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The 'Burbs and the Bees: Race, Class, and RPBB Policy in Minnesota

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ABSTRACT

Conserving the Rusty Patched Bumble Bee (RPBB) is a complicated scientific and legal effort that will require bee researchers, community organizers, and environmental justice

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coalitions to band together to reverse their decline. However, recent local and national disputes over the conservation of the RPBB demonstrate how a fragmented strategy will only have fragmented successes. Minnesota-based RPBB lawsuits (and potential lawsuits) highlight how race- and class-based privilege of communities correlates with whether habitat conservation, supporting both bees and humans, is seen as important by government decision-makers. This article highlights and discusses the environmental injustices that go unnoticed in the current bee conservation discussion and seeks to offer some suggestions for community involvement and better use of resources in ways that can support the RPBB in all the communities which they call home.

I. INTRODUCTION

Nobody knows with absolute certainty how to save the Rusty Patched Bumble Bee (RPBB). That is to say, there are still many aspects of their biology that scientists are still learning, and some of their still obscure life history traits are directly relevant to how to conserve the species and protect their habitat. Specifically, their nesting habitat preferences and overwintering requirements are relatively undocumented in scientific literature and more surveys are needed to describe their current population status and range.[1] Further, even less is known with certainty about how toxic pollutants impact their health and persistence in urban landscapes.[2] But, that said, the RPBB as a species does not have time to wait for scientific studies and data to figure out all these details; they are in dire need of protection right away.[3] It is within this data-poor but high-stakes setting that we offer a discussion of how people and policies could do better in helping the RPBB, and how addressing conservation to center equity and justice issues could also help address Minnesota's worst-in-the-country disparities.[4]

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1. Michelle Boone et al., *Notes from Rusty Patched Bumble Bee (Bombus Affinis Cresson) Nest Observations*, INSECT CONSERVATION & DIVERSITY, Jan. 10, 2022, at 2; *see* Amanda Liczner & Sheila Colla, *A Systematic Review of the Nesting and Overwintering Habitat of Bumble Bees Globally*, 23 J. INSECT CONSERVATION 787, 792–93 (2019) (examining overwintering studies).

2. Experiments to document dose, toxicity, and risk would require experiments on a large number of colonies. Such experiments would likely kill some colonies, making them impossible to conduct for such a rare and federally protected species like the RPBB.

3. *See* 82 Fed. Reg. 3186, 3196 (Jan. 11, 2017) (acknowledging scientific consensus that the RPBB is heading for imminent extinction).

4. *The Indicator from Planet Money: The Minnesota Paradox*, NAT'L PUB. RADIO (June 8, 2020), https://www.npr.org/2020/06/08/872639451/the-minnesota-paradox.

We acknowledge that the land that is inhabited by the state of Minnesota is the traditional, ancestral, and contemporary homelands of Dakota and Anishinaabe peoples.[5] This article will discuss short-term actions that the settler-colonial government of Minnesota, including local units of government, could do in terms of policies to protect a native bee species. We believe that returning stolen land and honoring treaty rights is a necessary first step, among many, towards healing both human societies and ecosystems.[6] We hope that this article can help inform discussion of and responses to Minnesota's history of conquest and erasure,[7] but we understand that our perspective is limited in important ways as settler lawyers and scientists. The recovery of the RPBB cannot be predicated on settler conservation goals alone, but instead on the ongoing solidarity and struggle within movements for justice. We offer this acknowledgement to name our commitment, as settler lawyers and scientists, to ongoing actions that support Indigenous sovereignty, to shift power relations, and to realign our scholarship with systems and visions that center planetary well-being and thus inevitably bee conservation.[8]

While there has been a robust amount of legal scholarship on RPBB litigation and conservation since the species became

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5. *See, e.g.*, *History on the Dakota of Minnesota*, DAKOTA WICOHAN, https://dakotawicohan.org/dakota-of-minnesota-history/ (last visited Feb. 8, 2022) (detailing Dakota history in Minnesota); *Land Acknowledgement*, UNIV. MINN. DULUTH, https://about.d.umn.edu/campus-history/land (last visited Feb. 8, 2022).

6. *See generally* WAZIYATAWIN, WHAT DOES JUSTICE LOOK LIKE? THE STRUGGLE FOR LIBERATION IN DAKOTA HOMELAND 167–75 (2008) (acknowledging the harms suffered by the Dakota People because of Minnesota's statehood and how those harms can be repaired); Edwin Ogar et al., *Science Must Embrace Traditional and Indigenous Knowledge to Solve Our Biodiversity Crisis*, 3 ONE EARTH 162 (2020) (proposing additional air quality review for projects permitted in historically overburdened communities).

7. For a deeper discussion of erasure of Native perspectives and experience throughout legal education, see K-Sue Park, *This Land Is Not Our Land*, 87 U. CHI. L. REV. 1977 (2020) (reviewing JEDEDIAH PURDY, THIS LAND IS OUR LAND: THE STRUGGLE FOR A NEW COMMONWEALTH (2019))*; see also* Max Liboiron, *Decolonizing Geoscience Requires More Than Equity and Inclusion*, 14 NATURE GEOSCIENCE 876 (2021) (discussing how understanding colonial relationships and geoscience discipline will help address the harm).

8. *See* Summer Wilkie, *So You Want To Acknowledge the Land?*, HIGH COUNTRY NEWS (Apr. 22, 2021), https://www.hcn.org/issues/53.5/indigenous-affairs-perspective-so-you-want-to-acknowledge-the-land (discussing the limitations of land acknowledgements and noting that "[s]omething tangible is required to begin the reconciliation process").

legally protectable (yet not fully protected) under federal environmental laws,[9] this is the first article to position bee conservation within the social and economic reality of the habitats the RPBB still calls home. The authors believe this is also the first law journal article on the RPBB co-authored by a wild bee scientist and therefore likely to be the first to offer concrete on-the-ground suggestions about improving practices and legal arguments to better support bees and the people who inhabit the same space. By contextualizing the RPBB in social and scientific contexts, we argue that saving this species will not be fully possible without Minnesotans embracing movements for environmental justice throughout the species' range.

Other authors have framed the issue of endangered species protection in complementary "win-win" ways. For example, Counsel for the U.S. House Select Committee on the Climate Crisis has "explore[d the idea that] existing and potential wildlife conservation policies . . . could play a vital role in mitigating global climate change."[10] This article differs because we contend that existing and potential wildlife conservation policies *must* play a direct role in mitigating environmental injustice in order to ultimately be effective—it is not possible to save a species like the RPBB without working with communities and protecting habitat everywhere the RPBB is found, not just within privileged neighborhoods. Fragmenting people's rights based on their social strata will doom any species (including humans) that hope to survive in a continuously habitable environment.

In writing this article, we do not mean to imply that environmental justice disputes in the Midwest can or should be reduced to the impacts of industry and development on charismatic species. There are many important instances of

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9. *See, e.g.*, Daniel Franz, Note, *Black and Yellow Letter Law: Managing Rusty Patched Bumble Bee Conservation Under the Endangered Species Act*, 31 COLO. NAT. RESOURCES, ENERGY & ENVTL L. REV. 193 (2020); Christopher M. Lambe, *What's All the Buzz About? Analyzing the Decision to List the Rusty Patched Bumble Bee on the Endangered Species List*, 29 VILL. ENV'T L.J. 129 (2018); Christine Tezak, *A Policy Analysts' View on Litigation Risk Facing Natural Gas Pipelines*, 40 ENERGY L.J. 209 (2019); Emily Helmick, *The Blight of the Bumblebee: How Federal Conservation Efforts and Pesticide Regulations Inadequately Protect Invertebrate Pollinators from Pesticide Toxicity*, 13 J. FOOD L. & POL'Y 325 (2018).

10. Mackenzie Landa, *Species Protection as a Natural Climate Solution*, 50 ENV'T L. REP. 10498, 10499 (2020).

racial and environmental injustice that will not be easily distilled into a paradigmatic environmental law dispute using legal structures first established in the 1970s.[11] New laws are necessary to address environmental justice in a truly holistic way that addresses the holes in our existing environmental law regime.[12] We also do not mean to suggest that a flood of bee litigation, without more targeted and collective political action, would promote justice. Indeed, people can, and have, invoked conserving the RPBB to bring legal action in support of abhorrent views that seek to create more racial and social injustice.[13] Nevertheless, where the RPBB still has a foothold and a chance to recover, it is important for scientists and legal experts to partner in solidarity with systematically and intentionally under-resourced communities to address fundamental injustices.

This article first provides an overview of the intersections between bee conservation and environmental justice advocacy. It then provides background on the scientific context of the RPBB, including what is known and unknown about the bee's habitats, behaviors, and vulnerabilities. The article then offers background on the legal context of the RPBB, discussing its listing under the Endangered Species Act (ESA) and the implications of such a listing for environmental review, while also highlighting recent bee-based litigation. Within these contexts, the article next provides an overview of two contemporary instances of racial and environmental injustice in Minnesota—the Roof Depot Warehouse demolition and the Line 3 Pipeline construction—and explores the relatively minor role that RPBB advocacy has played in both examples. The article then moves to our arguments and recommendations. In this last

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11. The Endangered Species Act, discussed below, was passed in 1973 and is primarily administered by the U.S. Fish and Wildlife Service and the U.S. National Oceanic and Atmospheric Administration Fisheries Service. *Summary of the Endangered Species Act: 16 U.S.C. § 1531 et seq.*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/laws-regulations/summary-endangered-species-act (last visited Feb. 8, 2022). NEPA, also discussed below, became law in 1970. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4331–70m-11.

12. *See, e.g.*, H.F. 168, 92d Leg. (Minn. 2021) (proposing additional air quality review for projects permitted in historically overburdened communities).

13. *See, e.g.*, Strahan v. Nielsen, No. 18-cv-161-JL, 2018 WL 3966318, at *4 (D.N.H. Aug. 17, 2018) (attempting to use conservation of the RPBB and Endangered Species Act to halt immigration into the U.S., ostensibly to prevent the "6th Great Extinction of Life on Earth").

section, it criticizes current data gathering and mapping efforts and analyzes how better and different RPBB surveying could create quality data for communities wanting to both conserve RPBB habitat and protect the local environment for people. It further discusses the need to center impacted communities in RPBB advocacy, explores the potential for common cause between environmental justice communities and the RPBB, and calls out policies that, by ignoring social dimensions of bee conservation, have failed to protect the health of both bees and the communities whose environments they share. In conclusion, this article argues that if the RPBB species is to be saved, future conservation and advocacy efforts must take an environmental justice approach and center the perspectives of impacted communities who share the RPBB's habitat.

II. BACKGROUND

In order to understand how the RPBB is litigated and conserved, and how they might play a role in environmental justice efforts, it is important to first understand their natural history and conservation needs. These bees are a unique endangered species because they are found not only in natural areas in more rural Minnesota, but also largely in high-density urban areas, namely the urban core of the Twin Cities.[14] Hence, species conservation and justice for urban communities appear to be tied to one another by the RPBB's unique habitat and conservation needs. This section discusses bees and environmental justice, and bees in their scientific context, before laying out past and ongoing bee-based litigation that may or may not advance environmental justice.

A. BEES AND ENVIRONMENTAL JUSTICE

As Dr. Robert Bullard explains: "Environmental justice embraces the principle that all people and communities have a right to equal protection and equal enforcement of environmental laws and regulations."[15] Environmental justice

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14. *See* Elaine Evans, *Rusty Patched Bumble Bee*, U. MINN. DEP'T ENTOMOLOGY, https://entomology.umn.edu/rusty-patched-bumble-bee (last visited Apr. 9, 2022) ("After 10 years of looking, conservationists and bumble bee biologists found rusty patched bumble bees again, primarily in and around urban centers in the Midwest, including the Twin Cities.").

15. Robert Bullard, *About Environmental Justice*, DR. ROBERT BULLARD, https://drrobertbullard.com (last visited Feb. 8, 2022). Robert Bullard is known

seeks to address and reverse environmental harms, and prevent them from happening in the future, whether that be through developing new policies, co-creating new institutions and economies, or restoring our relationships between each other and the land.[16] The 1991 First People of Color Environmental Leadership Summit established seventeen principles of environmental justice, which included: affirming "ecological unity and the interdependence of all species;" demanding "that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias;" affirming "the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and provid[ing] fair access for all to the full range of resources;" and demanding "the right to participate as equal partners at every level of decision-making, including needs assessment, planning, implementation, enforcement and evaluation."[17] It is only by adopting and implementing such principles that everyone can achieve the healthy environments they deserve, and following these principles similarly is necessary to conserve habitat needed for human and bee health.

Although the Minnesota Pollution Control Agency (MPCA) has had a dubious history of respecting environmental justice leaders and communities,[18] it nonetheless has made efforts to

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as one of the founders of the environmental justice movement in the U.S., and is often referred to as "the father of environmental justice." Oliver Milman, *Robert Bullard: 'Environmental Justice Isn't Slang, It's Real'*, GUARDIAN (Dec. 20, 2018), https://www.theguardian.com/commentisfree/2018/dec/20/robert-bullard-interview-environmental-justice-civil-rights-movement.

16. *See* Aneesh Patnaik et al., *Racial Disparities and Climate Change*, PRINCETON STUDENT CLIMATE INITIATIVE (Aug. 15, 2020), https://psci.princeton.edu/tips/2020/8/15/racial-disparities-and-climate-change ("Environmental justice is a social justice movement that seeks to dismantle the flawed environmental policies that have long harmed low-income communities and communities of color, and instead pursue policy and development that work to create a sustainable, cooperative, and equitable future for the environment.").

17. FIRST NATIONAL PEOPLE OF COLOR ENVIRONMENTAL LEADERSHIP SUMMIT, THE PRINCIPLES OF ENVIRONMENTAL JUSTICE (EJ) (1991), https://www.ejnet.org/ej/principles.pdf (last visited Feb. 18, 2022).

18. *See* Dan Kraker, *Majority of MPCA Advisory Group Resigns in Protest of Agency's Line 3 Decision*, MINN. PUB. RADIO NEWS (Nov. 17, 2020), https://www.mprnews.org/story/2020/11/17/majority-of-mpca-advisory-group-resigns-in-protest-of-agencys-line-3-decision (discussing the reasons for resignations of twelve out of seventeen members from a group that advises MPCA on environmental justice).

address environmental injustice[19] and defines "areas of increased concern for environmental justice" as those where: 1) 40% or more people have income less than 185% of the federal poverty level; 2) 50% or more of the population is people of color; and 3) federally-recognized tribal land.[20] The RPBB's current range includes many areas that meet at least one or more of these descriptors.[21]

Pollinator health and diversity are also key for food justice and food sovereignty. Areas with high amounts of surrounding natural areas, and thus high bee diversity, create higher yields for many pollinator-dependent crop plants.[22] In areas where community gardens are essential for food availability due to lack of grocery stores or affordable food options, there may be a lack of adequate pollination services where it is needed the most.[23]

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19. *See MPCA and Environmental Justice*, MINN. POLLUTION CONTROL AGENCY, https://www.pca.state.mn.us/about-mpca/mpca-and-environmental-justice (last visited Feb. 8, 2022) (providing a high-level overview of MPCA's commitment to environmental justice).

20. *Understanding Environmental Justice in Minnesota*, MINN. POLLUTION CONTROL AGENCY, https://mpca.maps.arcgis.com/apps/MapSeries/index.html ?appid=f5bf57c8dac24404b7f8ef1717f57d00 (last visited Feb. 8, 2022) (mapping environmental justice areas of concern in Minnesota).

21. *Compare Rusty Patched Bumble Bee Map*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/midwest/Endangered/insects/rpbb/rpbbmap.html (last updated Mar. 18, 2021), *with Understanding Environmental Justice in Minnesota*, *supra* note 20 (locating RPBB "red zones" near: Mora, which is listed by MPCA as a low-income environmental justice area; the Fond du Lac Reservation, which is listed by MPCA as tribal land and low-income environmental justice area; and large swathes of St. Paul and Minneapolis, which are listed by MPCA as majority population-of-color and low-income environmental justice areas).

22. Heather Grab et al., *Agriculturally Dominated Landscapes Reduce Bee Phylogenetic Diversity and Pollination Services*, 363 SCI. 282 (2019); Brett Blaauw & Rufus Isaacs, *Flower Plantings Increase Wild Bee Abundance and the Pollination Services Provided to a Pollination- Dependent Crop*, 51 J. APPLIED ECOLOGY 890 (2014); J.R. Reilly et al., *Crop Production in the USA Is Frequently Limited by a Lack of Pollinators*, 287 PROC. ROYAL SOC'Y B, 2020, at 1; Sarah Cusser et al., *Natural Land Cover Drives Pollinator Abundance and Richness, Leading to Reductions in Pollen Limitation in Cotton Agroecosystems*, 226 AGRIC., ECOSYSTEMS & ENV'T 33 (2016); Kyle Martins et al., *Pollination Services Are Mediated by Bee Functional Diversity and Landscape Context*, 200 AGRIC., ECOSYSTEMS & ENV'T 12 (2015); Taylor Ricketts et al., *Landscape Effects on Crop Pollination Services: Are There General Patterns?*, 11 ECOLOGY LETTERS 499 (2008).

23. Benjamin Iuliano et al., *Socio-Economic Drivers of Community Garden Location and Quality in Urban Settings and Potential Effects on Native Pollinators*, 5 MICH. J. SUSTAINABILITY 25 (2017); Austin Martin, The Effects of Socio-Economic Variables on Urban Bee Community Composition in

The RPBB could be a part of providing pollination if they recovered, but like many rare bees RPBBs are not significant contributors to crop pollination services, usually only visit wild plant species, and cannot be managed in the same way as honey bees.[24] That said, their current lack of an economic contribution to food production should not be a reason to not support their conservation.[25]

Another intersection between environmental justice and pollinator conservation is through the advocacy efforts to reduce pesticide use. Pesticides are harmful to bees and cause many adverse effects to their individual and population-level health.[26] Most studies on pesticide toxicity and risk assessment focus on managed honey bees, and studies demonstrate that bumble bees and other wild pollinators respond differently (and often more dramatically) to pesticide exposure than honey bees.[27] The use of pesticides is also a human health and environmental justice issue,[28] as farmworkers and advocates have fought against their

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Metropolitan Detroit (2018) (Master's thesis, University of Michigan) (on file with Deep Blue Documents, University of Michigan).

24. Robbin Thorp et al., *Rusty Patched Bumble Bee*, XERCES SOC'Y, https://www.xerces.org/endangered-species/species-profiles/at-risk-invertebrates/bumble-bees/rusty-patched-bumble-bee (last visited April 7, 2022); ELAINE EVANS ET AL., BEFRIENDING BUMBLE BEES: A PRACTICAL GUIDE TO RAISING LOCAL BUMBLE BEES 5–10 (2007).

25. *See* David Kleijn et al., *Delivery of Crop Pollination Services Is an Insufficient Argument for Wild Pollinator Conservation*, 6 NATURE COMM. 7414, 7415 (2015) ("The use of ecosystem services arguments for justifying biodiversity conservation is . . . not without risk or controversy.").

26. Jennifer Hopwood et al., *How Neonicotinoids Can Kill Bees*, 2 XERCES SOC'Y 1, 12–16 (2016), https://www.xerces.org/sites/default/files/2018-05/16-022_01_XercesSoc_How-Neonicotinoids-Can-Kill-Bees_web.pdf.

27. Maria Arena & Fabio Sgolastra, *A Meta-Analysis Comparing the Sensitivity of Bees to Pesticides*, 23 ECOTOXICOLOGY 324 (2014); Anson Main et al., *Beyond Neonicotinoids–Wild Pollinators Are Exposed to a Range Of Pesticides While Foraging in Agroecosystems,* 742 SCI. TOTAL ENV'T 140436 (2020); Cynthia Scott-Dupree et al., *Impact of Currently Used or Potentially Useful Insecticides for Canola Agroecosystems on* Bombus Impatiens *(Hymenoptera: Apidae),* Megachile Rotundata *(Hymentoptera: Megachilidae), and* Osmia Lignaria *(Hymenoptera: Megachilidae)*, 102 J. ECON. ENTOMOLOGY 177 (2009); Andi Kopit & Theresa Pitts-Singer, *Routes of Pesticide Exposure in Solitary, Cavity-Nesting Bees*, 47 ENV'T ENTOMOLOGY 499 (2018); Matthew Heard et al., *Comparative Toxicity of Pesticides and Environmental Contaminants in Bees: Are Honey Bees a Useful Proxy for Wild Bee Species?*, 578 SCI. TOTAL ENV'T 357 (2017).

28. *Protecting People from Pesticides*, EARTH JUST., https://earthjustice.org/advocacy-campaigns/pesticides (last visited Mar. 14, 2022).

use for decades.[29] Farmworkers' exposure to pesticides is a massive human health risk that has resulted in a myriad of chronic and acute health issues, ranging from reproductive issues,[30] to neurodegenerative diseases,[31] to cancer,[32] among other issues.[33] In fact, a recent report from the Union of Concerned Scientists also found that the combination of climate change-induced heat waves and pesticide exposure leads to significant adverse effects on farmworker health and safety.[34] Practices that prioritize human well-being, reducing pesticide exposure, and agroecological farm practices necessarily support pollinator health and conservation.

While there are aspects of bee conservation that can be used to enact environmental justice, there are also aspects that can inadvertently deepen inequities. Environmental justice movements have historically focused on addressing issues of environmental harms,[35] but these movements also focus on the placement of environmental amenities—like pollinator habitat gardens and park space, which are areas that could support the RPBB. In recent years, the phenomenon of "green gentrification" has gained increased scrutiny.[36] Green Gentrification is the placement of environmental amenities in cities in areas

29. *See, e.g.*, League of United Latin Am. Citizens v. Wheeler 899 F.3d 814, 818–19 (9th Cir. 2018) ("This case arises from a 2007 petition filed under 21 U.S.C. § 346a(d) proposing that the EPA revoke tolerances for the pesticide chlorpyrifos . . . ."), *reh'g granted* 914 F.3d 1189 (9th Cir. 2019).

30. Linda Frazier, *Reproductive Disorders Associated with Pesticide Exposure*, 12 J. AGROMEDICINE 27 (2007).

31. María Teresa Muñoz-Quezada et al., *Chronic Exposure to Organophosphate (OP) Pesticides and Neuropsychological Functioning in Farm Workers: A Review*, 22 INT'L J. OCCUPATIONAL & ENV'T HEALTH 68 (2016).

32. Kate Bassil et al., *Cancer Health Effects of Pesticides: Systematic Review*, 53 CANADIAN FAM. PHYSICIAN 1704 (2007).

33. John Beard et al., *Pesticide Exposure and Depression Among Male Private Pesticide Applicators in the Agricultural Health Study*, 122 ENVTL. HEALTH PERSP. 984 (2014); Ki-Hyun Kim et al., *Exposure to Pesticides and the Associated Human Health Effects*, 575 SCI. TOTAL ENV'T 525 (2017).

34. RAFTER FERGUSON ET AL., UNION OF CONCERNED SCIENTISTS, FARMWORKERS AT RISK: THE GROWING DANGERS OF PESTICIDES AND HEAT (2019), https://www.ucsusa.org/sites/default/files/2019-12/farmworkers-at-risk-report-2019-web.pdf (last visited Feb. 19, 2022).

35. Renee Skelton & Vernice Miller, *The Environmental Justice Movement*, NRDC (Mar. 17, 2016), https://www.nrdc.org/stories/environmental-justice-movement.

36. Isabelle Anguelovski et al., *New Scholarly Pathways on Green Gentrification: What Does the Urban 'Green Turn' Mean and Where Is It Going?*, 43 PROGRESS HUM. GEOGRAPHY 1064, 1064–65 (2019).

systematically excluded and under-resourced and leads to increased property values, increased rent, and displacement.[37] Pollinator gardens are one aspect of the renewed investments in urban greenspace, which may be prioritized in largely white communities given that most pollinator advocates and officials who implement pollinator programs are white.[38] This pattern also means that these largely white communities receive the benefits that pollinator habitat conservation provides, such as water filtration, flooding prevention, and aesthetics.[39]

B. SCIENTIFIC CONTEXT OF THE RPBB

While there are still many uncertainties about the RPBB's exact life history traits and what specific actions will support the recovery of their populations, there is enough evidence to make strong conservation policy. Also, the understanding of other bumble bee species can be generalized to predict the likely impacts of habitat destruction and pollution on the RPBB. Looking at this data together helps to contextualize RPBBs as subjects of environmental justice litigation.

1. Characteristics of the RPBB

There are forty-six species of bumble bees in North America north of Mexico[40] and twenty-four species of bumble bees in

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37. *Id*.

38. Rebecca Barak et al., *Factors Influencing Seed Mix Design for Prairie Restoration*, RESTORATION ECOLOGY, Oct. 2021; Audio tape: Personal Communications with Lead Ecologist, held by the Minnesota Board of Water and Soil Resources (Nov. 2019) (on file with authors).

39. *See* MIRA KLEIN ET AL., THE CREATE INITIATIVE, SHARING IN THE BENEFITS OF A GREENING CITY: A POLICY TOOLKIT IN PURSUIT OF ECONOMIC, ENVIRONMENTAL, AND RACIAL JUSTICE (2020), https://create.umn.edu/wp-content/uploads/2020/02/sharing_in_the_benefits_of_a_greening_city_-_final_web.pdf (last visited Feb. 19, 2022). In the most recent Minneapolis Parks and Recreation Board Comprehensive Plan, the Board states that "[p]arks are a potentially gentrifying force that could lead to displacement or to an increasing cost burden for residents. Improvements to parks could accelerate these realities." PARKS FOR ALL: MINNEAPOLIS PARK & RECREATION BOARD COMPREHENSIVE PLAN 11 (Apr. 2021), https://www.minneapolisparks.org/wp-content/uploads/2021/05/april_2021_draft_plan_and_addendum.pdf. Thus, any investment in greenspace to protect or support pollinator conservation should be done with intentionality and community engagement to prevent increased rent and displacement. *Id.*

40. PAUL WILLIAMS ET AL., BUMBLE BEES OF NORTH AMERICA: AN IDENTIFICATION GUIDE 10–11 (2014).

Minnesota.[41] The distribution of bumble bee species across the U.S. is complex and influenced by geographic constraints, species-specific biology, and land use history.[42] Whether a species is vulnerable to declines is also highly variable and dependent on various interacting factors.[43] Some bumble bee populations are well-documented to be doing well, others are declining, and many do not have sufficient data to understand the status of their populations.[44] *Bombus affinis*, the RPBB, is a critically endangered bumble bee species.[45]

The RPBB is distinctive by its characteristic "rusty patch" on its abdomen that can also appear as a deeper yellow, orange, or red color.[46] The queens are rather large and do not have the rusty patch but instead are distinct in having two bands of yellow on their abdomen in combination with a round face.[47]

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41. *Bumble Bees*, UNIV. MINN. COLL. FOOD, AGRIC. & NAT. RES. SCI.: BEE LAB (2022), https://beelab.umn.edu/bumble-bees.

42. *See generally* WILLIAMS ET AL., *supra* note 40, at 9–12 (mapping the distribution of bumble bees in the U.S. and worldwide).

43. Sydney Cameron et al., *Patterns of Widespread Decline in North American Bumble Bees*, 108 PROC. NAT'L ACAD. SCI. 662 (2011) (looking at and discussing factors such as host pathogen infection, population genetic diversity, and geographic range).

44. *See The IUCN Red List of Threatened Species*, INT'L UNION FOR CONSERVATION NATURE, https://www.iucnredlist.org/search?query=bumble%20bee&searchType=species (last visited Feb. 19, 2022) (searching for "bumble bee"; filtering by "global" and "species"; search yields ninety-one results).

45. *Rusty Patched Bumble Bee*, INT'L UNION FOR CONSERVATION NATURE, https://www.iucnredlist.org/species/44937399/46440196 (last visited Feb. 19, 2022).

46. Figure 1; Elaine Evans, *Guide to Minnesota Bumble Bees*, UNIV. MINN. EXTENSION, https://z.umn.edu/bumblebeesofmn (last visited Feb. 19, 2022).

47. Evans, *supra* note 46.

Figure 1. Graphical representation of an RPBB queen, worker, and male, respectively. Graphic from the Guide to MN Bumble Bees.[48]

Like all bumble bee species,[49] the life cycle of RPBBs is partly solitary and partly social.[50] In the spring, queens emerge from overwintering locations and forage on spring-blooming wildflowers and trees while looking for nesting sites for the summer.[51] Once they find a suitable area to nest, they build small wax cups where they provision nectar and form a ball of pollen on which they lay their eggs.[52] After a few weeks, the eggs hatch, the larvae feed on the pollen and develop into adults after another three weeks.[53] Through the spring and early summer, the colony mostly produces workers.[54] The bumble bee workers then forage for nectar and pollen and the queen does not leave the nest.[55] Towards the end of the colony cycle, bumble bee

48. *Id.*

49. Except for parasitic bumble bee species. *See* Meredith Swett Walker, *Cuckoo Bumble Bees: What We Can Learn from Their Cheating Ways (If They Don't Go Extinct First)*, ENTOMOLOGY TODAY (Oct. 29, 2018), https://entomologytoday.org/2018/10/29/cuckoo-bumble-bees-cheating-ways/ (describing broadly the unique life cycle of socially parasitic bumblebees within the subgenus *Psythirus*).

50. Figure 2; *About Bumble Bees*, XERCES SOC'Y FOR INVERTEBRATE CONSERVATION [hereinafter *About Bumble Bees*], https://xerces.org/bumblebees/about (last visited Feb. 19, 2022).

51. *About Bumble Bees*, *supra* note 50.

52. *Id.*

53. *Id.*

54. *Id.*

55. *Id.*

colonies create queens and males that leave the nest to mate.[56] The males and old colonies die off and the new mated queens overwinter and continue the cycle.[57] Unlike honey bees, which live in a colony all year, bumble bees live part of their lives as solitary queens underground.[58] Bumble bee nests can be very inconspicuous, difficult to find, and can range in size from fifty to five-hundred individuals in a colony.[59]

56. *Id*.
57. *Id*.
58. *Id*.
59. RICH HATFIELD ET AL., XERCES SOC'Y FOR INVERTEBRATE CONSERVATION, CONSERVING BUMBLE BEES: GUIDELINES FOR CREATING AND MANAGING HABITAT FOR AMERICA'S DECLINING POLLINATORS 4 (2012), https://www.xerces.org/sites/default/files/2018-05/12-028_01_XercesSoc_Conserving-Bumble-Bees-Guidelines_web.pdf.

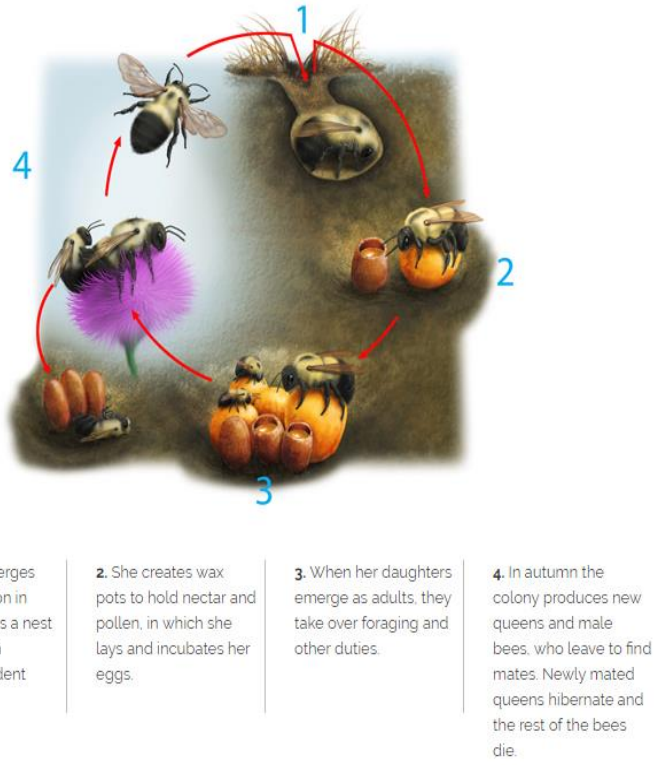

Figure 2. The life cycle of North American bumble bees (excluding parasitic species).[60] Image by David Wysotski.

2. RPBB overwintering and nesting

Compared to other bumble bee species, RPBB queens emerge relatively early in the spring,[61] but there is very little to no data on requirements or preference for their overwintering habitat. It is assumed that their overwintering habitat is similar

60. *About Bumble Bees*, *supra* note 50.

61. Sheila Colla & Sheila Dumesh, *The Bumble Bees of Southern Ontario: Notes on Natural History and Distribution*, 141 J. ENTOMOLOGICAL SOC'Y ONTARIO 39, 45 (2010); L.W. Macior, *Bombus (Hymenoptera, Apidae) Queen Foraging in Relation to Vernal Pollination in Wisconsin*, ECOLOGY, 1968, at 20–25; Bee Lab, *Rusty Patch Bumblee Bee ID: Queens*, YOUTUBE (Jun. 8, 2020), https://www.youtube.com/watch?v=9E7j1_kMbAs.

to other bumble bee species, where they burrow a few inches underneath dead wood, leaf litter, or loose soil, or near the base of trees.[62] However, this data is not well understood for many bumble bee species.[63] While other bumble bees tend to overwinter near their nesting site, the RPBB does not.[64]

Additionally, the nesting preferences of the RPBB and many other bumble bees are not well documented and have not been intensively studied for decades.[65] Some data suggest that bumble bees may prefer to nest in forests, grasslands, and agricultural fields.[66] Observations from the 1960s documented that RPBB nests "usually are located in underground holes reached by tunnels of varying length. This species nests commonly in urban areas, utilizing subterranean spaces in the rubble fill beside the concrete walls of houses."[67]

University of Minnesota researchers are currently studying RPBB nesting preferences which also range from old chipmunk burrows, underneath back porch steps, to inside the straw insulation in old houses.[68] The lack of quantitative survey and observational data on RPBB overwintering and nesting sites makes it difficult to develop land management and policy to protect their populations and requires intensive surveys to document their overwintering and nesting locations.

3. RPBB Habitat and Foraging Preferences

The RPBB is found in a variety of habitats during different parts of the life cycle of the colony, like open prairies, forested natural areas, mixed farmland, sand dunes, and urban gardens.[69] As with most bumble bee species, they have a very

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62. *See* Liczner & Colla, *supra* note 1, at 792–93 (examining overwintering studies).

63. *Id.* at 799.

64. O.E. Plath, *Notes on the Hibernation of Several North American Bumblebees*, 20 ANNALS ENTOMOLOGICAL SOC'Y AM. 181, 187 (1927).

65. *See* Roderick MacFarlane, Ecology of Bombinae (Hymenoptera: Apidae) of Southern Ontario, with Emphasis on Their Natural Enemies and Relationships with Flowers (Aug. 26, 1974) (unpublished Ph.D. thesis, University of Guelph) (on file with National Library of Canada).

66. Liczner & Colla, *supra* note 62, at 794.

67. J.T. Medler & D.W. Carney, BUMBLE BEES OF WISCONSIN: (HYMENOPTERA: APIDAE) 18 (1963).

68. Boone et al., *supra* note 1, at 2.

69. SHEILA COLLA & ALANA TAYLOR-PINDAR, ONTARIO MINISTRY OF NAT. RES., RECOVERY STRATEGY FOR THE RUSTY-PATCHED BUMBLE BEE (BOMBUS

long flight season and shift their use of different types of habitats throughout the year that provide different seasonal bursts of resources.[70]

Overall, bumble bees are known as "generalist" foragers, meaning that they feed on a wide variety of plant species, yet research suggests that declining bumble bee species have a narrower diet breadth than other species.[71] Studies on diet preferences of the RPBB using specimen observations in the field and examining pollen from the legs of museum RPBB specimens have documented that RPBBs across their range are relatively flexible in their diet breadth and that their diet has remained relatively consistent over the last century.[72] The U.S. Fish & Wildlife Service (FWS) created a resource with a list of plants favored by the RPBB,[73] but anecdotal observations do not always align with this list.[74] Additionally, most survey records focus on midsummer RPBB populations that represent floral preferences of workers, but recently published research has demonstrated that flowers present in forests are particularly important for RPBB queens and represent an often overlooked resource for their conservation and recovery.[75]

4. The RPBB in Minnesota

In response to a rise in enthusiasm and public interest in protecting pollinator populations, the state of Minnesota

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AFFINIS) IN ONTARIO 4 (2011), https://files.ontario.ca/environment-and-energy/species-at-risk/stdprod_086037.pdf.

70. Yael Mandelik et al., *Complementary Habitat Use by Wild Bees in Agro- Natural Landscapes*, 22 ECOLOGICAL APPLICATIONS 1535, 1541 (2012).

71. T. J. Wood et al., *Narrow Pollen Diets Are Associated with Declining Midwestern Bumble Bee Species*, 100 ECOLOGY, no. 6, 2019, at 1.

72. Michael Simanonok et al., *A Century of Pollen Foraging by the Endangered Rusty Patched Bumble Bee (*Bombus Affinis*): Inferences from Molecular Sequencing of Museum Specimens*, 30 BIODIVERSITY & CONSERVATION 123 (2021).

73. *Plants Favored by Rusty Patched Bumble Bee*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/midwest/endangered/insects/rpbb/plants.html (last visited Feb. 19, 2022).

74. *See* Zach Portman, *Some Good Flowers to Plant for the Rusty Patched Bumblebee*, MEDIUM (Mar. 4, 2021), https://zportman.medium.com/some-good-flowers-to-plant-for-the-rusty-patched-bumblebee-44859675f3f7.

75. John Mola et al., *The Importance of Forests in Bumble Bee Biology and Conservation*, 71 BIOSCIENCE 1234 (2021); John Mola et al., *Long- Term Surveys Support Declines in Early Season Forest Plants Used by Bumblebees*, 58 J. APPLIED ECOLOGY 1431 (2021).

designated the RPBB as the "state bee" and made commitments to support the recovery of their populations.[76] It is even featured on the state's new pollinator license plate.[77] Minnesota is often congratulated for its efforts to support pollinators as compared to other states' weaker programs,[78] and has numerous task forces and committees devoted to developing science-informed policy recommendations to protect pollinators, such as bees.[79] However, these efforts obscure the influence of powerful lobbying interests and lack of decisive actions that Minnesota has actually taken to implement necessary protections to support declining pollinator species, like the RPBB.[80] These

76. *State Bee – Rusty Patched Bumblebee*, OFFICE MINN. SEC'Y ST., https://www.sos.state.mn.us/about-minnesota/state-symbols/state-bee-rusty-patched-bumblebee (last visited Feb. 19, 2022). Minnesota state agencies have made efforts to make the public aware of the RPBB's designation as an endangered species. *See, e.g.*, Elaine Evans, *Fact Sheet: Rusty-Patched Bumble Bee*, MINN. ENV'T QUALITY BD., https://bwsr.state.mn.us/sites/default/files/2021-05/2020-Fact-Sheet-RPBB-10-13.pdf (last visited Feb. 19, 2022) (providing facts and history about the RPBB).

77. *Critical Habitat License Plates*, MINN. DEP'T OF NAT. RES., https://www.dnr.state.mn.us/features/plates/index.html (last visited Feb. 19, 2022). It is worth mentioning that all Minnesota license plates are made by people in prison at the Minnesota Correctional Facility-Rush City and paid between $0.25–$2.00 per hour. *See* MINN. DEP'T OF CORRECTIONS, OFFENDER ASSIGNMENT AND COMPENSATION PLAN, https://policy.doc.mn.gov/DocPolicy/PolicyDoc.aspx?name=204.010.pdf (discussing pay ranges in the Offender Assignment and Compensation Plan); Noelle Olson, *Rush City Prison Welcomes New Warden*, CNTY. NEWS REV. (Oct. 10, 2019), https://www.hometownsource.com/county_news_review/free/rush-city-prison-welcomes-new-warden/article_076218c0-eab0-11e9-89a8-a779ee18d771.html ("[A]ll Minnesota license plates are made at the Rush City prison."). While Minnesota state agencies portray this effort as a win for pollinators and conservation, it obscures that prisons and prison labor represent perhaps two of the deepest instances of environmental and social injustice. Funds for habitat conservation for pollinators should not come at the expense of human dignity and unfair labor practices. For further discussion of this issue, see David Pellow, *Struggles for Environmental Justice in US Prisons and Jails*, 53 ANTIPODE 56 (2019).

78. Damon Hall & Rebecca Steiner, *Insect Pollinator Conservation Policy Innovations at Subnational Levels: Lessons For Lawmakers*, 93 ENV'T SCI. & POL'Y 118 (2019).

79. *See, e.g.*, *Governor's Committee on Pollinator Protection*, MINN. LEGIS. REFERENCE LIBR., https://www.lrl.mn.gov/agencies/detail?AgencyID=2269 (last updated Mar. 10, 2020) (providing an example through Minnesota's Governor's Committee on Pollinator Protection).

80. *See, e.g.*, Tony Kennedy, *Senate Panel Again Tries to Alter Projects with Constitutional Backing*, STAR TR. (Apr. 9, 2021), https://www.startribune.com/senate-panel-again-triesto-alter-projects-with-constitutional-backing/600043831; Recorded Zoom Meeting with Julia Brokaw and Rep. Rick Hansen MN (52A) (Feb. 9, 2021) (on file with author).

state policies also rarely integrate issues of equity and environmental justice.[81]

In a letter to the Minnesota Legislature, bumble bee researcher Dr. Elaine Evans noted, "In 2018, a total of 471 rusty patched bumble bees were seen anywhere in the world. 165 of these were in MN. This represents 35% of all rusty patched bumble bee individuals."[82] It is unusual to have insects listed as endangered and even more unusual that this species is found in city centers and metro areas, making the listing of this species as endangered and its long-term protection complicated.[83]

Somewhat unexpectedly, this bee is commonly documented in the Twin Cities metropolitan area in natural areas and parks, as well as in residential neighborhoods.[84] This is likely due to observation bias by community science observations in urban areas, and many bumble bee species may find refuge in urban spaces,[85] where the diversity and abundance of flowers counteract the negative effects of concrete cover and impervious surfaces that would usually limit population growth and dispersal.[86]

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81. *See* Gregg Aamot, *How the MPCA Approaches Its Push Toward Environmental Equity*, MINNPOST (Mar. 2, 2021), https://www.minnpost.com/environment/2021/03/how-the-mpca-approaches-its-push-toward-environmental-equity (discussing Minnesota's failure to integrate issues of equity in recent environmental decisions, and the MPCA's suggestion that it needs a larger budget to address environmental inequities in the state).

82. Elaine Evans, *Will the Rusty Patched Bumble Bee Become Our 'State Bee?'*, UNIV. MINN. EXTENSIONS (Apr. 12, 2019), https://extension.umn.edu/natural-resources-news/will-rusty-patched-bumble-bee-become-our-state-bee (emphasis omitted).

83. Franz, *supra* note 9, at 204, 217–21 (stating that insects "represent less than five percent of the endangered species list" and discussing the various difficulties in designating a critical habitat area for the RPBB).

84. *See Bumble Bee Sightings Map*, BUMBLE BEE WATCH, https://www.bumblebeewatch.org/app/#/bees/map?filters=%7B%22sightingstatus_id%22:%5B%222%22%5D,%22species_id%22:%5B1%5D%7D (last visited Feb. 19, 2022) (searching "Species": "affinis / Rusty-patched bumble bee," and "Status": "Verified"; search results yield a map of sightings in the Twin Cities metropolitan area).

85. *See* Quinn McFrederick & Gretchen LeBuhn, *Are Urban Parks Refuges for Bumble Bees* Bombus *Spp. (Hymenoptera: Apidae)?*, 129 BIOLOGICAL CONSERVATION 372, 373 (2006) (discussing how insects, and bumble bees in particular, use metro area parks as refuge).

86. Marietta Hülsmann et al., *Plant Diversity and Composition Compensate for Negative Effects of Urbanization on Foraging Bumble Bees*, 46 APIDOLOGIE 760, 761 (2015).

5. RPBB Population Declines and Vulnerability to Heavy Metals and Climate Change

The RPBB was once widespread and abundant in its historic range across eastern North America and part of the Midwest, but populations severely declined two decades ago and the RPBB is now present in less than 0.1% of its former range.[87] These declines are linked to numerous interacting stressors, but pathogen spread from managed bumble bee colonies (such as *Nosema bombi* and *Crithidia bombi*) and insecticide use are the probable principal causes that particularly affect the subgenus *Bombus*, which includes the RPBB and a few other related species that are also experiencing declines.[88] Population declines are also a result of other factors such as habitat loss, industrial agricultural practices, climate change, and issues related to small population sizes that decrease genetic diversity.[89] For the purposes of this article, we expand on the impacts of heavy metal contamination on bee health—a lesser studied vulnerability with potential implications for development projects in more urban settings. We also expand on climate change impacts on bumble bee conservation that relate to the indirect impacts of fossil fuel infrastructure projects.

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87. U.S. FISH & WILDLIFE SERV., SURVEY PROTOCOLS FOR THE RUSTY PATCHED BUMBLE BEE (BOMBUS AFFINIS) 1 (Feb. 28, 2018), https://www.fws.gov/midwest/endangered/insects/rpbb/pdf/SurveyProtocolsRPBB28Feb2018.pdf; *Featured Pollinator*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/pollinators/features/rusty_patched_bumble_bee.html (last visited Feb. 19, 2022).

88. ELAINE EVANS ET AL., XERCES SOC'Y, STATUS REVIEW OF THREE FORMERLY COMMON SPECIES OF BUMBLE BEE IN THE SUBGENUS *BOMBUS* 33–34 (2008), https://xerces.org/sites/default/files/2019-10/xerces_2008_bombus_status_review.pdf. The relevance of insecticides, and especially systemic neonicotinoid pesticides, in RPBB population decline is well established by the FWS. 82 Fed. Reg. 3186, 3190 (Jan. 11, 2017) ("Neonicotinoids are a class of insecticides used to target pests of agricultural crops, forests (for example, emerald ash borer), turf, gardens, and pets and have been strongly implicated as the cause of the decline of bees in general."); *see id*. at 3201, 3198 (further analyzing why these pesticides used on corn and soybean crops are likely to harm ground-dwelling wild bees like the RPBB).

89. JENNIFER SZYMANSKI ET AL., RUSTY PATCHED BUMBLE BEE (*BOMBUS AFFINIS*) SPECIES STATUS ASSESSMENT 49–52 (2016), https://ecos.fws.gov/ServCat/DownloadFile/120109; *see also The Rusty-Patched Bumble Bee: The Story of a Declining Pollinator*, XERCES SOC'Y, https://xerces.maps.arcgis.com/apps/Cascade/index.html?appid=3545656993df4d19a83ffc7987c37c88 (last visited Feb. 18, 2022) ("While the causes of the declines of the rusty-patched bumble bee . . . are not entirely understood, factors contributing to declines likely include pathogens amplified by commercial bumble bees, habitat loss, pesticide use, and climate change.").

a. Heavy Metals

Bees are impacted by heavy metal contamination through their contact with soil for nesting and through eating pollen and nectar, because many plant species accumulate heavy metals in their plant tissues.[90] Contamination with heavy metals and metalloids can have both direct and indirect effects on bumble bees. Heavy metal concentrations at field-realistic levels can cause direct mortality of young bees (known as larvae), decrease the fitness of individual bumble bees (affecting ability to produce offspring), and lower the probability that a colony will survive and produce queens.[91] Heavy metals can also alter the gut microbiome of bumble bees, and one recently published study found that cadmium, copper, and selenate altered the gut microbiome dramatically and led to direct mortality just three days after exposure via oral ingestion.[92]

Additionally, research demonstrated that bumble bees will spend less time on flowers contaminated by nickel and lead, but it is unclear if they are actively avoiding contaminated flowers through taste or if ingesting metals alters their foraging behavior.[93] Studies in honey bees have demonstrated bioaccumulation (increased concentrations of metals in bees' bodies than found in the environment), disruption to memory, and decreased colony health via direct and indirect mortality.[94] Researchers at the University of Minnesota[95] and the Ohio State

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90. *See* Nicoletta Rascio & Flavia Navari-Izzo, *Heavy Metal Hyperaccumulating Plants: How and Why do They do It? And What Makes Them So Interesting?* 180 PLANT SCI. 169, 171–74 (2011) (explaining how plants hyperaccumulate heavy metals).

91. Frances Sivakoff et al., *Urban Heavy Metal Contamination Limits Bumblebee Colony Growth*, 57 J. APPLIED ECOLOGY 1561, 1566 (2020); Sarah Scott et al., *Exposure to Urban Heavy Metal Contamination Diminishes Bumble Bee Colony Growth*, URBAN ECOSYSTEMS (Jan. 31, 2022), https://link.springer.com/article/10.1007/s11252-022-01206-x.

92. Jason Rothman et al., *The Direct and Indirect Effects of Environmental Toxicants on the Health of Bumblebees and Their Microbiomes*, 287 PROC. ROYAL SOC'Y B, Oct. 28, 2020, at 1, 7.

93. George Meindl & Tia-Lynn Ashman, *The Effects of Aluminum and Nickel in Nectar on the Foraging Behavior of Bumblebees*, 177 ENV'T POLLUTION 78, 80 (2013).

94. Kristen Hladun et al., *Metal Contaminant Accumulation in the Hive: Consequences for Whole- Colony Health and Brood Production in the Honey Bee (*Apis Mellifera *L.)*, 35 ENV'T TOXICOLOGY & CHEMISTRY 322, 326–27 (2016).

95. Snell-Rood Lab, *Research*, UNIV. MINN. COLL. BIOLOGICAL SCIS., https://cbs.umn.edu/snell-rood-lab/research (last visited Feb. 19, 2022).

University[96] are currently exploring various aspects of heavy metal contamination in bumble bees. Specifically, how field-realistic concentrations may lead to behavioral changes of bumble bees, such as reduced care for brood, altered behaviors that regulate the temperature of the colony,[97] and impacts on colony health, as well as documenting metal uptake in common flower species in cities.[98]

Research on heavy metal impacts to bumble bees usually isolates one or a few specific heavy metals, but bees usually experience a slurry of these toxins in their environment, which likely leads to synergistic negative effects.[99] Specifically, one study found that in just fifteen days, bumble bees were nearly four times more likely to die from exposure to arsenic alone than bumble bees exposed to no heavy metals at all.[100] In the same study, they found that bumble bees exposed to a combination of multiple heavy metals (including arsenic, cadmium, chromium and lead) were nine times more likely to have dead brood—demonstrating the combined impacts of heavy metal contamination on bumble bee health.[101] More research is needed on the interactions between heavy metal contamination and

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96. *Sarah Scott*, OHIO STATE DEP'T ENTOMOLOGY, https://entomology.osu.edu/our-people/sarah-scott [hereinafter *Scott*] (last visited Feb. 19, 2022).

97. James Crall et al., *Neonicotinoid Exposure Disrupts Bumblebee Nest Behavior, Social Networks, and Thermoregulation*, 362 SCIENCE 683, 683–85 (2018).

98. Sarah Scott et al., OHIO STATE UNIV. DEP'T OF ENTOMOLOGY, *The Effects of Heavy Metals on the Common Eastern Bumblebee,* Bombus Impatiens (2020), https://grad.cfaes.ohio-state.edu/sites/grad/files/rpp-pdf/2020PosterPDF-scott.2094vunjnralpdju5g4v%20-%20Fit.pdf. Sarah Scott is a PhD candidate at Ohio State University studying chromium impacts on bumble bee navigation and documenting metal uptake and translocation into clover nectar and biomass. Preliminary results show "[a]rsenic, cadmium, chromium and lead fed bumble bee colonies had higher brood mortality (larvae and pupae) compared to control colonies . . . ." *See id.*; *Scott*, *supra* note 96.

99. Scott et al., *supra* note 98; *see generally* Julija Cubins & Lauren Agnew, *Roadside Pollinator Habitat with Lauren Agnew*, HOOKED ON SCI. (June 17, 2020), https://www.podchaser.com/podcasts/hooked-on-science-1612957/episodes/roadside-pollinator-habitat-wi-86002290 (discussing Lauren Agnew's research on pollinators). Lauren Agnew is a PhD candidate currently examining results from a study in the summer of 2021 that examined the impacts of a copper contaminated diet. *Id.* This diet represented field-realistic doses of copper in pollen collected from flowers on Minnesota roadsides to show what effect it has on wild-caught and lab reared bumble bee colonies. *Id.*

100. Scott et al., *supra* note 98.

101. *Id*.

infection by pathogens.[102] Studies on pesticides demonstrate synergistic effects between pesticide contamination and increased viral and parasite infections, but research is needed on whether heavy metals lead to increased pathogens, of which the RPBB are thought to be particularly susceptible.[103]

b. Climate Change

Climate change impacts on bumble bee populations are a well-documented stressor contributing to their declines and is an area of active inquiry as researchers try to better predict and mitigate the consequences in different regions.[104] Climate change can impact bumble bees directly and indirectly, including via extreme weather events that cause local extinctions,[105] heatwaves that exceed bumble bee thermal tolerance thresholds,[106] gradual changes in average temperatures and precipitation that de-synchronize the phenology of their floral

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102. *See* Heike Feldhaar & Oliver Otti, *Pollutants and Their Interaction with Diseases of Social Hymenoptera*, 11 INSECTS 153, 160–61 (2020) (discussing heavy metal pollution and the susceptibility of insects to pathogens).

103. *Id.*; EVANS ET AL., *supra* note 88, at 29–30.

104. *See* Sydney Cameron & Ben Sadd, *Global Trends in Bumble Bee Health*, 65 ANN. REV. ENTOMOLOGY 209, 216–17 (2020) (discussing the effects of global warming on bumble bee populations); Catherine Sirois-Delisle & Jeremy Kerr, *Climate Change-Driven Range Losses Among Bumblebee Species Are Poised to Accelerate*, 8 SCI. REP., 2018, at 1, 5–8 (using models and data to predict how climate change will affect bumble bee range).

105. SARINA JEPSEN ET AL., XERCES SOC'Y FOR INVERTEBRATE CONSERVATION, PETITION TO LIST THE RUSTY PATCHED BUMBLE BEE *BOMBUS AFFINIS* (CRESSON) 1863, AS AN ENDANGERED SPECIES UNDER THE U.S. ENDANGERED SPECIES ACT 23 (Jan. 31, 2013), https://www.xerces.org/sites/default/files/publications/13-057.pdf; Jeremy Kerr et al., *Climate Change Impacts on Bumblebees Converge Across Continents*, 349 SCI. 177, 179 (2015).

106. Pierre Rasmont & Stéphanie Iserbyt, *The Bumblebees Scarcity Syndrome: Are Heat Waves Leading to Local Extinctions of Bumblebees (Hymenoptera: Apidae:* Bombus*)?*, 48 ANNALES DE LA SOCIÉTÉ ENTOMOLOGIQUE DE FRANCE 275, 277–79 (2012) (discussing the ways that a heat wave can affect a bumble population); Meaghan Pimsler et al., *Biogeographic Parallels in Thermal Tolerance and Gene Expression Variation Under Temperature Stress in a Widespread Bumble Bee*, 10 SCI. REP., 2020, at 1, 7; Kevin Maebe et al., *Impact of Intraspecific Variation on Measurements of Thermal Tolerance in Bumble Bees*, J. THERMAL BIOLOGY, July 2021, at 1, 7 (finding the different thermal tolerance thresholds of the worker and queens of three subspecies of *Bombus Terrestris* subspecies).

resources,[107] and synergistic effects of climate change with habitat loss.[108]

In Minnesota, climate change is predicted to have several detrimental impacts that could impact bumble bee communities. In recent years, there have been a number of extreme and unprecedented weather events such as extreme spring flooding[109] and a historic drought.[110] The Minnesota Department of Natural Resources website states, "Minnesota keeps getting warmer and wetter,"[111] which means more frequent heat waves, variable seasons, warmer winters, and heavy precipitation events.[112] The Twin Cities in particular are vulnerable to "heat island" effects in which the urban center is hotter than the surrounding area, sometimes by nine degrees Fahrenheit.[113]

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107. *See* Ignasi Bartomeus et al., *Climate-Associated Phenological Advances in Bee Pollinators and Bee-Pollinated Plants*, 108 PROC. NAT'L ACAD. SCI. 20645, 20647 (2011) (finding that the phenology of bees changes along with the phenology of the plants that they visit); Jane Ogilvie & Jessica Forrest, *Interactions Between Bee Foraging and Floral Resource Phenology Shape Bee Populations and Communities*, 21 CURRENT OP. INSECT SCI. 75, 79–80 (2017) (discussing how climate change is causing floral phenology changes and affecting bees); Graham Pyke et al., *Effects of Climate Change on Phenologies and Distributions of Bumble Bees and the Plants they Visit*, 7 ECOSPHERE, no. 3, 2016, at 1, 12 (finding a lower level of synchrony "between bumble bee and flowering phenologies" and a reduced number of bumble bees); Peter Soroye et al., *Climate Change Contributes to Widespread Declines Among Bumble Bees Across Continents*, 367 SCI. 685, 685 (2020) ("Temperature and precipitation can affect bumble bee mortality and fecundity directly and indirectly through changes to the floral resources." (internal citation omitted)).

108. *See* Cameron et al., *supra* note 43, at 665–66 (highlighting the multiple effects of climate change that can have an impact on bee populations).

109. Jeff Berardelli, *Perfect Storm of Extreme Weather and Climate Change Drove Deadly Midwest Flooding*, CBS NEWS, https://www.cbsnews.com/news/midwest-flooding-perfect-storm-of-extreme-weather-climate-change-drove-deadly-flooding-in-nebraska-and-iowa (last updated Mar. 18, 2019).

110. *The Drought of 2021*, MINN. DEP'T NAT. RES., https://www.dnr.state.mn.us/climate/journal/drought-2021.html (last updated Jan. 28, 2022).

111. *Climate Trends*, MINN. DEP'T NAT. RES., https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html (last visited Feb. 19, 2022).

112. *Id.*

113. Monique Dubos, *Twin Cities Heat Island Study Yields Surprises*, UNIV. MINN. INST. ON ENV'T (Nov. 18, 2015), http://environment.umn.edu/news/twin-cities-heat-island-study-yields-surprises. *See generally* Brian Smoliak et al., *Dense Network Observations of the Twin Cities Canopy-Layer Urban Heat Island*, 54 J. APPLIED METEOROLOGY & CLIMATOLOGY 1899, 1899–1916 (2015) (showing the methods and results used to determine the extent of the heat island effect on the Twin Cities).

There is more research needed on specific climate change impacts to RPBB populations across their range and how they interact synergistically with other environmental stressors and pathogen prevalence. In other bumble bee species, research demonstrates that when bees are at the edge of their range in elevation or latitude, southern populations expand their range and move northward,[114] but the northern populations do not move—a process known as a "range contraction."[115] It could also be possible that species like the RPBB may move south—away from their northern range—because there is higher weather variability in northern Minnesota and the changes are proportionately larger.[116] This could put RPBB populations at greater risk of heat stress from higher temperatures. Studies of other bumble bees document heat thresholds around 104 degrees Fahrenheit that can prevent them from flying or induce a stupor.[117] However, this threshold does not account for the increase in body temperature while bees are flying and foraging, meaning that the upper limit of their thresholds may be much lower.[118] Furthermore, given that the RPBB is found in the Twin Cities metropolitan area, they likely experience heat island effects that may exceed their thermal tolerance threshold, especially given predictions that Minneapolis will regularly experience extended heat waves.[119]

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114. Kerr et al., *supra* note 105, at 178–79.

115. Sirois-Delisle & Kerr, *supra* note 104, at 2.

116. Alexandra Papanikolaou et al., *Landscape Heterogeneity Enhances Stability of Wild Bee Abundance Under Highly Varying Temperature, But Not Under Highly Varying Precipitation*, 32 LANDSCAPE ECOLOGY 581, 582 (2017); *see* Alex Koyler, *Climate Change in Minnesota: 23 Signs*, MINN. PUB. RADIO NEWS (Feb. 2, 2015, 6:01 AM), https://www.mprnews.org/story/2015/02/02/climate-change-primer (observing that northern Minnesota is heating more quickly than southern Minnesota).

117. Baptiste Martinet et al., *A Protocol to Assess Insect Resistance to Heat Waves, Applied to Bumblebees (*Bombus *Latreille, 1802)*, 10 PLOS ONE, no. 3, Mar. 4, 2015, at 1, 4.

118. April Hamblin et al., *Physiological Thermal Limits Predict Differential Responses of Bees to Urban Heat-Island Effects*, 13 BIOLOGY LETTERS, 2017, at 1, 6 (arguing that the habits of bees can play an important role in their heat resistance).

119. *See* KRISTINA DAHL ET AL., UNION OF CONCERNED SCIENTISTS, KILLER HEAT IN THE UNITED STATES: CLIMATE CHOICES AND THE FUTURE OF DANGEROUSLY HOT DAYS 18 (2019), https://www.ucsusa.org/sites/default/files/2020-12/UCS_extreme_heat_report_190712b_low-res_corrected12-20.pdf (stating cities throughout the country can expect frequent, intense heat to a degree that is historically unprecedented); *Extreme Heat Events*, MINN. DEP'T

The RPBB could also be particularly impacted by the extreme precipitation events occurring in Minnesota because these events not only prevent weather conditions necessary to foraging, but also flood nests of bumble bees, resulting in lower abundance in subsequent years.[120]

C. LEGAL CONTEXT OF THE RPBB

The FWS listed the RPBB as an endangered species under the ESA in 2017.[121] This move created strong and controversial legal protections for the species, catalyzing a wave of recent litigation challenging industry and government projects in places where the bee may be present.[122] While legal disputes have generally not been framed in terms of, or to benefit, environmental justice communities, recent cases demonstrate the potential for communities to exert legal power by insisting upon the conservation required by federal law.[123]

HEALTH (2017), https://www.health.state.mn.us/communities/environment/climate/docs/extremeheatsummary.pdf.

120. Lawrence Harder, *Influences on the Density and Dispersion of Bumble Bee Nests (Hymenoptera: Apidae)*, 9 HOLARCTIC ECOLOGY 99, 102 (1986).

121. Sarina Jepsen & Rich Hatfield, *Rusty Patched Bumble Bee Protected as an Endangered Species*, XERCES SOC'Y FOR INVERTEBRATE CONSERVATION (Jan. 10, 2017), https://www.xerces.org/press/rusty-patched-bumble-bee-protected-as-endangered-species.

122. *E.g.,* Petzel v. Kane Cnty. Dep't of Transp., 16-cv-5435, Dkt. 115 (N.D. Ill. Sept. 14, 2017); Defs. of Wildlife v. U.S. Dep't Interior, No. 18-02090, Dkt. 1 (4th Cir. Sept. 19, 2018); Orr v. EPA, 1:17-cv-141-MR-DLH, 2017 WL 2434779 (W.D.N.C. June 5, 2017).

123. Some disputes over the RPBB's habitat are very much live issues and potential court cases at the time of writing this article. For example, the Bell Bowl Prairie's destruction was slowed by the RPBB foraging season until late 2021. Juanpablo Ramirez-Franco, *Rusty Patched Bumble Bee Stalls Construction Over Bell Bowl Prairie*, N. PUB. RADIO (Sept. 29, 2021, 11:31 AM), https://www.northernpublicradio.org/wnij-news/2021-09-29/rusty-patched-bumble-bee-stalls-construction-over-bell-bowl-prairie. This article unfortunately cannot (and thus does not) cover all of the important community efforts related to the RPBB which are in development but not yet in the courts at the moment. Other litigation not discussed in this article has been filed to date, but often failed to comply with the procedural requirements of the ESA or NEPA. *E.g.*, *Petzel*, 2018 WL 3740629, at *5 (challenging NEPA's bar by statute of limitations, and failing to properly send a sixty-day notice of intent to sue letter regarding ESA claims to make the government aware of an alleged violation of the ESA); *Orr*, 2020 WL 2512985, at *6 (failing to properly send a sixty-day notice of intent to sue regarding ESA claims); Strahan v. Nielsen, No. 18-cv-161-JL, 2018 WL 3966318, at *1 (D.N.H. Aug. 17, 2018) (failing to properly send a sixty-day notice of intent to sue regarding ESA claims).

1. ESA Listing of the RPBB

In the ESA, Congress declared its purpose was "that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of" the ESA,[124] and even without the government's involvement, the law forbids all people from "taking" (a term roughly equivalent to harming)[125] a listed endangered species in the U.S.[126] As a result, any action that would "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" by any person in regards to any listed species must be prevented by responsible agencies pursuant to the ESA.[127] While this article will not go into great detail about the requirements of the ESA, the fact that it contains a near-absolute prohibition on harming listed species is an attractive legal tool for those who wish to protect species and habitats, as well as those who oppose destructive projects or activities that imperil listed species.

Once a species is listed under the ESA, it is protected by at least two substantial requirements of the law.[128] Under ESA Section 7, federal agencies are required to consult with the expert federal agencies (the FWS and the National Oceanic and Atmospheric Administration) to assure that their actions do not imperil listed species.[129] Under ESA Section 10, anyone who may "take" a listed species must first obtain a permit from the expert agencies that would allow such take and limit negative impacts to the species.[130]

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124. 16 U.S.C. § 1531.

125. *See* 16 U.S.C. § 1532(19) ("The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.").

126. 16 U.S.C. § 1538.

127. 16 U.S.C. §§ 1538, 1532(19).

128. *Listing Species Under the Endangered Species Act,* CTR. BIOLOGICAL DIVERSITY, https://www.biologicaldiversity.org/programs/biodiversity/endangered_species_act/listing_species_under_the_endangered_species_act/index.html (last visited Apr. 7. 2022).

129. *See Endangered Species Act, Section 7*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/endangered/laws-policies/section-7.html (last updated Jan. 30, 2020).

130. *See Endangered Species Act, Section 10* U.S. FISH & WILDLIFE SERV., https://www.fws.gov/endangered/laws-policies/section-10.html (last updated Jan. 30, 2020).

The RPBB was set to be federally-listed under the ESA in January 2017 by the FWS, and, after delays, the listing became effective in March 2017.[131] This listing was the result of grassroots organizing led by the Xerces Society for Invertebrate Conservation (a nonprofit whose purpose is to "protect[] the natural world through the conservation of invertebrates and their habitats"),[132] along with and represented by the Natural Resources Defense Council (NRDC), who sued the Department of Interior and the FWS for ignoring Xerces's 2013 petition[133] to list the RPBB as endangered under the ESA.[134]

Concurrent with the listing of a species under the ESA, Section 4 requires the FWS to establish a "critical habitat" area to the "maximum extent prudent and determinable."[135] If the FWS lacks the data required to make a determination at the time of listing, the FWS may take an additional year to gather data, but within a year must make a critical habitat determination based on the data available to it "to the maximum extent prudent."[136] The designation of critical habitat is core to the ESA: it reflects Congress's finding that the destruction of natural habitats is among the greatest cause of species extinction,[137] and is a necessary prerequisite to several protections available to species under section 7.[138]

Despite the requirements of the ESA, the FWS never made a critical habitat determination for the bee. Following a lawsuit

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131. Endangered Species Status for Rusty Patched Bumble Bee, 82 Fed. Reg. 3186 (Jan. 11, 2017) (to be codified at 50 C.F.R. pt. 17); Endangered Species Status for Rusty Patched Bumble Bee, 82 Fed. Reg. 10285 (Feb. 10, 2017) (to be codified at 50 C.F.R. pt. 17) (delaying effective date of listing); Michael Greshko, *First U.S. Bumblebee Officially Listed as Endangered*, NAT'L GEOGRAPHIC (Mar. 22, 2017), https://www.nationalgeographic.com/science/article/bumblebees-endangered-extinction-united-states.

132. *About the Xerxes Society*, XERXES SOC'Y FOR INVERTEBRATE CONSERVATION (2021), https://xerces.org/about-xerces.

133. JEPSEN ET AL., *supra* note 105.

134. *Rusty Patched Bumble Bee Threatened with Extinction*, XERCES SOC'Y FOR INVERTEBRATE CONSERVATION (May 13, 2014), https://xerces.org/press/rusty-patched-bumble-bee-threatened-with-extinction-0 (stating the Xerces Society petitioned to have the RPBB added to the ESA in 2013 but was ignored and then filed a complaint against the U.S. Fish & Wildlife Service in May 2014).

135. 16 U.S.C. § 1533(a)(3)(A).

136. 16 U.S.C. § 1533(b)(6)(C)(ii).

137. *See* Tenn. Valley Auth. v. Hill, 437 U.S. 153, 179–81 (1978) (discussing the intent and purposes of the ESA).

138. 16 U.S.C. § 1536(a)(2).

to force agency action filed by the NRDC, on September 1, 2020, the FWS published a final determination that designating a critical habitat was "not prudent" for the RPBB.[139] The FWS argued in its final rule that by developing priority maps it had already achieved the benefits of a critical habitat determination.[140] However, the priority maps do not implicate the legal protections that flow from a critical habitat determination. Further, the maps developed by the FWS suffer from fundamental design flaws,[141] and the FWS noted in the same final rule that its priority maps contained areas not suitable as habitat for the RPBB.[142] Arguing that an actual critical habitat determination for the RPBB is feasible, prudent, and required under the law, several environmental non-profits have filed suit requesting that the determination be set aside as "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."[143] In a statement, NRDC attorney Lucas Rhodes commented: "Having to drag the Service to court at every step is getting old . . . . They should just do right by the bee in the first place."[144]

2. The FWS RPBB Map

As stated above, instead of designating critical habitat for the RPBB, the FWS developed a map[145] of "priority areas" for

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139. Determination That Designation of Critical Habitat is Not Prudent for the Rusty Patched Bumble Bee, 85 Fed. Reg. 54281 (Sept. 1, 2020) (to be codified at 50 C.F.R. pt. 17).

140. 5 Fed. Reg. 54284 ("Although we have since found that triggering section 7 consultation in unoccupied areas is not necessary, we have achieved, through development of the priority maps, the other benefits of critical habitat that we had identified in the final listing rule.").

141. *See* discussion *infra* Section IV.A.

142. 85 Fed. Reg. 54284.

143. Motion for Summary Judgment at 22, Nat. Res. Def. Council, Inc. v. U.S. Fish & Wildlife Serv., No. 21-cv-770-ABJ (D.D.C. Dec. 6, 2021), ECF No. 19 (quoting 5 U.S.C. § 706(2)(a), which requires federal agencies to make reasoned and evidence-based decisions).

144. Mary Divine, *Environmental Groups Sue to Save Habitat for Endangered Bee*, TWIN CITIES PIONEER PRESS (Mar. 24, 2021), https://www.twincities.com/2021/03/24/environmental-groups-sue-to-save-habitat-for-endangered-bee.

145. This article was premised on the version of the FWS RPBB priority maps that were in place at the time of the cases discussed. During the writing and editing process of this article, the FWS transformed all of its species' websites and moved the location of its RPBB maps. The updated version of the map is available at *Rusty Patched Bumble Bee Map*, U.S. FISH & WILDLIFE

RPBB habitat assessment[146] based primarily on direct observations of bees recorded since 2007.[147] This is unusual, as other endangered species do not have a publicly available map for their habitat and ranges. The FWS map identifies certain areas as "high potential zones" where the RPBB is "likely present."[148] In those "zones," the FWS says that activities that may harm or kill RPBBs may require formal ESA consultation and permits to incidentally take bees.[149] The areas around "high potential zones" are referred to as "primary dispersal zones" and the FWS explains, "These areas are important for conservation actions and additional survey effort."[150] But the agency does not automatically require formal consultation and "Take Permits" (which are required for projects affecting critical habitat) for potentially harmful projects within the primary dispersal zones.[151] Thus, under the FWS's policy, being in a "high potential zone" merits the protection under the ESA while being in a "dispersal zone" merits no agency action at all. The map is delineated based on the FWS assessment of RPBB movement,

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SERV., https://www.arcgis.com/home/webmap/viewer.html?webmap=2716d871f88042a2a56b8001a1f1acae&extent=-100.6667%2C29.7389%2C-48.8551%2C50.9676 (last updated March 10, 2022) [hereinafter *RPBB Map*]. At the time of this writing, the map is somewhat buried in the website remodeling. It can now be accessed by going to https://www.fws.gov/species/rusty-patched-bumble-bee-bombus-affinis, clicking on the geography tab, navigating down to the geography subtab, and then selecting "Federal agencies can learn more about high potential zones for Section 7 purposes under the Endangered Species Act" hyperlink. It is our understanding that the underlying models informing high and low potential zones remain the same as in the previous map, as do the maps' color-coded systems of displaying that information. When possible, we have updated our figures showing portions of the map to the most current version. Our analysis of the maps and their influences on RPBB policy below is thus unaffected by this change. Personal communications with the FWS discussing the website changes on file with authors.

146. *RPBB Map*, supra note 145.

147. *See id*. (displaying where rusty patched bumble bees have been recorded).

148. *Id.*

149. *See id.* (displaying where rusty patched bumble bees have been recorded).

150. *Id*. The FWS maps and its descriptions of those maps use the phrases "primary dispersal zones" and "low potential zones" interchangeably in reference to the same data. *See id.* Because the two terms are functionally equivalent with regard to the map, this article uses them interchangeably as well.

151. *Id.*

dispersal, and habitat preferences as well as their interpretation of peer-reviewed literature.

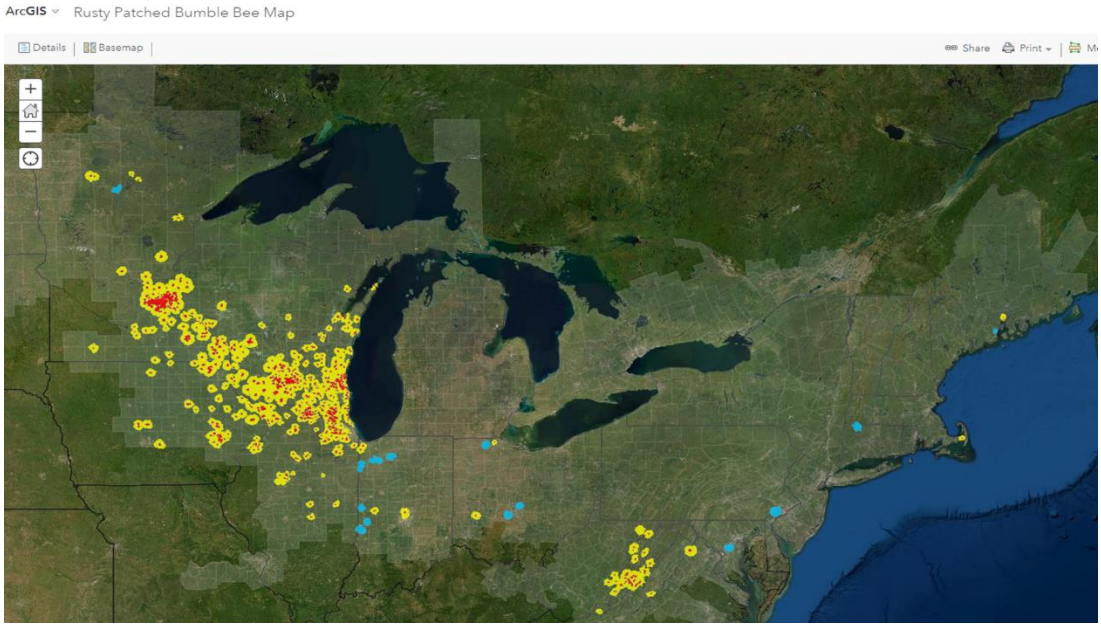

Figure 3, screenshot of the FWS RPBB map showing an overview of all areas identified by the agency as potential places the RPBB may be found.[152]

After the FWS compiled the RPBB observation records, they created a map for a spatial habitat connectivity model, which outlines areas where there is potential for the RPBB to disperse or move across various landscape types.[153] Habitat connectivity is a broad and complex theoretical framework within the field of ecology.[154] There are ongoing debates about how to put this theory into policy and practice given the lack of species-specific

152. *Id*.

153. U.S. FISH & WILDLIFE SERV., MINN.-WIS. FIELD OFFICE, HABITAT CONNECTIVITY MODEL FOR THE RUSTY PATCHED BUMBLE BEE (BOMBUS AFFINIS) 1 (Feb. 27, 2018), https://www.fws.gov/midwest/endangered/insects/rpbb/pdf/habitatconnectivitymodelrpbb.pdf [hereinafter HABITAT CONNECTIVITY].

154. PETER H. SINGLETON & BRAD MCRAE, *Assessing Habitat Connectivity*, in CONSERVATION PLANNING: SHAPING THE FUTURE 245, 245–270 (Jan. 2013).

data about species' movement between fragmented landscapes.[155] Understanding RPBB movement is essential to developing a robust map that identifies RPBB habitat and fosters policy supporting RPBB wellbeing. To understand RPBB movement, it is imperative to have clear documentation of RPBB habitat associations, foraging preferences, dispersal distances, differences in the behavior of both males and females, and knowledge of nesting and overwintering sites. Much of this is not yet well understood for the RPBB, yet the entire regulatory framework for their protection hinges on what little we understand of their natural history. Researchers, however, can draw reasonable inferences based on their knowledge of other bumble bee species.

The FWS uses the National Land Cover Database (NLCD),[156] which categorizes different areas of North America into various land cover classes (e.g., wetland, deciduous forest, cropland, etc.) to figure out priority areas for the RPBB in the map.[157] The land cover classes are ranked "weak," "moderate," or "strong" barriers to RPBB movement based on an informal survey of RPBB natural history experts.[158] The land cover classes are also given a numerical ranking from zero to nine on whether they could support RPBB movement.[159]

Then, the FWS uses that land cover data to create "rings" averaging approximately four kilometers in diameter around the locations of RPBB records dating back to 2007.[160] Four kilometers correlates with supposed bumble bee flight distances.[161] The rings of the location records and land cover classes mark "high potential zones"—areas that likely support

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155. Lenore Fahrig, *Ecological Responses to Habitat Fragmentation Per Se*, 48 ANN. REV. ECOLOGY, EVOLUTION, & SYSTEMATICS, 2017, at 1, 11 (finding mostly positive effects of fragmentation). *But see* Robert Fletcher Jr. et al., *Is Habitat Fragmentation Good for Biodiversity?*, 226 BIOLOGICAL CONSERVATION, 2018, at 9, 10–11 (critiquing Fahrig, *supra*, and finding negative effects of fragmentation).

156. *Multi-Resolution Land Characteristics (MRLC) Consortium*, MRLC, https://www.mrlc.gov (last visited Feb. 9, 2022).

157. SINGLETON & MCRAE, *supra* note 154.

158. HABITAT CONNECTIVITY, *supra* note 153, at 1.

159. *See Data Services* Page, MULTI-RESOL. LAND CHARACTERISTICS CONSORTIUM, https://www.mrlc.gov/data-services-page (last visited Apr. 14, 2022) (table of landcover classes and rankings on file with authors).

160. HABITAT CONNECTIVITY, *supra* note 153, at 1–3.

161. *Id.*

the highest RPBB movement and persistence.[162] Because land cover varies around each location record, the shape of the high potential zones are irregular.[163]

A ten-kilometer ring, based on the expected maximum RPBB dispersal distance, marks the "primary dispersal zone."[164] The FWS designates this as the area where there is "reasonable potential" presence of the RPBB.[165] Potentially destructive activities within these zones do not trigger any regulatory permitting or consultation process.[166] The map also has "uncertain zones," based on records prior to 2007, that have not had subsequent surveys to document RPBB presence.[167] Uncertain zones also do not trigger regulatory processes or formal consultation.[168]

For the purposes of this article, it is important to note that the FWS maps identify much of the Twin Cities metropolitan area as "high potential zones" where the RPBB is likely present.[169] Areas in the metro area that are not "high potential zones" are nonetheless mostly covered by "primary dispersal zones."[170]

While this map is a useful tool to protect the RPBB, it has some major limitations due to uncertainties about RPBB biology, observational bias, and the map's inability to account for legacies of segregationist housing and greening policies.[171]

3. Impact of an ESA Listing on Environmental Review

The National Environmental Policy Act of 1969 (NEPA), often described as the nation's environmental Magna Carta,[172]

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162. *Id.* at 1.
163. *Id.* at 1–2.
164. *Id.* at 2.
165. *Id.*
166. *See* 85 Fed. Reg. 54282 (citing desire to avoid triggering Section 7 consultation processes in areas where bee presence is uncertain).
167. HABITAT CONNECTIVITY, *supra* note 153, at 1.
168. 85 Fed. Reg. 54282.
169. *RPBB Map*, *supra* note 145.
170. *Id*.
171. *See* discussion *infra* Section IV.A.
172. *E.g.*, Amanda Jahshan, *NEPA: The Magna Carta of Environmental Law*, NAT. RES. DEF. COUNCIL (July 26, 2013), https://www.nrdc.org/experts/amanda-jahshan/nepa-magna-carta-environmental-law ("You might already know that the National Environmental Policy Act (NEPA) paved the way for our country's existing environmental protections. What you might not know is

obliges agencies to "look before they leap" by requiring adequate and truthful environmental review of potentially significant environmental impacts of agency actions,[173] thereby predicting and alerting policymakers to detrimental effects to the environment.[174] Because harming an endangered species would naturally also harm the human environment, NEPA review is a logical place for agencies to begin assessing whether their actions will be prohibited, or require special precautions or permits under the ESA. Projects that might harm the RPBB, for instance, have the potential for significant impacts, meriting full environmental review in an Environmental Impact Statement (EIS) under NEPA. For example, a federally funded highway project in Illinois was required to prepare an additional EIS to assess the project's potential impact on the RPBB following the species' listing as an endangered species.[175]

NEPA coverage of impacts to the RPBB can even cancel projects in cases where NEPA review and the possibility of eventual ESA compliance delay a controversial project's timeline, such as when permit granting agencies must re-analyze the project.[176] In June 2020, for example, environmental organizations fighting the Atlantic Coast gas pipeline petitioned the Federal Energy Regulatory Commission (FERC) to redo its NEPA analysis to account for new information, including new RPBB surveys with more sightings along the pipeline's proposed route, and to consider alternatives to the project.[177] As discussed more below, federal courts agreed with the challengers that the agency failed to properly assess threats to the RPBB and ordered

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that it has gained international celebrity, earning the moniker—the 'Magna Carta' of environmental law.").

173. *Id.*

174. For more information on NEPA and recent rulemaking developments implementing NEPA, see *NEPA Environmental Review Requirements*, ENV'T & ENERGY L. PROGRAM (Aug. 15, 2018), https://eelp.law.harvard.edu/2018/08/nepa-environmental-review-requirements ("Regulatory Tracker" webpage); *CEQ NEPA Regulations*, NEPA, https://ceq.doe.gov/laws-regulations/regulations.html (last visited Feb. 20, 2022) (linking to information on CEQ's Interim Final Rule and Phase 1 and Phase 2 rules to reverse regulatory changes under the Trump administration).

175. Petzel v. Kane Cnty. Dep't of Transp., No. 16-cv-5435, 2017 WL 2880880, at *2 n.2 (N.D. Ill. July 6, 2017).

176. *NEPA Environmental Review Requirements*, *supra* note 174.

177. Ethan Howland, CQ Roll Call, *FERC Asked to Revise Environmental Analysis for Atlantic Coast Pipeline*, 2020 CQFENRPT 0811 (June 2, 2020), 2020 WL 2847307.

FERC to redo its environmental review before reissuing necessary permits for project completion.[178] On July 5, 2020, the project was officially canceled.[179]

NEPA review does not require agencies to prevent species impact, only to analyze what the environmental impacts might be.[180] Still, its burden on the agency mandates extra scrutiny on projects, often revealing whether projects are in the public's interest.[181] If a review demonstrates the environmental harm of a government action outweighs any potential benefits, then the public and regulators may unite against the project because of the information revealed under NEPA.[182] But even without enlightened public engagement, a thorough environmental review can also trigger the substantive requirements of the ESA—a law that is well-known to favor environmental protection over short-term profits.[183]

4. Bee Successes in the Courts

While NEPA and other environmental review laws (such as Minnesota's state version, the Minnesota Environmental Policy Act (MEPA)[184]) are an entry-point to requiring governments to

178. *Infra* Section II.C.4.a.

179. *Dominion Energy, Duke Energy Cancel the Atlantic Coast Pipeline*, BIC MAG. (July 6, 2020), https://www.bicmagazine.com/projects-expansions/midstream/dominion-energy-duke-energy-cancel-the-atlantic-coast-pipeli ("This was a necessary decision given the legal uncertainties facing the project, and we deeply regret that we were unable to complete this project.").

180. 42 U.S.C. § 4332.

181. *See id*. (describing the project consequences agencies must consider under NEPA).

182. 42 U.S.C. § 4321 ("The purposes of this chapter are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.").

183. *See also Timber Wars Episode 1: The Last Stand*, OR. PUB. BROAD. (Jan. 29, 2022), https://www.opb.org/show/timberwars. While the ESA alone may not deserve all the negative credit it gets for halting projects, it certainly is a stronger standard than NEPA when judged by its substantive standard that prohibits unpermitted taking of a listed species.

184. MINN. STAT. § 116D (2021). For a comprehensive historic perspective on MEPA and MERA, see Stephanie Hemphill, *Protecting Minnesota's Natural Resources in Law*, MINN. HIST. MAG., Winter 2018–19, at 164, 165, http://collections.mnhs.org/MNHistoryMagazine/articles/66/v66i04p164-176.pdf.

assess impacts on endangered species, such analyses (if they find the potential for listed-species impacts) lead to a much more prescriptive federal regime protecting these species. The combination of these precautionary environmental review requirements and the prohibitive ESA means that would-be bee protectors have an array of legal tools at their disposal. Even in just the past few years since the RPBB's ESA listing, environmental advocates have found some success in preventing or redirecting projects that did not fully take into account the potential impacts on endangered bees.[185]

a. Atlantic Coast Pipeline

Numerous commentators have summarized the Atlantic Coast Pipeline lawsuits in the Fourth Circuit, [186] and this article will not reproduce those analyses. The pipeline project was planned to carry gas south from West Virginia, through Virginia and North Carolina, crossing federal forest and the Appalachian Trail.[187] FERC, the U.S. Forest Service (USFS), and the National Park Service (Park Service) were federal agencies with permit granting authority over the disputed land.[188] Before

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185. *E.g.*, Robert Branan, *Atlantic Coast Pipeline: Fourth Circuit Finds Continued Shortcomings in Required Endangered Species Act Review*, N.C. COOP. EXTENSION, https://farmlaw.ces.ncsu.edu/2019/08/atlantic-coast-pipeline-fourth-circuit-finds-continued-shortcomings-in-required-endangered-species-act-review (last updated Nov. 2, 2019) ("The Atlantic Coast Pipeline (ACP) – the 600 mile conveyance of natural gas from West Virginia to the Virginia and North Carolina coasts – faces continuing hurdles before the Federal Fourth Circuit Court of Appeals with the recent decision of Defenders of Wildlife v. Dept. of Interior, No. 18-2090 (July 26, 2019). This decision relied on jurisprudential standards of review under the Endangered Species Act to find shortcomings in the US Fish and Wildlife Service's ('FWS') assessment of the ACP's impact on certain endangered species habitat in the ACP corridor.").

186. *See, e.g.*, Robert Wear, Comment, Defenders of Wildlife v. United States Department of the Interior: *The Fourth Circuit Refuses to Back Down to Industry in their Rigid Review of Biological Opinions*, 33 TUL. ENV'T L.J. 253 (2020); Christine Tezak, *A Policy Analyst's View on Litigation Risk Facing Natural Gas Pipelines*, 40 ENERGY L.J. 209, 229–35 (2019); Travis Poulos, Note, *The Modern-Day Case of* The Lorax *Within the Fourth Circuit*, 13 ELON L.J. 291, 297–301 (2020) (telling the story of the Atlantic Coast and Mountain Valley Pipelines "through the lens of Dr. Seuss").

187. *Atlantic Coast Natural Gas Pipeline*, CHESAPEAKE BAY FOUND., https://www.cbf.org/about-cbf/locations/virginia/issues/atlantic-coast-natural-gas-pipeline.html (last visited Feb. 20, 2022).

188. *See Forest Service Release of the Final Record of Decision for the Atlantic Coast Pipeline Special Use Permit and Land and Resource Management Plan Amendments: Frequently Asked Questions*, FOREST SERV.,

granting their various permits, these agencies had to consult with the FWS under ESA Section 7, and obtain a formal assessment of RPBB risks, because the project was close to known RPBB habitat.[189]

The project was opposed by a large coalition of environmental justice and conservation groups, who filed many legal challenges to federal agency permit approvals.[190] Atlantic Coast would have needed a pumping station in Union Hill, a historic African American community founded by freed slaves, and route through low-income rural communities and Indigenous lands without the consent of the relevant communities.[191] When criticized that the Union Hill pumping station would burden a community mostly composed of minorities with the pipeline's immediate environmental externalities, Atlantic Coast shocked the community by hiring demographics analysts to prove that the town was predominantly white.[192] The Virginia Air Board approved a key permit for the pipeline based on Atlantic Coast's new demographic projections, but the Fourth Circuit overturned their decision a year later, criticizing the board for its "flawed analysis" of the conflicting data.[193] Ultimately, it was the RPBB presence that proved fatal to the pipeline, but the public outrage over Atlantic Coast's disregard for environmental justice concerns animated and united the opposing coalitions.[194]

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https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd564459.pdf (last visited Feb. 20, 2022).

189. Defs. of Wildlife v. U.S. Dep't of the Interior, 931 F.3d 339, 343 (4th Cir. 2019).

190. *Stop the Pipelines*, SIERRA CLUB, https://www.sierraclub.org/virginia/vapipelines (last visited Feb. 20, 2022).

191. Lyndsey Gilpin, *A Pipeline Runs Through It*, GRIST (Dec. 3, 2019), https://grist.org/Array/tracing-the-path-of-dominion-energys-atlantic-coast-natural-gas-pipeline; Elly Benson, *Environmental Injustice in Union Hill*, SIERRA CLUB (July 1, 2019), https://www.sierraclub.org/articles/2019/07/environmental-injustice-union-hill.

192. Ben Paviour & Abi Cole, *A Historically Black Town Stood in the Way of a Pipeline-So Developers Claimed It Was Mostly White*, GUARDIAN (Sept. 17, 2021), https://www.theguardian.com/us-news/2021/sep/16/virginia-atlantic-coast-pipeline-union-hill-historically-black-town.

193. *Id*.

194. *See, e.g*., *Roundup: Conservation Community on the Cancellation of the Atlantic Coast Pipeline*, VA. CONSERVATION NETWORK, https://vcnva.org/round up-conservation-community-on-the-cancellation-of-the-atlantic-coast-pipeline (last updated July 6, 2020) (including a compilation of celebratory comments

The oil and gas industry also watched the Atlantic Coast lawsuits closely,[195] likely realizing the RPBB or other listed species posed a significant threat to building future pipeline infrastructure.[196] Oil industry analysts even went so far as to argue that the responsible federal agencies had become too pro-industry, resulting in agency actions that were easily overturned by courts because the agencies failed to meet their mandate or acted beyond their authority.[197] The oil and gas pipeline industry is facing an existential threat if significant pipeline rerouting is sufficient to kill the overall project (when the cost of finding new pipeline corridors or facing high risks of litigation exceeds project profitability).[198] Moreover, even small rerouting to avoid endangered species can require a significant regulatory reassessment, as an oil industry analyst explained:

> If the project route requires more than a ¼-mile variance, then Atlantic Coast would need to amend its FERC-issued certificate and construction of a relocated segment (not to mention its in-service timeline) would become dependent on the timing of that review. How long it might take FERC to review a certificate amendment would depend on the scope of any such change and the extent of continued opposition to the project . . . . [I]t would be reasonable to expect FERC to work expeditiously on a potential re-route, but certificate

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from several people involved in the coalition against the pipeline, none of which mention bees or any other endangered species).

195. *Recent Case Decisions*, 5 OIL & GAS, NAT. RES. & ENERGY J. 375, 399 (summarizing Defs. of Wildlife v. U.S. Dep't of the Interior, 931 F.3d 339 (4th Cir. 2019)).

196. "The ESA can serve as an obstacle to fossil fuel production—and thereby limit GHG emissions—even in the absence of critical habitat designation." Landa, *supra* note 10, at 10507–08 (discussing the Atlantic Coast Pipeline legal dispute and the similar ESA fight against the Mountain Valley Pipeline); *see also id.* at 10507 (asserting that critical habitat designation under the ESA "can prevent oil and gas development in habitat designated as critical for threatened and endangered species").

197. Tezak, *supra* note 186, at 214. "Agency efforts to fast-track approvals can result in major delays and I think Atlantic Coast's experience illustrates that the ESA may be a particularly substantive hurdle. Project opponents of the Atlantic Coast Pipeline successfully appealed multiple federal approvals that feed into the FERC's certificate review that I view as examples of poorly executed 'enabling' efforts slowing a project down instead of accelerating its progress." *Id.* at 229.

198. *See id.* at 235*; see also Dominion Energy and Duke Energy Cancel the Atlantic Coast Pipeline*, DOMINION ENERGY (July 5, 2020), https://news.dominionenergy.com/2020-07-05-Dominion-Energy-and-Duke-Energy-Cancel-the-Atlantic-Coast-Pipeline (discussing how litigation risk makes "the project too uncertain to justify investing more shareholder capital").

> amendments can take a year or more for review, depending on scope, from the date the modification is sought.[199]

In the 2019 court opinion that required agency reassessment of the RPBB and other listed species impacts of Atlantic Coast, the Fourth Circuit agreed with challengers that the FWS's formal assessment: failed to justify its inadequate assumptions about RPBB nest density; was inconsistent with the FWS's own evidence because allowing some bee mortality was inconsistent with the FWS's position on the importance of each colony; did not correctly account for the overall status of the species; and failed to consider RPBB recovery, focusing only on RPBB survival, inconsistent with the ESA's standards.[200] The court also found fault with the FWS's jeopardy determination for one other species and lack of enforceable take limits for two other species,[201] handing the FWS a hefty do-over in all of its ESA analyses for the project.[202] While the companies did not list these species impacts among the regulatory issues leading to an "unacceptable layer of uncertainty and anticipated delays for the" Atlantic Coast Pipeline,[203] regulatory and legal delay from this decision before the project's ultimate cancellation was made possible in part because of a small bee's legal right to not be ignorantly crushed in the name of large energy infrastructure.[204]

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199. Tezak, *supra* note 186, at 235.

200. *Defs. of Wildlife*, 931 F.3d at 349–55 (holding that the FWS's "conclusion that the [Atlantic Coast Pipeline] will not jeopardize the RPBB in Bath County, Virginia, is arbitrary and capricious because it runs counter to available evidence, relies on data without providing a meaningful basis for that reliance, fails to consider the species's status as a whole, and fails to consider the pipeline's impacts on RPBB recovery").

201. *Id.* at 358–66. As part of the consultation requirements under section 7 of the ESA, agencies must work with the FWS to determine whether an action is likely to "jeopardize the continued existence" of a listed species. 16 U.S.C. § 1536(a)(2).

202. *Defs. of Wildlife*, 931 F.3d at 366.

203. DOMINION ENERGY, *supra* note 198.

204. Ultimately, the companies that sought to build the Atlantic Coast Pipeline addressed the endangered bee issue too little and too late. In a both comedic and tragic attempt to address the issue of bees while redirecting attention away from its legal problems, the now-defunct Atlantic Coast Pipeline project website still contains information on how not to be stung by bees. *Project Update*, ATLANTIC COAST PIPELINE (Aug. 2017), https://atlanticcoastpipeline.com/resources/news/docs/acp-newsletter-august.pdf. The generic advice on avoiding bee stings is copied from another source and doesn't mention the RPBB or habitat issues at all, but instead suggests that people should, among other things, cover sugary beverages and, mysteriously, "avoid floral prints." *Id.* This August 2017 gesture towards addressing the issue of bees was not enough to

An attorney leading the case against the Dakota Access Pipeline,[205] in an event aptly called "The Future of Pipelines," opined that while his "suspicion is that it wasn't a bunch of die-hard rusty patched bumble bee aficionados that led the movement against" the Atlantic Coast pipeline, each pipeline project has a unique set of facts and opportunities for legal challenges.[206] Even if the environmental justice advocates campaigning against the pipeline were not all RPBB conservationists at heart, it is important to acknowledge and remember that many of them had their own reasons for opposing the Atlantic Coast pipeline. This large coalition of different groups banded together to oppose the project for many reasons beyond the protection of one imperiled bee.[207] While its effect on protected species may have been one of the final nails in the coffin for this pipeline, the groups' sustained efforts regarding all of the project's impacts and permits were necessary

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save the project from the legal dispute humming in the background. Some companies, learning from the Atlantic Coast Pipeline's downfall, are attempting to get ahead of the RPBB issue, although not always in ways that actually protect the bees. For example, one of the biggest polluters in the Twin Cities metro area (a Koch Industries refinery that processes Canadian tar and oil from Line 3's group of predecessor pipelines) has released glossy press materials on bees, specifically relating to the closeness of its facility to the RPBB. *See* Press Release, Chris Duffy, FLINT HILLS RES., Federally Endangered Bee Species Discovered at Pine Bend Bluffs Natural Area in Dakota County (Oct. 22, 2019), https://pinebendrefinery.com/wp-content/uploads/2019/10/10-22-19-bumble-bee-press-release.pdf (announcing the discovery of the RPBB in the Pine Bend Bluffs Natural Area). The facility is the third-largest source of greenhouse gas emissions in the state, and its indirect emissions from vehicle fuels and other combustible products have an even larger impact on the climate and air pollution experienced in the region. LIFE AND BREATH: HOW AIR POLLUTION AFFECTS HEALTH IN MINNESOTA, MINN. POLLUTION CONTROL AGENCY (June 2019) https://www.pca.state.mn.us/sites/default/files/aq1-64.pdf. That the refinery has not directly killed an individual RPBB in its immediate vicinity does not make up for the full death toll that it has likely caused by increasing pollution and contributing to climate change throughout the region and world. *See id*.

205. For more information on the Dakota Access Pipeline, which does not intersect with the RPBB's legal protections, *see generally Dakota Access Pipeline*, EARTHJUSTICE, https://earthjustice.org/case/dakota-access-pipeline (last updated Sep. 22, 2021).

206. Jan Hasselman, Staff Att'y, Earthjustice, The Future of Pipelines (Jan. 2021) *in* 51 ENVTL. L. REP. 10005, 10010–11.

207. *See generally Stop the Pipelines*, *supra* note 190 (outlining various interest groups who advocate against the pipeline).

conditions precedent for the RPBB's court case to have the impact it ultimately did.[208]

b. Lone Lake Park Mountain Bike Trail

In an infrastructure project of a different sort, the Minnesota city of Minnetonka similarly sought to build through RPBB habitat without properly vetting the project and ensuring that no bees would be harmed.[209] While this dispute was on a vastly different scale, it is nonetheless a useful case study for how solid scientific data on RPBB occurrence and population size can impact policy and environmental conditions at the local level.

On August 5, 2020, the Center for Biological Diversity (CBD), a nonprofit organization focused on conserving threatened species in order to save all life on earth,[210] informed the Minnetonka government that if they continued with plans to build a mountain-bike course in Lone Lake Park through known RPBB habitat, CBD would sue them for violating the ESA and for the incidental take of an endangered species.[211] CBD's intent-to-sue warning letter noted:

> Lone Lake Park is designated as a "High Potential Zone" for the rusty patched bumble bee. In 2018, more than 30 of the endangered bees were identified at the Park, and scientists estimated that the Park's population represented 13% of the total population of the bees in Minnesota and 6% of the remaining populations in North America. In July of this year, several individual rusty patched bumble bees were

208. *See* James Steinbauer, *The Atlantic Coast Pipeline: Risky and Costly . . . and Unnecessary*, SIERRA CLUB (Aug. 27, 2019), https://www.sierraclub.org/sierra/atlantic-coast-pipeline-risky-and-costly-and-unnecessary (summarizing additional environmental concerns and legal victories against the project in years leading up to the final legal dispute).

209. Jennifer Bjorhus, *Minnetonka Faces Federal Lawsuit Over Mountain Bike Trail Through Rare Bumblebee Haven*, STAR TRIB. (Aug. 6, 2020), https://www.startribune.com/minnetonka-faces-federal-lawsuit-over-mountain-bike-trail-through-rare-bumblebee-haven/572020192.

210. *About the Center*, CTR. BIOL. DIVERSITY (last visited Apr. 18, 2020), https://www.biologicaldiversity.org/about.

211. Formal Warning Letter from Collette Adkins, Senior Att'y, Ctr. for Biological Diversity, to the City of Minnetonka (Aug. 5, 2020), https://www.biologicaldiversity.org/species/invertebrates/pdfs/Rusty-Patched-in-Lone-Lake-Sec-9—NOI-8-5-2020.pdf.

> again documented in Lone Lake Park – and this time a mere feet from the proposed trail corridor.[212]

CBD demanded that, consistent with the ESA, the city government prepare a habitat conservation plan and apply for a federal ESA Section 10 incidental take permit[213] before proceeding with construction of the trail.[214] CBD estimated that by creating a 5-mile mountain bike trail which would require clearing a 10-foot corridor through the park, the proposed project would disturb fifty acres of park land, equaling half of the available bee habitat.[215] Additionally, CBD alleged the project would destroy important food sources and nesting sites.[216] Despite the fact that the city actively coordinated with the FWS regarding surveys for bees and attempts to not kill them, CBD asserted that those efforts fell short of the ESA's legal requirements.[217]

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212. *Id*. at 5. The ESA requires that aggrieved parties send a formal warning letter describing their "intent to sue" at least sixty days before commencing a citizen suit. 16 U.S.C. § 1540(g)(2).

213. As CBD explained in its letter to the city: "Under Section 9 of the ESA, it is unlawful for any person to 'take' an endangered species. 16 U.S.C. § 1538(a)(1)(B). To 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. 16 U.S.C. § 1532(19). 'Take' includes direct as well as indirect harm and need not be purposeful. See 50 C.F.R. § 17.3 (definitions of 'harass' and 'harm'); Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687, 704 (1995). In fact, a take may even be the result of an accident. See Nat'l Wildlife Fed'n v. Burlington N. R.R., 23 F.3d 1508, 1512 (9th Cir. 1994)." Adkins, *supra* note 211, at 1.

214. *Id.* It also explained that under the ESA, the city would be required to "minimize and mitigate" impacts on RPBB takes "to the maximum extent practicable." *Id.* at 3 (citing 16 U.S.C. § 1539(a)(2)(B)).

215. *Id*. at 5.

216. Soil disturbance and the removal of decaying vegetation "will cause direct destruction and disturbance of present and potential nesting sites and overwintering sites" for the RPBB. *Id.*

217. CBD's intent-to-sue letter noted that the FWS told Minnetonka to conduct RPBB surveys for its project, but the city had only acted on that suggestion in June 2020, meaning surveys were ongoing while destructive preparation work was in progress. *Id*. at 8. Minnetonka had worked with the FWS, which had prepared a "Recommendations for Mountain Bike Trail Construction within Rusty Patched Bumble Bee (RPBB) High Potential Zones" guidance document for the city in 2019, updated in spring 2020. *Id*. at 2. The city actively coordinated with the FWS on the RPBB issue and planned to follow this FWS guidance on minimizing harm to the bees, but determined that it would not apply for an incidental take permit, a decision which CBD clearly took issue with. *Id*. at 8; *See Lone Lake Park Multi-Use Mountain Bike Trail*, CITY OF MINNETONKA, https://www.minnetonkamn.gov/services/projects/park-and-trail-projects/lone-lake-park-multi-use-mountain-bike-trail (last visited

Before the 60-day waiting period on the intent-to-sue letter had elapsed, the city and CBD announced a settlement and rapprochement.[218] CBD's press statement explained: "Minnetonka will convert one acre of turf at Lone Lake Park into pollinator habitat and earmark $20,000 for creating and improving habitat for the bee on private and public lands in the city. The city has also agreed to limit use of pesticides on city property."[219] While the bike trail construction project would continue, its impact on the RPBB population would be mitigated by restrictions on soil disturbance and tree removal.[220] In the announcement the mayor of Minnetonka thanked CBD for their conservation work and expressed his city's ongoing commitment to protecting the environment and bee habitat.[221] CBD's staff scientist said that "[w]ith these new conservation measures for the bee, Minnetonka's setting a standard for other municipalities in the Midwest."[222]

Feb. 26, 2022) (outlining progress being made on the bike trail simultaneously with RPBB surveys); *see also* Press Release, Ctr. for Biological Diversity, Lawsuit Launched to Protect Minnesota's Endangered Rusty Patched Bumble Bee (Aug. 5, 2020) https://biologicaldiversity.org/w/news/press-releases/lawsuit-launched-to-protect-minnesotas-endangered-rusty-patched-bumblebee-2020-08-05 ("Instead of following the process set by the Endangered Species Act, the city is relying on a cursory and voluntary guidance document from the Fish and Wildlife Service that experts say will not protect the rusty patched bumblebee.").

218. Press Release, Ctr. for Biological Diversity, Agreement Reached to Protect Endangered Rusty Patched Bumble Bee at Minnetonka's Lone Lake Park (Sept. 22, 2020) https://biologicaldiversity.org/w/news/press-releases/agreement-reached-to-protect-endangered-rusty-patched-bumblebee-at-minnetonkas-lone-lake-park-2020-09-22.

219. Settlement Agreement (Sept. 19, 2020), https://www.biologicaldiversity.org/species/invertebrates/pdfs/Rusty-patched-Bumblebee-Minnetonka-Settlement-Agreement.pdf; *see also* Press Release, Ctr. for Biological Diversity, Agreement Reached to Protect Endangered Rusty Patched Bumble Bee at Minnetonka's Lone Lake Park (Sept. 22, 2020) https://biologicaldiversity.org/w/news/press-releases/agreement-reached-to-protect-endangered-rusty-patched-bumblebee-at-minnetonkas-lone-lake-park-2020-09-22 (outlining various elements of the settlement agreement).

220. Settlement Agreement, *supra* note 219.

221. *Id.*; *accord Lone Lake Park Multi-Use Mountain Bike Trail*, CITY OF MINNETONKA (September 22, 2020), https://www.minnetonkamn.gov/services/projects/park-and-trail-projects/lone-lake-park-multi-use-mountain-bike-trail (quoting Minnetonka mayor Brad Wiersum thanking CBD for their environmental efforts).

222. *See Lone Lake Park Multi-Use Mountain Bike Trail*, *supra* note 221 (quoting Minnetonka major Brad Wiersum).

Unlike some communities in the path of the Atlantic Coast Pipeline,[223] Minnetonka is not an environmental justice community. The median household income is $95,630, and 66.1% of housing is owner-occupied.[224] Approximately 85% of the population is white, only 15.3% of households make less than $35,000 per year, and more than 95% of people live above the poverty line.[225] In 2019, when Minnesota's overall poverty rate was 9%, the census tract just north of Lone Lake Park had a 1% poverty rate.[226]

Perhaps unsurprisingly, in addition to race and class-based privilege, the Minnetonka community is also fortunate enough to have additional capacity when it comes to RPBB conservation. A leading bee and wasp naturalist and educator frequents Lone Lake Park and consistently documents the RPBB sightings that she makes in official records.[227] She also provided photography that supported CBD's warning letter.[228] It follows that Lone Lake Park's unique status, having more than thirty well-documented RPBB sightings, is as much a statement about how many observations one qualified scientist can make as it is about how many bees are actually present.

What might be more surprising is that some of the conservation measures approved by both parties in the settlement were not necessarily all relevant to the RPBB,

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223. *E.g.*, Gilpin, *supra* note 191 (discussing environmental justice issues at play with the Atlantic Coast pipeline).

224. *Minnetonka Data*, MINN. COMPASS https://www.mncompass.org/profiles/city/Minnetonka (last visited Feb. 20, 2022) (graphing data from the U.S. Census Bureau on Minnetonka residents).

225. *Id.*

226. *Population Characteristics Query*, MINN. DEP'T HEALTH, https://data.web.health.state.mn.us/population_query (last visited Feb. 20, 2022) (data generator showing poverty levels in previous years, in this case 2019); *Poverty Tract*, MINN. DEP'T HEALTH (2017), https://mndatamaps.web.health.state.mn.us/interactive/povertytract.html (interactive map showing poverty levels by area in 2019, where the relevant tract for Minnetonka is 27053026103).

227. Heather Holm, INATURALIST, https://www.inaturalist.org/people/heatherholm (last updated Feb. 22, 2022) (profile for and catalog of Heather Holm's bee and wasp sightings). Indeed, the scientist who recorded most of those sightings lives in Minnetonka. Heather Holm, *About the Author*, POLLINATORS NATIVE PLANTS, https://www.pollinatorsnativeplants.com/about-the-author.html (last visited Feb. 22, 2022).

228. Adkins, *supra* note 211, at 4, 5 n.15; *see also* Press Release, Ctr. for Biological Diversity, *supra* note 218 (quoting and providing contact information for Heather Holm).

though they benefitted pollinators more generally. In addition to the controls noted above regarding precautions for trail building and money for other changes to land use,[229] the settlement called for installing a "bee lawn,"[230] which is when low-growing flowers are planted in turfgrass.[231] While the one-acre bee lawn required in the settlement might benefit some pollinators and add other additional benefits to the environment (water filtration, insect biodiversity, lower chemical and management inputs),[232] there is no concrete scientific evidence that it would be beneficial to the RPBB. Plant species used in bee lawns are not as attractive to diverse bumble bee communities as other common Minnesota native prairie plants, and some are introduced species known to spread aggressively into natural areas and outcompete native plants growing in those places.[233] Indeed, as the settlement was being worked out, the naturalist who provided the observations underpinning the lawsuit explained this scientific reasoning to Minnetonka staff to illustrate why a bee lawn would do more harm than good.[234] But Minnetonka was resistant to this information without hearing it from institutional sources like the FWS or the University of Minnesota.[235]

Moreover, without any pressure on the city from the FWS to go through the federal permitting process or otherwise provide enforceable standards to protect the RPBB,[236] the only way to achieve any benefit for the bee was through a settlement that

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229. *See supra* notes 217–20 and accompanying text; *see also* Settlement Agreement, *supra* note 219.

230. Settlement Agreement, *supra* note 219, at (4)(c).

231. Normally these areas are used and mowed similar to turf but offer additional plants for bees. *See Planting and Maintaining a Bee Lawn*, UNIV. OF MINN. EXTENSIONS (2021), https://extension.umn.edu/landscape-design/planting-and-maintaining-bee-lawn.

232. James Wolfin, Floral Enhancement of Turfgrass Lawns for the Benefit of Bee Pollinators in Minneapolis, Minnesota (Jan. 2019) (MS Theses, University of Minnesota) (ProQuest).

233. Simanonok et al., *supra* note 72.

234. Emails Exchanged Between Heather Holm, and Julia Brokaw (Apr. 25–26, 2021) (on file with authors).

235. *Id.*

236. The FWS provided a guidance document to the city initially for construction in high potential RPBB zones, and then took the position that providing the guidance was all they needed to do. *See* Adkins, supra note 211, at 7 n.34. They chose to be completely hands-off with regard to the settlement. *See id.* and personal communications with parties on file with the authors.

compromised its conservation with the objectives of the city.[237] Importantly, this is not principally due to either of the settling parties' positions, but rather is based on weak suggestions from the expert agency in charge of protecting the RPBB that obscure the nuances about the benefits of bee lawns for the RPBB.[238] Additionally, the scientific uncertainty around the bee, discussed throughout this article, presents another major difficulty in arriving at a settlement that best works for the RPBB.[239]

The Lone Lake Park settlement may provide an example of some things that work well in RPBB cases, and highlights some opportunities for adjustments based on scientific caution. Having the detailed records of RPBB occurrence and committed advocates is a necessary prerequisite to building an ESA case and bringing a credible threat of litigation, and in this respect CBD was well-prepared to take on Minnetonka. However, the resolution and settlement depended in part, and too heavily, on suggestions from the very same agency—the FWS—who in the Atlantic Coast Pipeline case repeatedly fell short of adequately protecting the RPBB and other listed species.[240] In this case the FWS merely suggested that a mountain bike trail and other development could be done slightly differently, falling far short of assessing what would be the best conditions to foster RPBB recovery in an area where they are known to reside. This issue clearly demonstrates the importance of incorporating the local knowledge and expertise of community naturalists with formal expert opinions, such as from researchers who specialize in bumble bee biology in academic or advocacy circles, in the settlement of RPBB cases, to ensure decisions which are

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237. Promotional materials and advocacy efforts can present additional complications; for example, the Minnesota Board of Water and Soil Resources uses the RPBB in the logo of their "Lawns to Legumes" program, which provides cost-share grants for Minnesotans to plant bee lawns as a part of pollinator habitats. *Lawns to Legumes: Your Yard Can BEE the Change*, MINN. BD. WATER & SOIL RES., http://bwsr.state.mn.us/l2l (last visited Apr. 9, 2022). Adding to the confusion, the UMN Bee Laboratory has also been reluctant to publicly discuss the relevance of bee lawns on the conservation of the RPBB. *See* Settlement Agreement, *supra* note 219, at (5)(b) (conflating the bee lawns promoted by "Lawns to Legumes" with habitats most useful to the RPBB).

238. Adkins, *supra* note 211.

239. Discussed further *infra* Section IV.D.

240. *See* Settlement Agreement, *supra* note 219.

grounded in science and are less likely to be hampered by weak government participation.

III. RACIAL INJUSTICE AND BEES IN MINNESOTA

Many communities in Minnesota do not have resident bee scientists even though they are within, or proximate to, known RPBB habitats. In fact, much of the Twin Cities metro area has been identified in FWS mapping (based on observations like those made in Lone Lake Park) as "high potential zones" where the RPBB is "likely present."[241] Large portions of the Twin Cities metro area are designated primary dispersal zones, indicating that they should be surveyed for the RPBB.[242] And even if there is no current RPBB presence, habitats should be preserved and fostered, since RPBBs are likely to disperse there from the high potential zones they are already known to occupy.

But without qualified resident scientific staff, most communities in these zones lack the prerequisite knowledge and data to protect their RPBBs and themselves from potentially harmful projects. A recent dispute between the City of Minneapolis ("Minneapolis" or "City") and one of its most-environmentally-impacted Green Zone neighborhoods[243] over a destructive City project helps to illustrate the data gap between those who have scientific know-how and those who do not. Also, Minnesota's own oil pipeline dispute—over the Line 3 project—similarly shows how, without data, a listed species may not be given the attention it is due.

A. EAST PHILLIPS AND THE ROOF DEPOT

The East Phillips neighborhood of South Minneapolis is only an eleven-mile walk, bike ride, or drive from Lone Lake Park in Minnetonka, but the two communities are vastly different demographically. "East Phillips is one of Minneapolis's poorest neighborhoods with the City's largest Native American

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241. *RPBB Map*, *supra* note 145 (showing the zones where the rusty patched bumble bee is likely to be found).

242. *Id*.

243. *Green Zones Initiative*, CITY MINNEAPOLIS, https://www2.minneapolismn.gov/government/departments/coordinator/sustainability/policies/green-zones-initiative (last visited Feb. 17, 2022) (describing the plans that the green zones have to support the economic development and improve the health of vulnerable communities).

population."[244] More than half of the households of the larger Phillips neighborhood have an income of less than $35,000 per year.[245] Thirty-six percent of residents are below the poverty line.[246] Seventy-three percent of residents are renters, and 70.8% of community residents have moved in since 2010.[247] Thirty-eight percent of Phillips residents were born outside of the United States, and 21.5% of residents have a disability.[248] Seventy-one percent of Phillips residents are BIPOC.[249] East Phillips is also home to Little Earth of United Tribes housing community, the first Native-preference low income housing community in the United States.[250] American Indian or Alaskan Native people make up 18.2% of the neighborhood.[251]

The East Phillips neighborhood is also disproportionately impacted by industrial and urban pollution. In 2017, Minneapolis designated East Phillips the "Southside Green Zone" because it is a low-income and majority Indigenous and community of color area experiencing the harms of "environmental conditions such as traffic and stationary pollution sources, brownfield sites, blight and substandard housing."[252] The area was contaminated by decades of arsenic and lead pollution from a pesticide manufacturing plant, at a location now referred to as the Arsenic Triangle.[253] The U.S.

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244. Avian Ciganko-Ford & Sam Ly, *Drowning Our History: Minneapolis's Water Yard Agenda*, CLIMATES OF INEQUALITY (2018), https://climatesofinequality.org/project/drowning-our-history-minneapoliss-water-yard-agenda (describing East Phillips as an environmental justice neighborhood where the communities can protest the building of facilities that would increase pollution).

245. *Phillips Community Data*, MINN. COMPASS (2022), https://www.mncompass.org/profiles/city/minneapolis/phillips (providing data regarding the age, sex, race, income, housing, and other information about the Phillips community).

246. *Id*. (showing data between 2015 and 2019 that relates poverty and age).

247. *Id*. (showing the data regarding housing in Phillips).

248. *Id*. (showing who lives in Phillips).

249. *Id*. (showing the race and ethnicity of people in Phillips).

250. *See About*, LITTLE EARTH, https://www.littleearth.org/about (last visited Feb. 20, 2022) (describing the history and current status of the Little Earth housing community).

251. Ciganko-Ford & Ly, *supra* note 244.

252. *Green Zones Initiative*, *supra* note 243 (explaining the need for the Green Zones Initiative).

253. Erin Niehoff, *Poor Governance to Bring New Toxicity to 'Arsenic Triangle'*, MINNPOST (Aug. 25, 2020), https://www.minnpost.com/community-voices/2020/08/poor-governance-to-bring-new-toxicity-to-the-arsenic-triangle (explaining how the City Council's decision to use the Roof Depot site for city

Environmental Protection Agency (EPA) designated the area as a Superfund site because of the Reade Manufacturing Company's arsenical pesticide legacy pollution, and over a period of years state and federal agencies oversaw the replacement of much of the contaminated soil throughout the neighborhood.[254] But serious pollution sources remain, specifically the Smith Foundry (an active metal fabrication business) and Bituminous Roadways (an asphalt mixing plant).[255]

Immediately adjacent to the Arsenic Triangle, and just across the street from the foundry and asphalt facility, lies the Roof Depot building. It is a large warehouse which sits atop and covers a huge amount of legacy pollution, including underground tanks and untold amounts of arsenic and other metal contaminated soil.[256] Minneapolis has announced plans to disrupt that pollution, not to mention residents' lives, to build and expand an industrial facility in East Phillips to store water infrastructure and work on city vehicles—while also servicing salt trucks and preparing hot asphalt for use elsewhere in the city.[257]

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operations will harm the East Phillips community both environmentally and financially, and asking the council to reconsider).

254. *CMC Heartland Lite Site*, MINN. DEP'T AGRIC., https://www.mda.state.mn.us/chemicals/spills/incidentresponse/superfund/cmcheartlandlite (last visited Feb. 22, 2022) (describing the site's soil and groundwater contamination and how the site was cleaned up).

255. *About*, SMITH FOUNDRY, http://www.smithfoundry.com/about (last visited Feb. 22, 2022); *About Us*, BITUMINOUS ROADWAYS, https://bitroads.com/About-Us (last visited Feb. 22, 2022); *see also* Susan Du, *Hope in the Arsenic Triangle: A Forgotten Neighborhood Fights with Minneapolis for its Future*, CITYPAGES (May 29, 2019), https://web.archive.org/all/20190529144250/http://www.citypages.com/news/hope-in-the-arsenic-triangle-a-forgotten-neighborhood-fights-with-minneapolis-for-its-future/510528131 (describing current polluters still based in the "Arsenic Triangle" area of East Phillips).

256. Amended Complaint ¶¶ 26–28, E. Phillips Neighborhood Inst., Inc. v. City of Minneapolis, No. 27-CV-20-8414 (Minn. Dist. Ct. Aug. 16, 2020) (intending to halt the Hiawatha Campus Expansion Project, the East Phillips Neighborhood Institute brought this legal action against the Minneapolis Public Works Department); *Environmental Assessment Worksheet for Hiawatha Maintenance Facility Expansion*, CITY MINNEAPOLIS (Jan. 28, 2021) [hereinafter *Hiawatha EAW*], https://www2.minneapolismn.gov/media/content-assets/www2-documents/business/PW-Hiawatha-Facility-Expansion-EAW-(PDF),wcmsp-227306.pdf; Comments submitted on the proposed EAW by EPNI (on file with authors).

257. *See Hiawatha Campus Expansion*, CITY MINNEAPOLIS, https://www2.minneapolismn.gov/government/projects/public-works/hiawatha-campus-expansion/ (last visited Feb. 22, 2022) (explaining the inadequacies of the

The community is unique in another way: East Phillips has been so impacted by environmental pollution that, before Minneapolis designated it a Green Zone, the Minnesota Legislature attempted to protect the neighborhood by making it more difficult to obtain permits that would create cumulative environmental harms in the community.[258] Since 2008, the "Clark-Berglund Cumulative Pollution Law" has required additional cumulative impacts analysis before the Pollution Control Agency (PCA) issues any permit that would deposit pollution throughout the neighborhood.[259] Large projects proposed for the neighborhood have had to submit (and re-submit) detailed analyses about how their facilities would contribute to the environmental burden facing residents.[260] This is the neighborhood, designated by both the Legislature and the City itself as overburdened with pollution, that the City chose as the optimal location for storing its water infrastructure and servicing its fleet of heavy vehicles.

But before the Roof Depot could be leveled for the project, Minneapolis was sued.[261] Not for harm to listed bees, but for foreseeable and considerable harm to the people and human environment that the City's project would entail.[262] The project

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current Minneapolis water distribution facility and how the campus expansion will help the communities of Minneapolis).

258. *See* MINN. STAT. § 116.07.4a (2021) (explaining the powers and duties of the Pollution Control Agency); Ciganko-Ford & Ly, *supra* note 244.

259. REFERENCE DOCUMENT FOR MINNESOTA STATUTE § 116,07, SUBDIVISION 4A, MINN. POLLUTION CONTROL AGENCY (2016), https://www.pca.state.mn.us/sites/default/files/aq1-42.pdf (explaining how permits are obtained and the process of the cumulative impacts analysis); *Air Permitting in South Minneapolis*, MINN. POLLUTION CONTROL AGENCY, https://www.pca.state.mn.us/air/air-permitting-south-minneapolis (last visited Feb. 22, 2022) (describing how the 2008 law requires the Minnesota Pollution Control Agency to analysis the "cumulative levels and effects of past and current pollution" before a permit may be issued).

260. WENCK ASSOCS., INC. & METRO. TRANSIT, MINN. STAT. 116.07 SUBDIVISION 4A REPORT, WENCK ASSOCS., INC. & METRO. TRANSIT (Jan. 21, 2011), https://www.pca.state.mn.us/sites/default/files/aq5-30.pdf (describing how the project will affect communities and the foreseeable risks involved).

261. Complaint, E. Phillips Neighborhood Inst., Inc. v. The City of Minneapolis, No. 27-CV-20-8414 (D. Minn. June 12, 2020), Doc. 2 [hereinafter *EPNI*]; Chao Xiong, *East Phillips Neighborhood Group Sues Mpls. To Stop Project Over Concerns For People of Color*, STAR TRIB. (June 16, 2020), https://www.startribune.com/east-phillips-neighborhood-group-sues-city-to-stop-minneapolis-project-over-concerns-for-residents-of-color/571276962.

262. Amended Complaint ¶¶ 42–44, E. Phillips Neighborhood Inst., Inc. v. City of Minneapolis, No. 27-CV-20-8414 (Minn. Dist. Ct. Aug. 16, 2020).

would unearth many tons of legacy pollution, while replacing a relatively inert and quiet building with an expansive industrial yard; residents of East Phillips were concerned that this would further decrease the health of their community and provide no benefit to people who lived in the immediate area.[263]

The East Phillips Neighborhood Institute[264] (EPNI) and one of its board members, Cassandra Holmes, brought suit against the City under the Minnesota Environmental Rights Act (MERA) and the Minnesota Environmental Policy Act (MEPA).[265] When it became apparent that the City was not planning on following the Clark-Berglund Cumulative Pollution Law, the plaintiffs joined the PCA in the lawsuit because the PCA has direct authority over Minneapolis's duty to comply with that law.[266]

In June 2020, on the day the lawsuit was filed and after EPNI had petitioned for such review, the City agreed to conduct an environmental review that it had delayed starting for five months.[267] Under MEPA's normal procedures, the City's contractor began to conduct an Environmental Assessment Worksheet (EAW)—a series of answers to twenty questions—to determine if the proposed project has the potential to cause

263. *Id.*; Xiong, *supra* note 261.

264. *See Bylaws of the East Phillips Neighborhood Institute*, EPNI (Aug. 30, 2018), https://www.eastphillipsneighborhoodinstitute.org/wp-content/uploads/2019/05/EPNI-Executed-Bylaws.pdf ("The purpose of [the EPNI] shall be to create, develop own and operate the East Phillips Indoor Urban Farm project . . . in order to promote the personal, social, environmental and economic health of the people of East Phillips and . . . promote environmental justice.").

265. *EPNI*, *supra* note 261, at 1 (requesting that defendants complete an environmental impact statement prior to the Hiawatha Expansion Project).

266. The plaintiffs also included a claim against the Minnesota Environmental Quality Board (EQB) for failing to assign a petition for environmental review to a non-conflicted agency. Instead, the EQB had referred a citizen petition to the city, making Minneapolis its own judge regarding the potential environmental harms of its proposed project. *EPNI, supra* note 261, ¶ 69 (explaining that a petition with over 200 signatories was submitted to the EQB in January 2020 without response).

267. Rather than commencing environmental review as requested in the petition filed with the EQB in January 2020, however, the City claimed that it did not have any relevant permit to trigger such review and delayed its decision. Decl. of Hilary Dvorak at 3, E. Philips. Neighborhood Inst., Inc. v. City of Minneapolis, Case No. 27-CV-20-8414 (June. 12, 2020).

significant impacts to the environment.[268] If any significant impacts are found, the City would then be compelled to perform an EIS prior to proceeding with its proposed project (similar to the standard under the federal analog, NEPA).[269] Understandably, killing people or endangered species with pollution would be the quintessential "significant impact."[270] Consistent with MEPA, the City produced a draft EAW and presented it to the public and various governmental agencies to receive comments on the analysis its contractor prepared.[271]

The East Phillips neighborhood, and the Roof Depot site that the City plans to tear down, unearth, and replace with a large maintenance facility, are partially within the "high potential zone" established by the FWS's RPBB map, and within the primary dispersal zone for conserving habitat and surveying for RPBB presence.[272] Thus the whole project site is within the bees' flight distance (Figures 4–5).[273]

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268. For the standard EAW form, see *Environmental Assessment Worksheet*, MINN. ENVTL. QUALITY BD. (July 2013), https://www.eqb.state.mn.us/sites/default/files/documents/Finalized%20EAW%20Form%20July2013.pdf.

269. *See Environmental Review 101—for Local Governments*, MINN. ENV'T QUALITY BD., https://www.eqb.state.mn.us/sites/default/files/documents/ER%20101%20-%20for%20LGUs.pdf (describing an EIS as "[a]n EAW with substantially more analysis").

270. For example, in the context of NEPA, the FAA finds that there is a significant impact to the environment if the FWS or the NMFS "determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat." FED. AVIATION ADMIN., ORDER 1050.1F, ENVIRONMENTAL IMPACTS: POLICIES AND PROCEDURES 4 (July 16, 2015), https://www.faa.gov/documentLibrary/media/Order/FAA_Order_1050_1F.pdf. The FAA also looks at numerous factors to determine whether this significance threshold has been met. *Id.* at 4–13.

271. *Hiawatha EAW*, *supra* note 256.

272. *See RPBB Map, supra* note 145. It is important to note that these "high potential zones" are often oddly shaped because they are determined based on historical and current records of the RPBB and suitable habitat (like parks and greenspace) within a certain radius of where the bee was observed.

273. *Id.* (including a star symbol representing the location of the Roof Depot).

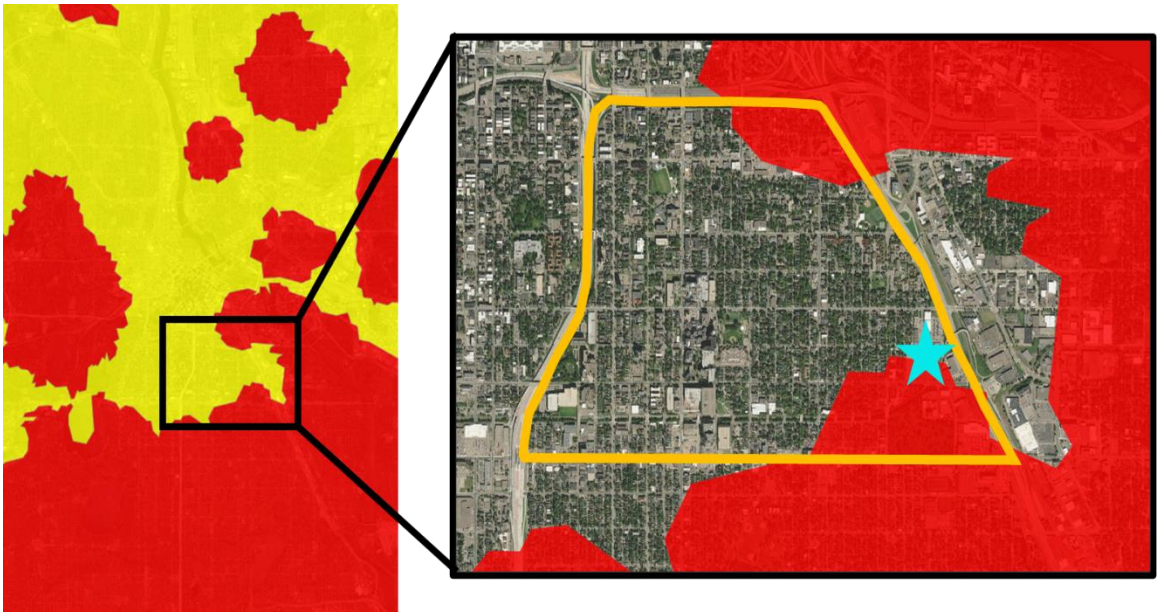

Figure 4: Map of the East Phillips Neighborhood (outlined in orange) and a blue star showing the area of the Roof Depot site overlaid on the FWS RPBB Map.[274] Area unshaded of the Roof Depot site is within a "low potential zone."

274. *Id.*

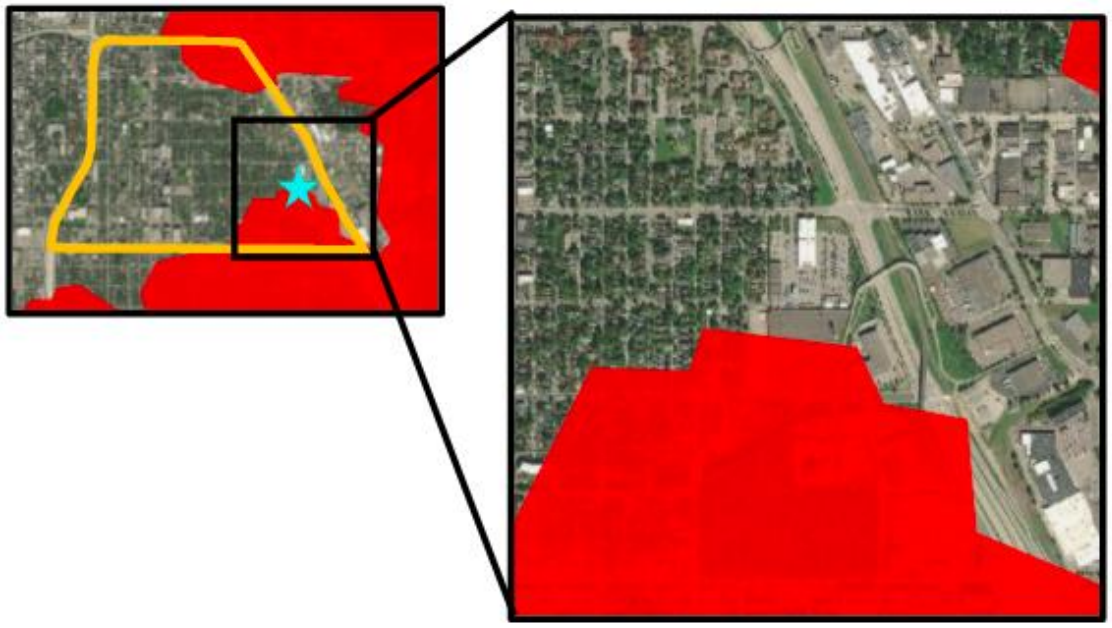

Figure 5: Roof Depot site, showing that half the building is covered by a red "High Potential Zone" of where the RPBB may be present.[275]

275. *Id.*

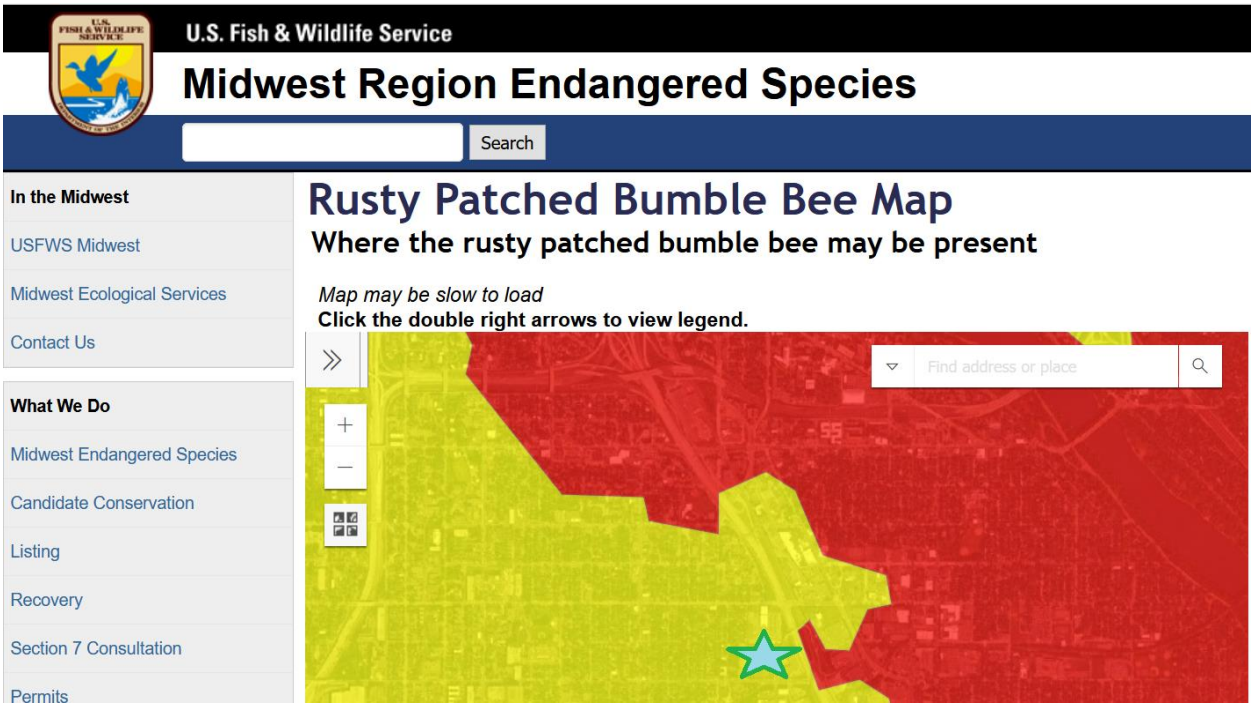

Figure 6: This is the map as it looked in 2021, at the time that the City prepared its EAW.[276] The star added represents the Roof Depot site.

Nevertheless, in preparing its draft EAW, the City's contractor avoided the issue. Confronted with EAW question number thirteen on endangered and protected species, the City's draft EAW denies that there is habitat sufficient to support wildlife.[277] The draft further states that the City's contractor consulted with the Minnesota DNR and established that there were no *state*-listed endangered species in the area, thus no potential impacts on endangered species.[278] The draft failed to

276. *See RPBB Map*, *supra* note 145. The map as it used to appear is archived at: https://web.archive.org/web/20211028142025/https://www.fws.gov/midwest/Endangered/insects/rpbb/rpbbmap.html.

277. *Hiawatha EAW*, *supra* note 256, at 30 ("The site itself does not contain a sufficient amount of vegetation or habitat for threatened or endangered species.").

278. *Id.*

indicate, however, that the DNR's formal response directed the City to consult with the FWS regarding the presence of *federally*-listed endangered species.[279] The City failed to take this step as it made no reference to a FWS informal consultation in the response to question thirteen.[280] The DNR also indicated that "ecologically significant features for which we have no records may exist within the project area. **If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.**"[281]

Several commenters on the draft EAW pointed out that the project was in close proximity to RPBB high potential zones and that the City's environmental review was incomplete and arbitrary because it failed to assess the potential impact on an endangered species.[282] The City's entire response on this issue was:

> The response from the DNR indicated that it did not consider the proposed project a threat to known state-listed threatened or endangered species. The project proposer has reviewed information that indicated the project was in a low potential zone for the rusty patched bumble bee and was not likely to be present. Having said that, discussion under Item 15 of the EAW discusses preliminary landscape plans for the proposed project. The proposed project will incorporate significantly more greenspace and landscaping surrounding the site border and within the site boundaries than currently exists. Trees, shrubs and other pollinator-friendly planting and landscape features will be incorporated into an employee patio that will include a water feature with an outdoor picnic/gathering area. With selection of the right plants, the proposed project will

279. *Id.* at 794 ("To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.").

280. *See id.* at 30.

281. *Id.* at 794 (bolding in original).

282. Two commenters who brought up this issue are authors of this article, one commenting as an individual and the other on behalf of the University of Minnesota Law School's Environmental and Energy Law Society. The City only responded to the Environmental and Energy Law Society, thus failing to respond to a comment on endangered species impacts submitted by a scientific expert on the class of insect that it had failed to adequately assess. *See generally* DRAFT FINDINGS OF FACT AND RECORD OF DECISION OF THE EAW OF THE HIAWATHA MAINTENANCE FACILITY EXPANSION, CITY OF MINNEAPOLIS 38 (2021), https://lims.minneapolismn.gov/Download/RCA/17578/Hiawatha%20Maintenance%20Facility%20Expansion%20project%20DRAFT%20Findings%20of%20Fact%20and%20Record%20of%20Decision.pdf (showing the city's response).

> provide a much better habitat for the rusty patch bumble bee than current conditions at the site.[283]

Despite commentators providing additional information regarding the RPBB and its presence in the vicinity of the project, the City's response to comments indicated no interest in gathering additional information necessary to create a complete review of the issue.[284] Instead, the City asserted that a "water feature" and the "right plants" would be enough to bring an endangered species back from the brink of extinction.[285]

The City's planned project could be especially harmful to the RPBB because of the legacy heavy metal pollution that the project is likely to expose.[286] While studies on heavy metal contamination have not been done specifically on RPBBs, they have been conducted in both lab and field-scale experiments on other commonly found bumble bee species found in the same places as existing RPBB populations.[287] The expected impact of heavy metals on other bumble bee species would likely be transferable to RPBBs, and exposure to arsenic and other metals under the Roof Depot site could compound stressors on the already jeopardized RPBB population sizes.

Bees are impacted by heavy metal contamination through their contact with soil for nesting and through eating pollen and nectar because many plant species accumulate heavy metals in their plant tissues.[288] Although the exact consequences of heavy metal contamination for the health of bees is still a growing science, current knowledge suggests that contamination could be disastrous for any nearby RPBB populations.[289]

On October 7, 2021, EPNI appealed the City Council's vote to approve the EAW as adequate under MEPA.[290] In that filing,

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283. DRAFT FINDINGS OF FACT, *supra* note 282.

284. *Id.*

285. *Id.* at 38.

286. *See Roof Depot Site Pollution Map*, EAST PHILLIPS NEIGHBORHOOD INSTITUTE https://www.eastphillipsneighborhoodinstitute.org/1636-2/ (last visited Apr. 6, 2022) (showing the dispersal of heavy metal pollution around the Roof Depot site).

287. *See, e.g.*, Sarah B. Scott et al., *Exposure to Urban Heavy Metal Contamination Diminishes Bumble Bee Colony Growth*, URBAN ECOSYSTEMS 1, (2021). *See also*, discussion, *supra* Section II.B.5.a.

288. *See* Rascio & Navari-Izzo, *supra* note 90 (explaining how plants hyperaccumulate heavy metals).

289. *See* discussion *supra* Section II.B.5.a.

290. Statement of the Case, E. Phillips Neighborhood Inst., Inc. v. City of Minneapolis, A21-1297, at 3 (Minn. Ct. App. Oct. 7, 2021).

EPNI asserted nine different ways in which the EAW failed to meet the requirement of adequate analysis, including "[p]roject impacts on the Rusty Patched Bumblebee, a federally-listed endangered species."[291] If the City continues to pursue this project despite turnover in City Council members and widespread opposition by the community and others,[292] the failure to investigate RPBB presence and impacts could be litigated in Minnesota state courts, potentially linking environmental justice to the RPBB in a precedent-setting opinion.

In the Fourth Circuit decision on the Atlantic Coast Pipeline project, the court held that "FWS cannot escape its statutory and regulatory obligations by not obtaining accurate scientific information."[293] Similarly, it seems that local governments in Minnesota should not be able to shrug off the proximity of their projects to listed species, especially when they are proposing a project that is likely to harm and kill the few individuals of that species in the vicinity of the project.

B. LINE 3

The Line 3 project moves tar sands oil from Alberta, Canada through Minnesota to refineries throughout the U.S. Midwest and South, and potentially for export to other countries.[294] This project has large environmental justice impacts, as it crosses a region of the state with high rural poverty, skirts several

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291. Statement of the Case, East Phillips Neighborhood Institute, Inc. v. City of Minneapolis, A21-1297, at 3 (Minn. Ct. App. Oct. 7, 2021).

292. Demonstrating EPNI's broad appeal across a wide spectrum of people, they have received financial support from Bon Iver and potential grant money for the urban farm from an NFL players' benevolent foundation. *See Saving the Roof Depot*, EPNI (Dec. 23, 2020), https://www.eastphillipsneighborhood institute.org/2020/12/23/press-release-12-23-2020 (reporting that the indie folk band pledged to match donations up to $10,000); Andrew Hazard, *Urban Farm or Public Works Facility?*, SAHAN J. (Apr. 16, 2021) https://sahanjournal.com /climate/east-phillips-pollution-urban-farm-proposal (listing a nonprofit started by NFL players called SHIELD in addition to the Minnesota Department of Employment and Economic Development, Hennepin County, and City of Lakes Community Land Trust as potential donors).

293. Wear, *supra* note 186, at 256.

294. *See generally* MPR News Staff, *The Line 3 Oil Pipeline Project: What You Need to Know*, MPR NEWS (July 16, 2021, 4:17 PM), https://www.mprnews.org/story/2021/07/16/the-line-3-oil-pipeline-project-what -you-need-to-know (explaining, among other things, the effects that the completed pipeline would have on product distribution).

reservations (crossing one), and impacts treaty-protected lands where Indigenous people retain their rights to hunt and gather in the northern parts of the state.[295]

In the fight against building Line 3, the RPBB has not been much more than a footnote despite the project's footprint being close to multiple "high potential zones" and crossing through "low potential zones."[296] The EIS asserts that the project proposal would be subject to a FWS incidental take permit under the ESA if it may harm listed species, and suggests that the proposer should have consulted with the appropriate federal permitting agency (i.e. the U.S. Army Corps of Engineers) to later consult with the FWS.[297] The EIS also acknowledged:

> If present, the Dakota skipper, Poweshiek skipperling, and rusty patched bumble bee could be affected by construction activities that disturb native vegetation. These activities would disrupt egg laying and foraging during spring and summer, and could crush dormant larvae or hibernating queens during fall and winter. These prairie-dependent insects depend on high-quality native grasslands and tallgrass prairies to provide food from flower pollen and nectar.

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295. *See* CHAPTER 11: ENVIRONMENTAL JUSTICE OF THE LINE 3 PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT, MINN. ENVTL. REV. OF ENERGY PROJECTS 14 t.11.2-2 (2020), https://mn.gov/eera/web/project-file?legacyPath=/opt/documents/34079/Line3%20FEIS%20Ch%2011%20Environmental%20Justice%20Complete.pdf (highlighting Carlton, Cass, Itaska, and St. Louis counties as areas of environmental justice concern); *Understanding Environmental Justice in Minnesota*, MINN. POLLUTION CONTROL AGENCY, https://mpca.maps.arcgis.com/apps/MapSeries/index.html?appid=f5bf57c8dac24404b7f8ef1717f57d00 (last visited Feb. 20, 2022) (allowing users to interact with a screening tool, with data from the Census Bureau, to "identify census tracts where additional consideration or effort is warranted to ensure meaningful community engagement and to evaluate the potential for disproportionate adverse impacts . . . "). Ultimately, Line 3 will cross the Fond du Lac Reservation even though this is not reflected in the project's EIS. Dan Kraker, *Enbridge, Fond du Lac Band Reach Deal to Route Line 3 Through Reservation*, MPR NEWS (Aug. 31, 2018), https://www.mprnews.org/story/2018/08/31/enbridge-fond-du-lac-band-reach-deal-route-line-3-oil-pipeline-through-reservation (extending easements for six existing oil pipelines on the Fond du Lac Reservation for ten years, the financial conditions of which remain confidential).

296. For a visualization of the pipeline route, see *Understanding Environmental Justice*, *supra* note 20.

297. CHAPTER 3: REGULATORY FRAMEWORK OF THE LINE 3 PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT, MINN. ENVTL. REV. OF ENERGY PROJECTS 13 (2020), https://mn.gov/eera/web/project-file?legacyPath=/opt/documents/34079/Line3%20FEIS%20Ch%2003%20Regulatory%20Framework.pdf ("[the FWS] encourages project applicants to consult with [the permitting agency] to ascertain a project's potential to affect [threatened or endangered] species . . . .").

> Vegetation clearing and replacement with non-native ground covers could injure or kill these butterflies and bees, and could remove forage plants.[298]

But ultimately the EIS, using the FWS's available data, determined that any harms to the RPBB could not be substantiated with certainty:

> The Applicant's preferred route crosses through current potential low use areas where rusty patched bumble bees may disperse from current high use areas or where their occurrence is uncertain. Construction could render some potentially used habitat as unusable, such that the rusty patched bumble bee could experience short-term, minor impacts. The rusty patched bumble bee may benefit from opportunities to conserve the species within the dispersal area, and USFWS may recommend surveys. [299]

The pipeline's impact on other listed species has been more controversial and studied.[300] The Biological Assessment prepared by the Canadian pipeline company building Line 3, Enbridge, submitted to the FWS by the Army Corps of Engineers to satisfy ESA consultation requirements, did acknowledge that the RPBB is present in the counties that the pipeline's construction was supposed to impact.[301] But the Biological Assessment denied that there could be any effect on the RPBB because "[h]igh potential zones for the rusty patched bumble bee . . . do not intersect the Project's Action Area."[302] Ultimately, the FWS accepted all of the Biological Assessment's conclusions and did not require the project proposer to obtain any take permits under the ESA.[303] The RPBB appears only to be subject to

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298. CHAPTER 6: EXISTING CONDITIONS OF THE LINE 3 PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT, MINN. ENVTL. REV. OF ENERGY PROJECTS 558, https://mn.gov/eera/web/project-file?legacyPath=/opt/documents/34079/Line%203%20Revised%20FEIS%20Ch%2006%20Existing%20Conditions.pdf.

299. *Id.* at 558–59.

300. *Statement from the DNR About the Higgins Eye Pearlymussel*, MINN. DEP'T NAT. RES. (Aug. 10, 2021), https://files.dnr.state.mn.us/features/line3/statewide-mussel-sites.pdf (commenting on Higgins eye pearlymussel misinformation circulating on social media that is contrary to scientifically-backed sources).

301. LINE 3 REPLACEMENT PROJECT BIOLOGICAL ASSESSMENT, ENBRIDGE 10–11 t.ES-1 (2019), https://docs.google.com/document/d/1Co4xftjcGRpyUt4A-GllPTkYWkt1goqdcg-BJRgQfzk/edit (listing six threatened or endangered species and three more species for which Line 3 crosses their "critical habitat").

302. *Id.* at 34–35 t.5.1-1.

303. Letter from Peter Fasbender, Field Supervisor, U.S. Fish & Wildlife Serv., to Andrew Beaudet, Chief, Northwest Section, U.S. Army Corps of Eng'rs (July 2, 2019), https://docs.google.com/document/d/1bgrcWwUcxSowCa6LKqM

voluntary measures to mitigate Line 3's harms on wildlife. Activists opposing Line 3, who have had reason to distrust the state agencies' ability to regulate and oversee the project,[304] made efforts to survey[305] and document bees in the project's path,[306] but in ways that fell short of the formal documentation necessary to change the FWS's mapping of the species' presence.[307] For example, leaders from the Red Lake Treaty Camp claimed to have observed the RPBB and shared it on their Facebook page,[308] but because they did not have a clear photo to document the observation, it was not able to be seriously considered by agencies.

During construction in summer of 2021, activists noted observations of many dead bees along roadsides of increased truck and vehicle traffic near drill pads, sparking concern for any impacts of rare bumble bees in the area, like the RPBB.[309] In fact, within a few hours of trying to re-survey the Red Lake Treaty Camp area for the RPBB, the activists documented a few records of the Yellow Banded Bumble Bee (*Bombus terricola*), which is known to be rare and declining in this region but has no federal or state listing in place.[310] This illustrates the

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BMybE-14aFrnbq9—NBrOTGM/edit?usp=sharing (stating the FWS's conclusions in its ESA consultation approving the Army Corps of Engineers' applicant-prepared Biological Assessment predicting minimal impacts to listed species).

304. Rilyn Eischens, *Enbridge Line 3 Drilling Fluid Spills: What We Know So Far*, MINN. REFORMER (Aug. 16, 2021), https://minnesotareformer.com/2021/08/16/enbridge-line-3-drilling-fluid-spills-what-we-know-so-far (delineating Enbridge's Line 3 spills, which reportedly occurred 28 times along 12 river crossings over summer 2021).

305. WATCH THE LINE MN, https://watchthelinemn.org (last visited Feb. 7, 2022).

306. *Minnesota Enbridge Biodiversity Accountability*, INATURALIST, https://www.inaturalist.org/projects/minnesota-enbridge-biodiversity-accountability (last visited Feb. 7, 2022).

307. Red Lake Treaty Camp, FACEBOOK (June 16, 2021), https://www.facebook.com/redlaketreatycamp/posts/198096568866310.

308. *Id.*

309. Personal communication with activists at Firelight Treaty Camp, and those who participated in the Treaty Walk (on file with authors).

310. *Observations*, INATURALIST, https://www.inaturalist.org/observations?place_id=any&project_id=minnesota-enbridge-biodiversity-accountability&subview=table&taxon_id=121517&verifiable=any (last visited Feb. 8, 2022) (showing filtered iNaturalist search for b. Terricola along pipeline route); Endangered and Threatened Wildlife and Plants; 12-Month Findings on Petitions To List Eight Species as Endangered or Threatened Species, 84 Fed. Reg. 41694, 41698 (proposed Aug. 15, 2019) (to be codified at 50 C.F.R. pt. 17)

difference between whether a species is not present in a given area or if it simply has not been surveyed.

Similar to the struggle in the East Phillips Neighborhood, the insect community of northern Minnesota is woefully understudied by experts and state agencies, and lacks local capacity and knowledge for extensive surveys like those in Minnetonka or other well-resourced metro areas.

IV. ARGUMENT AND RECOMMENDATIONS

Communities throughout the Twin Cities metro area and outstate Minnesota have the opportunity to protect community health while also helping to conserve the RPBB. By comparing outcomes in Minnetonka and the East Phillips Neighborhood, it is apparent that boots-on-the-ground scientific knowledge and institutional connections, generational wealth,[311] clear documentation, and sustained advocacy are key to asserting rights to public health and a clean environment. Similarly, comparing the Atlantic Coast cancellation to the RPBB's minor role in the Line 3 pipeline further highlights how large projects that harm low-income and minority communities can only be stopped by ESA litigation if the species is demonstrably present.

It is also clear from this analysis that environmental injustice is spatially and structurally embedded in the FWS's RPBB policies and in the way data is represented on the FWS RPBB map. Those with access to natural areas and technology, who have time and expertise to survey for bees, and who own or control land, can reinforce cycles of continued environmental protections within legal and administrative structures.

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https://www.govinfo.gov/content/pkg/FR-2019-08-15/pdf/2019-17536.pdf#page=1 (showing that the FWS suggested listing this species).

311. Or, ideally, additional resources dedicated to communities lacking such advantages and ample social services which begin to overcome this structural issue in our society.

Figure 7: (Left) Map of the neighborhood percent non-white population in Minneapolis ('Green Space, White Space' Story Map by Rebecca Walker) and (Right) the FWS RPBB map of Minneapolis showing high and low potential zones for the RPBB.[312] Note that the maps are not to exact scale with each other but can be compared using the river and the chain of lakes as reference points.

Despite large power and influence disparities, there are concrete ways to rebalance the playing field. There are survey methods that can be implemented to better support community

312. *RPBB Map*, *supra* note 145.

and legal advocates when trying to prevent environmentally destructive projects even though RPBBs are incredibly difficult to find and detect. Additionally, because bumble bees are relatively larger insects, it is possible to teach and empower the general public to identify them by species, add them to formal survey databases, and thus help enact the public's broader environmental justice goals.

Below, we document critical changes that will need to be made regarding RPBB policy, as well as techniques and best practices to emphasize when working for RPBB protection in environmental justice spaces.

A. CRITICAL PERSPECTIVES ON THE FWS RPBB MAP

While the FWS RPBB Map is a useful tool to know if a certain area is within a RPBB high or low potential zone, the map has serious limitations—both scientifically and ethically—that matter for RPBB conservation and for the ability to enact environmental justice goals.

The foundation for the map is based on documented records of the RPBB.[313] The location of these records may or may not be in places deemed biologically relevant by the FWS for the RPBB (e.g., in natural areas that the RPBB could move through). Additionally, bee observers are not evenly surveying across the RPBB range, thus a major limitation of these maps is observation bias for where they are being recorded and by whom. Not only is the map potentially undervaluing certain areas for the RPBB (like urban centers), but the regulatory framework that extends from the map's high potential zone boundaries is left to the discretion of the FWS. Whether the FWS puts an area in a high potential zone is often outcome-determinative in whether an ESA or environmental review challenge could be successful. This agency discretion *could* be used to holistically integrate uncertainties about RPBB biology and make judgments that favor environmental protection, but instead seems to inflexibly interpret the boundaries between high and low potential zones in ways that have favored environmentally destructive projects.

Moreover, the underlying science of the FWS map also seems like it may be erring on the side of downplaying potential

313. HABITAT CONNECTIVITY, *supra* note 153.

bee presence, which negatively impacts urban areas due to assumptions built into the model.

One of the peer-reviewed research projects that largely informs this map is a 2013 study from the Central Valley of California; researchers studied a rare bumble bee, *Bombus vosnesenskii*, to create a habitat model on their potential dispersal across the landscape.[314] One of the main findings of that study was that the urban land cover was detrimental to the bees' dispersal.[315] However, important to our analysis and to the validity of the FWS map's modeling, the potential negative influence of urbanization on the RPBB may not follow the same patterns as it does for other bumble bee species. A recent survey of roadsides within the Twin Cities metro area found that bumble bee abundance was associated with higher urban and developed land cover, and that the RPBB was positively associated with developed land cover.[316] Additionally, a recent study documenting RPBB nesting in MN indicated the importance and potential of urban or degraded areas for their recovery.[317] This is not surprising given that the RPBB was once widespread and abundant, and continues to be regularly documented in places like the Twin Cities.[318] However, the FWS map ranks moderate and high intensity urban landcover classes as poor quality habitat for the RPBB,[319] which may simply not be true. This ranking excludes various areas of the Twin Cities considered to be highly developed or industrial land, such as the East Phillips Neighborhood. Additionally, the landcover dataset does not have a high resolution,[320] so it does not account for the presence of backyard or boulevard gardens or flowering trees

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314. Shalene Jha & Claire Kremen, *Urban Land Use Limits Regional Bumble Bee Gene Flow*, 22 MOLECULAR ECOLOGY 2483 (2013).

315. *Id.* at 2492.

316. ELAINE EVANS ET AL., MINN. DEP'T. TRANSP., MONITORING AND HABITAT ASSESSMENT OF DECLINING BUMBLE BEES IN ROADSIDES IN THE TWIN CITIES METRO AREA OF MINNESOTA 20 (2019), https://www.cts.umn.edu/publications/report/monitoring-and-habitat-assessment-of-declining-bumble-bees-in-roadsides-in-the-twin-cities-metro-area-of-minnesota.

317. Boone et al., *supra* note 1, at 1.

318. ELAINE EVANS ET AL., MINN. ENVTL. QUALITY BD., FACT SHEET: RUSTY-PATCHED BUMBLE BEE 1 (2020) https://bwsr.state.mn.us/sites/default/files/2021-05/2020-Fact-Sheet-RPBB-10-13.pdf.

319. *RPBB Map*, *supra* note 145.

320. *Id.*

found in many inner city neighborhoods that could support bee populations.

Additionally, because the FWS map prioritizes greenspace and parks even within the metro area,[321] the segregationist housing and development policies of the Twin Cities area are unfortunately reflected in its mapping framework. The locations of parks in the Twin Cities metro area were specifically planned by real estate developers in the 1920s and 1930s, who intentionally embedded racist ideologies into the design of park greenspace and surrounding communities.[322] That the FWS map in part depends on green space apportioned through racist policy further exacerbates disparities between which communities have the opportunity to use RPBB legislation to prevent destructive projects and which communities do not.

The FWS map also downplays potential bee presence by undervaluing forests as an important habitat type for the RPBB.[323] RPBB queens emerge early in the season and rely on early blooming plants mostly found in forested habitats, when many plant species of other habitat types are not yet blooming.[324] Additionally, a recent study of bumble bee colonies found that they had larger colonies in forests than nearby meadows, even though the number of nests between the two habitat types were similar.[325] The FWS map values "mixed forest" and "deciduous forest" as weak or moderate barriers to RPBB movement and also does not take temporal aspects of habitat quality into consideration.[326] In the Minnesota roadside study, forests were also associated with a greater abundance of rare bumble bee species' like the RPBB.[327] If the map included

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321. *Id.*

322. *Green Space, White Space with Rebecca Walker*, MONEY, POWER, LAND, SOLIDARITY (Feb. 15, 2021), https://moneypowerlandsolidarity.libsyn.com/green-space-white-space-with-rebecca-walker.

323. Mola et al., *Long-Term Surveys*, *supra* note 75; Mola et al., *Importance of Forests*, *supra* note 75.

324. Mola et al., *Importance of Forests*, *supra* note 75, at 1236.

325. Genevieve Pugesek & Elizabeth Crone, *Contrasting Effects of Land Cover on Nesting Habitat Use and Reproductive Output for Bumble Bees*, 12(7) ECOSPHERE 1, 1 (2021).

326. *Bombus Affinis*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/species/rusty-patched-bumble-bee-bombus-affinis/map (last visited Apr. 10, 2022) (showing the U.S. Fish & Wildlife Service's Rusty Patched Bumble Bee interactive map).

327. EVANS ET AL., *supra* note 316, at 19.

these habitat types as important for the RPBB, it is possible that the Line 3 pipeline would have intersected with "high potential zones," given that large areas of northern Minnesota are forest. Being a "high potential zone" could have made the difference between a canceled pipeline and one not required to obtain any permits under the ESA.

Additionally, the FWS map has a crowdsourcing problem. The foundation of the FWS map is confirmed observations of the RPBB, so it does not include any areas that were not surveyed by researchers or where communities did not document or upload photo records to various community science databases. In fact, even documented records of the RPBB are not always adequately included in the map, and it is only updated once per year.[328]

It becomes apparent, when looking at the totality of problems underlying the FWS map, that there is a bias in both the observed data and the assumptions about where to model probable RPBB presence, both of which disadvantage low-income and BIPOC communities. Though the map appears to be a dispassionate scientific assessment of high/low/no likelihood of RPBB presence in an area, a look behind the curtain shows it is a perpetuation of class and race issues that have plagued policymaking for centuries. Advocates in areas where the RPBB has historically roamed who find that the FWS map puts their communities in the low or no probability zones should be allowed to question the assumptions that led to that determination, and a work-in-progress RPBB map should not be a barrier to conservation or legal efforts if there is reason to believe the bee is present. For communities like East Phillips, the fact that their community largely lies just outside a high potential zone appears to reflect more the historic undervaluing of their parks infrastructure and potentially misunderstandings of RPBB dispersal, rather than an accurate assessment that they are far less likely to have bees than the community on the other side of Hiawatha Avenue, a designated "High Potential Zone".

328. Interview with Dr. Elain Evans, in St. Paul, Minn. (Jan. 5, 2021) (discussing her experience with the FWS missing records on the map of the RPBB at the MSP airport).

B. SURVEY METHODOLOGIES

Finding rare species is incredibly difficult and it requires a lot of time to observe and document their presence, nests, and overwintering sites. The ability to detect an individual of a rare species depends on where one is looking, the characteristics of the area, the time of year, and other factors.[329] Finding and documenting rare species also requires different forms of survey techniques that can be time and labor intensive.

One of these techniques is known as "occupancy modeling" and should be done by any local, state, or federal agency before making decisions about approving construction projects in the range of the RPBB.[330] Occupancy modeling helps to determine the probability that an individual of a rare species could occur at a given place and the probability that it could be detected.[331] This is important because most RPBB policies are either based on historical records of casual sightings or use simple abundance-based metrics in a given area instead of taking a robust and systematic survey approach.[332] Occupancy modeling for different bumble bee species is a relatively new study area,[333] but is invaluable for monitoring efforts of rare species of high conservation concern and high public awareness, like the RPBB.

Occupancy models require a lot of data and repeated surveys of the same location over time, sometimes requiring a

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329. *See generally* Neal M. Williams et al., *Variation in Native Bee Faunas and its Implications for Detecting Community Changes*, 5 CONSERVATION ECOLOGY ART. 7(2001), https://www.ecologyandsociety.org/vol5/iss1/art7 (describing factors that create difficulties in detecting a rare species); *see also* James P. Strange & Amber D. Tripodi, *Characterizing Bumble Bee (Bombus) Communities in the United States and Assessing a Conservation Monitoring Method*, 9(3) ECOLOGY & EVOLUTION 1061–69 (2019); Charles D. Michener, 66(3) BIOGEOGRAPHY OF THE BEES. ANNALS OF THE MO. BOTANICAL GARDEN 277–347 (1979) (describing the varying regions of bee habitat worldwide).

330. *See* EVANS ET AL., *supra* note 316, at 12 (discussing the use of occupancy modeling for species with a detection probability less than one).

331. *Id.*

332. *See* Darin McNeil et al., *Distance Models as a Tool for Modelling Detection Probability and Density of Native Bumblebees*, 143 J. APPLIED ENTOMOLOGY 225 (2019) (looking at potential biases created by current survey methods); James Nichols & Byron Williams, *Monitoring for Conservation*, 21 TRENDS ECOLOGY & EVOLUTION 668 (2006) (arguing for a more robust approach to survey methods that goes beyond monitoring).

333. *See* J. Scott Maclvor & Laurence Packer, *The Bees Among Us: Modeling Occupancy of Solitary Bees*, 11 PLOS 1 (2016), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0164764.

minimum of nine visits to establish RPBB absence.[334] While this method requires advanced training in modeling and statistics, field methods are broadly accessible to communities interested in documenting the RPBB. Through community and university partnerships, it could be possible to develop estimates of occupancy and detection for their area of concern.

Occupancy modeling was not used in the FWS mapping of "high potential zones" near the Line 3 pipeline nor in the data used for the draft EAW conducted for the EPNI case, even though it would have been possible for Enbridge or the City to hire contractors to collect necessary data. Without putting forth the effort to prove that the RPBB is not present, these project proposers risk both public confidence and potential RPBB impacts, and remaining willfully blind to species impacts could be litigated as a failure to "look before they leap" under NEPA or MEPA.

Occupancy models are an effective tool, but they rely on finding bees where they are foraging, and are therefore best performed during specific time periods of the summer when foraging activity is most easily observed.[335] Detecting nesting and overwintering sites is a more time-consuming endeavor. Studies of bumble bee nesting and overwintering use various methods that could be implemented in areas of interest and do not require extensive scientific training. Because of the RPBB's status as an endangered species, any surveys of nesting and

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334. A recent study of MN roadsides in the Twin Cities Metro area visited ninety-four sites multiple times to survey for bumble bees, then revisited certain sites again across the season depending on whether bumble bees were present. EVANS ET AL., *supra* note 316, at 5. The study found that even though the overall sample size was small, the researchers were able to estimate that the RPBB was present at 4% of the study sites. *Id.* at 13. Additionally, from their data, they also found that at least nine site surveys were required to detect whether RPBBs were indeed absent from a site versus being present and simply not detected. *Id.* While this result is specific to the context of the roadsides in the Twin Cities Metro area, it highlights the importance of this methodology to make better and more informed conservation decisions for the RPBB.

335. *See* Jerry S. Cole et al., *Explaining the Birds and the Bees: Deriving Habitat Restoration Targets from Multi-Species Occupancy Models*, 10 ECOSPHERE 1, 4 (2019), https://www.birdpop.org/docs/pubs/Cole_et_al_2019_Multi-species_Occupancy_Models.pdf.

overwintering should be done with utmost caution to avoid harming any individuals.[336]

To find and document nests, usually a person will walk slowly and methodically through an area, noting observations of where a bumble bee flies into the grass and listening for buzzing within the surface of vegetation.[337] After locating a potential nest, the researchers wait to see if other worker bumble bees return to that nest or emerge.[338] This helps to differentiate between a nesting site and simply a place where a single worker is resting on vegetation before continuing to forage or return to the nest.

Locating bumble bee queen overwintering areas is particularly difficult. Researchers have started to pilot community-wide efforts to search for overwintering habitat and share their insights.[339] The protocol they suggest is that each fall (depending on your region) to pick an area, lightly dig the surface within approximately four inches, and sift through the soil and litter to see if you find a queen bumble bee, and document your findings on their website.[340] Unfortunately, this method cannot be done by the public in areas where the RPBB is found because handling a RPBB without a permit is a violation of the ESA and there is potential to harm an overwintering queen if digging into the soil.[341]

The FWS also has a survey protocol document that supports efforts to survey for the RPBB where they suggest best practices

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336. While it is obvious that this journal article does not constitute legal advice, the authors ask that you please do not kill or take any RPBBs while looking for them.

337. Pugesek & Crone, *supra* note 325, at 3.

338. Sujaya Rao & Kimberly Skyrm, *Nest Density of the Native Bumble Bee,* Bombus Nevadensis *Cresson (Hymenoptera: Apoidea), in an Agricultural Landscape*, 86 J. KAN. ENTOMOLOGICAL SOC'Y. 93, 93 (2013) ("The entrances . . . were flagged and monitored until at least 5 individual *B. nevadensis* emerged or returned to the same hole, which we considered evidence of the presence of a colony.").

339. *Are You Ready To Start A Bumble Bee Queen Quest?*, QUEEN QUEST, http://www.queenquest.org (last visited Feb. 10, 2022).

340. *Protocol*, QUEEN QUEST, http://www.queenquest.org/protocol.html (last visited Feb. 10, 2022).

341. *See Rusty Patched Bumble Bee Guidance for Surveyors and Researchers*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/midwest/Endangered/insects/rpbb/surveys.html (last updated May 27, 2021) [hereinafter *Bumble Bee Guidance*] (explaining how to obtain the recommended Scientific Recovery Permit if one plans to handle the RPBB).

to find them.[342] However, the document's recommendations do not include occupancy models or suggestions for methodologies to locate their nesting or overwintering areas.[343] Instead, it is focused on locating foraging workers.[344] As can be seen from the example of Lone Lake Park in Minnetonka, frequent observations of workers foraging can be determinative in an ESA case.[345] However, these observations will be most powerful if they are documented in advance and backed up with sufficient verification. The FWS states that "[a]nyone can take photographs of bumble bees!"[346] but as learned from treatment of the Red Lake Treaty Camp's photos, it is vital to take as clear of a photo as possible and then to document it through a database used by federal agencies. The most frequently-used databases for the RPBB, as well as information on how to take a lawsuit-supporting photo, are outlined in the subsequent section.

C. GRASSROOTS SCIENCE EFFORTS FOR THE RPBB

Given that the FWS map relies on RPBB location records for which areas are deemed "'high potential zones," community science and citizen science[347] efforts are crucial to help document and protect the RPBB. While efforts to document water quality

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342. *Survey Protocols for the Rusty Patched Bumble Bee*, U.S. FISH & WILDLIFE SERV. (Apr. 12, 2019) https://www.fws.gov/midwest/Endangered/insects/rpbb/pdf/Survey_Protocols_RPBB_12April2019.pdf.

343. *Id*.

344. *Id*.

345. *See* Settlement Agreement, *supra* note 219 (resulting in settlement).

346. *Bumble Bee Guidance*, *supra* note 341.

347. "Community science" is also known as "citizen science." Most people have started using the phrase "community science" in efforts to use more inclusive language to engage anyone, regardless of citizenship status, in participating in monitoring their local environment. However, for some, re-branding the term "citizen-science" to "community science" ignores fundamental issues of access to engage in environmental monitoring, as most of the contributors to these databases remain largely white, older, and male dominated. Additionally, some fear there is a risk of co-optation of the frameworks of already existing "community science" practices that go beyond documenting biodiversity and monitoring and instead aim to shift systems, and directly use data to lead to social action. For this paper, we intentionally use "community science" and "citizen science" distinctly. *See generally* Caren Cooper et al., *Inclusion in Citizen Science: The Conundrum of Rebranding*, 372 SCIENCE 1386 (2021) (asking if replacing the term "citizen science" does more harm than good).

and stream invertebrates[348] are the hallmark examples in which community-collected data is used to highlight corporate pollution, bumble bees are another model-organism that can be used in advocacy for social and environmental health.[349]

There are a number of web-based biodiversity platforms to use for documenting bumble bees. A widely used online database and phone app is iNaturalist, where users take photographs of wildlife and upload them to the platform.[350] The user can try to identify the organism of interest (or can leave it unknown) and an online community of naturalists verifies or suggests alternative identifications.[351] Once an observation has been identified by multiple people who agree, it is considered "research grade."[352] Importantly, if someone uploads photos of an endangered species, like the RPBB, iNaturalist obscures the location data, meaning that the location of the observation does not show up in the exact spot where it was observed.[353]

Another platform for community and citizen science bumble bee data is known as Bumble Bee Watch and is both an online website and app.[354] This platform specifically collects data on bumble bees for Canada and the United States and is operated via the Xerces Society, York University, Wildlife Preservation

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348. *See generally* Caitlyn Myers, *Disaster Coming Downriver*, SCI. FOR THE PEOPLE, https://magazine.scienceforthepeople.org/vol22-1/tva-tennessee-water-justice-citizen-science (last visited Feb. 10, 2022) (describing community efforts to monitor and document water quality in East Tennessee).

349. For a discussion of current community science efforts to document bees, see Victoria MacPhail et al., *Community Science Participants Gain Environmental Awareness and Contribute High Quality Data But Improvements Are Needed: Insights From Bumble Bee Watch*, PEER J. 1 (2020) http://doi.org/10.7717/peerj.9141 (providing background on community science efforts to study bee populations, and discussing the benefits and potential limitations of such datasets).

350. INATURALIST, https://www.inaturalist.org/home (last visited Feb. 10, 2022).

351. *Id.*

352. *What is a 'Verifiable Observation' and how does it reach 'Research Grade'?*, INATURALIST, https://www.inaturalist.org/posts/26549-what-is-a-verifiable-observation-and-how-does-it-reach-research-grade (last visited Feb. 11, 2022).

353. *Geoprivacy,* INATURALIST, https://www.inaturalist.org/pages/geoprivacy (last visited Feb. 11, 2022).

354. BUMBLE BEE WATCH, https://www.bumblebeewatch.org/ (last visited Feb. 10, 2022).

Canada, and various other organizations.[355] Bumble bee observers take photos of bumble bees, upload them, and try to identify them to the best of their ability.[356] Behind the scenes, bee researchers check and verify the identifications.[357] This app does not obscure location records of rare and endangered bees and is used by the FWS to update their maps.[358]

More locally, the program Minnesota Bumble Bee Atlas is gaining momentum in the state.[359] This program divides the state of Minnesota into a grid, trains local volunteers to conduct regular bumble bee observation surveys within a grid-area, and shares the data with University of Minnesota researchers.[360] The program provides training and materials to participants on how to identify, observe, and survey for bumble bees.[361] All records of any RPBB sightings are shared with the FWS.[362]

While records from these platforms are shared with the FWS, it can take time before they are incorporated into the FWS map.[363] Those concerned about impacts to the RPBB in a given area should check these databases in addition to the FWS map, in case certain records have not been incorporated.

If one observes that an area of concern is lacking in records of bumble bees and wants to see if the RPBB is present, conducting informal, local surveys is a useful tool. However, it is imperative that any sighting is well-documented and well-photographed. The University of Minnesota Bee Lab as well as the Xerces Society for Invertebrate Conservation offer many resources to support local efforts to document bumble bees.[364]

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355. *About,* BUMBLE BEE WATCH, https://www.bumblebeewatch.org/about (last visited Feb. 10, 2022).

356. *Id*.

357. *Id*.

358. Email from Tamara Smith, Acting Deputy Project Leader, U.S. Fish & Wildlife Serv., to Julia Brokaw (Mar. 28, 2022, 2:57 PM) (on file with authors) [hereinafter Email from Tamara Smith].

359. MINNESOTA BUMBLE BEE ATLAS, https://mnbumblebeeatlas.umn.edu/ (last visited Feb. 20, 2022).

360. *Id.*

361. *Id.*

362. Email from Tamara Smith, *supra* note 358.

363. *Id.*

364. *E.g.*, *Help Collect Data*, U. MINN. BEE LAB (Jan. 24, 2022) https://beelab.umn.edu/collect-data; *Community Science*, XERXES SOCIETY, https://www.xerces.org/community-science (last visited Feb. 20, 2022).

Taking good quality photographs is important for verification and ultimately for gathering evidence sufficient to support litigation. It is important to get photographs from multiple angles of the back of the bee (where one can see patterns on the thorax and abdomen), a side angle, and of their faces. Bees can be incredibly difficult to photograph because they move and fly very quickly; taking a short video of the bee is recommended so that screenshots of different angles can be pulled to use for identification. The colonies of the RPBB are most abundant in mid-summer in Minnesota when workers are actively foraging and can be photographed or videotaped visiting flowers where their distinctive coloration can be easily seen.[365] Bees are most active on sunny, warm days.[366] Early in the spring or later in the fall is when queens are most active outside of the nest.[367] Queen bees can be found searching for nests in the early spring and foraging on flowers in the early spring and late summer to early fall.[368]

While these community and citizen science platforms and volunteer efforts are crucial, they also require access to digital cameras, cellphones, and internet access which can be cost-prohibitive for many people. It is important to note that there are many reasons why certain communities would not want to share species location data like RPBB records with state or federal governments or scientists, especially records of rare or culturally important species.[369] The profit-driven public policy and regulatory process of the United States prioritizes the destruction of land and biodiversity, and there are deep legacies of distrust about how ecological data is used or ignored. In the permitting process for the Line 3 pipeline, Enbridge was given permission to negatively impact populations of Minnesota state-listed threatened, endangered, and special concern species, with

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365. *See Bumble Bees: Nesting and Overwintering*, XERCES SOCIETY, https://xerces.org/bumblebeenests (last visited Apr. 10, 2022) (describing bumble bee foraging behavior where the worker bees take over foraging duties).

366. *Things are Buzzing on the Chippewa National Forest*, USDA FOREST SERV., https://www.fs.usda.gov/detail/chippewa/home/?cid=FSEPRD649383 (last visited Apr. 10, 2022) ("Ideal survey weather is warm, sunny days with little to just light winds.").

367. *See* XERCES SOCIETY, *supra* note 365.

368. *See id.*

369. Personal communications with surveyors and impacted communities in Minnesota.

little oversight on suggested best management practices.[370] Simply documenting a rare species and sharing the data with relevant agencies unfortunately does not guarantee their protection. Instead it may seem to only provide documentation of where species are lost, perhaps until they no longer exist.

Furthermore, community and citizen science efforts must be conducted in genuine, engaged partnerships between interested communities and researchers. Too often, well-intentioned researchers and environmentalists reproduce colonial ideologies by going into a community they are not from and collect data without consent from the community, ostensibly to "help" them. This ideology ignores the wealth of knowledge that exists in these communities and is incredibly harmful to people, science, and policy. It foregrounds settler desires and goals (e.g. to document or conserve a rare bee), assumes entitlement to place-based information, and breaks trust required for true solidarity in facing social and environmental crises.[371]

D. PRECAUTIONS TO CONSIDER WHEN NEGOTIATING BEE SETTLEMENTS

In legal disputes and settlements, there is a lot of information and negotiations required to arrive at an ideal outcome for bees and people. It is important that any settlement of an ESA case regarding the RPBB be grounded in evidence and in consultation with scientific experts who know about conserving this particular bee species.

However, it is difficult to concretely know how RPBBs will be impacted by various proposed projects due to the lack of data in certain areas, uncertainty about their nesting and

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370. *See, e.g.*, ST. MINN. PUB. UTIL. COMM'N, PIPELINE ROUTING PERMIT FOR CONSTRUCTION OF A LARGE CRUDE OIL PIPELINE & ASSOCIATED FACILITIES 17–30 (Oct. 26, 2018), https://efiling.web.commerce.state.mn.us/edockets/searchDocuments.do?method=showPoup&documentId={80F0B166-0000-C83B-95D1-DBD35DC260AE}&documentTitle=201810-147316-02 at 21 (showing the permit for line 3, requiring only coordination with the DNR and the FWS for how to deal with listed species); MINN. DEP'T NAT. RES., ENBRIDGE LINE 3 REPLACEMENT PROJECT: PERMIT TO TAKE ENDANGERED OR THREATENED SPECIES INCIDENTAL TO DEVELOPMENT NO. 28565 (Nov. 12, 2020) https://files.dnr.state.mn.us/features/line3/decisions/threatened-endangered-species-decision.pdf (showing the Minnesota Department of Natural Resource permit to take state listed species of plants).

371. DINA GILIO-WHITAKER, AS LONG AS GRASS GROWS: THE INDIGENOUS FIGHT FOR ENVIRONMENTAL JUSTICE, FROM COLONIZATION TO STANDING ROCK 19 (2019); MAX LIBOIRON, POLLUTION IS COLONIALISM (2021).

overwintering habitat, dispersal abilities, and other factors. For example, as discussed in Section II.B.5. above, little is known about the direct or cumulative effects that various heavy metals might have on RPBB populations. However, what is known is highly suggestive of negative and harmful effects—it is only the degree of harm that remains uncertain. For projects likely to increase pollution from heavy metals and other potentially harmful substances, as for projects that may disrupt or displace bee habitats, it is imperative to take a precautionary approach that is grounded in prevention and reduces risk both for the RPBB and for people. It is also important that adequate surveys are conducted as thoroughly as possible, in order to inform the level of precaution required.

There is not an ideal time of year to damage RPBB habitat that sufficiently reduces the potential risk, given the lack of data on RPBB nesting and overwintering, the difficulty in locating RPBB nests, and the well-documented threats to their already small populations. The precautionary principle would argue against assuming no impacts in months when bees are less visibly active but known to still be present, even when we do not know precisely what their preferred habitat is. Protective measures would instead demand projects that are less destructive, such as EPNI's plan for the Roof Depot site which would leave the building standing instead of demolishing it and kicking up large amounts of toxic metal dust.[372]

Some may argue that risks to the RPBB are reduced if a company plants pollinator gardens as mitigation for their construction projects. While the motivation behind such efforts are laudable, and they may benefit some pollinators other than the RPBB, because we do not know where the RPBB prefers to nest and overwinter in relation to flowering gardens, it is often better to avoid disturbing an area for development. Furthermore, setting up the garden is easier said than done, as native pollinator gardens require years of maintenance after they are planted.[373] Most companies and consultants do not budget for years-long native garden management. Thus, the plantings do not establish, become overgrown by invasive grasses or are unintentionally mowed, weakening their

372. *Supra* Section III.A.

373. *Residential Pollinator Habitat*, MINN. BD. WATER & SOIL RES., https://bwsr.state.mn.us/residential-pollinator-habitat (last visited Feb. 21, 2022).

perceived or planned benefit.[374] In the Lone Lake Park case, the settlement explicitly called for "multiple growing seasons" of maintenance and efforts to establish the bee lawn they agreed to.[375]

Advocates in disputes and settlement negotiations should also consider the potential for downstream impacts on bee populations, especially for disputes involving fossil fuel intensive projects like energy pipelines. Given the myriad of potential ways that climate change could impact RPBB populations,[376] it is important to not only consider the direct effects of proposed development projects on RPBB survival, but to also consider the long-term impacts of any proposed projects that may exacerbate pollution or climate change.

E. ENVIRONMENTAL JUSTICE COMMUNITIES' COMMON CAUSE WITH THE RPBB

The interests of the RPBB and environmental justice communities align in many ways. By focusing on these intersections, we seek to highlight the importance of long-standing environmental justice goals and visions. Environmental justice and RPBB conservation can be seen as complementary perspectives, and in many cases in the Twin Cities, could be fast friends when bees lack human champions and communities lack legal tools to protect themselves.

1. Centering the needs of impacted communities in RPBB "high potential zones" and those who are left out

Again, it is important to remember that the FWS RPBB map depends, in part, on the distribution of green space and amenities that were distributed over years when segregationist policies built the Twin Cities' urban reality. This is a common issue in environmental justice. The environmental inequities experienced in the Twin Cities and across the country directly

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374. LAURA JACKSON & JUSTIN MEISSEN, FINAL REPORT SEED MIX EXPERIMENTS AND ANALYSIS OF NATIVE SEED SUPPLY FOR THE POLLINATOR HABITAT INITIATIVE (2019); Kyle Van den Bosch & Jeffrey Matthews, *An Assessment Of Long-Term Compliance With Performance Standards In Compensatory Mitigation Wetlands*, 59 ENVTL. MGMT. 546 (2017); Katherine Turo & Mary Gardiner, *From Potential To Practical: Conserving Bees In Urban Public Green Spaces*, 17 FRONTIERS IN ECOLOGY & ENV'T 167 (2019).

375. Settlement Agreement, *supra* note 219, at (4)(c).

376. Discussed *supra* Section II.B.5.b.

flow from planning decisions that considered certain communities to be more compatible with pollution. "It's rooted in racial discrimination in housing, land use planning, and zoning. Lines of demarcation on race and class were used to confine and segregate individuals and communities. This historical pattern stands to this day."[377] The result, in the Twin Cities and elsewhere, is that "[c]ommunities of color don't get a fair share of the good stuff – parks, green spaces, nature trails, good schools, farmers markets, good stores. They get less of all the things that make communities healthy and get more of their fair share of the bad stuff."[378] And while the FWS may not have espoused the same policy goals that led to redlining and other overtly segregationist policies, the data presented in the FWS map has not been assessed for whether it maps historic racism, let alone RPBB presence.

The zoning designations of Minneapolis's East Phillips neighborhood were adopted in the early-mid 1900s and still concentrate historic heavy industrial uses near houses once deemed "slums."[379] The designation of the East Phillips neighborhood to not be within a "high potential zone," and thus the protections that it would grant, is more due to legacies of segregationist housing policies than the biology of the RPBB. Communities directly adjacent to East Phillips are protected, and the City's argument that no endangered species are present seems to be based entirely on a failure to look rather than proof of absence. Knowing what we do about injustice in the built environment, it is important that scientific assumptions do not reinforce past racism by looking at parks and the communities nearby them as "good bee habitat" and historically-impacted warehousing sites and neighboring communities as "bad for bees." This is especially true for species that seem to be well-adapted to urban areas and disturbance, like the RPBB.

An environmental justice approach to RPBB conservation will be important across the species range, not just in urban neighborhoods or rural areas along a pipeline route. When viewed at the county-level, it appears that poverty in the Twin Cities metro area is concentrated in Hennepin and Ramsey

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377. Milman, *supra* note 15.

378. *Id*.

379. Ciganko-Ford & Ly, *supra* note 244. The area was also once targeted with destruction-by-highway.

Counties, surrounded by a ring of wealthy suburbs.[380] However, looking at the same data by census tract reveals that Anoka County (which is part of the suburbs north of the urban core), for example, has an overall poverty rate of 6.6% while one census tract within it has a significantly higher rate of 21.8%.[381] Suburban poverty is increasingly studied[382] and appears to be growing as more Americans than ever live in suburban areas instead of rural or urban settings.[383] The FWS RPBB map indicates high potential zones through the Twin Cities' surrounding suburbs, suggesting the potential for a high degree of overlap between any future RPBB critical habitat designation and areas of increasing suburban poverty.

It is also the case that both people and bees have a hard time convincing decision makers to adopt a "precautionary principle" and favor protections when there is a question about the environmental harm that will flow from an economic activity. While the Atlantic Coast Pipeline may have been brought low by the RPBB and other endangered species, it seems that by the time Line 3 was ready for FWS scrutiny the agency had developed a preference for moving projects along if there was sufficiently incomplete data to assume a low probability of RPBB presence.[384] It seems plausible that the FWS could take exactly the opposite tack and demand that large well-financed projects in Minnesota prove the absence of the RPBB before greenlighting construction across hundreds of miles that disturbs exponentially more potential habitat than a suburban

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380. *See Poverty in Minnesota Counties*, MINN. DEP'T HEALTH, https://mndatamaps.web.health.state.mn.us/interactive/poverty.html (last visited Feb. 20, 2022) (providing an interactive map of poverty levels statewide by county).

381. *Compare id., with Poverty in Minnesota Neighborhoods*, MINN. DEP'T HEALTH https://mndatamaps.web.health.state.mn.us/interactive/povertytract.html (last visited Feb. 22, 2022) (providing an interactive map of poverty levels by census tract, a more localized view than by county).

382. *See* KATRIN ANAKER, POVERTY IN THE U.S. SUBURBS (2018), https://www.taylorfrancis.com/chapters/edit/10.4324/9781315266442-18/poverty-suburbs-katrin-anacker (analyzing poverty in U.S. cities, emphasizing suburban poverty and its differences from inner-city poverty).

383. Elizabeth Kneebone, *The Growth and Spread of Concentrated Poverty*, BROOKINGS INST. (July 31, 2014) https://westorlandonews.com/wp-content/uploads/2014/08/The-Growth-and-Spread-of..._-Brookings-Institution-1.pdf.

384. *See* Letter from Peter Fasbender, *supra* note 303 (adopting as sufficient a biological assessment with only a cursory analysis of the project's proximity to RPBB high potential zones).

mountain bike trail. Furthermore, demands from climate justice organizers and Line 3 opponents argue that federal and state agencies should take climate change impacts into consideration, in addition to localized construction impacts on at-risk species and the ecosystems that support them.[385]

Ultimately, advocates hope that the FWS will be forced by the federal courts to declare critical habitat for the RPBB, which is not affected by the same issues as the current FWS RPBB map. While the agency cannot automatically provide greater protections to environmental justice communities using the ESA's existing requirements, at the very least it could cease discounting the value of, and potential habitat for, the RPBB in both urban and rural forested settings. A precautionary approach to designating critical habitat would be based on credible survey data that accounts for uncertainties in RPBB biology, and would err on the side of protecting potential habitat and communities.

Even after better science is applied to RPBB policy, thus giving the species and the people who live around it a chance at meaningful protections, litigation directed at government agency action is still likely needed to enforce the protections. Both the ESA and Minnesota's Environmental Rights Act, not to mention NEPA and MEPA, will provide litigation opportunities for communities who find themselves at the nexus of RPBB conservation and agency neglect. But hopefully, both environmental justice advocacy and lawsuits will lead to bureaucratic path dependence—rather than upholding past structures of oppression, agencies could be pushed towards promoting both species conservation and environmental justice as complementary goods which best protect the human environment.[386]

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385. Jariel Arvin, *The Indigenous-Led Fight to Stop the Line 3 Oil Pipeline Expansion in Minnesota, Explained*, VOX (Mar. 25, 2021, 1:50 PM), https://www.vox.com/22333724/oil-pipeline-expansion-protest-minnesota-biden-climate-change ("In the second state lawsuit, Friends of the Headwaters, the White Earth Band of Ojibwe, the Red Lake Band of Chippewa, the Sierra Club, and Honor the Earth argue that the Minnesota Pollution Control Agency, which has regulatory control, didn't consider the long-term or climate impacts of the project."). *See generally* WATCH THE LINE MN, *supra* note 305 (including a blog where opponents of the pipeline post news of environmental damage).

386. One example of an agency who "gets it" but genuinely doesn't "get it" is the Michigan Environmental Agency that permitted an environmentally unjust

2. Solidarity with Land Back Movements

While environmental statutes may be useful tools for bee conservation and the protection of impacted communities, it is also the case that those statutes are predicated on access and entitlement to stolen Indigenous lands. Movements for stolen land to be returned to Tribal Nations and Indigenous communities has gained momentum in the past few years as a first step towards justice and reparations for Indigenous peoples.[387] The settler-colonial framework of entitlement, greed, and assumed access to stolen land—either for habitat protection or extraction and development—can reproduce colonial violence. It is imperative that the land be returned to Tribal Nations and Indigenous communities and that their expertise be centered for solutions to be enacted.[388]

The ESA, for example, charges the Secretary with using government authority to acquire land to the extent necessary to conserve a species.[389] Although Congress observes at the very beginning of the ESA that America's extinction crisis is the result of untempered growth and development,[390] the ESA contains no provision for the relinquishment of land or resources back to Tribal Nations and Indigenous communities. Instead, the Act offers a paternalistic solution, assuming that federal government dominion and consideration of species as an aspect of future development is necessary to protect threatened and endangered species. NEPA, and any federal or state environmental law, suffer the same fundamental flaw—while they may be necessary to reduce harm in the current system of

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facility and simultaneously asked the EPA to tell it how to improve on environmental justice. *See EGLE Approves Asphalt Plant Air Permit; Seeks Federal Guidance, Support To Address EJ Concern*, MICH. DEPT. ENV., GREAT LAKES & ENERGY (Nov. 15, 2021), https://www.michigan.gov/documents/egle/Letter-2021-11-15-Ajax-Permit-EGLE-to-USEPA_741314_7.pdf (stating Michigan's EGLE department announced its approval of an air permit for an asphalt plant in "a neighborhood of color in social and economic distress," while also asking the EPA to "provid[e] tools and strategies to improve public health in at-risk communities").

387. *See* LAND BACK, https://landback.org (last visited Feb. 20, 2022) (campaigning for the return of indigenous lands); RED NATION, THE RED DEAL. INDIGENOUS ACTION TO SAVE OUR EARTH 18 (2020) (calling for climate justice on behalf of indigenous peoples).

388. Eve Tuck & K. Wayne Yang, *Decolonization Is Not a Metaphor*, 1 DECOLONIZATION: INDIGENEITY, EDUC. & SOC'Y 1 (2012).

389. 16 U.S.C. § 1534(a)(1).

390. 16 U.S.C. § 1531(a)(1).

American development and resource exploitation, they offer no way out of it.[391]

The RPBB, like many endangered species, is native and adapted to environments that predate the American project.[392] While researchers today still have much to learn about the habits and needs of the RPBB, we must not forget that human societies successfully coexisted with this species for generations prior its modern decline. Indigenous knowledge, traditions, and practices with regard to native species like the RPBB are essential to species survival. Projects across the country are finding benefits to conservation and biodiversity when land is returned to Indigenous people for the management of natural resources.[393] For bees specifically, multiple projects led by Indigenous leaders demonstrate the power and potential of their vision for bee conservation. From ethically growing and cultivating native plants,[394] to gardens that center reciprocity, Indigenous stewardship and art,[395] and food sovereignty

391. NEPA, for example, aims to maintain conditions for a harmonious coexistence with nature that will "fulfill the social, economic, and other requirements of present and future generations of Americans." 42 U.S.C. § 4331(a).

392. We have immense gratitude and appreciation for the RPBB, the biodiversity of this state, and the land we call home. Ironically, many scientific studies cited in this article that provide the basis for our understanding of bumble bee biology required lethal sampling methods to better understand the threats to their populations and to ecosystem health. We do not take this loss of life lightly, despite its regular practice in western sciences, and are deeply grateful, humbled, and committed to transforming the knowledge we gained from those losses of life into action and justice.

393. Jim Robbins, *How Returning Lands to Native Tribes is Helping Protect Nature*, YALE ENV'T 360 (June 3, 2021) https://e360.yale.edu/features/how-returning-lands-to-native-tribes-is-helping-protect-nature; *see* THE ASSESSMENT REPORT ON POLLINATORS, POLLINATION & FOOD PROD. (2016) https://ipbes.net/sites/default/files/downloads/pdf/2017_pollination_full_report_book_v12_pages.pdf (covering changes in animal pollination as a regulating ecosystem service that underpins food production and its contribution to gene flows and restoration of ecosystems).

394. Kylie Mohr, *Collecting Seeds to Restore Prairie Grasslands*, HIGH COUNTRY NEWS (Oct. 1, 2021), https://www.hcn.org/issues/53.10/north-prairies-collecting-seeds-to-restore-prairie-grasslands.

395. *What is Finding Flowers?*, FINDING FLOWERS, http://findingflowers.ca (last visited Feb. 22, 2022); *On Pollination and Perseverance*, LOWER PHALEN CREEK PROJECT (Aug. 12, 2020), https://www.lowerphalencreek.org/lpcp-blog/2020/8/11/rqspu5zq2v4bdawuq3p8aqv5mauzv6.

projects,[396] Indigenous communities offer long-term frameworks and visionary possibilities for bee conservation.

The purpose of this article is not to analyze thoroughly the potential implications of returning land back to Indigenous communities for the RPBB and we as authors are limited in our ability to do so by our own biases and backgrounds which are rooted in settler science and American law. Further research, centering Indigenous voices and knowledge, is needed to explore the scientific and legal impacts of such efforts. We make this point to observe that such work is important, and to acknowledge that while the best practices outlined throughout this article may offer immediate solutions with environmental justice benefits, we believe a long-term solution for both the RPBB and our societal health will require approaches that are rooted in both racial justice and decolonization.[397]

V. CONCLUSION

The RPBB cannot, and moreover should not, be saved absent improved environmental conditions and public health for environmental justice communities. While resources are currently allocated such that only some habitats and some people have sufficient data and power to protect themselves from the wrecking ball, it does not have to be that way. In the wake of the killings of Jamar Clark, Philando Castille, George Floyd, Daunte Wright, Winston Smith, Sam Holmes, and many more of our community members and friends, it is also clear that there are more issues to deal with than industrial pollution and habitat destruction in communities of color in Minnesota. However, there is much that the legal and scientific community can do to close some of the gaps that they have helped to perpetuate through the erasure of certain communities' voices. Much of that work will have to be in the form of culture change and scientific reassessment at the FWS, where assumptions about RPBB presence can lead to life-or-death policy outcomes for environmental justice communities and endangered bees. Advocates have tools at the local, state, and federal levels—both inside courts and agencies as well as in the court of public opinion—to force decisionmakers to reckon with the past and

396. *Our Farm*, DREAM WILD HEALTH, https://dreamofwildhealth.org/farm (last visited Feb. 22, 2022).

397. Tuck & Yang, *supra* note 388.

present assumptions that continue to lead to worse outcomes for BIPOC neighborhoods and treaty lands. In working together to save RPBB habitat and individuals, we can make a better place to live for both humans and bees. Ultimately, if we mean to save the species, we must.

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