

ZOO GONE WILD

The Oakland Zoo's expansion into Knowland Park would destroy rare habitat and cut off public access to open space. Can opponents stop the project before it's too late?

By Sam Levin

On a recent Friday afternoon, Joel Parrott and Nik Dehejia stood in the middle of the grassy highlands of Knowland Park in the hills of East Oakland, staring out at an incredible view of the San Francisco Bay. It was warm and sunny on our trip through the pristine city-owned park in the Oakland hills and its undisturbed natural habitat.

Parrott, president and CEO of the East Bay Zoological Society, the nonprofit that runs the publicly owned Oakland Zoo, told me to imagine bison roaming the land as he talked about the zoo's planned expansion into Knowland Park. "What did the Bay Area look like before there was all this development? ... What did it look like back when the Native Americans were here before the Gold Rush? That's what it's all about."

At that moment, we were standing near the zoo's proposed new tule elk and bison exhibit, just one piece of the so-called "California Trail" project. "[You'll] get to see the American bison in the foreground and the San Francisco Bay in the background," Parrott said.

To our right, Parrott and Dehejia explained, a gondola will carry visitors from the adjacent existing zoo to the project's new interpretive center and visitors' building, which will feature a restaurant with panoramic views of the bay. Surrounding those structures will be exhibits showcasing wolves, grizzly bears, black bears, mountain lions, and more.

Simply put, Knowland Park will look and feel dramatically different than it does now. With its hundreds of acres of peaceful and wild open space — and with the dense urban development of Oakland in the flatlands below — Knowland Park currently looks like you have stumbled upon a stubborn plot of parkland that has, against the odds, avoided human interference.

Dehejia, the Zoological Society's chief financial officer and project director for the expansion, acknowledged the uniqueness of Knowland Park, and argued that it's an ideal setting for Bay Area residents to learn about the ecological history of the region — lessons that he said the Zoological Society would incorporate into the zoo's new California Trail exhibit.

If the society has its way, big changes are indeed coming to Knowland Park. But critics say the changes will irreversibly destroy valuable

habitat and cut off the public from open space parkland it has a right to access. Opponents also say that if the \$61 million California Trail project is built as planned, it will not spread a message of conservation, as the Zoological Society contends, but instead will set a troubling precedent for the seizure of public parkland and the development of environmentally harmful projects on natural landscapes that are home to threatened and endangered species.

Conservation advocates and Knowland Park neighbors have been fighting the expansion proposal for years as it has weaved its way through the regulatory process. And though the Zoological Society is nearing the finish line — with the goal of breaking ground in 2015 and opening in 2017 — the proposed 56-acre project is not, as the society presents it, a done deal.

Because the Zoological Society has chosen to develop on high-quality natural habitat on the Knowland Park ridgeline — which supports a threatened snake species and features rare plant communities, native grasslands, and more — state and federal regulators are now requiring that the society and the city set aside additional land for "mitigation." That means the project can't move forward unless the city, which owns the zoo, agrees to block off parkland from the public to make up for the habitat loss caused by the zoo expansion.

Currently, the Zoological Society is proposing to take an additional 21 acres of Knowland Park — on top of the 56 acres of parkland it already plans to use in its expansion. The 21 acres of additional parkland would become a "conservation easement" that would be inaccessible to the public in order to protect threatened and endangered species in the area.

Activists have long pointed out the irony of the Zoological Society destroying sensitive natural habitat in order to build an artificial exhibit that would feature animals that have disappeared from the East Bay because of habitat loss. And now they contend that the society's plan to take part of a public park away from the public is not only unethical and illegal, but also a bad solution to a problem that the nonprofit created when it chose to develop on sensitive habitat in the first place. The Oakland City Council is expected to vote this fall on the Zoological Society's request to close the additional 21 acres of Knowland Park, in what could be the final major hurdle for the zoo's expansion.



“The zoo will never, ever live this down,” said John Taylor, a UC Berkeley professor of plant and microbial biology who has analyzed some of the unique features of the park. “If we build something on top of the most interesting habitat, we can’t get it back. ... That would be one of those really sad events, where to celebrate something — native plants and animals — you destroy them.”

And if the council gives the green-light to the final plan, critics say it will be yet another example of Oakland city government supporting the Zoological Society at the expense of taxpayers — through a public-private partnership that has become increasingly problematic over the years. According to opponents of the zoo expansion — who have requested and analyzed extensive public records — the Zoological Society has continued to receive substantial public funding, including roughly \$24.5 million for its expansion efforts, without adequate oversight or scrutiny by the city.

The activists fighting to save Knowland Park also say the city has not only repeatedly failed to require meaningful environmental reviews of the expansion, but has continued to support the zoo’s growth without proper assurances that the taxpayer-funded project is even financially feasible. In fact, activists say the limited records they have obtained raise a number of questions about the fiscal merits of the plan.

That means if the project advances as proposed, Oakland residents could lose more than just sensitive natural habitat.

With roughly four hundred acres of open space, Knowland Park is the City of Oakland’s largest, and by some measures, most biologically diverse park. The western highlands of the park feature a rare type of vegetation called maritime chaparral, as well as grasslands and plants native to California, fields of wildflowers, and hundreds of lichen and fungal species.

The park’s habitats support a range of plants and animals — including the threatened Alameda whipsnake and California red-legged frog — and make the area an important wildlife corridor for mountain lions, migratory birds, and other native East Bay species.

Government officials have long acknowledged the unique value of the land, which was designated a public park in 1948. That year, the park’s namesake, Joseph Knowland (longtime editor and publisher of the *Oakland Tribune*), who was then the chairman of the California State Park Commission, helped negotiate the purchase of the land from a bank that had a mortgage on the property.

Recalling Knowland Park’s inclusion into the state park system in a 1972 interview on file at the UC Berkeley Bancroft Library, Newton Bishop Drury, who was director of the National Park Service in the 1940s, described it as “a wonderful piece of rolling land quite typical of the coast range.” And state memos from the 1950s indicate that numerous officials, as part of a Knowland Park advisory committee, had discussed the importance of preserving the site’s valuable natural

habitat.

“Knowland Park spoke to people,” said Laura Baker of the East Bay chapter of the California Native Plant Society, who recently obtained historical records from the state parks department. “They recognized it was a beautiful piece of land.”

The park memos discussed conservation priorities and the importance of “protect[ing] the native areas so they could start the processes of natural renewal.” Baker, one of the lead activists opposing the zoo’s expansion, said that historical records indicate that “when Knowland became a state park, only a portion of it was supposed to be for the zoo.”

And an early state parks “statement of purpose” for Knowland Park said the mission of the site was: “To supply day use park facilities and to provide for the development of an arboretum and botanical garden along with limited zoological exhibits.”

The Oakland Zoo, which was originally founded in 1922, moved from its previous location in Joaquin Miller Park to Knowland Park in 1939. In 1975, the state transferred Knowland Park to the City of Oakland with an agreement that the site always maintain “public park” uses. If the city “ceases to use the property for public park purposes,” the deed of transfer stated, the park “shall revert to the state of California.”

Environmental activists are now citing this so-called “reverter clause” as a reason why the city should not approve the Zoological Society’s proposal to eliminate public access to 21 additional acres in Knowland Park. And communications between state officials and Zoological Society representatives — which Knowland Park advocates have obtained through public records requests and shared with the *Express* — reveal that there have been recent internal discussions about whether closing off parkland would violate the terms of the 1975 deed.

But to understand how the Oakland Zoo got to this stage in its project, you first have to understand the history of how the city has given the Zoological Society increasing authority over the zoo operations and the park. In 1982, in what the zoo describes on its website as a “major turning point in the Zoo’s development,” the city gave the East Bay Zoological Society the responsibility of managing the entire zoo and all of Knowland Park. And soon after, both the city and the nonprofit began setting the stage for the zoo’s expansion into previously undisturbed parts of Knowland Park.

