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Vermont Law School
164 Chelsea Street | P.O. Box 96
South Royalton, Vermont 05068
(802) 831-1024
vjel@vermontlaw.edu

vjel.vermontlaw.edu

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EXPLORING AN UNENUMERATED CALIFORNIA CONSTITUTIONAL RIGHT TO SAFE AND CLEAN WATER THROUGH A HYPOTHETICAL DECISION

*Salvador Segura**

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INTRODUCTION

California recognizes by statute that every human being has a right to safe and clean water.¹ Yet, throughout the state, one million Californians lack such access.² Many of these Californians are Hispanic farmworkers residing in disadvantaged unincorporated communities (DUCs) throughout the

* Salvador Segura is from Monrovia, CA. He is a Juris Doctor and Certificate in Water Resources Law candidate at Vermont Law School with plans to graduate in May 2022. Salvador would like to thank Professor Pat Parenteau and Notes Editor Andrew Lechner for their support during the writing process—and Professor Catherine Fregosi for teaching him how to write! Salvador also thanks the Vermont Journal of Environmental Law Staff of Volume 22 and 23 for all their hard-work. Finally, Salvador immensely appreciates his friends and family—and dog Daisy, who helped him find his best friend, Andie Parnell, and her dog Hazel; they’ve become a happy little Frenchie Family. This paper is for the one million Californians without access to safe and clean water.

1. CAL. WATER CODE § 106.3(a) (2013).

2. CAL. DEP’T OF WATER RES. ET AL., 2020 WATER RESILIENCE PORTFOLIO: IN RESPONSE TO THE EXECUTIVE ORDER N-10-19, 17 (2020).

Central and Salinas Valleys. These communities must rely on contaminated aquifers.³ The unincorporated community of Tooleville of Tulare County, located in the San Joaquin Valley, represents many of these Californians' struggle for the right to safe and clean water.⁴

Tooleville consists of 80 homes and about 391 residents—68% of whom are Hispanic.⁵ Records show Tooleville's water has been contaminated by pesticides since the 1970s and continues to be so because the state does not regulate Tooleville's source of water.⁶ Since 2001, Tooleville has unsuccessfully tried to persuade the neighboring City of Exeter (Exeter)—about a mile away—to extend Tooleville's water from Exeter's municipal water system.⁷ Tooleville could not rely on California to order such consolidation, despite the California State Water Resources Control Board's (Water Board) authority to order a mandatory consolidation of public water systems.⁸ Tooleville was ineligible for mandatory consolidation because Tooleville's water did not consistently fail to meet state and federal standards.⁹ Furthermore, the residents of Tooleville cannot rely on § 106.3(a) of the California Water Code to require the State to provide them with access to safe and clean water because the statute does not create a legal duty.¹⁰ Therefore, the residents of Tooleville did not have legal recourse to achieve access to clean and safe water. The overarching question for the Tooleville residents is: can they achieve access to safe and clean water by filing suit against the State of California, the Water Board, the County of Tulare (Tulare), and the City of Exeter by claiming Tooleville residents have an unenumerated constitutional right to safe and clean water? Will the Supreme Court of California recognize such an unenumerated right?

3. Jose A. Del Real, *They Grow the Nation's Food, but They Can't Drink the Water*, N.Y. TIMES (May 21, 2019), <https://www.nytimes.com/2019/05/21/us/california-central-valley-tainted-water.html>; CAL. GOV. CODE § 56033.5 (2012).

4. Casey Beck, *Inside the Uphill Fight for Clean Water in California's Central Valley*, YALE ENV'T 360 (July 28, 2020), <https://e360.yale.edu/features/inside-the-uphill-fight-for-clean-water-in-californias-central-valley>.

5. Austin R. Ramsey, *The Great Divide: California Communities Battle for Rights to Water*, THE FRESNO BEE (June 5, 2020), <https://www.fresnobee.com/news/local/water-and-drought/article243237701.html>.

6. *Id.*; See also, Virginia Madrid-Salazar, Comment, *Feeding the World has Left Our Water Contaminated: Will California's Human Right to Water Act Fix the Problem?*, 24 S.J. AGRIC. L. REV. 213, 213-214 (2015) (noting that "California does not require regulation of every domestic water source.").

7. Ramsey, *supra* note 5.

8. *Id.*

9. *Id.*; CAL. HEALTH & SAFETY CODE § 116682(a) (2022).

10. See CAL. WATER CODE § 106.3(b)-(e) (2013) (noting that § 106.3(b) sets forth a policy for state agencies to consider in making decisions and does not expand any obligation of the state to provide water or infringe on the rights or responsibilities of public water systems); Madrid-Salazar, *supra* note 6, at 229-230.

This Note will explore an unenumerated California Constitutional right to safe and clean water through a hypothetical lawsuit by the residents of Tooleville against the State of California, the Water Board, Tulare, and Exeter. Part I will introduce the plaintiff, Tooleville, and the defendants, the State of California, the Water Board, Tulare, and Exeter, by providing the facts and circumstances leading up to the “cause of action.” Part II will discuss California Constitutional claims, present anticipated arguments, and analyze the strength of the legal claims before providing a discussion as to how a court is likely to rule. Part III will discuss the scope, application, and precedent of the court’s hypothetical ruling, as well as the practical concerns of potentially recognizing an unenumerated California Constitutional right to safe and clean water. This part will also consider whether the ruling will apply to other unincorporated communities.

I. TOOLEVILLE’S WATER: FACTUAL BACKGROUND

The residents of Tooleville rely on two contaminated wells—one of which ran completely dry for a day in 2021—for water that exceeded the acceptable level of nitrate at least seven times since 1997.¹¹ Most of the residents drink the water from the contaminated well and use it for cooking.¹² In addition, residents have to pay twice as much for water because they have to pay their water utility bill and for bottled water.¹³ Residents only receive five five-gallon jugs of bottled water from Tulare County every two weeks.¹⁴ Meanwhile, the Friant-Kern Canal—primarily used for irrigation—runs behind their houses and through Exeter’s municipal water system.¹⁵ The canal does not contain harmful contaminants and is less than a mile west of Tooleville.¹⁶ Tooleville residents do not have legal access to water from the Friant-Kern Canal that supports the San Joaquin Valley’s major crops: alfalfa, corn, grapes, vegetables, and fruits.¹⁷ Furthermore, Tooleville’s

11. Carolina Laurie Balazs, *Just Water? Social Disparities and Drinking Water Quality in California’s San Joaquin Valley* 1, 61 (2011) (Ph.D. dissertation, University of California, Berkley); CTR. FOR WATERSHED SCIS., U.C. DAVIS, *ADDRESSING NITRATE IN CALIFORNIA’S DRINKING WATER WITH A FOCUS ON TULARE LAKE BASIN AND SALINAS VALLEY GROUNDWATER* 9 (2012) (noting nitrate is a by-product of nitrogen use which is widely applied to crops throughout the region); Diana Marcum, *A California Town Refused to Help Neighbors with Water. So the State Stepped In*, L.A. TIMES (Oct. 30, 2021), <https://www.latimes.com/environment/story/2021-10-30/california-water-crisis-state-intervenes-to-help-town>.

12. Marcum, *supra* note 11.

13. *Id.*

14. See Cagle, *Rural California May Run Dry*, THE GUARDIAN (Feb. 28, 2020), <https://www.theguardian.com/environment/2020/feb/28/california-water-wells-dry-sigma>.

15. Balazs, *supra* note 11, at 29.

16. Balazs, *supra* note 11, at 29; Ramsey, *supra* note 5.

17. Balazs, *supra* note 11, at 29; Ramsey, *supra* note 5; *Friant-Kern Canal*, WATER EDUC. FOUND., <https://www.watereducation.org/aquapedia/friant-kern-canal> (last visited Mar. 13, 2022).

efforts to persuade Exeter to consolidate water systems have been unsuccessful.¹⁸

Tooleville's present conditions can be attributed to several factors. One systematic and intentional factor dates back to the 1970s, when Tulare County first listed Tooleville as one of fifteen communities for which public resources—including water infrastructure—should be withheld.¹⁹ The County Plan reads:

Public commitments to communities with little or no authentic future should be carefully examined before final action is initiated. These non-viable communities would, as a consequence of withholding major public facilities such as sewer and water systems, enter a process of long term, natural decline, as residents depart for improved opportunities in nearby communities.²⁰

Tooleville is one of thirteen of the *non-viable* communities that remain and must rely on small, privately-owned wells that are contaminated—in part because Tulare County withheld public funds that could have provided Tooleville with proper water infrastructure.²¹

A second factor causing the present conditions in Tooleville is California's regulatory framework. Small public service providers and private wells are not protected by California's Safe Drinking Water Act regulations, nor the Water Board's funding mechanism.²² The smallest regulated water service providers are public water systems with at least five, but not more than 14, service connections.²³ As a result, nitrates from agricultural use has permeated into the groundwater since the early 1990s.²⁴

As an unincorporated community, Tooleville did not have a viable legal mechanism to force the State of California or Exeter to provide Tooleville residents with access to safe and clean water. Two possible legal avenues—1) a human right to water policy, and; 2) consolidation—were of no use to Tooleville either. First, California's right to safe and clean water statute does not create a legal duty or remedy that private citizens can invoke to obligate the state to provide Californians with clean and safe water.²⁵ The statute is a policy consideration agencies should take into account when planning or

18. Ramsey, *supra* note 5.

19. Laura Bliss, *Meet the Drought-Stricken Communities of California's San Joaquin Valley*, GRIST (Oct. 2, 2015), <https://grist.org/climate-energy/meet-the-drought-stricken-communities-of-californias-san-joaquin-valley/>; Balazs, *supra* note 11, at 61.

20. Bliss, *supra* note 19.

21. *Id.*

22. Madrid-Salazar, *supra* note 6, at 214.

23. CAL. HEALTH & SAFETY CODE § 116275(n) (2019).

24. CTR. FOR WATERSHED SCIS., *supra* note 11, at 9.

25. CAL. WATER CODE § 106(b)-(e) (2013); Madrid-Salazar, *supra* note 6, at 229–230.

making decisions²⁶ Second, the Water Board can order a consolidation of public water systems only if a water system is consistently failing to provide an adequate supply of safe drinking water.²⁷ Tooleville's water did not consistently fail to provide an adequate supply of safe drinking water despite the nitrate contamination of Tooleville's wells.²⁸ The City of Exeter has repeatedly declined to voluntarily consolidate.²⁹

In 2019, the Exeter City Council voted unanimously to reject plans for extending service to the Tooleville community after approving the Water Master Plan which examined Exeter's water infrastructure and capacity to serve another community.³⁰ The Water Master Plan recognized that Tooleville's water is contaminated with nitrates, hexavalent chromium, and bacteria.³¹ After the Council's vote, the Mayor and Council stated that Exeter did not have the water capacity and ability to service Tooleville, nor were they interested in adding to Exeter's debt or stretching its workforce to help Tooleville.³² But, helping Tooleville only requires constructing 0.7 miles of pipe.³³ In the exact words of Exeter Mayor Mary Waterman-Philpot, "[w]e [Exeter,] have to take care of Exeter first" because "[w]e don't have the water capacity and the ability to service another community."³⁴ Exeter officials fear extending service to Tooleville will burden the city's water system, which they argue already requires repairs that may cost millions of dollars. Further, helping Tooleville will also require raising water and sewer rates for Exeter residents.³⁵ But as of August 2021, the State Water Resources Control Board warned Exeter that if the city does not voluntarily consolidate within six months, the State will step in according to their new authority under the Proactive Water Solution Bill Senate Bill 403.³⁶

The Proactive Water Solution Senate Bill 403 (SB 403 Consolidation of At-Risk Water Districts) was signed into law on September 23, 2021, and

26. See Kristin Dobbin et al., *SGMA and the Human Right to Water: To What extent do Submitted Groundwater Sustainability Plans Address Drinking Water Uses and Users?*, U.C. DAVIS (July 2020) (noting that of the forty-one ground basin recovery plans submitted to the Department of Water Resources for review, only five mentioned the human right to water and only one affirmed the right as a consideration in developing the plan).

27. CAL. HEALTH & SAFETY CODE § 116682(a) (2022).

28. Ramsey, *supra* note 5.

29. *Id.*

30. Cresencio Rodriguez-Delgado, *Dirty Water Fights Brewing as Central Valley City Refuses to Help Neighboring Town*, FRESNO BEE (Sept. 11, 2019), <https://www.fresnobee.com/article234986737.html>.

31. CITY OF EXETER, WATER SYSTEM MASTER PLAN 5-1 (2019).

32. Rodriguez-Delgado, *supra* note 30.

33. Marcum, *supra* note 11.

34. Rodriguez-Delgado, *supra* note 30.

35. *Id.*

36. Marcum, *supra* note 11; Ben Irwin, *Newsom Signs Proactive Water Solutions Bill SB 403*, SUN GAZETTE (Oct. 6, 2021), <https://thesungazette.com/article/news/2021/10/06/newsom-signs-proactive-water-solutions-bill-sb-403/>.

amended the California Safe Drinking Water Act.³⁷ SB 403 adds to the *consistent failure* threshold that water systems serving DUCs were required to meet for the Water Board to order consolidation.³⁸ Under SB 403 the Water Board can now authorize and fund consolidations to assist DUCs served by water systems that are “at-risk of failing” even though the water systems may consist of private domestic wells.³⁹ SB 403 also requires the Water Board to seek and consider community input before ordering a consolidation, and it requires the Water Board to consider petitions for mandatory consolidation from DUCs served by at-risk water systems.⁴⁰

Since the passage of SB 403, Tooleville and the one million Californians without access to safe and clean water appear to now have a legal mechanism to achieve access to safe and clean water.⁴¹ However, SB 403 reflects what has caused Tooleville, and arguably one million Californians, to not have access to safe and clean water: communities being left out of the decision-making process. In Tooleville’s case: Tulare County deciding to withhold public resources to DUCs in the 1970s, California’s decision to not regulate small public water systems and private wells until September 2021, and Exeter’s refusal to assist Tooleville for 20 years.⁴² The application of SB 403 has yet to unfold, but SB 403 does not create an enforceable right to safe and clean water that Californians can invoke. Rather, SB 403 grants the Water Board administrative oversight to consider providing DUCs, served by at-risk water systems, with access to safe and clean water.⁴³ Under SB 403, communities without access to water are still left out of the decision-making process, leaving the Water Board to decide whether a community may gain access to clean and safe water through consolidation. Therefore, even though SB 403 provides Tooleville and possibly the one million Californians without access to safe and clean water with a legal avenue to achieve such access, there is still value in recognizing an unenumerated constitutional right to safe and clean water Californians can invoke, which this note explores through a hypothetical lawsuit.

37. S.B. 403, 2021 Sess. (Cal. 2021).

38. *Id.*; Irwin, *supra* note 36.

39. CAL. HEALTH & SAFETY Code § 116682 (2022).

40. CAL. HEALTH & SAFETY Code § 116682 (2022).

41. CAL. HEALTH & SAFETY Code § 116682 (2022); Irwin, *supra* note 36.

42. Madrid-Salazar, *supra* note 6, at 214; Irwin, *supra* note 36.

43. Irwin, *supra* note 36.

II. IN THE COURTROOM

A. Tooleville's Residents California Constitutional Claim(s)

This section will explore a constitutional avenue for Tooleville to access clean and safe water. The Tooleville residents will file a petition to the California Supreme Court to issue a mandamus compelling the State of California, the Water Resources Control Board, County of Tulare, and City of Exeter to provide Tooleville residents with clean and safe water. They will argue for an unenumerated constitutional right to safe and clean water. What follows is the hypothetical Court decision from the mandamus action.

1. Hypothetical California Supreme Court Decision:

*RESIDENTS OF TOOLEVILLE v. STATE OF CALIFORNIA et al.*⁴⁴

Tooleville Residents (Tooleville) filed a petition in the Supreme Court for a writ of mandamus against the State of California, California Water Resources Control Board, County of Tulare, and City of Exeter (collectively, defendants), seeking to compel the parties to provide them with access to safe and clean water. Tooleville contends they have an unenumerated, fundamental, and basic California constitutional right to safe and clean water. We review this case pursuant to Article VI, § 10 of the California Constitution, whereby this Court has “original jurisdiction in proceedings for extraordinary relief in the nature of mandamus, certiorari, and prohibition.”⁴⁵

The defendants plead an affirmative defense under Water Code § 2000 that this Court lacks jurisdiction because Tooleville’s suit involves the determination of water rights.⁴⁶ We disagree. This Court invokes “original jurisdiction where the matters to be decided are of sufficiently great importance and require immediate resolution.”⁴⁷ Those circumstances are present here because 391 residents are, and have been, without access to safe

44. This footnote serves as a disclaimer that the following is a hypothetical opinion based on the actual factual circumstances of the Tooleville community. Please note that the Tooleville community did not comment on or endorse this Note. All information in this note is publicly available information. Any errors in this note are my own. Solely for the purposes of this note assume the California Supreme Court issued an opinion addressing Tooleville Residents’ claims for an unenumerated Constitutional right to safe and clean water in response to this hypothetical petition for a writ of mandamus.

45. CAL. CONST. art. VI, § 10; *See* Cal. Redevelopment Ass’n v. Matosantos, 53 Cal. 4th 231, 253 (2011) (noting the California Supreme Court has original jurisdiction where matters to be decided are of great importance and require immediate resolution).

46. *See* CAL. WATER CODE § 2000 (1957) (providing that in any suit brought in the state of California for the determination of water rights, the court may order a reference to the Water Resources Control Board).

47. *Matosantos*, supra note 45, at 253.

and clean water or a viable legal mechanism to achieve such access.⁴⁸ Water Code § 2000 provides that, “[in] any suit brought in any court of competent jurisdiction in this State for determination of rights to water, the court may order a reference to the [Water] board, as referee, of any or all issues in the suit.”⁴⁹ The statute merely implies the courts of this state have concurrent original jurisdiction in suits to determine water rights.⁵⁰ As such, this Court will exercise original jurisdiction over Tooleville’s petition for mandamus.

Defendants argue that Tooleville is not entitled to a writ of mandamus because they fail to show that: 1) “the respondent has failed to perform an act despite a clear, present and ministerial duty to do so,” 2) “the petitioner has a clear, present and beneficial right to that performance, and 3) “there is no other plain, speedy and adequate remedy.”⁵¹ Defendants emphasize that a mandamus compelling them to perform a future duty to supply clean and safe water is inappropriate because there is no present duty to provide Tooleville with clean and safe water.⁵² Furthermore, defendants argue that issuing a writ on the grounds that Tooleville does have an unenumerated constitutional right to safe and clean water is unconstitutional under the separation of powers doctrine, as provided in Article III, § 3 of the California Constitution.⁵³ Defendants also contend that recognizing such a right is akin to enacting legislation, which is within the power of the Legislature, not the Judiciary.⁵⁴ We disagree.

First, Tooleville satisfies mandamus requirements two and three. A party seeking a writ of mandamus has a clear, present, and beneficial right to the performance they seek when they have “some special interest to be served or some particular right to be preserved or protected over and above the interests held in common with the public at large.”⁵⁵ A mandamus writ is appropriate if the party has no “plain, speedy, or adequate remedy.”⁵⁶ Tooleville has a special interest in the outcome of this proceeding because they seek to compel defendants to provide them with access to clean and safe water—a right the legislature of this state has recognized.⁵⁷ Furthermore, as Tooleville

48. Ramsey, *supra* note 5.

49. CAL. WATER CODE § 2000 (1957).

50. Nat’l Audubon Soc’y v. Superior Ct., 33 Cal. 3d 419, 451 (1983).

51. See *Riverside Sheriff’s Ass’n v. Cnty. of Riverside*, 106 Cal. App. 4th 1285, 1289 (Cal. Ct. App. 2003) (listing the standard for a writ of mandamus).

52. See *Fitch v. Justice Court*, 24 Cal. App. 3d 492, 495 (Cal. Ct. App. 1972) (relying on *Treber v. Superior Ct.*, 68 Cal. 2d 128, 134 (Cal. 1968)) (noting that a writ of mandamus cannot compel performance of “a future duty if no present duty to perform exists.”).

53. See CAL. CONST. art. III, § 3 (providing that a branch of government may not exercise a power not authorized by the California Constitution).

54. See *Robinson v. Payne*, 20 Cal. App. 2d 103, 105 (Cal. Ct. App. 1937) (recognizing that all legislative power of the state, except the right of initiative and referendum, is vested in the legislature).

55. *Save the Plastic Bag Coal. v. City of Manhattan Beach*, 254 P.3d 1005, 1011 (2011).

56. CAL. CIV. PROC. CODE § 1086 (1907).

57. CAL. WATER CODE § 106.3 (2013).

provides, they do not have a viable legal mechanism to access safe and clean water, so they turned to this Court to seek relief. California’s right under the clean water statute does not create a legal duty and remedy private citizens can invoke to obligate the state to provide Californians clean and safe water.⁵⁸ Nor was the Water Board able to order a consolidation of Tooleville and Exeter’s water systems because Tooleville’s water does not consistently fail to provide an adequate supply of safe drinking water.⁵⁹ Therefore, Tooleville has no “plain, speedy, or adequate remedy.”⁶⁰

Second, defendants’ argument based on the separation of powers doctrine has no merit. The separation of powers doctrine “establishes a system of checks and balances to protect any one branch against the overreaching of any other branch.”⁶¹ The judicial power may “test legislative and executive acts by the light of constitutional mandate and in particular to preserve constitutional rights, whether of individual or minority, from obliteration by the majority.”⁶² The judiciary can exert more influence in safeguarding or recognizing fundamental constitutional rights.⁶³

We now address whether defendants have a duty to provide Tooleville with access to clean and safe water by turning to the merits. In its petition, Tooleville advances three arguments invoking an alleged unenumerated—fundamental and basic—constitutional right to safe and clean water. We address each argument in turn. First, Tooleville provides that the laws of the State have failed to protect Tooleville’s water quality and prevent them from accessing clean and safe water despite California’s role as a public trustee of the people’s water. Tooleville cites this Court’s decisions in *National Audubon Society v. Superior Court* and *South Pasadena v. Pasadena Land & Water Company*. Tooleville argues that because California is in control of the state’s water resources through a public trust, Tooleville has a right to a clean and safe water supply and a right to enforce it through a mandamus against the person in control of the supply.⁶⁴

In *National Audubon*, this Court recognized that the State of California holds the people’s natural resources in trust.⁶⁵ This Court further recognized that the public trust is “an affirmation of the duty of the state to protect the people’s common heritage of streams, lakes, marshlands and tidelands,

58. CAL. WATER CODE § 106.3 (2013).

59. CAL. HEALTH & SAFETY CODE § 116682(a) (2022); Ramsey, *supra* note 5.

60. CAL. CIV. PROC. CODE § 1086 (1907).

61. CAL. CONST., art. III, § 3; Bixby v. Pierno, 481 P.2d 242, 249 (1971).

62. Pierno, 481 P.2d at 249.

63. See *id.* (relying on CARDOZO, *The Nature of the Judicial Process*, in COLLECTED LEGAL PAPERS 92, 94 (1921); LEARNED HAND, *The Contribution of an Independent Judiciary to Civilization*, in THE SPIRIT OF LIBERTY 118–126 (1959)).

64. *Nat’l Audubon Soc’y*, 33 Cal. 3d at 440; *S. Pasadena v. Pasadena Land & Water Co.*, 93 P. 490, 494 (1908).

65. *Nat’l Audubon Soc’y*, 33 Cal. 3d at 440.

surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust.”⁶⁶ In *South Pasadena*, this Court recognized the remedy in the form of a mandamus to compel an established water system—controlled by a quasi-public corporation—to continue a supply of water to all the persons who depend on the right.⁶⁷

Here, Tooleville is correct in arguing that the state holds the people’s natural resources in trust via the Public Trust Doctrine. However, Tooleville supplies its water from two private wells that have become contaminated mostly from agricultural runoff—not from a quasi-public corporation controlling an established water system. Nor has Tooleville’s supply of water ceased to exist but rather the quality of the water has degraded. Therefore, *South Pasadena* is not directly applicable here.

Tooleville’s second argument is that in reading the California Constitution liberally and as a whole, there is an unenumerated—fundamental and basic—right to safe and clean water. Therefore, by invoking this right, Tooleville can compel the state to provide them with safe and clean water for the purpose of residential drinking water. Tooleville primarily relies on Article I, §§ 1, 7, and 24 and Article X, § 5 of the California Constitution. Tooleville argues that defendants’ collective decisions spanning over decades (withholding funding by the county, refusing to voluntarily consolidate, and California’s regulatory framework that does not protect their water from pollution) have substantially affected their fundamental vested rights. Although this Court has not recognized an unenumerated right to safe and clean water, Tooleville’s argument has some merit.

The concept of unenumerated rights is not a new phenomenon.⁶⁸ Unenumerated rights are not expressly mentioned in the text of a constitution. Rather, the right is inferred from the language, history, and structure of a constitution, or cases interpreting a constitution.⁶⁹ Both the United States Supreme Court and state supreme courts have recognized unenumerated rights based on principles from their respective constitutions.⁷⁰ The United States Supreme Court recognizes the right to travel, the right to privacy, the

66. *Id.* at 441.

67. *S. Pasadena*, 93 P. 490, at 495.

68. See Stevens G. Calabresi & Sarah E. Agudo, *Individual Rights Under State Constitutions when the Fourteenth Amendment Was Ratified in 1868: What Rights Are Deeply Rooted in American History and Tradition?*, 87 TEX. L. REV. 7, 118 (2008) (finding state constitutional law in 1868 openly contemplated the existence of unenumerated, fundamental, natural, and inalienable rights).

69. *Unenumerated Rights*, JRANK, <https://law.jrank.org/pages/10977/Unenumerated-Rights.html> (last visited Mar. 13, 2022).

70. *Id.*; See *Griswold v. Conn.*, 381 U.S. 479, 483 (1965) (recognizing that the First Amendment has a penumbra where the right to privacy is protected from governmental intrusion); see *Tobe v. City of Santa Ana*, 9 Cal. 4th 1069, 1100 (1995) (holding the right to intrastate travel is a basic human right protected by the United States and California Constitutions as a whole).

right to autonomy, the right to dignity, and the right to an abortion as unenumerated rights based on express constitutional provisions.⁷¹ In discussing the right to keep and bear arms for the purpose of self-defense, the Supreme Court provided that when determining whether an unenumerated right is fundamental, a court must decide whether the claimed right is either fundamental to liberty or whether it is deeply rooted in the history and tradition of the United States.⁷²

This Court has engaged in the unenumerated rights analysis when determining whether the right to travel is an unenumerated, basic human right.⁷³ It affirmed that “the right to intrastate travel (and intermunicipal travel) is a basic human right protected by the United States and California Constitutions as a whole.”⁷⁴ This Court reasoned that “such a right is implicit in the concept of a democratic society and is one of the attributes of personal liberty under common law.”⁷⁵ Courts of this state have found violations of the unenumerated right to travel when there is a direct restriction to travel.⁷⁶ In contrast, the lower courts of the State have refused to recognize a “constitutionally protected right to indulge in the use of euphoric drugs.”⁷⁷ In that case, the appeals court noted that the defendant did not invoke an analogous principle to protect their claimed right to use euphoric drugs.⁷⁸ Furthermore, this Court’s judicial review jurisprudence regarding the review of administrative decisions offers some applicable guidance. In *Bixby v. Pierno*, this Court provided that, “courts must determine on a case-by-case basis whether an administrative decision or class of decisions substantially affects fundamental vested rights and thus requires independent judgment review.”⁷⁹ This Court must make three determinations in this case: 1) whether the asserted right is a fundamental and basic one; 2) what the economic aspects of the right are, and; 3) what “the effect of it in human terms [is] and the importance of it to the individual in the life situation.”⁸⁰

Article I, § 1 of the California Constitution provides that, “[a]ll people are by nature free and independent and have inalienable rights. Among these are enjoying life and liberty, acquiring, possessing, and protecting property,

71. See generally *Tobe*, 9 Cal. 4th at 1100 (establishing interstate travel as a basic human right protected by the California Constitution); *Griswold*, 381 U.S. at 70 (describing unenumerated rights such as the right to travel and right to privacy, among other rights).

72. *McDonald v. City of Chi.*, 561 U.S. 742, 764, 768 (2010).

73. *Tobe*, 9 Cal. 4th at 1100.

74. *Id.*

75. *Id.*

76. *Id.* at 1101 (relying on *Adams v. Superior Ct.*, 12 Cal. 3d 55, 61–62 (1974)).

77. *People v. Aguiar*, 257 Cal. App. 2d 597, 603 (Cal. Ct. App. 1968).

78. *Id.* at 605.

79. *Pierno*, 481 P. 2d at 252.

80. *Id.*

and pursuing and obtaining safety, happiness, and privacy.”⁸¹ Article I, § 7 provides that, “a person may not be deprived of life, liberty, or property without due process of law or denied equal protection of the laws”⁸² Article I, § 24 provides two critical provisions. First, “rights guaranteed by this [California] Constitution are not dependent on those guaranteed by the United States Constitution.”⁸³ Second, “this declaration of rights may not be construed to impair or deny others retained by the people.”⁸⁴ Article X, § 5 provides that, “[t]he use of all water now appropriated, or that may *hereafter* be appropriated, for sale, rental, or distribution, is hereby declared to be a public use, and subject to the regulation and control of the State, in the manner to be prescribed by law.”⁸⁵ Article X, § 2 provides that, “because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable”⁸⁶ This Court has recognized that the purpose of Article X, § 2 is to ensure that the State’s water resources are “available for the constantly increasing needs of *all* of its people.”⁸⁷ Furthermore, California law has long recognized that residential drinking water is the highest *beneficial use*.⁸⁸

In applying the factual circumstances before this Court and the above Constitutional provisions, cases, and legal principles Tooleville has a persuasive argument. As provided in their petition, Tooleville relies on one contaminated well for water that has exceeded the acceptable level of nitrate at least seven times since 1997, which many residents have consumed and still use for cooking.⁸⁹ The regulatory framework of this state has failed to protect their supply of water from agricultural contamination.⁹⁰ The County of Tulare intentionally withheld funding from Tooleville for water infrastructure.⁹¹ The existing legal avenues to achieve access to safe and clean water are of no use to the residents of Tooleville either. California’s Right to Clean Water Statute does not create a legal duty or remedy that private citizens can invoke to obligate the state to provide Californians clean and safe water.⁹² Further, Tooleville does not qualify for a consolidation of

81. CAL. CONST. art. I, § 1.

82. CAL. CONST., art. I, § 7.

83. CAL. CONST., art. I, § 24.

84. *Id.*

85. CAL. CONST., art. X, § 5.

86. CAL. CONST., art. X, § 2.

87. *Meridian, Ltd. v. San Francisco*, 13 Cal. 2d 424, 449 (1939).

88. CAL. CONST., art. X, § 2; CAL. WATER CODE § 106 (2013).

89. Balazs, *supra* note 11, at 61.

90. CTR. FOR WATERSHED SCIS., *supra* note 11, at 9.

91. Bliss, *supra* note 19.

92. CAL. WATER CODE § 106(b)-(e) (2013); Madrid-Salazar, *supra* note 6, at 229-230; Ramsey, *supra* note 5.

their water system because their water does not consistently fail to provide an adequate supply of safe drinking water.⁹³ In addition, the neighboring city of Exeter refuses to voluntarily consolidate or extend service to Tooleville, even though Exeter recognizes Tooleville's water is contaminated with nitrates, hexavalent chromium, and bacteria.⁹⁴ Given these facts, we are convinced these are direct restrictions preventing Tooleville from accessing something as fundamental and basic as water for residential drinking.

We see no reason why, in reading the California Constitution as a whole, the provisions of Article I, §§ 1, 7, and 24 and Article X, § 5 of the Constitution should not be construed to support a fundamental and basic unenumerated right to safe and clean water. Using this Court reasoning when it recognized an unenumerated right to travel, access to safe and clean water is “such a right [that] is implicit in the concept of a democratic society and is one of the attributes of personal liberty under common law.” Through that reasoning, how can you—without water—enjoy the inalienable rights to life and liberty, acquiring, possessing, and protecting property, and pursuing and obtaining safety, happiness, and privacy secured by the Constitution and upheld by this Court?⁹⁵ The State recognizes that water for residential water use is the highest *beneficial use* in the state, which is reinforced by the statute recognizing water as a human right.⁹⁶ Implicit in this recognition is that there is no life and liberty without safe and clean water for residential drinking because it is well recognized that humans need water to survive.⁹⁷ The human body consists of 60% water and needs water to flow through our cells and organs.⁹⁸ Nor is there enjoyment in acquiring, possessing, and protecting property without access to safe and clean water. Again, this is implicit in the state's recognition of domestic—residential—water use as the highest *beneficial use* in the state. A right to safe and clean water for residential drinking is closely related and implicit in all the explicitly recognized and protected rights in the Constitution and all the unenumerated constitutional rights this Court has recognized. Therefore, as implicit as the right to travel is in the Article I, §§ 1 and 24 of the California Constitution, this Court recognizes access to safe and clean water for residential drinking as a basic human right protected by Article I, §§ 1, 7, and 24, and Article X, § 5.

93. CAL. WATER CODE § 106(b)-(e) (2013); Madrid-Salazar, *supra* note 6, at 229-230; Ramsey, *supra* note 5.

94. CITY OF EXETER, WATER SYSTEM MASTER PLAN 5-1 (2019).

95. *Tobe*, 9 Cal. 4th at 1100; CAL. CONST., art. I, § 1.

96. CAL. WATER CODE § 106.3 (2013).

97. Karen Fifield, *Clean Drinking Water is Essential to Life*, MICH. STATE UNIV. (Nov. 16, 2017), https://www.canr.msu.edu/news/clean_drinking_water_is_essential_to_life#:~:text=Clean%20drinking%20water%20is%20essential%20to%20life, and%20human%20and%20animal%20feces.

98. *Id.*

Furthermore, in support of Tooleville's argument, Tooleville cites to the New York, Montana, and Pennsylvania Constitutions, and to the Pennsylvania Supreme Court Opinion *Robinson Township v. Commonwealth* as persuasive authority.

Article I, § 19 of the New York Constitution provides that "[e]ach person shall have a right to clean air and water, and a healthful environment."⁹⁹ Article IX, § 1 of the Montana Constitution provides:

The state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations . . . the legislature shall provide adequate remedies for the protection of the environmental life support system from degradation and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources.¹⁰⁰

Article I, § 27 of the Pennsylvania Constitution provides:

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic, and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all people.¹⁰¹

In *Robinson*, the Pennsylvania Supreme Court held that the Pennsylvania Oil and Gas Act was unconstitutional because the Act was incompatible with Pennsylvania's duty as trustee of Pennsylvania's natural resources.¹⁰² The Court recognized that § 27 of the Pennsylvania Constitution accomplishes two goals.¹⁰³ First, § 27 identifies protected environmental rights—like the right to clean air and pure water—to prohibit the state from acting in a detrimental manner.¹⁰⁴ Second, § 27 establishes a framework for the Commonwealth to affirmatively participate in the development and enforcement of these environmental rights.¹⁰⁵

Although we find the authorities persuasive, there is a critical difference between the case before us and that of the Pennsylvania Supreme Court's decision in *Robinson*. There, the plaintiffs cited to an *enumerated* right that

99. N.Y. CONST., art. I, § 19.

100. MONT. CONST., art. IX, § 1.

101. PA. CONST., art. I, § 27.

102. *Robinson Twp. v. Commonwealth*, 632 Pa. 564, 585 (2013).

103. *Id.* at 645.

104. *Id.*

105. *Id.*

is explicitly stated in their state constitution.¹⁰⁶ While here, Tooleville is citing to various articles and sections to convince this Court to infer the California Constitution supports an *unenumerated* right to safe and clean water. An explicit and enumerated California Constitutional right to safe and clean water would require the citizenry to exercise their initiative power to propose and adopt an amendment to the Constitution, just like voters recently did in the State of New York and that other states are proposing.¹⁰⁷

Tooleville's third argument is that the current California water jurisprudence fails to address the water needs of rural disadvantaged unincorporated communities (DUCs) because the jurisprudence is based on the evaluation of water-use in a city context from California's state courts.¹⁰⁸ The evaluation assumes municipal water systems are available to all domestic water users in the state.¹⁰⁹ Cases addressing water in a rural context are overwhelmingly focused on irrigation for agriculture rather than drinking water for rural, non-city residents.¹¹⁰ Of the total water supply used in the state, about 80% is used for agricultural use while the remaining 20% is used to support residential and business use.¹¹¹ Many communities have a reliable water supply, even during droughts, except for many rural communities throughout the state.¹¹² In addition to contamination, rural communities are severely vulnerable to water shortages because of their isolation and lack of capacity to develop water supplies.¹¹³ For many of these rural communities like Tooleville, access to water is a matter of survival.¹¹⁴

Tooleville cites to two cases as examples. First, in *Southern California Water Co.*, the appeals court addressed a groundwater basin issue, where the parties were disputing their water rights and allocation of unused storage space.¹¹⁵ Throughout the opinion, there is an underlying discussion of the

106. *Id.*

107. CAL. CONST., art. II, § 8; Stacey Halliday et al., *New York Becomes the Third State to Adopt a Constitutional Green Amendment*, BEVERIDGE & DIAMOND (Dec. 10, 2021), <https://www.bdlaw.com/publications/new-york-becomes-the-third-state-to-adopt-a-constitutional-green-amendment/> (noting New York adopted a constitutional green amendment and other states have similar proposed amendments in their legislatures); see generally, Mark Baldassare et al., *The Initiative Process in California*, PPIC (Oct. 2013), https://www.ppic.org/wp-content/uploads/content/pubs/jtf/JTF_InitiativeProcessJTF.pdf (discussing California's voter initiative process).

108. Camille Pannu, *Drinking Water and Exclusion: A Case Study from California's Central Valley*, 100 CAL. L. REV. 223, 240 (2012).

109. *Id.*

110. *Id.* at 241.

111. CAL. DEP'T. WATER RES. ET AL., *supra* note 2, at 11–12.

112. *Id.*

113. *Id.*

114. See Cagle, *supra* note 14 (noting “[r]ural residents across the Central Valley are plagued with a host of water-born toxins.”).

115. *Cent. & W. Basin Water Replenishment Dist. v. S. Cal. Water Co.*, 109 Cal. App. 4th 891, 896–98 (Cal. Ct. App. 2003).

water basins at issue, a capacity to extract water from the basins and store the water, and even a recognition that the water resources in the state must be used in the public interest.¹¹⁶ However, throughout the opinion there is an underlying assumption that municipal water is available to all domestic water users in the state. The opinion provides that the California Constitution requires the state's water resources be put to reasonable and beneficial use in the interest of the people and for the public welfare as if all Californians had access to the state's water resources.¹¹⁷

Second, in *Abatti v. Imperial Irrigation District*, the appeals court addressed farmers' water interests within an irrigation district in California's Imperial Valley.¹¹⁸ The court of appeals' opinion provides a discussion of how California law empowers irrigation districts to hold their water rights in trust for the benefit of their users, including: municipal users, industrial users, agricultural users, or farmers.¹¹⁹ The opinion discusses § 106 of the California Water Code and how it expressly provides that water for domestic use is preferred, followed by irrigation.¹²⁰ However, the opinion provides that districts may exercise discretion to distribute water, and therefore, water for irrigation or agricultural purposes may be preferred over domestic uses—in practice.¹²¹ We find Tooleville's argument partially convincing.

B. Courts' Rulings

While the above hypothetical decision provides one approach, the manner in which the California Supreme Court would actually rule if they were presented with the same facts and circumstances discussed in this note would likely differ. The courts would likely have a more extensive record of the facts and circumstances, including but not limited to testimony from individual Tooleville residents of how their life is affected, documentation of any health conditions they have suffered because of consuming contaminated water, and any other relevant documentation. However, as discussed, a petition for a writ of mandamus to the California Supreme Court would likely face two arguments. First, the State, Water Board, County of Tulare, and Exeter would likely contest the Court's jurisdiction on the grounds that issuing a writ of mandamus—compelling them to fulfill a duty that *officially* does not exist—is inappropriate on grounds of separation of powers. However, the Supreme Court of California *does* have original jurisdiction to hear cases that require extraordinary relief, like a writ of mandamus, and

116. *Id.* at 900-06.

117. *Id.* at 905-06.

118. *Abatti v. Imperial Dist.*, 52 Cal. App. 5th 236, 246 (Cal. Ct. App. 2020).

119. *Id.*

120. *Id.*

121. *Id.*

courts are able to recognize unenumerated constitutional rights. Second, the California Supreme Court, like the United States Supreme Court, has recognized fundamental and basic rights that are not explicitly enumerated in the text of their respective constitutions.¹²² The purpose of this note is to explore that avenue as a means of recognizing an unenumerated California Constitutional right to safe and clean water.

Climate change advocates have been advocating for constitutional environmental rights by proposing constitutional amendments, known as Green Amendments, and by filing suits in federal court.¹²³ For example, in the famous *Juliana v. United States* case, a youth environmental activist group called Our Children's Trust sued the United States in federal court in the District of Oregon.¹²⁴ The plaintiffs asserted a fundamental unenumerated right to a sustainable climate under the Due Process Clause of the Fifth Amendment, and that by failing to enact effective legislation to combat climate change, the government infringed on their constitutional rights.¹²⁵ The district court agreed with the plaintiffs.¹²⁶ Judge Ann Aiken stated, "the right to a climate system capable of sustaining human life is fundamental to a free and ordered society."¹²⁷ Judge Aiken relied on *Obergefell v. Hodges* to compare the foundational value of the asserted right to the right of same-sex marriage—providing that all other rights would be infringed without the recognition of the right to a stable climate.¹²⁸ The *Juliana* case, coupled with the cases recognizing other unenumerated rights, like the right to travel and privacy, support the notion that a constitutional amendment is a legitimate legal avenue for achieving the recognition of an unenumerated California Constitutional right to safe and clean water.

122. See *Griswold*, 381 U.S. at 483 (recognizing that the First Amendment has a penumbra where the right to privacy is protected from governmental intrusion); *Tobe*, 9 Cal. 4th at 1100 (holding the right to intrastate travel is a basic human right protected by the United States and California Constitutions as a whole).

123. See *Resources, GREEN AMENDMENTS FOR THE GENERATIONS*, <https://forthe generations.org/resources/> (last visited Dec. 4, 2020) (providing list of resources related to Green Amendments, including a proposal to Amend New Jersey's Constitution).

124. *Juliana v. United States*, 217 F.Supp.3d 1224, 1233 (D. Or. 2016).

125. *Id.* at 1248–50.

126. See *id.* at 1234 (denying defendants' motions to dismiss).

127. *Id.* at 1250.

128. *Id.* at 1248–50.

IV. IMPACT OF THE COURT'S RULING: SCOPE, APPLICATION, AND PRECEDENT

A. Scope of Unenumerated Constitutional Right

Regardless of how a court would actually rule, the recognition of an unenumerated right in this context must be narrowly tailored to the facts like those set forth above, where a significant number of residents of an established community do not have access to safe and clean water because the laws failed to protect their existing water supply from contamination. Courts should find a violation of this right only when these circumstances exist and when there is a direct restriction to prevent residents—who are in need of safe and clean water as a matter of *survival*—from accessing safe and clean water for residential drinking. As the hypothetical opinion suggests, such restrictions can be a regulatory framework that does not protect a supply of water that residents depend on, a county that intentionally withholds funding for essential infrastructure, or even a community that refuses to consolidate or extend service to another community (though this may require finding that the refusal is in bad faith).

A broad, unenumerated constitutional right to safe and clean water would raise a number of concerns, like the concern of exacerbating droughts by increasing competing water interests throughout the state.¹²⁹ Droughts are recurring in California and are severe; in 2014, Governor Brown declared a statewide drought emergency, and in 2021, following three years of severe drought, Governor Newsom expanded the statewide drought emergency's scope to encompass previously excluded counties.¹³⁰ The state recognizes that California faces daunting water challenges given depleted water basins, aging water infrastructure in need of repairs, climate change, and population growth.¹³¹ These are serious concerns considering climate change is projected to reduce mountain snowpack, intensify droughts and wildfire, raise sea levels, shorten wet seasons, and worsen floods—all of which will dramatically change the water resources of the state.¹³² The impacts are projected to occur in correlation with California's expected population

129. See Dan Walters, *Key Conflicts Roil California's Ever-Evolving Waterscape*, CALMATTERS, <https://calmatters.org/environment/2019/05/future-of-california-water-supply/> (noting the competing water interests throughout the state) (last updated June 23, 2020).

130. Ellen Hanak et al., *California's Latest Drought*, PPIC WATER POL'Y CTR. (July 2016), https://www.ppic.org/wp-content/uploads/JTF_DroughtJTF.pdf; *Governor Newsom Expands Drought Emergency Statewide, Urges Californians to Redouble Water Conservation Efforts*, OFF. OF GOVERNOR GAVIN NEWSOM (Oct. 19, 2021), <https://www.gov.ca.gov/2021/10/19/governor-newsom-expands-drought-emergency-statewide-urges-californians-to-redouble-water-conservation-efforts/>.

131. CAL. DEP'T. WATER RES., *supra* note 2, at 6.

132. *Id.*

increase to 45 million by 2050, which will only place greater pressure on the state's rivers and aging water infrastructure.¹³³

Given these projections, a genuine concern of recognizing an unenumerated constitutional right to safe and clean water is that developers may feel encouraged to develop in remote areas without immediate access to water and invoke the right. This is a realistic concern as many lawmakers in the state see the construction of more housing as the solution to the state's housing crisis—development in areas without existing access to water is likely.¹³⁴ However, the lesson of Owens Valley coupled with the California Supreme Court decision in *National Audubon*, existing statutes, and riparian case law already address this concern.

First, the story of Owens Valley coupled with the California Supreme Court decision in *National Audubon Society v. Superior Court* can be understood as a precautionary tale against the extensive and unlimited diversion of water to support urban expansion and development. In 1913, the City of Los Angeles began to divert water from the Owens River through the 233-mile-long Los Angeles Aqueduct to support the rapid growth of the city.¹³⁵ The Owens Lake was completely dry by 1926.¹³⁶ The dry Owens Lake bed is the biggest single source of dust pollution in the United States, which is detrimental to the health of residents and the environment.¹³⁷ In 1970, the Department of Water and Power of the City of Los Angeles completed its second diversion tunnel and began to divert “virtually the entire flow” from the streams near Mono Lake, the second largest lake in California.¹³⁸ The diversions lowered the levels of the lake; exposed the islands on the lake, which exposed the gull to coyotes; and ultimately impaired the scenic beauty and ecological values of the lake.¹³⁹ The Supreme Court of California recognized that private water rights are subject to the Public Trust Doctrine, which protects the scenic and ecological values of the

133. *Id.*

134. See Hannah Wiley, *Make Housing Cheaper? Here's How California Lawmakers are Getting Started in 2020*, THE SACRAMENTO BEE (Jan. 5, 2020), <https://www.sacbee.com/news/politics-government/capitol-alert/article238910033.html> (noting advocates and lawmakers see Gov. Newsom's law spurring construction of new homes as the solution to California's housing crisis).

135. *First Owens River-Los Angeles Aqueduct*, ASCE, <https://www.asce.org/project/first-owens-river-los-angelesaqueduct/#:~:text=The%20aqueduct%20proper%20includes%20a,97%20miles%20of%20covered%20conduit> (last visited Feb. 21, 2022).

136. Marith C. Reheis, *Owens (Dry Lake), California: A Human-Induced Dust Problem*, U.S. GEOLOGICAL SURV. (Dec. 9, 2016), [https://geochange.er.usgs.gov/sw/impacts/geology/owens/#:~:text=Inyo%20Range%20\(fig.,1\),.2\)](https://geochange.er.usgs.gov/sw/impacts/geology/owens/#:~:text=Inyo%20Range%20(fig.,1),.2)).

137. Caitlin Shamberg, *Part 2: What Happened to the Owens Valley*, KCRW (Nov. 5, 2013), <https://www.kcrw.com/news/articles/part-2-what-happened-to-the-owens-valley>.

138. *Nat'l Audubon Soc'y*, 33 Cal. 3d at 424.

139. *Id.* at 424–25.

people's navigable waterways.¹⁴⁰ The Supreme Court's decision in *National Audubon* saved Mono Lake from meeting the same fate as Owens Lake.

Second, the same statute that provides the established policy of California, "that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes" also recognizes that such a right "shall not apply to water supplies for *new development*."¹⁴¹ The statute, albeit implicitly, distinguishes between a human being's right to water for essential purposes and a commercial-purpose right, such as a new development. This distinction is also present in other sections of the California Water Code. For example, § 106 explicitly provides that water for domestic purposes is the highest use of water in the state.¹⁴² Domestic purposes—human consumption, household conveniences, and for the care of livestock—are given preference.¹⁴³

Third, although a developer may argue that because human beings are, or will be, occupants of their property—and therefore, their water-use qualifies as domestic use—the Supreme Court of California has already addressed this potential argument albeit implicitly. In *Prather v. Hoberg*, the Court noted that human beings occupying "hotels, apartment houses, boarding houses, auto camps, or resorts" does not exclude them from the preferential domestic use class, but such a commercial character may prejudice a domestic user of water, especially if the nondomestic uses are present.¹⁴⁴ The Court provided that nondomestic uses include swimming pools, ornamental pools, and boating.¹⁴⁵ Therefore, the lessons of Owens Lake, *National Audubon*, the California Water Code, and riparian case law provides courts a legal basis to deny developers seeking to broaden this unenumerated constitutional right to safe and clean water for the purpose of supporting their commercial development in remote areas.

B. Practical Concerns of Application of Right: Cost and Maintenance

In addition to the concerns regarding the scope of the unenumerated constitutional right, there are practical concerns of applying this right, namely the cost and maintenance of the infrastructure required to provide residents with access to safe and clean water. The estimated cost of infrastructure for small water systems to meet public health requirements is between \$250–500,000 per system.¹⁴⁶ There are about 450 small water

140. *Id.* at 435.

141. CAL. WATER CODE § 106.3 (2013) (emphasis added).

142. CAL. WATER CODE § 106 (2013).

143. *Deetz v. Carter*, 232 Cal. App. 2d 851, 854 (Cal. Ct. App. 1965).

144. *Prather v. Hoberg*, 24 Cal. 2d 549, 562 (1944).

145. *Id.*

146. Pannu, *supra* note 108, at 267.

systems, including Tooleville's, in disadvantaged unincorporated communities (DUCs) that require improvements.¹⁴⁷ The cost of infrastructure for improving DUCs' water systems is high, but the recently established Safe and Affordable Drinking Water Fund was established to help fund the cost of these improvements, providing \$130 million annually.¹⁴⁸

In contrast, doing nothing about contaminated water is also costly considering the water users' personal health, monetary costs, and cost of providing bottled drinking water.¹⁴⁹ For example, in 2010, the U.S. Centers for Disease Control and Prevention provided that hospitalizations related to waterborne diseases cost the healthcare system as much as \$539 million annually.¹⁵⁰ The monetary costs to access water is also very high for unincorporated, low-income Hispanic farmworkers because they pay for both contaminated water and bottled drinking water—as high as a 12% of their total household income.¹⁵¹ The temporary measure of the State providing bottled water is also expensive, costing four million annually to serve 51 communities with bottled drinking water.¹⁵²

Some rural residents have installed new pumps to drop their wells, or have dug a whole new well, to access water that is less contaminated.¹⁵³ However, the cost is upwards of \$20,000, which many landlords pass on to renters.¹⁵⁴ But even then, this has proven to be a temporary and unsuccessful measure amid intensive droughts throughout California.¹⁵⁵ About 12,000 rural residents ran out of water during the 2011–2017 drought.¹⁵⁶ One family in the Tombstone Territory (a small community like Tooleville) began to pump sand and air instead of water in 2016 after the territory had installed new wells and deepened existing ones despite being two miles from the Kings River.¹⁵⁷ The residents who cannot afford a new well rely on the water bottle deliveries discussed above or from local aid groups.¹⁵⁸ Needless to say, the cost of doing nothing to provide rural residents with access to safe and

147. *Id.*

148. *Safe and Affordable Funding for Equity and Resilience*, CAL. WATER BDS., https://www.waterboards.ca.gov/water_issues/programs/grants_loans/sustainable_water_solutions/safer.html (last updated Feb. 18, 2022).

149. See Pannu, *supra* note 108, at 226 (discussing the costs stemming from contaminated drinking water on water users).

150. *Waterborne Diseases Could Cost Over \$500 Million Annually in U.S.*, CDC, <https://www.cdc.gov/media/pressrel/2010/r100714.htm> (last reviewed July 14, 2010).

151. Pannu, *supra* note 108, at 242–43.

152. Ramsey, *supra* note 5.

153. Cagle, *supra* note 14.

154. *Id.*

155. *Id.*

156. *Id.*

157. *Id.*

158. *Id.*

clean water is also expensive, and that expense burdens residents who are already disadvantaged.

C. Precedent

The recognition of an unenumerated California Constitutional right to safe and clean water will provide about 350,000 residents from about 450 DUCs throughout the San Joaquin Valley a legal mechanism for obtaining access to safe and clean water.¹⁵⁹ DUCs have been systematically deprived of access to democratic governance and essential services because DUCs do not have city governments directly representing their interests.¹⁶⁰ The story and experience of the Tooleville residents is representative of how a lack of governmental representation, an inadequate regulatory framework that does not protect your water, and the absence of a legal mechanism to achieve access to safe and clean water deprives you of a basic human right—access to safe and clean water. As this note provides, the judicial system is an avenue to remedy such a critical human concern.

CONCLUSION

In closing, millions of Californians do not have access to clean and safe water despite the state recognizing—by statute—that all human beings have such a right. As California transforms and improves its water management system to cope with the challenges presented by climate change, population growth, and economic growth, the state can no longer neglect the Californians (mostly low-income farmworkers in the Central and Salinas Valley) clean and safe water. As Tooleville highlights, many DUCs throughout the San Joaquin Valley did not have a legal mechanism to obligate the state to provide them access to safe and clean water. California's regulatory framework failed to protect many DUCs' sources of water from contamination. California's current right to water statute is symbolic. Moreover, the Water Board's authority to order a consolidation of public water systems may not apply, nor are cities willing to voluntarily consolidate. Therefore, a lawsuit brought by the residents of Tooleville against the State of California, the Water Board, the County of Tulare, and City of Exeter claiming an unenumerated constitutional right to clean and safe water, will hold the state accountable. A successful suit by Tooleville will become a powerful tool in the hands of hundreds of DUCs throughout the Central and Salinas Valleys to use in their fight for safe and clean water.

159. JONATHAN LONDON ET AL., *THE STRUGGLE FOR WATER JUSTICE IN CALIFORNIA'S SAN JOAQUIN VALLEY* 8 (U.C. Ctr. for Reg'l Change 2018).

160. *Id.*

BRANCHING OUT WITH A GENUS IDEA: THE NEED TO PRESERVE GENETIC BIODIVERSITY THROUGH PHYLOGENETIC METRICS IN CONSERVATION LAW DURING THE ANTHROPOCENE

*Heidi Guenther**

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INTRODUCTION: KINGDOM

The United States is facing a critical moment in human history and the choices we make will determine the future we will collectively inhabit. Societally, we are still grappling with whether the science of climate change is real and whether humans are the cause of it.¹ In the meantime, species are

* Heidi Guenther is currently pursuing her J.D. from Vermont Law School with the intent to graduate in May 2022. She would like to thank all of the innovative and brilliant humans of VLS who collectively

dying off in all ecosystems at alarming levels.² The increase in overall extinction has drastically accelerated since the dawn of the Industrial Revolution and increased production of human-produced greenhouse gases.³ While we are taking steps in the right direction to reduce greenhouse gas production, the reduction is not happening quickly enough to prevent a global warming and its ensuing effects on all species.⁴ Currently, the way we conserve species focuses on populations that are already threatened—whose numbers are dangerously close to extinction.⁵ We should be taking more proactive steps to assist species that are still abundant, so that they are capable of adapting through the Anthropocene.⁶

work to make the world a little better. She would also like to thank Dani Walthall for howling at the moon and watching the meteors.

1. ANTHONY LEISEROWITZ ET AL., CLIMATE CHANGE IN THE AMERICAN MIND: APRIL 2019, 4–10 (Yale Univ. & George Mason Univ. 2019). While there has been an increase in U.S. public acknowledgement of climate change in the last decade, the percentage of U.S. voters who believe direct action needs to occur is still staggeringly low. As of 2021, only 66% of registered voters felt that the U.S. should be doing more to address climate change and that the reduction of greenhouse gas emissions was critical to climate change mitigation. See ANTHONY LEISEROWITZ ET AL., PUBLIC SUPPORT FOR INTERNATIONAL CLIMATE CHANGE: SEPT. 2021, 4 (Yale Univ. & George Mason Univ. 2021).

2. U.N. Report, *Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating'* (May 6, 2019), <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/#:~:text=The%20Report%20finds%20that%20around,20%25%2C%20mostly%20since%201900> [hereinafter *Nature's Dangerous Decline*]; IPBES, THE GLOBAL ASSESSMENT REP. ON BIODIVERSITY & ECOSYSTEM SERV. 26 (2019) [hereinafter IPBES].

3. See Rebecca Lindsey, *Climate Change: Atmospheric Carbon Dioxide*, NOAA (Aug. 14, 2020), <https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide> (graphically displaying the increase in atmospheric carbon dioxide since 1750); Bjorn Carey, *The Industrial Revolution of the Oceans Will Imperil Wildlife, Says Stanford Scientist*, STANFORD NEWS (Jan. 16, 2015), <https://news.stanford.edu/2015/01/16/oceans-extinction-cycle-011615/#:~:text=Many%20scientists%20have%20identified%20the,other%20factors%20killed%20othe r%20animals> (noting that scientists have determined the Industrial Revolution as the tipping point of species extinction rates).

4. See *Nature's Dangerous Decline*, *supra* note 2 (finding that of the five primary factors driving global species loss, climate change due to greenhouse gas emissions is on track to be the largest contributor); Charles Noyes, 5 *Takeaways From the 2021 IPCC Report on Climate Change*, ONETREEPLANTED (Aug. 12, 2021), https://onetreepanted.org/blogs/stories/5-takeaways-from-the-2021-ipcc-report-on-climate-change?utm_source=google-search&utm_medium=pdmr&utm_campaign={campaign}&utm_term=ipcc%20climate%20report%202021&gclid=Cj0KCCQiAw9qOBhC-ARIsAG-rdn7fXLvi_XbGHx94UcUveDnLuEcIjMGZZQa8xdwRhDtUZeOW4c-qcsaAqpUEALw_wcB (summarizing the major points of the 2021 Intergovernmental Panel on Climate Change (IPCC) Report, which found that humans have created climatological changes that are irreversible and certain projections of these changes are locked in, regardless of human action to decrease emissions).

5. See Lilian Sayuri Ouchi-Melo et al., *Integrating Phylogenetic and Functional Biodiversity Facets to Guide Conservation: A Case Study Using Anurans in a Global Biodiversity Hotspot*, 27 BIODIVERSITY & CONSERVATION 3247, 3257–60 (2018) [hereinafter Ouchi-Melo et al.] (pointing out the negative implications of focusing conservation solely on individual species and those in biodiverse hotspots).

6. The Anthropocene is defined as “the most recent period in Earth’s history when human activity started to have a significant impact on the planet’s climate and ecosystems.” *Anthropocene*, NAT’L GEOGRAPHIC, <https://www.nationalgeographic.org/encyclopedia/anthropocene/> (last visited Mar. 16, 2021).

Preserving species that currently have large genetic variance in their populations will allow them to evolve with the coming anthropogenic changes to habitat.⁷ We must actively work to prevent genetic bottlenecks because it is critical to species adaptation and climate change mitigation.⁸ Moving this concept further, the use of phylogenetic data⁹ on *speciation* can serve to identify which species have the ability to evolve through the Anthropocene and which habitats should be the focus of conservation.¹⁰ Congress should implement legal frameworks and protections to work alongside *best available* scientific data to create a proactive phylogenetic approach to conservation. It is upon us as policymakers, legislators, and legal advocates to make this happen.

This note asserts that the current legal protections afforded to non-human species in the United States are insufficient for preserving species diversity as we progress through the Anthropocene. Conservation law should focus on incorporating phylogenetics as a metric for preventative species population degradation. In Section I, this note addresses fundamental biology and the current scientific data regarding phylogenetics and species biodiversity to set the stage for why species preservation matters to human survival in the Anthropocene. Section II addresses the current structure of the federal Endangered Species Act (ESA) and its successes and failures as it relates to phylogenetics. After discussing the inadequacies of law and policy currently in place under the ESA, this note suggests measures to address and improve regulations that agencies can incorporate into a more approachable and boundaryless solution. In conclusion, this note reiterates those solutions proposed in the suggested, more comprehensive act—The Phylogenetic Preservation Act—while emphasizing why this measure is critical to all species adaptation through the Anthropocene.

7. See Ary A. Hoffmann & Carla M. Srgò, *Climate Change and Evolutionary Adaptation*, 470 NATURE 479, 480–82 (2011) (discussing how genetic variation, climate change pressures, and adaptation relate to trait selection in species ability to evolve with the rate of climate change) [hereinafter Hoffmann].

8. See *Genetic Bottleneck*, NAT'L GEOGRAPHIC, <https://www.nationalgeographic.org/media/genetic-bottleneck/> (last updated Mar. 8, 2019) [hereinafter *Genetic Bottleneck*] (“A genetic bottleneck occurs when a population is greatly reduced in size, limiting the genetic diversity of the species.”); Martine Maron et al., *Climate-Induced Resource Bottlenecks Exacerbate Species Vulnerability: A Review*, 21 DIVERSITY & DISTRIB. 731, 731, 738 (2015) (noting that climate change and human-induced stressors exasperate resource and genetic bottlenecks) [hereinafter Maron et al.].

9. