation Service and the Farm Service Agency to increase state support for pollinator habitat creation.
3. **Protect and monitor native and wild bees/pollinators**
   To get a better understanding of native bee populations and the risks they face, the state should create a monitoring program, in collaboration with universities, extension services, and other private or non-governmental agencies, to track and monitor the health of native populations, adverse incidents, and the environmental factors that threaten their long-term survivability.
4. **Improve enforcement and compliance across the state**
   States should review and approve pollinator specific label statements for pesticide products that they register and determines the enforceability of the label statement to a standard that results in total compliance. These statements can and should include statements permanently restricting products or applications that pose risks to pollinators.
5. **Improve best management practices (BMPs) that reduce pesticide risks**
   BMPs need to be strong and user-friendly, while encouraging growers to utilize organic practices; avoid the use of any and all pesticides that are acutely toxic to bees; institute mandatory buffer zones in fields to eliminate pesticide drift; and create habitat areas or hedgerows that DO NOT come into contact with pesticides to provide on-site pollinator forage.

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Glyphosate Causes Cancer

Is Monsanto Ready for the Consumer Response?

The International Agency for Research on Cancer (IARC) determined in March that the herbicide glyphosate, or Roundup (produced by Monsanto), is a potential cancer causing agent for humans, based on laboratory animal studies.[1] The finding adds to the literature of adverse affects linked to glyphosate and has triggered a new round of calls to ban its use. Beyond Pesticides is calling for an end to glyphosate use and urging EPA to suspend its uses, while telling consumers to take steps to protect themselves and the environment from exposure to this harmful chemical. As the most widely used herbicide in the world, individuals are regularly exposed to glyphosate through contaminated food and its use on lawns and landscapes.

Glyphosate in Agriculture

According the U.S. Geological Survey (USGS), an estimated 283 million pounds of glyphosate was sprayed across the country for agricultural use in 2012.[2] Applications to corn and soybeans, a majority of which are genetically engineered to tolerate applications of glyphosate, accounted for over 70% of glyphosate's use.[3] Studies show that glyphosate can metabolize in crops sprayed with the chemical,[4] and persist in high levels in food products manufactured with glyphosate-contaminated crops.[5]

A 2014 Government Accountability Office report found that neither the U.S. Department of Agriculture (USDA) nor the Food and Drug Administration (FDA) regularly test for residues of glyphosate in the food supply.[6] However, shortly after IARC's determination, the U.S. Environmental Protection Agency (EPA) indicated to *Reuters* that, "Given increased public interest in glyphosate, EPA may recommend sampling for glyphosate in the future."[7]

Home and Garden Applications

The frequency of glyphosate use in non-agricultural settings is second only to the herbicide 2,4-D.[8] EPA estimates between 5-8 million pounds of glyphosate is sprayed each year for residential lawn and garden use, and 13-15 million pounds is applied by professional applicators on industrial, commercial, and government properties.[9] Glyphosate-containing herbicides not only put those applying the product at risk, but may also endanger those nearby as a result of pesticide drift.[10] Further, glyphosate-based herbicides bind to soil and remain on lawns an average of 47 days, though studies indicate the chemical may persist for nearly six months in certain soils,[11] long after the small yellow flags telling children and pets to stay off are removed. USGS found that glyphosate is widespread in the environment, and in particular it is commonly detected in surface waters.

Current Regulations

EPA is in the process of conducting a review of glyphosate on a 15-year cycle, and is set to release its preliminary risk assessment in 2015. Although the agency has already indicated that it will require measures to mitigate the rising tide of resistant weeds in agriculture,[12] such a management plan would have very little impact on the health of farmworkers and the environment, and continue to present a risk to consumers through residues on food and in home and garden use.

EPA conducts its chemical reviews in close cooperation with Canada's Pest Management Regulatory Agency, which recently released its reevaluation decision on glyphosate for public comment. The agency stopped far short of meaningful action on the chemical, choosing instead to address risk through changes in the pesticide label, such as additional precautionary statements and recommended spray buffer zones.

"Probable" carcinogen: what does that mean for my health?

It's easy for consumers to say, and no doubt many activists have heard, the refrain that "everything causes cancer." Often this statement is used as a reason to brush-off needed action on industrial contaminants –after all, we're exposed to hundreds of environmental chemicals each day, so why worry about a "probable" carcinogen, the ranking IARC has given to glyphosate?

Rather than throw our collective hands up, the prospect of recurring chemical exposure should rally us to address these health concerns and seek out alternatives when credible and respected scientific agencies make such determinations. A look into IARC's evaluation process showcases the gravity of these classifications. IARC employs a "strength of evidence" assessment, basing the carcinogenicity of a chemical on whether it is capable of increasing the occurrence of malignant growths,[13] reducing their latency (time between exposure and the onset of cancer), or increasing the severity or multiplicity of such growths. Prior to classifying a chemical, 17 experts from 11 countries analyzed scientific studies and data for approximately one year before meeting together in a Working Group in an attempt to reach a consensus evaluation. Consideration is given to exposure data, studies of cancer in humans, studies of cancer in experimental animals, and mechanistic and other relevant data.

[Note: cancer ratings are based on studies of laboratory animals, since we do not test chemicals on humans. In some cases there is epidemiologic evidence, often from workplace data that links chemical exposure to a cancer effect. However, since the point of testing is to inform regulatory decisions to prevent exposure to carcinogens, glyphosate's cancer ranking as the highest possible rating for carcinogenicity in humans based on laboratory data is extremely meaningful.]

"17 experts from 11 countries analyzed scientific studies and data for approximately one year before meeting together in a Working Group in an attempt to reach a consensus evaluation. Consideration is given to exposure data, studies of cancer in humans, studies of cancer in experimental animals, and mechanistic and other relevant data."

Chemicals are placed into one of four categories:

- ***Group 1: Is Carcinogenic to Humans***
  Sufficient evidence of carcinogenicity in both humans and experimental animals,
- ***Group 2:***
  (A) Probably Carcinogenic to Humans
  Limited evidence of carcinogenicity in humans; Sufficient evidence of carcinogenicity in experimental animals
  (B) Possibly Carcinogenic to Humans
  Limited evidence of carcinogenicity in humans; Less than sufficient evidence of carcinogenicity in experimental animals
- ***Group 3: Not Classifiable as to its Carcinogenicity in Humans***
  Inadequate evidence of carcinogenicity in humans; limited evidence of carcinogenicity in experimental animals
- ***Group 4: Probably not Carcinogenic to Humans***
  Evidence suggests lack of carcinogenicity in humans and experimental animals[14]

International Agency Research on Cancer

World Health Organization

Glyphosate falls in IARC's group 2A classification

Human data available to IARC was based on research conducted since 2001. "Case-control studies of occupational exposure in the USA, Canada, and Sweden reported increased risks for non-Hodgkin lymphoma that persisted after adjustment for other pesticides," according to IARC's article in *The Lancet Oncology*. In its monograph, the agency notes that EPA previously classified glyphosate as a possible carcinogen in humans based on studies that show tumors in mice, yet in 1991, the agency changed its classification to evidence of non-carcinogenicity in humans after a re-evaluation of the study. IARC used both EPA's report and more recent data in its conclusion that there was sufficient evidence of the carcinogenicity of glyphosate in experimental animals.

"There were several studies. There was sufficient evidence in animals, limited evidence in humans and strong supporting evidence showing DNA mutations ... and damaged chromosomes," said Aaron Blair, Ph.D., chair of the IARC Working Group and a scientist emeritus at the National Cancer Institute, in an interview with *Reuters*.[15]

Take Action!

Consumers should not have to wait for federal regulators to act in order to address glyphosate use and contaminated foods in their community. Take the following five steps, all of which can be started immediately, to reduce glyphosate use for you, your family, and our communities at-large.

Tamp Down on Roundup

1) Buy organic foods.

Because organic standards, with few exceptions, do not allow the use of any toxic synthetic pesticides in food production, buying organic is the only surefire way to prevent glyphosate in your diet. Choosing organic also means buying into an agricultural system that protects farmworkers, prevents water contamination, and safeguards wildlife.

March Against Monsanto protest outside of White House in May 2015. Monsanto is the leading producer of glyphosate. Photo Courtesy Ford Fischer/News2Share www.news2share.com

2) Stop the use of lawn care products like Roundup, which contain glyphosate.

You don't need to be an organic farmer or master gardener to manage your lawn without the use of pesticides and herbicides like Roundup. Alternative practices are available to help create conditions where weeds do not become a significant problem, and new least-toxic herbicides are available to help with your transition to organic, or in those increasingly rare instances when weeds do get out of control. See Beyond Pesticides' Lawns and Landscapes resources for assistance: www.beyondpesticides.org/lawn.

3) Voice your concerns about glyphosate to your local grocery and home improvement store, and encourage them not to sell products containing or sprayed with glyphosate.

Forward-looking home improvement stores are already starting to ditch lawn care pesticides like Roundup in favor of least-toxic alternatives. Tell your local hardware stores to stop selling glyphosate-based herbicides (and that aisle filled with pesticides, while you're at it!).

Your grocery store should also hear about your concerns with glyphosate-sprayed crops. Let them know that food laced with a probable carcinogen is not acceptable for you or your family's health.

While both these retailers might say they can't control the sourcing of their products, make sure your message gets to managers, who will report back to owners or corporate headquarters.

4) Join with other concerned residents in your community and work toward a resolution prohibiting toxic lawn care herbicides from being used in your town.

Starting a movement isn't easy, but it is amazing how quickly you can pick up steam with the right information to the right local leaders, and a group of committed individuals. See Beyond Pesticides' fact sheet on how to *Start Your Own Local Movement* [http://beyondpesticides.org/documents/MovementFactsheet.pdf] for the basics you'll need to begin your campaign to stop the use of glyphosate in your community.

5) Write letters and sign petitions to EPA, USDA, and other elected officials.

Although signing a petition against glyphosate [http://bit.ly/StopGlyphosatePetition] like the one Beyond Pesticides has created is a simple step, after you take action we encourage you to craft your own unique letter to your local, state, and federal representatives, as well as officials at EPA and USDA. Let them know that you're not okay with a carcinogen on our lawns and in our food.

For help completing these actions, please don't hesitate to contact Beyond Pesticides at info@beyondpesticides.org or by calling 202-543-5450.

A World Without Glyphosate

As we consider the end of the herbicide glyphosate (Roundup), the question that comes to mind is what will replace it. Of course, there are replacement products that are available for people and communities considering the shift away from toxic pesticide products. But, the long-term solution requires the adoption of organic systems that focus first on practices and prevention and, only second and as a last resort, on alternative products. Predictably, and regardless of the International Agency for Research on Cancer's classification for glyphosate, this question of alternatives to the weed killer has been emerging because of widespread weed resistance to glyphosate.

Background

The widespread use and reliance on glyphosate, and the simultaneous reductions in the use of sustainable weed management practices, has resulted in glyphosate-resistant weeds. In regions of the U.S. where Roundup-Ready (glyphosate-tolerant) crops dominate, there are now evolved glyphosate-resistant populations of economically-damaging weed species. Growers of GE cotton in 2014 asked for an emergency use of the herbicide propazine due to weed resistance across three million acres. The request was denied by EPA because public exposure to triazine herbicides (propazine's chemical cousin with atrazine and others) in the aggregate already showed unacceptable risk levels. Pursuing sustainable alternatives can prevent the pesticide treadmill that results from the use of GE crops and pesticides like glyphosate. Ecological pest management strategies, organic practices, and solutions that are not chemical-intensive are the most appropriate and long-term solution to managing unwanted plants or weeds.

Common Glyphosate Uses

An organic, feed-the-soil approach to the growing of plants, including turf, is the most sustainable and cost-effective. With this systems approach in organic lawns, landscapes, and agriculture, we enhance soil health, beneficial bacteria and fungi in the soil, natural nutrient cycling, crop rotation, and incorporate organic compatible management practices and products.

Agriculture

The Roundup-Ready crops (soy, corn, canola, alfalfa, cotton, sorghum) can all be grown organically and, in fact, are a part of the $40 billion organic industry that continues to grow. Shifting to newer herbicide-tolerant varieties, such as those that are now tolerant of the herbicide 2,4-D (Enlist Duo), only postpones resistance while exposing people and the environment to another cancer causing agent that is also an endocrine disruptor.

Lawns and Landscapes

The principles of organic are available for all of glyphosate uses: fence lines, utility poles, sidewalks, driveways, garden beds, roadsides and medians, rights-of-way, and parks. For all these current uses, there are either opportunities for mechanical removal (goats, flame and steam weeding, hand pulling), mulching systems and cultural practices (landscape fabric, high mowing, hedgerows, or organic compatible products (horticultural vinegar, herbicidal soaps, essential oils, corn gluten meal).

Please see Beyond Pesticides' page www.beyondpesticides.org/lawn for more information on alternatives to glyphosate.

Monsanto and the Industry Response

In response to the IARC cancer finding on glyphosate, Monsanto has objected strenuously. Monsanto's official position: "The 2A classification does not establish a link between glyphosate and an increase in cancer. "Probable" does not mean that glyphosate causes cancer and IARC's conclusion conflicts with the overwhelming consensus by regulatory bodies and science organizations around the world, like the U.S. EPA, which concluded that there is evidence of non-carcinogenicity." There no doubt will be industry supported efforts to undercut the finding of this respected scientific body of the World Health Organization. An assessment by the German Federal Institute for Risk Assessments (BfR), which takes the non-carcinogen position, is based almost solely on industry science and classified industry reports provided to it by the Glyphosate Task Force, an industry consortium led by Monsanto. Three scientists on Germany's scientific panel on pesticides work for the pesticide industry. BfR and IARC's findings have been released during a pivotal time, as a decision on whether to extend the license for glyphosate's use in Europe is currently pending, and these studies are sure to be incorporated into the decision making process. Meanwhile, glyphosate is being taken off the shelves by companies across Europe and member states are calling for the European Union to ban the chemical.

Endnotes

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Environmental Effects of 30 Commonly Used Lawn Pesticides

Pesticides	Health Effects					
	Detected in Groundwater	Potential Leacher	Toxic to Birds	Toxic to Fish/ Aquatic Organisms	Toxic to Bees	Toxic to Mammals
Herbicides						
2,4-D*	X[1,2,3,4,7]	X[3,4]	X[1,2,3,11]	X[1,2,3,11]	X[1,11]	X[3,4,12]
Benfluralin	X[7]		X[3,11]	X[3,11]	X[5,11]	
Clopyralid	X[2,7]	X[2,11]	X[11]	X[11]	X[11]	
Dicamba	X[2,7]	X[1,2,3]	X[10,11]	X[1,2,3,11]	X[5,10,11]	
Diquat Dibromide		X[5]	X[1,3,11]	X[1,3,11]	X[5,11]	X[1]
Dithiopyr				X[5,6,11]	X[5,11]	
Fluazipop-p-butyl				X[1,4,6,11]	X[1,4]	
Glyphosate*	X[8]	X[5]	X[1,3,11]	X[1,2,11]	X[11]	X[4]
Imazapyr	X[2]	X[2,3]		X[2,5,11]	X[5,11]	
Isoxaben		X[11]	X[11]	X[3,11]	X[11]	
MCPA	X[4.7]	X[1,4,11]	X[1,3,11]	X[1,3,11]	X[5]	X[3]
Mecoprop (MCPP)*	X[4]	X[1,2,3,11]	X[3,11]	X[2]	X[11]	X[3]
Pelargonic Acid*			X[3 §]	X[3 §]	X[5]	
Pendimethalin*	X[3,7]		X[1,3,11]	X[1,3,11]	X[5,11]	X[3]
Triclopyr	X[2,7]	X[1,2,3,11]	X[2,3,11]	X[2,3,11]	X[5,11]	
Trifluralin*	X[4,7]			X[3,11]	X[5,11,12]	
Insecticides						
Acephate		X[1]	X[1,3,10,11]	X[3,11]	X[1,3,10,11]	X[3]
Bifenthrin*†			X[1,10,11]	X[1,10,11]	X[1,10,11]	X[1,4]
Carbaryl	X[1,3,7]	X[11]	X[2,11]	X[1,2,3,11]	X[1,2,3,11]	X[3,11]
Fipronil	X[7]	X[5,11]	X[2,4,10,11]	X[2,4,10,11]	X[2,4,10,11]	X[4]
Imidacloprid ‡	X[7]	X[1,2,10,11]	X[1,2,11]	X[1,2,11]	X[1,2,10,11]	
Malathion*	X[1,2,3,7]	X[1,3,5]	X[1,2,3,10,11]	X[1,2,3,10,11]	X[1,3,10,11]	X[3]
Permethrin*†	X[2,7]			X[1,2,3,11]	X[1,2,3,11]	
Trichlorfon		X[1,3,11]	X[1,3,11]	X[1,3,11]	X[1,11]	X[4 ‖]
Fungicides						
Azoxystrobin	X[9]	X[3,4,11]	X[11]	X[3,11]	X[11]	
Myclobutanil	X[7]			X[5]		
Propiconazole	X[7]	X[3]		X[3,11]	X[5,11]	X[11]
Sulfur		X[1]	X[11]	X[11]	X[11]	
Thiophanate methyl		X[3]		X[3,11]	X[11]	
Ziram		X[3,4]	X[1,3,11]	X[1,3,11]	X[11]	X[3]
Totals:	19	20	22	30	29	14

Description

Most toxicity determinations based on interpretations and conclusions of studies by university, government, or organization databases. Empty cells may refer to either insufficient data or if the chemical is considered relatively non-toxic based on currently available data. The column labeled "Potential to Leach" refers to a chemical's potential to move into deeper soil layers and eventually into groundwater. The column labeled "Toxic to Mammals" refers to conclusions based on evidence from studies done on non-human mammals.

The list of 30 commonly used lawn chemicals is based on information provided by the General Accounting Office 1990 Report, "Lawn Care Pesticides: Risks Remain Uncertain While Prohibited Safety Claims Continue," U.S. Environmental Protection Agency (EPA) National Pesticide Survey (1990), Farm Chemicals Handbook (1989), The National Home and Garden Pesticide Use Survey by Research Triangle Institute, NC (1992), multiple state reports, current EPA Environmental Impact Statements, and Risk Assessments, EPA national sales and usage data, best-selling products at Lowe's and Home Depot, and Beyond Pesticides' information requests.

For more information on hazards associated with pesticides, please see Beyond Pesticides' *Gateway on Pesticide Hazards and Safe Pest Management* at www.beyondpesticides.org/gateway. For questions and other inquiries, please contact our office at 202-543-5450, email info@beyondpesticides.org or visit us on the web at www.beyondpesticides.org.

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**These pesticides are among the top 10 most heavily used pesticides in the home and garden sector from 2006-2007, according to the latest sales and usage data available from EPA (2011), available at http://www.epa.gov/opp00001/pestsales/07pestsales/market_estimates2007.pdf.*
† EPA lists all synthetic pyrethroids under the same category. While all synthetic pyrethroids have similar toxicological profiles, some may be more or less toxic in certain categories than others. See Beyond Pesticides' synthetic pyrethroid fact sheet at bit.ly/TLBuP8 for additional information.
‡ Imidacloprid is a systemic insecticide in the neonicotinoid chemical class, which is linked to bee decline.
§ Based on soap salts.
|| Based on in-vitro mammalian cell study.

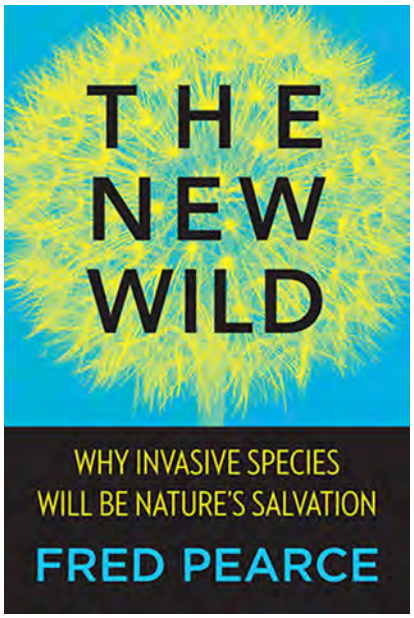
by Terry Shistar

The New Wild

Why Invasive Species Will Be Nature's Solution

Fred Pearce, Beacon Press, 2015, 194pp.

The New Wild undertakes a number of tasks –investigating the validity of claims that non-native species cause harm to ecosystems, "rebooting" our ideas about nature, and arriving at lessons about how non-native species fit into future conservation efforts. I believe the author successfully makes the case that the vast majority of non-native species introductions do not result in ecological harm. However, his case for non-native species as an important component of future conservation efforts is weakened by arguments about changing our ideas about nature that are based on false dichotomies. It would have been better to accept that different ideas about nature and conservation are appropriate in different contexts.



The New Wild examines several well-known examples of non-native or "invasive" species introductions that have been claimed to produce ecological harm. His findings include:

- "Sheep, and the changes that their owners made to accommodate them, changed Australia. Yet virtually nobody blames the sheep. . . They blame the rabbits" that ate the grasses planted for sheep.
- Water hyacinth grows in response to water polluting excess nutrients and disappears when water quality is restored.
- The "killer algae" *Caulerpa taxifolia* opportunistically invaded when pollution weakened naturally-occurring sea grasses and disappeared when the water was cleaned up. In addition, the algae helped to clean up the water.
- Kudzu, introduced as cattle forage, became a weed when no longer grazed, but no research supports the claim of ecological harm.
- Cheatgrass and other grasses introduced to feed cattle produce a fire hazard, but also reduce soil erosion and desertification that would have resulted from overgrazing of sagebrush by European cattle.

Two lessons can be derived from the above examples:

- When non-natives "invade" agricultural production systems – also composed largely of non-natives species– the "invaders" are blamed for ecological changes. Some non-natives don't count –crops, honey bees, and earthworms, for example.
- When non-native species flourish as a result of pollution, the response has been to blame the "invader" instead of cleaning up the pollution. The author quotes Glasgow University botanist Jim Dickson, Ph.D., "No endemic is remotely threatened by any aliens."

There are many disturbed ecological communities –indeed, the author may be correct in concluding that every ecological community has been disturbed or restructured by human activity. But I am among those he describes as fearing what appears to be an "anything goes" approach in his "rebooting" of our ideas about nature.

It is not necessary to abandon the concepts of "nature" and "natural." In several places, the author makes a distinction between two different ways that ecological communities might arise, saying, "Ecosystems are not so much complex and coevolved machines as the result of accident and chance." Ecological communities do arise from accident and chance, but also from coevolution, succession, and other processes acting on those chance encounters. It is precisely because both mechanisms operate together in natural systems that we should not fear the invasion of natural systems by non-native species. Where the ecosystem is healthy, ecological and evolutionary processes make the community resilient –it is dynamic certainly, but not subject to upheaval. As illustrated by the examples in the book, if the concern is ecological damage, then attention to the underlying causes of disturbance is more likely to protect the community than attempting to eradicate species that have taken advantage of a change that favors them over natives.

Although I believe Mr. Pearce's reasoning has flaws, the examples he provides are evidence supporting the theme of the book –that introduced non-native species can protect natural systems that are seriously disturbed. In some cases, the introduction of alien species can help restore a community to something approaching its original biodiversity. And although I disagree with defining everything as "natural," I agree with him concerning the ecological and health value of "rewilding" urban areas, including greening as an alternative to rebuilding of brownfields. In some of those disturbed environments, alien species may be the best or only choices for the job.

The Bee Protective
Ambassador Project

On college campuses nationwide, grounds crews and landscapers maintain land with toxic pesticides, even though safer alternatives exist. The widespread use of pesticides, specifically, a class of insecticides known as neonicotinoids (neonics), has been implicated in the decline of honey bees and other wild pollinators.

In order to mitigate the devastating effects that neonics and other pesticides have on pollinators, Beyond Pesticides has created the BEE Protective Ambassador project to educate students on the importance of bees, and how they can take action on their campuses and in their communities.

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