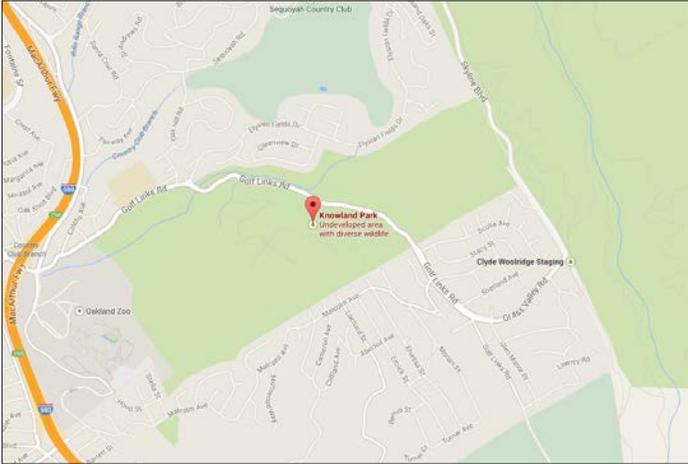
In 1998, the city rezoned the park as part of a massive rezoning of thousands of acres of Oakland parkland — a process that was exempt from the state’s primary environmental law, the California Environmental Quality Act, because the overall initiative was aimed at increasing protections and limiting developments on open space. Knowland Park, however, gained a “special use” zoning designation in that process, which set the stage for the zoo’s expansion.

At around the same time, the Zoological Society brought forward a master plan proposal for the zoo’s future, with the goal of making “optimum use of the unique combination of historic and native Californian landscapes in Knowland Park.” That included a “California 1820” expansion project that would teach visitors about “California’s rich, natural heritage” through a development on 62 additional acres of Knowland Park. The project would be an extension of the existing, roughly 45-acre zoo at the lower part of the park, making the zoo about 107 acres total.

After the Zoological Society proposed this master plan in 1996, a group of neighbors raised a range of concerns about the proposal and the potential loss of open space, and argued that the plan warranted a full environmental impact report (EIR).

But the city decided that an EIR was not necessary and instead issued what’s known as a “mitigated negative declaration,” which meant that the city believed that with certain mitigation measures, the project would not have a significant impact on the environment. The city council unanimously approved the plan in 1998, at which point the zoo also negotiated a memorandum of understanding with neighborhood groups that addressed some of their concerns.

“It was this great spirit of compromise ... and it was approved by



the neighbors,” recalled Parrott, who has been running the zoo since 1985, during a recent interview inside a conference room at the zoo. “Fast forward over all these years,” he continued, flashing a grin. “New neighbors.”

For a long time, Ruth Malone had no idea that Knowland Park was even accessible to the public. At one point in the 1990s, Malone, who co-founded Friends of Knowland Park, recalled going to the zoo with her husband and asking an official at the entrance if they could hike in the park. “They said, ‘No you can’t go there,’” she said. “And we didn’t investigate it further.”

But years later, after she moved closer to Knowland Park, she discovered that she had been given false information. “I could’ve been coming here all this time,” she said.

Anyone can enter Knowland Park, though the city does not post any information online about this fact or put up any signs at park entrances. The Oakland Office of Parks and Recreation didn’t even list it as one of its city parks on its website until 2012 after advocates repeatedly demanded it. And city parks staff, Malone said, once incorrectly told Friends of Knowland Park that the parkland was privately owned. “It’s been the best kept secret in the city,” she added.

From 1999 to 2010, the Zoological Society devoted its time and efforts to new exhibits and projects within the existing zoo, spending about \$25 million on improvements. At that point, the society was ready to execute the critical vision in its master plan — expanding further into Knowland Park. While the zoo said it was simply taking its 1998 plan to its logical conclusion, opponents said the proposal the zoo brought forward in 2011 was extremely different from the one the council had previously approved. And it was, they said, more environmentally destructive. “You can’t help but characterize it as a giant theme park,” Malone said.

A number of key differences alarmed environmental groups. The proposed interpretive center had increased from a 7,500-square-foot, 1-story building covering 0.23 acres to a 34,305-square-foot, 3-story building, covering 0.36 acres. It would now include offices, in addition to a restaurant, classroom, gift shop, and exhibits. The zoo had also added a gondola attraction that would require 7 towers, and an overnight camping area that could accommodate about 100 people.

The footprint of the animal exhibits had also grown from 16.23 acres to 18.07 acres and had been substantially reconfigured such that the bulk of the exhibits had moved farther away from the existing zoo and deeper into the upper part of Knowland Park. That meant that many visitors to the park’s remaining open space, including at some of the best viewpoints, would immediately see the zoo’s attractions in the foreground when looking out at the bay.

“When you change a project in such a way as they have, that’s significant, and that needs to go through a further environmental

review,” said Norman La Force, chair of the Sierra Club’s East Bay public lands committee. But, he continued, “to do a proper environmental review costs money, and frankly, a lot of agencies don’t want to spend that kind of money, so they find every which way they can not to review it.” La Force argued that a nonprofit, especially one that takes public funding and says it’s dedicated to conservation, should be committed to participating in a full environmental review.

But just as it had in 1998, the city said an EIR was not necessary, and instead conducted a more limited review, determining that the project in its new form, with certain mitigation measures, was once again acceptable. The city council agreed and unanimously approved the project.

Scott Miller, zoning manager for the City of Oakland, said the city carefully reviewed and analyzed the updated project prior to the 2011 approval. “Those studies determined there were no significant impacts.” And the extensive arguments of the project’s critics, he added, were “thoroughly vetted.”

But one of the most critical components of an EIR is the meaningful consideration of alternative plans, including exploring other locations for a project. And according to the zoo’s opponents, there are numerous ways in which the zoo could expand on its current site, or within lower, less sensitive parts of Knowland Park. “It’s really shocking, said Mack Casterman, conservation analyst with the California Native Plant Society’s East Bay Chapter, “that when it comes to literally their own backyard, they are purposefully avoiding an alternative that would be less impactful to the really, really special natural resources that are right behind their current facility.”

Since 2011, the Zoological Society has continued to argue that its new project plan was legal and environmentally superior to its approved 1998 plan. Notably, Zoological Society and city officials said, the total expansion site has *decreased* from 62 acres to 56 acres, giving the zoo a total size of about 101 acres rather than 107. The Zoological Society had also abandoned a plan for an environmentally harmful road loop and shuttle system, replacing it with the aerial gondola, which would require no tree removal. And the reorganization of the exhibits will help better preserve grasslands and trees, they said.

During our interview, Parrott — darting back and forth between a 1998 master plan map on one side of the zoo’s conference room and a current project map on the other side — said: “It is the same project. Here it is, and here it is. ... That was a conceptual plan. So we went onto the next level of design and development.”

Deheja further noted that the Zoological Society has established a long-term “Habitat Enhancement Plan” as part of the project, aimed in part at eradicating invasive species and replanting native ones: “The project itself is an improvement to the habitat. There’s a whole plan that’s going to be implemented as a result of this project.”

And in June 2012, the Zoological Society got additional good news when an Alameda County Superior Court judge ruled that the updated project was simply a modification of the original plan — striking down a lawsuit that the expansion opponents filed against the city after the council approved the new master plan.

Friends of Knowland Park and the California Native Plant Society, the plaintiffs in the lawsuit, couldn’t afford to appeal the decision, and at that point, the California Trail project seemed inevitable.

But over the last year, as the project has inched closer to breaking ground, the Zoological Society has run into a new set of obstacles — and this time it isn’t just neighbors and environmentalists raising objections.

Before Joel Parrott became the director of the Oakland Zoo in 1985, the Humane Society had named it one of the worst zoos in the country for animal welfare. Parrott, who was previously a consulting veterinarian for the zoo, made it his mission to turn things around.

He started improving exhibits one by one, elevated the institution’s animal care standards, adopted more progressive zookeeper training



policies, and launched a multi-phase renovation of the zoo that continued for the next twenty years. And he established a number of conservation initiatives at the zoo.

“Dr. Parrott’s vision is why we are here,” said Amy Gotliffe, the zoo’s director of conservation. “To make the animals have a better life and a safe future — that has filtered down to every last person who has worked at the zoo.”

Kelly Sorenson, executive director of the Ventana Wildlife Society, which has partnered with the zoo on a condor recovery project, said zoo officials were immediately excited about the opportunity to collaborate: “It was not only a ‘yes,’ it was, ‘What else can we do?’ That was really refreshing. ... And they’re providing a tremendous amount of support for condors.”

This commitment to conservation, zoo officials say, extends to the expansion project. “It’s not honest to say that the people associated with the zoo don’t care about conserving the natural environment,” said Jim Wunderman, a member of the East Bay Zoological Society board of trustees and president and CEO of the Bay Area Council, a business advocacy group. “The California Trail project ... has been done very thoughtfully and artfully.”

The California Department of Fish and Wildlife, however, has questioned the Zoological Society’s approach to conservation and mitigation. State Fish and Wildlife is responsible for enforcing the California Endangered Species Act and issuing permits for projects that may harm threatened species — in this case, the Alameda whipsnake. Scott Wilson, the department’s acting regional manager, wrote a letter to Parrott in 2012 expressing concerns about the location of the interpretive center building and recommending that the Zoological Society move it to a different spot, 200 yards south. “This effort would leave the rare and high-quality maritime chaparral habitat intact [and] better conserve the Alameda whipsnake population,” Wilson wrote, later recommending something activists had long suggested: “The Project footprint could be further reduced by locating other facilities within the current Zoo footprint.”

The Zoological Society, however, has not acted on those recommendations.

Andrew Hughan, spokesperson for the state Fish and Wildlife Department, said in a recent interview that the agency has had extensive communications with the Zoological Society since Wilson wrote that letter, and that his agency plans to issue the zoo’s permit in the near future.

However, because of the serious impacts of the project, state regulators and officials with the US Fish and Wildlife Service, which enforces federal endangered species laws, are requiring that the Zoological Society set aside a total of about 52 acres for mitigation. In its most recent proposals, the society has suggested setting aside 31 acres within its current expansion site for mitigation and closing 21 acres of

open space outside the project perimeter.

However, activists contend that a substantial portion of the additional 21 acres of parkland that the Zoological Society wants to set aside for mitigation is unsuitable for the threatened species and that areas within the proposed expansion that the society plans to set aside for habitat are disconnected from nearby wildlife corridors. Environmentalists further argue that the idea that the zoo is actually protecting any land in the first place is something of a farce, given that Knowland Park is already a designated open space park and therefore effectively protected from harmful development projects.

“Taking land that’s already protected and that the public already owns and calling it ‘mitigation’ ... sets a really bad precedent,” said Jeff Miller, a San Francisco-based conservation advocate with the Center for Biological Diversity, an environmental group. Typically, developers turn privately owned land — not public land — into conservation easements for mitigation purposes.

Miller also argued that the whipsnakes would not benefit from fragmented conservation sites — especially ones that aren’t the best kind of habitat for the species. “It’s outrageous. The project is going to destroy what we know is good whipsnake habitat [for the actual zoo expansion] ... and substitute it with much poorer habitat that whipsnakes don’t use and never will use.”

It is projects like these that kill off a species, Miller added. “It’s death by a thousand cuts for the whipsnake. The whole reason the whipsnake is threatened to start with is that its habitat has been fragmented by urban development.”

The Zoological Society and its consultants continue to argue that all of the chaparral plant communities, including the best habitat for the snake species, are protected in its plan either through easements or through lack of development. When state regulators expressed initial concerns, “they had been operating without seeing detailed plans and had heard from the opposition a lot of misinformation,” said Jim Martin, a biological consultant who has been working for the zoo since 2007.

Today, regulators appear to be siding with the Zoological Society, with the US Fish and Wildlife Service recently issuing a “biological opinion” that the project will *not* impact the status of the snake species. This document is effectively the final step before federal agencies give the society its permits.

But even if the society gets the green light from state and federal regulatory agencies, opponents are hoping that the city council will be unwilling to support a plan that calls for the removal of public access to a section of a public park.

Emails between state agencies and the Zoological Society, which activists obtained through public records requests, reveal that state officials have recently questioned whether it’s even permissible for the city to prevent the public from accessing parts of the park. In order for Knowland Park to abide by the stipulations of its deed, it must maintain “public park purposes.”

According to public records, Linda Barrera, general counsel for the California Department of Fish and Wildlife, asked the Zoological Society’s attorney in March what the group’s plans were for “providing public access in and/or around the conservation area,” in order to determine whether the expansion might violate the deed’s “public park purposes” clause.

Later, after Barrera had apparently discussed these questions with the California State Parks Department — which signed the original deed of transfer — she wrote that the conservation easement could possibly be acceptable if the public would have some “limited access” to the site. Access, in this case, would come in the form of zoo visitors taking gondola rides over the site and viewing it from lookout points.

From the perspective of open space advocates, this would be a clear violation of the “public park” mandate in the Knowland deed, given that people would have to pay for admission to the zoo and then could only view this part of the park from above. “The issue became, how do you give the appearance of public access without the reality of public



access?" said Baker of the plant society.

Huey Johnson, former secretary of resources for the State of California and founder of the Resource Renewal Institute, a Bay Area environmental nonprofit, said that the proposal would clearly contradict the Knowland Park agreement, and further send a troubling message about the development of parkland: "It's like letting somebody walk in and rob a bank."

Nancy Graalman, director of Defense of Place, a program of the Resource Renewal Institute that's focused on protecting parklands, added: "It's a laughable proposition that public access can be replaced by flying over it in a gondola."

Representatives from the Oakland Parks and Recreation Department declined to be interviewed for this report, despite repeated requests over several weeks. Scott Miller, the Oakland zoning manager, defended the concept of using existing public parkland for mitigation and said the city is in discussions with the Zoological Society about the best possible solution. "Designating areas for protection of sensitive biological resources is a common park purpose," he said. "We think it maintains an appropriate balance between the protection of natural resources and the public use of parkland." Plus, he added: "The zoo is an incredible resource for the city."

Vicky Waters, spokesperson for the California State Parks Department, also declined to comment, saying the state agency has no official position until permits and reviews for the project are complete. Waters also declined to say what is a permissible "public park purpose" that would meet the requirements of this kind of deed. (She did tell me, however, that the state park system currently includes nineteen conservation easements, but could not confirm if any of them were used for development mitigation).

The Zoological Society, too, continues to argue that blocking off part of a public park for conservation is a clear public park purpose and that the 21 acres of mitigation are inaccessible to the public. I hiked a section of it with Baker, who is 67 years old, and another advocate, who is 64 years old. It's rough terrain, but not inaccessible.

"The zoo is not taking anything," Parrott said, arguing that it is federal and state regulators that are requiring land be set aside for conservation.

Dehejia further argued that the society is adding important protections to parts of the park and that the conservation plan aligns nicely with the institution's broader mission: "It is a wonderful idea. It's going to protect the species. ... To have an endangered species is something we are very excited about. We are a zoo after all."

On a whim, Elise Bernstein decided to attend a board of trustees meeting at the Oakland Zoo in the fall of 2012. She was a member of the zoo and had visited often with her daughter and grandson since moving to the Eastmont neighborhood in East Oakland in 2009. By 2012, she was involved in the efforts to preserve

Knowland Park and thought it would be useful to sit in on meetings of the board of trustees, which is the governing body of the East Bay Zoological Society.

The trustees, Bernstein recalled, seemed surprised to have a member of the public show up, but a staffer gave her an agenda packet. Bernstein observed the meeting and left quickly after it ended. But as she was walking toward her car in the parking lot, the staffer who had given her the agenda packet chased after her. "She came running out and said, 'Hey. Hey. Wait. Wait. Excuse me, do you have our financial report?'" Bernstein recalled. "And she took it back. She said, 'I'm sorry. This is not public information.'"

Bernstein said she later kicked herself for not even glancing down at the document. But the situation affirmed some of her suspicions about the Zoological Society's lack of transparency. "The public is entitled to have information about how our money is spent," she said. "This is a city operation. We own the zoo. ... And we own the park."

Critics of the California Trail project argue that the Zoological Society has, over the years, requested and received a significant amount of public funding without being open about its finances — with the organization often citing the fact that it is a private nonprofit. The ongoing lack of financial accountability, opponents say, is an additional red flag for the expansion.

As part of a \$72 million capital campaign for the zoo's growth — which includes the California Trail project and a new veterinary hospital that opened in 2012 — the Zoological Society has relied on a range of public funding sources, totaling \$24.5 million. Of that amount, \$13.7 million comes from a 2002 Oakland bond measure financed by city property owners, \$3.5 million from an East Bay Regional Park District measure financed by residents throughout the East Bay, \$7 million from a California State Parks nature education grant, and \$300,000 from the California Cultural and Historical Endowment, a state agency.

The Zoological Society also receives additional funding from East Bay taxpayers for its current operations. Currently, the society receives about \$485,000 annually from the city's general fund, about \$500,000 from a city hotel tax, and roughly \$600,000 from a regional property tax, Dehejia explained. The total of about \$1.5 million in annual public funding makes up roughly 10 percent of the society's \$14 million budget (a public funding rate that Dehejia said is below industry standards for zoos and aquariums).

Although a dedicated group of project opponents has requested and analyzed public records pertaining to the Zoological Society's current and future operations, it's hard to imagine anyone has spent more time scrutinizing the organization's finances than Jim Hanson, the conservation committee chair for the California Native Grasslands Association. Hanson provided me with extensive records and reports, documentation of records requests that went nowhere, and his own detailed analysis of the zoo expansion. "This is an environmental and financial fiasco," said Hanson, who first got involved in Knowland Park because of his interest in grasslands. "For the citizens of Oakland, it's a real tragic kick in the stomach in terms of economic development in the 21st century."

For starters, Hanson argued that missing financial reports, including ones that he said the Zoological Society is legally obligated to provide to the city, point to a lack of accountability and raise questions about the feasibility of the California Trail project.

For years, he and another Knowland Park advocate, Mimi Pulich, have requested from the city copies of the Zoological Society's "capital improvement budget," which the nonprofit is obligated to submit annually to the parks and recreation department, according to the terms of its management agreement. That report, the contract states, should include a spending plan, information on actual expenses, and a description of its current and future budget.

In 2013, in response to Pulich's request for those reports for 2005 through 2012, a city parks representative said no documents existed. The email, which Pulich shared with me, noted that the parks department had also consulted with the City Administrator's Office and the City



Auditor's Office.

Beginning in 2013, the parks representative added in the email, the agency will be “requiring that the Zoological Society provide all reports agreed upon in the agreement.” The missing reports and seemingly new commitment to hold the society accountable signaled to the activists that the nonprofit had clearly violated the terms of its own contract. “We’re basically doing the city’s job for them,” Hanson said.

And when the Zoological Society finally submitted a report this year, it included a single page of capital improvement information — one chart with estimated costs for the expansion project and on-site renovations and maintenance. “The absence of detail is striking,” Pulich said. “It’s certainly not what is described in the management agreement.”

The Zoological Society has also refused to release a California Trail financial feasibility study, even though it has produced one internally (a fact society officials confirmed). Because the society is not a public agency, it does not have to release the report, but its refusal is concerning, said Hanson, who argued that the city council should have required that the report be publicly available.

Hanson pointed out that in another Oakland public-private partnership, the renovation of the Fox Theater, the city auditor in 2011 specifically cited the lack of a comprehensive financial feasibility study as one of the factors that led to the city spending significantly more money on the project than initially estimated.

Baker of the California Native Plant Society has also repeatedly requested from the city copies of construction contracts for the zoo’s veterinary hospital, which was completed in 2012. The Zoological Society’s management agreement with the city spells out a number of requirements, including local hiring practices, for construction projects. But officials with the city’s Contracts and Compliance Division told Baker that there was nothing on file for the zoo’s hospital project.

A city spokesperson told me in an email that “the agreement between the Zoo and the City is for management services only” and that it appeared the Zoological Society was not obligated to submit a report for the hospital construction. But that statement seems to contradict what’s actually in the society’s contract, which specifically references requirements for “construction contracts.”

Hanson further argued that the limited information that is publicly available raises alarms. For example, the Zoological Society board approved a \$10 million loan for the expansion project last year — but, according to Hanson’s public records requests, the city council never reviewed it. This is despite the fact that the society’s management agreement requires the council to approve loans.

Hanson also pointed out that, in 2012, the Zoological Society itself publicly stated that it was in a difficult financial position and needed more funding for its existing zoo operations. The society made that argument as part of its push for a controversial county parcel tax, Measure A1.

At the time, the society argued that the tax, which would have funneled more than \$100 million to the zoo over 25 years, was critical

for animal care needs, education programs, and to keep zoo admission prices down. The measure failed to get the required two-thirds vote, and Hanson and other Zoological Society critics have questioned whether it’s financially wise for the organization to move forward with a large expansion if it has needs in its existing zoo that have gone unmet.

William Marchant, co-chair of the Zoological Society board of trustees, told me that the A1 defeat meant a loss of financial security against a bad year — one with lots of rain, for example. “We have to continue to increase our revenue.”

Regarding contract compliance concerns, Dehejia told me: “We have never been notified that we have been in breach of contract.” And Parrott, in reference to the Zoological Society’s internal feasibility study, said, “It’s private, because people like the Friends of Knowland Park, what do they need to look at our business plan for? ... They’re not here to help us improve the business plan.” Parrott also declined to tell me the source of the \$10 million loan, but said this type of bridge loan was very common. Dehejia argued that this type of loan also does not require council approval.

Parrott said that the Zoological Society would continue to raise funds for the projects that the A1 parcel tax would have allowed, including new exhibits for the chimpanzees and tigers at the existing zoo. But in the immediate future, he said, “a lot of opportunity for our guests and the animals here at the zoo have been lost.” Still, he argued that financing for the expansion is fully in place, and separate from the funding for the current zoo: “We wouldn’t be moving forward if we weren’t really confident.”

The California Trail plan, Parrott added, “is extremely feasible, and on top of that, it will enhance our mission to expose children to nature and wildlife.”

On a recent summer afternoon, three Knowland Park advocates took me on a trip to the Oakland Zoo. Along the way, they pointed out different exhibits and areas that they thought seemed overdue for an update or renovation, and described other opportunities for growth — within the existing zoo.

They are not opposed to the zoo building major new attractions, they emphasized. But from an education standpoint, they questioned the value of building on parkland, rather than coming up with innovative opportunities to celebrate it — having zoo docents lead hikes through Knowland Park, for example.

“There is plenty of room for them to get their expansion, without taking more public parkland,” Baker told me on the drive over to the zoo, noting that most zoos, which aren’t located next to wildland parks, find other ways to grow and change and truly promote conservation.

Hanson pointed out that some zoos have built conservation exhibits focused on native species that are endangered today — such as the Santa Barbara Zoo’s “California Trails” exhibit, which features animals at risk of disappearing from the state forever due to habitat destruction. The Oakland Zoo California Trail, by contrast, would display animals that have already mostly disappeared from the region because of habitat destruction.

At one point during our zoo trip, we stumbled upon a large banner advertising the California Trail expansion, located in the spot where visitors will get on the gondola. “Embark on the Adventure!” the sign read, featuring images of a grizzly bear and mountain lion and explaining that this is where visitors will begin their “California Trail journey.”

They will ride the gondola to the park hilltop where they will arrive at a visitor center and restaurant with bay views. From there, they can stop at a San Francisco Bay overlook, the banner read.

“We can do that any day of the week without having to get on a gondola,” Baker said. “It’s like selling air, you know?”

Staring at the large banner, looking up toward Knowland Park in the background, Hanson read aloud one part of the sign that he thought was particularly absurd: “IMAGINE the Bay Area in its natural state.”

“You’re going to have to imagine it,” he said with a laugh, “because it will be gone.”



WHAT'S POISONING THE BEES

Toxic pesticides are killing honeybees and other pollinators — and our food supply stands to suffer.

By Sam Levin

Some of the honeybees were lying on their backs, trembling and twitching. Others were crawling slowly on the ground, unable to fly. Many were motionless, lying dead in piles. Many more had simply disappeared, apparently unable to find their way back to their hives. This was the gruesome scene commercial beekeeper Steve Ellis came upon on the morning of May 7, 2013.

The sight stunned Ellis, who has owned and operated Old Mill Honey Company in Barrett, Minnesota for 35 years. “Normally in the spring, we typically expect bees to build up and get stronger,” he recalled. “For a beekeeper to watch his bees be devastated in the springtime — it’s like watching a little child get extremely sick and debilitated. It takes a real mental toll on you.”

But almost immediately, Ellis discovered the culprit: That morning, a farmer had planted corn in a field directly adjacent to his bee yard, which housed roughly 1,300 hives at the time. He was well aware that most corn seeds are treated with a pesticide called neonicotinoids. And that day, the wind was blowing from the cornfield toward Ellis’ bees, the beekeeper wrote in an incident report he sent to the US Environmental Protection Agency. The bees’ only sources of food were nearby willow trees, which, Ellis surmised, had become coated with pesticide-contaminated dust. “We took a close look to see how the bees were behaving when they were trying to forage them. It was shocking what we found,” Ellis said in a video he took that day documenting the massacre. “Bees literally incapacitated when they come in contact with the flowers.”

Ellis said he has no doubt that the farmer’s pesticides had poisoned his bees. Neonicotinoids, called neonics for short, are the most widely used pesticides in the world; they coat the majority of maize seeds planted in this country. They are considered systemic pesticides, meaning they get into a plant’s root and leaf system and are distributed throughout the organism — including to the pollen and nectar. While they’re very effective at killing harmful pests such as beetles and aphids, neonics are also highly toxic to bees. High doses of exposure to the pesticides cause bees’ nervous systems to shut down, killing them. And research has increasingly shown that even low doses of exposure to neonics can produce chronic, sub-lethal impacts in bees — meaning

they can weaken or sicken honeybees and their colonies.

Pesticides are just one piece of a very complex puzzle of factors that is contributing to declining bee health and massive colony losses that are being reported by commercial beekeepers across the country. A few weeks ago, the US Department of Agriculture released data showing that US beekeepers lost more than one in five honeybee colonies in the 2013-14 winter season. Beekeepers have been experiencing abnormally high losses since 2006, when honeybees began mysteriously disappearing from their hives in large quantities, part of a phenomenon experts called colony collapse disorder (CCD). But since then, attention has shifted toward broader declines in honeybee health due to a wide range of threats, such as pathogens, parasites, poor nutrition, migratory stresses, and environmental stresses — including exposure to pesticides.

While experts agree that declining bee health is a multifaceted problem, in recent years, a growing body of research has suggested that pesticides are a major threat to our nation’s honeybees, weakening colonies and making them vulnerable to diseases and parasites. “We know that the dust from [pesticide-laden] seed planting is outright toxic to bees and responsible for ... bee kills on an annual basis during corn-planting time,” said James Frazier, a professor of entomology at Penn State who has co-authored studies exploring links between pesticides and honeybee health. “We know that pesticides of multiple classes are having sub-lethal consequences at many levels. ... There’s no doubt that they are having a negative impact on colony survival and health.”

Beekeepers, researchers, and environmental advocacy groups accuse the EPA of failing to properly regulate pesticides and protect pollinators (most notably honeybees, but other insects and animals, too), while Europe has temporarily banned the use of three neonic compounds due to concerns about their impacts on bees. Critics say the federal agency has relied heavily on biased data from the corporate giants that profit tremendously from pesticides, including Bayer CropScience and Syngenta, which manufacture neonics, and Monsanto, which produces the crop seeds that are coated with the pesticides. Furthermore, critics say manufacturers often bring pesticide products to market before their potential hazards are fully understood, and in some cases, their negative impacts on bee health have already been proven.



Several Bay Area beekeepers, researchers, and advocacy organizations hope to change this scenario. And four commercial beekeepers, including Ellis, have sued the EPA for continuing to allow the use of certain pesticides that are toxic to bees.

It's not just the beekeepers' businesses that are at stake. If honeybees continue to die at rapid rates, our food supply will suffer. Honeybees are believed to be responsible for one-third of all the food we eat — almonds, apples, blueberries, alfalfa that dairy cows depend on, and much more. According to the USDA, bee pollination sustains more than \$15 billion in crop value every year, allowing for the commercial production of many foods that “give our diet diversity, flavor, and nutrition.”

“This is not one of those species we can ignore,” said Terry Oxford, a San Francisco-based beekeeper and activist. “Pollinators and bees are tied into our existence. They are essentially our food.”

But neonicotinoids deny that their products are responsible for declining bee health. While they acknowledge that pesticides can be toxic to bees, they insist they are safe if applied correctly. The Bayer CropScience officials who visited Ellis' bee yard after he found his sickened bees noted in an incident report that “neonicotinoid exposure was one likely cause of the incident.” Still, the company downplayed the devastation: “The observed level of bee mortality, while clearly undesirable, did not appear to pose a serious risk of colony loss for the colonies affected.” In a phone interview, David Fischer, Bayer's director of pollinator safety, who visited Ellis' bee yard, said the bee deaths were probably due to a combination of factors, including the fact that they had just traveled across the country. (Ellis keeps his bees in Barrett for honey production during the summer, and in Oakdale, California, which is about an hour and a half east of Oakland, for almond pollination during the winter.) “Steve might say there were severely impacted. I'm not sure I've seen any data that backs that up.”

According to Ellis, however, the incident resulted in more than \$200,000 worth of losses. And after his colonies were exposed to Bayer's pesticide, his bee population dwindled to about half of what it had been only a matter of weeks prior, he said. And that was only the beginning of the damage.

Honeybees are more important to human survival than ever before. In the last fifty years, the amount of agriculture production dependent on pollination has increased by 300 percent, according to the United Nations. Today, bees pollinate 71 out of 100 crop species that provide 90 percent of food worldwide, the UN estimated in a 2010 report.

And yet, honeybee colonies in the United States have been steadily declining since the 1940s, dropping 61 percent from their peak of 5.9 million colonies in 1947 to a low of 2.3 million reported in 2008, according to data from the USDA National Agricultural Statistics Service. More tellingly, beekeepers have lost a large percentage of their colonies in recent years. For the last several decades, beekeepers could typically expect annual losses of about 5 to 15 percent, which usually occurred during winter. But since 2006, winter loss rates have fluctuated between 22 and 36 percent. According to the USDA's annual colony loss

survey, beekeepers lost 30.5 percent of their colonies in the 2012-13 winter season. Things improved slightly last season, when beekeepers lost 23.2 percent of their colonies. But for the second time, this year's survey also looked at summertime losses, which were nearly as high as winter rates — roughly 20 percent.

“We have become so dependent on this one species of pollinator — the honeybee,” said Claire Kremen, UC Berkeley professor of environmental science, policy, and management. But while our food supply has increasingly demanded the services of bees, our agriculture system has transformed into one that is very challenging for bees and beekeepers. For decades, we have moved toward monoculture planting — growing single crops over large areas. “One of the things that happens when you plant things in monoculture is that you also become more vulnerable to pest attacks, because you've just laid out a feast,” explained Kremen, who is also the faculty co-director of the Berkeley Food Institute. “A pest insect can rapidly spread.” And the monoculture system, she noted, has also eradicated the habitats for predator species that naturally prey on these harmful pests. The only way, then, to control pests is with chemical pesticides, Kremen said. “And most pesticides have some generality to them and they're targeting insects — and bees are insects. So, do the math.”

According to activists, this transition to monoculture has put us on a so-called “pesticide treadmill,” in which farmers are forced to use increasingly toxic and larger amounts of pesticides in order to fight off pests, which have developed ever-greater resistance to the chemicals. Adding to the problem, a number of recent agricultural developments have exacerbated the effect of pesticides on bees. For starters, over the last two decades or so, the EPA has restricted the use of many older pesticides that were found to be extremely toxic to humans. While eliminating these old harmful chemicals was undoubtedly a good decision, it meant that farmers needed an alternative. So in the 1990s, neonicotinoids, which pose less of a risk to agricultural workers, entered the market. “We thought they were going to be the much safer next generation,” said Paul Towers, who is the organizing and media director of Pesticide Action Network North America, which is based in Oakland. “But we have a regulatory system that allows you to bring it to market before you can fully understand what the impacts are.”

Chemical companies soon began coating the seeds of corn and other crops with neonic pesticides, a practice that became widespread in the early 2000s. Neonics are now used as seeds treatments on more than 140 crops — including most corn and a large portion of soy, wheat, and canola seeds. In the case of corn, the rise of neonic seed treatments occurred alongside the proliferation of genetically engineered crops. For the most part, “They don't sell the genetically modified seeds unless they are treated with the chemicals,” said Susan Kegley, principal scientist with the Berkeley-based Pesticide Research Institute, explaining how Monsanto, Bayer, and Syngenta have created a system in which neonics are pervasive in our environment. While in the 1990s, only around 30 to 35 percent of total corn acreage in the United States (roughly 75 to 80 million acres) was treated with insecticides, by 2012, 94 percent (of 92 million acres) of corn seed planted in this country was treated with neonics, according to the Pesticide Action Network.

“We've gone from pest eradication to pest prevention,” said Jeff Anderson, a longtime migratory commercial beekeeper, explaining how pesticides have become so pervasive. He said pesticides have devastated his colonies for years, and he experienced record high losses — 67 percent — in the 2012-13 winter season.

A growing body of evidence has shown just how extensively bees are exposed to pesticides. In 2010, researchers at Penn State published results of a broad survey examining pesticide residues on samples of bees from 23 states. The group found 121 different pesticides and metabolites (a breakdown product of pesticides) in nearly 900 wax, pollen, bee, and hive samples. A majority of the wax and pollen samples contained at least one systemic pesticide; honeycomb and pollen samples were contaminated with an average of six pesticides. The number of pesticides detected in mixtures in bee pollen alone “represents a remarkably high

level for toxicants in the brood [eggs and larvae] and adult food of this primary pollinator,” the authors wrote.

“I think the research community was really shocked,” said Frazier, professor at Penn State and co-author of the study, referring to the response to his report.

And more recently, studies have linked neonics to bee health. In 2012, entomologists at Purdue University published research showing that in agricultural fields that used neonic-treated seeds, neonics were found in the soil and nearby plants. Researchers also found clothianidin, a neonic compound (which was responsible for poisoning Ellis’ bees last year), in the bodies of dead bees found near hive entrances, while no detectable levels of clothianidin were found in healthy bees. In addition, researchers discovered that the bees living in these environments transported tainted maize pollen back to their hives.

“If you wanted to design something that would kill bees, this is it,” said Greg Hunt, who co-authored the Purdue study and is a professor of entomology at the university. The use of pre-treated seeds is so prevalent that farmers “don’t have a choice,” he added. “It’s not the growers’ fault. ... It’s very difficult to get untreated seeds.”

When I spoke with Hunt last month, he said he had found roughly a thousand dead bees in front of his hive at his home in Indiana just a few days earlier. The reason, he suspected, was a farmer who had planted corn a third-of-a-mile away on a field surrounded by dandelions, which the bees feed on. Hunt said he even found an empty bag of corn kernels nearby, indicating the farmer had used the most toxic clothianidin seed treatment available.

Just last month, Chensheng (Alex) Lu, associate professor of environmental exposure biology at the Harvard School of Public Health, published a study linking neonics to honeybee colony collapses, replicating findings he first published in a 2012 study. He observed three groups of six bee colonies each from October 2012 through April 2013: Two of the groups were treated with different neonic compounds (at doses far below established lethal levels) and a control group was left untreated. For the first several months, all of the colonies experienced declines typical for New England winters. But in January, the control colony population began to increase, as is normal, while the neonic-treated hives continued to decline. By April, half of the neonic-contaminated colonies were lost, while only one of the colonies in the control group, which appeared to have been infected by a parasite, did not survive. “We were very confident in our conclusions that the pesticides caused this problem,” Lu told me.

Ken Warchol, a sixth-generation beekeeper who managed the colonies in Lu’s research and co-authored the study, said that neonics exacerbate other threats facing honeybees, such as mites and diseases. “There’s no question that it’s a deadly combination.” He noted that in his commercial business, losses are consistently higher for hives located near farms treated with pesticides compared to hives located in suburban and urban areas. Numerous beekeepers I interviewed for this story echoed Warchol’s experience.

Even when bees aren’t killed outright by neonics, they can suffer lingering effects from exposure to the pesticides. Ellis, for example, said that his colonies suffered for months after being initially exposed to pesticides. Part of the damage was due to the fact that the next cycle of bees was still feeding on pesticide-contaminated pollen, he said.

A new state-by-state analysis of honey production data over time produced by the Pesticide Research Institute suggests there’s a correlation between colony losses and the emergence of certain pesticides. The report compares rates of decline in honey production over the last two decades with rates of approval of neonic usage on different crops, and concludes that there’s a correlation between the two. “Where they are planting corn and soy, it’s a disaster,” said Kegley. “These are declines of anywhere between 30 and 80 percent.” But in areas where bees are able to forage on plants that have not been contaminated with neonics, honey production levels generally stayed the same or increased, she said.

In light of the mounting evidence, the European Commission last

year decided to enact a two-year ban on three neonics to give officials an opportunity to reevaluate the pesticide’s potential harms to bees. For years, beekeepers and environmental activists have called on the EPA to implement similar restrictions in the United States. So far, they haven’t had any success.

Jim Doan has been a commercial beekeeper for more than four decades, pollinating apples in New York and citrus in Florida. But due to financial hardships caused by the massive bee losses he has experienced in recent years, he decided to sell his 112-acre farm in western New York state last summer. And now he’s ending his honey business, too.

“I can’t stand to see any more dead hives of bees,” Doan told me by phone recently, adding that he will still raise bees, but only for the purpose of selling them to other beekeepers. “It’s the only thing I’ve ever done in my life ... but I’ve got to get out.”

Doan is one of the four commercial beekeepers who, with the support of a number of environmental advocacy groups, sued the EPA in March 2013 for what the suit calls the agency’s “vast and extremely risky experiment” of allowing more than two million pounds of neonic pesticides to be used annually on more than 100 million acres of farmland.

“The research out there shows that these products are lethal to bees. When is the EPA going to say we’ve got enough information?” said Doan, who has lost about half of his hives every year since 2006, according to the lawsuit. He said his bees died from acute and chronic exposure to neonics, including from clothianidin-contaminated dust from a nearby cornfield. “I didn’t do anything wrong,” he added. “My world changed around me and I didn’t have any say in it.”

The lawsuit alleges that the EPA relied on manufacturers’ inadequate studies in its approval of two neonic compounds — clothianidin and thiamethoxam. Furthermore, the suit alleges, the EPA violated the law in its refusal to suspend the usage of these pesticides despite knowing the hazards proven by independent research. Critics say the lack of proper risk assessment is woven into the agency’s so-called “conditional registrations,” by which regulators can approve a pesticide that meets certain standards but still requires more testing. The EPA insists it only registers safe products, but from the perspective of the agency’s critics, pesticide manufacturers have repeatedly abused the conditional registration process and secured federal approval for the widespread and unsafe use of toxic chemicals.

“We don’t have the luxury of debating these questions for the next decade,” said Tom Theobald, a Colorado beekeeper and co-plaintiff in the lawsuit. After 38 years in the industry, his honey business is no longer profitable due to repeated losses of his bees. “We are completely out of time.” Theobald made headlines in 2010 when an EPA official sent him a memo — which he then leaked — that included concerns from the agency’s own experts regarding “deficiencies” in a field study on the effects of clothianidin on honeybee hives. The study, which was funded by neonics manufacturer Bayer, found that the neonic seed treatments have no long-term effect on bees.

But the memo — authored by Joseph DeCant and Michael Barrett, an EPA ecologist and chemist, respectively — noted problems with the study and stated that the agency “expects adverse effects to bees if clothianidin is allowed to drift from seed planting.” One problem with the experiment, according to the EPA’s review, was that the two bee groups studied were kept too close together. Due to the “deficiencies,” the study could no longer be categorized as “acceptable” and instead must be considered “supplemental,” the memo said. This “supplemental” status meant additional research was needed to answer questions about clothianidin’s risk to bees. While the study was not ultimately deemed invalid, to beekeepers like Theobald, it proved hugely problematic.

“It’s just bogus,” said Theobald. “The study was designed to avoid finding what they purported to be looking for.”

The EPA memo was written more than seven years after the agency first raised concerns about how clothianidin seed treatments could



expose pollinators to toxic pesticides. In 2003, the EPA approved a conditional registration for the pesticide, with the condition being that Bayer must conduct a study evaluating the long-term toxicity of the pesticide on pollinators. But the beekeepers who have filed suit against the EPA allege that Bayer has failed to meet this requirement.

“EPA knew from day one that there was this potential harm to pollinators and required [Bayer] to provide more information,” said Sylvia Wu, a San Francisco-based staff attorney with the Center for Food Safety, a plaintiff in the suit. “[Bayer] hasn’t produced it, but EPA has allowed the product to remain on the marketplace nonetheless.” The Center for Food Safety, along with a number of advocacy groups and beekeepers, sued the EPA after the agency rejected their request in a 2012 petition to issue an emergency suspension of clothianidin.

The lawsuit, filed last year in the US District Court for the Northern District of California, is winding its way through the courts. In April, a judge issued a ruling dismissing parts of the beekeepers’ claims and allowing others to move forward.

EPA officials declined to be interviewed for this story, but a spokesperson sent a lengthy email on the agency’s behalf defending its approval of neonics and overall commitment to protecting pollinator health. Regarding Bayer’s study that the EPA downgraded to “supplemental,” the agency said Bayer did fulfill the requirement originally imposed as a condition of clothianidin’s registration, but that more data was still needed. “EPA judged the study to be supplemental, meaning that additional research was needed to fully answer our questions about clothianidin’s risks to bees. This experience helped us

to refine the design of a new study.” The agency stated Bayer’s additional field studies on clothianidin are now underway, with results expected by the end of 2015. Regarding requests to suspend clothianidin, the agency said, “suspension is appropriate only if there exists a substantial likelihood of serious, imminent harm.”

The EPA has also updated pesticide labels with new management practices for spray applications to minimize the potential harm to bees, the agency noted. The EPA has not, however, made any label changes for the widespread application of neonics through seed treatments. When I asked why labels for treated seeds don’t address the potential harm to bees, EPA said it has required the manufacturers “to conduct studies measuring residue levels in pollen and nectar. These data will help resolve uncertainties around the risks posed by the use of neonicotinoids for seed treatment.”

Concerns about bee health extend beyond the use of neonics. Research has increasingly demonstrated that the combined use of pesticides can lead to significantly increased toxicity levels in bees. In April, the Pollinator Stewardship Council reported that almond pollination in California led to devastating losses for beekeepers this year. The multibillion-dollar almond industry, which depends entirely on commercial beekeeping for pollination in late winter, brought roughly 1,300 beekeepers with a total of 1.7 million colonies to the state this season, according to the organization, which collects bee kill reports. Around 15 to 25 percent of those colonies were damaged, with losses totaling at least \$64 million for the commercial beekeepers, the group said. The suspected culprit is a so-called “tank mix” of chemicals, which includes an insect growth regulator and fungicide.

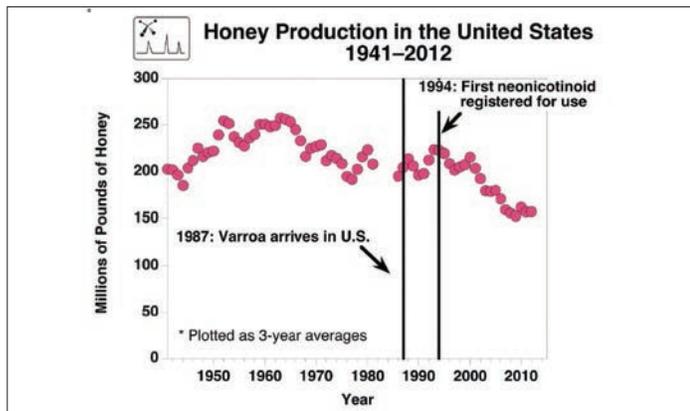
The EPA, however, generally does not consider the impact of pesticide mixtures on bee health. “None of this has been adequately studied or taken into consideration for registration purposes,” said Penn State entomologist Frazier. He published research in 2012 showing that certain chemicals sprayed on almonds — including chemicals that are considered “inert” and not subject to any regulatory testing whatsoever — can impair honeybee learning. “They are completely ignoring it,” Frazier said. What’s more, the almond growers who applied the tank mixes this year followed official label guidelines, said Michele Colopy, program director of the Pollinator Stewardship Council. “Growers and farmers are being shortchanged by the labels just as much as the beekeepers.”

Asked about the bee deaths as a result of almond pollination, an EPA spokesperson wrote in an email that the cause and scope of the incident is currently under investigation, but if the agency finds that these chemicals pose “unreasonable adverse effects to the environment,” then it “will move quickly to take appropriate regulatory action.”

While under criticism for its products and practices, agrochemical companies have invested significant resources into programs that purport to support honeybee health. Bayer runs a “Bee Care Program” (and is in the process of expanding its research and development operations in Davis, where it is also establishing a new “bee health research center”), Syngenta has an “Operation Pollinator” initiative, and Monsanto runs a research unit called “Beeologics.” From the perspective of environmental groups and beekeepers, the underlying motivation of these programs is clear: to mask the role their chemicals have played in the bee crisis.

Chemical manufacturers typically blame the issue of declining bee health on factors other than pesticides — primarily mites. “The number-one problem is the varroa mite,” said Fischer, Bayer’s director of pollinator safety and manager of the North American Bee Care Center. “All parties who are looking at this agree that the varroa mite and the diseases that the varroa mite can transmit are the most important factor.” The parasitic mite known as the *Varroa destructor* essentially sucks the blood of bees, thereby spreading viruses. It was first discovered in the United States in 1987, and can destroy whole colonies.

Many researchers and commercial beekeepers agree that the parasite is a major contributor to declining bee health. However, they insist the



mite isn't the only problem, and that their existence doesn't lessen the role that pesticides play. In fact, some scientists believe that pesticides weaken bees and potentially make colonies more vulnerable to mites and other pests and pathogens.

"They are trying to say, 'Hey, it's everything but our pesticides that is causing this,'" said Lisa Archer, director of the food and technology program of Berkeley-based Friends of the Earth, who showed me a photo of a large sculpture of a varroa mite attacking a bee that Bayer erected in its Bee Care Center in Germany, the company's headquarters. "What they are trying to do is distract attention from their contribution to the problem, which is classic tobacco industry science 101. The idea is to create as much doubt in the mind of the public and regulators as possible to delay action on their product." In April, Friends of the Earth released a report scrutinizing the marketing efforts of pesticide makers, arguing that they are protecting their profits with misleading campaigns that downplay the dangers of their pesticides in the same way tobacco companies once downplayed the cancer risks posed by cigarettes.

The stakes are high for these companies. For example, Friends of the Earth's report noted that Bayer reported more than \$10 billion in global sales from its pesticide and seed growth products in 2012. Its leading neonic product, a compound called imidacloprid, is worth \$1.1 billion, according to a 2011 *Journal of Agricultural and Food Chemistry* article cited by Friends of the Earth's report. Bayer also has shared interests in clothianidin, which the journal article said is worth \$439 million. The neonic product manufactured by the Switzerland-based Syngenta is a compound called thiamethoxam, which is worth \$627 million, according to the report. Syngenta reported nearly \$2 billion in total insecticide sales in 2013. St. Louis-based Monsanto, meanwhile, reported sales in its seeds and genomics division of \$10.3 billion in fiscal year 2013. (Monsanto does not report financial data specific to seed treatments.)

Neonics represent just a portion of these companies' massive operations. In 2013, Bayer's CropScience division reported sales of roughly \$12 billion and gross profits of roughly \$2.2 billion. In the same year, Monsanto reported sales of \$14.86 billion and gross profits of \$7.7 billion, while Syngenta reported sales of \$14.7 billion and gross profits of \$6.7 billion.

The companies and their political action committees also spend significant sums on political donations and lobbying efforts in Washington, DC. Over the last ten years, Bayer, Syngenta, and Monsanto have spent roughly \$55 million, \$9 million, and \$61 million, respectively, on lobbying activities, according to data from the companies and the Center for Responsive Politics. Since 2002, Bayer's PAC, Syngenta's PAC, and the Monsanto Citizenship Fund (the company's PAC) have donated roughly \$2 million, \$913,000, and \$1.81 million to federal campaigns, according to data from the companies and from MapLight, a Berkeley-based nonpartisan research organization.

In an interview, Bayer's Fischer said the company's "crop protection" products are thoroughly researched and, when used properly, do not negatively impact pollinators: "If the labels are followed, the exposure

levels are within the range that honeybees can tolerate without adverse effects to the colony." He added that, in terms of pollinator safety, pesticide seed treatments are much less risky than pesticides applied directly to foliage. These seed treatments are an "environmentally friendly way to use an insecticide," he said.

He also tried to discredit the studies that have pointed to links between neonics and declining bee health, saying they had flawed designs, weren't applicable to the real world, or presented mixed results. For example, regarding Lu's study linking neonics to colony collapse, Fischer said, "He overdosed the bees." He argued that Lu essentially fed his bees "abnormally high concentrations" of neonics in a manner that did not resemble field exposure. (Lu, however, countered that the daily dosage per bee was extremely low — and that he lowered the neonic levels the second time around in response to similar criticisms in 2012.)

Fischer also defended the studies called into question in the lawsuit against the EPA, arguing that Bayer has repeatedly shown that clothianidin is safe. "[The EPA] doesn't register anything unless they think the benefits outweigh the risks," he said. More broadly, Fischer argued, Bayer's pesticides are critically important to agriculture: "As the world population increases and the need to produce food continually increases, we need to maximize yields."

Representatives of Syngenta, which has its US headquarters in Delaware, declined to be interviewed for this story. However, spokesperson Ann Bryan sent a lengthy email, which stated, "We care about the health of bees and other pollinators, and always appreciate the opportunity to share our science about neonicotinoids and the vital role they play in crop protection and environmental health and safety." Bryan touted the efforts of Syngenta's Operation Pollinator, a program that is active in California, Florida, and Michigan and focuses on restoring native pollinators on farms through the creation of habitats. "Syngenta knows that modern agricultural technology and practices can and do successfully coexist with bees and other pollinators," she said.

Jerry Hayes, commercial director of Beeologics, Monsanto's honeybee research unit, said no research has shown that the company's pre-treated seeds lead to chronic, long-term health effects for honeybees. He also noted that Monsanto supports seed treatment stewardship guidelines that help protect bees. The fact that these products have passed all of EPA's regulatory hurdles proves that they are clearly safe, he said.

Like Fischer, Hayes emphasized that there is a reason there's a high demand for their seeds: "Farmers use these products because they bring value and they increase yields," he said.

But critics argue that neonics don't actually provide the agricultural benefits the companies use to bolster their cases. In March, the Center for Food Safety released a report citing eight peer-reviewed studies that showed a lack of a significant yield benefit from neonic treatments. (The companies have criticized this report, arguing that it is limited in scope and relies on flawed or narrow studies.)

Hayes also believes that eliminating varroa mites would dramatically improve honeybee health. He said Monsanto is currently trying to develop products that would allow honeybees to fight off mites through RNA interference, which would essentially silence the genes of harmful parasites. He also referenced a recent congressional subcommittee hearing on pollinator health that focused on the threat of varroa mites.

Monsanto spokesperson Billy Brennan referred me to an article from the USDA's Agricultural Research Service branch titled "Helping Honey Bees' Health," which, he noted, was consistent with the USDA's testimony at the hearing. In outlining all of the threats to bee health, the USDA's article did not include a single mention of pesticides.

Perhaps it's not surprising that federal regulatory agencies echo similar sentiments about bee health as those espoused by chemical companies. Both camps downplay the dangers of pesticides — in fact, they sometimes exclude pesticides entirely in their discussion of bee health.

For example, the USDA's recent press release on bee loss data placed a huge emphasis on mites. Bryan, the Syngenta spokesperson, emailed

me the announcement, noting that the “results of this survey echo the findings highlighted in several other articles about the health of bees and the truth about the state of bee populations.” She included links to several articles and op-eds that downplayed the bee crisis, blamed varroa mites entirely, and criticized anti-pesticide environmental activists.

The congressional hearing on pollinators in April also heavily focused on varroa mites, relying on testimony from Bayer’s Fischer and Jeff Pettis, research leader of the USDA’s Agricultural Research Service Bee Research Laboratory. No independent scientists or commercial beekeepers were called to testify. Bryan pointed to this hearing as further validation of the role that mites play in declining bee health: “Dr. Pettis called Varroa Mites the top bee health factor that needs to be addressed,” she wrote.

But Pettis doesn’t actually agree with that assessment. “It was not very balanced,” he said of the hearing in a phone interview, adding it was a “shame ... we didn’t hear directly from beekeepers.” Pettis added that pesticide exposure is a key stress that can weaken bees and make them vulnerable to diseases. Last year, he co-authored a study showing that crop pollination exposes honeybees to pesticides that alter their susceptibility to a certain pathogen.

Regarding the USDA’s “Honey Bees’ Health” article that contained no mention of pesticides, Pettis said he was surprised by that fact. Hours after we got off the phone, the article was updated to include the word “pesticides” in a laundry list of factors; a USDA spokesperson commented below the article that its exclusion was a typo.

So why does the government exclude pesticides in its discussion of bee health? Pettis offered this explanation: “There has been a recent emphasis on varroa mites and varroa controls — in everything from the congressional hearing to our most recent press release. This by no means deemphasizes the important role other stressors like nutrition and pesticide exposure play in bee health.”

Pettis also noted that while pesticides “were not high on my list of suspects,” when researchers first began observing significant losses starting in 2006, “they’ve risen much more so in the last five years.” And, he said, if the varroa mite disappeared tomorrow, that would not solve the problem. “I think that about a third of our problems would go away,” he said, adding, however, that most of the challenges to bee health would still remain. “That’s big. That’s the majority of our problems.”

The most striking aspect of my conversation with Pettis was that it revealed a clear disconnect between the agency’s public relations officials and research scientists. A few weeks ago, Kim Kaplan, a spokesperson for the USDA’s Agricultural Research Service department, told me, “We are averaging about 30 percent losses over winter. Where do pesticides fit into that? It’s really hard to say.” Kaplan even brushed aside concerns raised by Pettis’ own findings in his 2013 study exploring how the combination of pesticide exposure and pathogens can have negative effects on honeybee colonies. Those results were mixed, she said: “It shows you how confusing the scientific evidence is.” She also sent me several articles slamming the Harvard studies on neonics, as well as a link to a *Forbes* op-ed that defended neonics and criticized the European ban on the pesticides.

Some argue that the corporate influence on bee research extends to academia as well. “I think there are people that are afraid to publish data for fear of their careers being interfered with by industry,” said Maryann Frazier, a honeybee specialist at Penn State’s department of entomology (and wife of James Frazier). “There are people within the pesticide community that ... slam this research and these young up-and-coming scientists, because they have said something negative, even if the research has been peer-reviewed.” Harvard’s Lu said he was surprised by the intensity and the sometimes personal nature of the attacks he faced after he published research unfavorable to neonics.

Companies may also be attempting to influence academic research through contributions to universities. According to Bayer’s Fischer, the company plans to spend roughly \$12 million on bee health in North America this year, with about one-third devoted to research

including grants to conservation organizations, contracts with research organizations, and research within universities. The amount Bayer has spent on bee research has increased significantly in recent years, he added. Bryan of Syngenta said the company invested \$1.37 billion globally in research and development in 2013. Brennan from Monsanto said the company “does fund a lot of external research from a lot of different backgrounds, including academia.” Monsanto spent \$1.5 billion on research and development in 2013, according to the company’s financial reports, plus \$113 million on purchasing Beelogics, the research firm, in 2011.

Such research investments can help the companies get the positive press they seek. When Monsanto announced that it had bought Beelogics, the *St. Louis Post-Dispatch* ran with this headline: “Monsanto buys Beelogics, working to save pollinating bees.”

While the declining health of honeybees is certainly troubling, other insects and pollinators that are beneficial to our food supply are also under threat. New research raises concerns about the potential harms pesticides carry for a range of species, including birds, aquatic invertebrates, and butterflies. Some environmental advocates and researchers have attributed dramatic declines in monarch butterflies to the widespread use of herbicides, which has killed the milkweed plants on which monarchs depend.

“As we’ve switched to genetically engineered corn that allows us to spray more and more herbicides, we then kill off every piece of vegetation that’s around the corn,” said Towers, of the Pesticide Action Network. “The butterflies and the bees are just ... indicators of how the landscape has changed so dramatically.”

While manufacturers present their chemicals as essential to modern agriculture, the widespread use of toxic pesticides is not the only option. Many food policy experts and environmental advocacy groups believe that “integrated pest management” programs — in which pesticides are used as a last resort — are more sustainable in the long-term and less hazardous to pollinators. In this model, growers use a variety of tactics to control pests, such as rotating crops and supporting predators. Instead of “pre-sterilizing” fields with chemicals, as the Center for Food Safety described in its recent report regarding the overuse of neonics, pesticides can be applied only when pest damage poses a serious economic threat. In organic food production, growers don’t use any synthetic chemicals at all and only apply pesticides produced from natural sources.

Failing to change our current mode of agricultural production could be devastating. If commercial beekeepers can’t keep their bees alive, they won’t be able to bring their pollination services to the growers who depend on them. “Ten years from now, I don’t know whether we will have commercial beekeeping as a career,” said the Pesticide Research Institute’s Kegley. Further declines in bee pollination could translate to smaller yields and higher prices for a number of crops, including apples, oranges, cherries, and blueberries. And that means a less healthy diet, said Kremen of the UC Berkeley Food Institute, noting that people struggling with malnutrition and obesity need access to affordable fruits and vegetables — foods that largely rely on bee pollination. “It’s not a pretty picture.”

Consider the case of almonds, which rely on pollination from a whopping 60 percent of all managed US honeybee colonies every year, according to the USDA. As the almond industry has boomed in recent decades, the number of honeybee colonies available for pollination services has dropped. At this stage, research shows that the beekeepers are just barely meeting demand. And after the devastating kills this past season, some beekeepers told the EPA that, without meaningful regulatory reforms, they will have to add a pesticide surcharge to almond pollination contracts for 2015, according to the Pollinator Stewardship Council.

Other beekeepers, however, may just stay away from the almond groves altogether next year. The risk of severe hive damage is just too great. ●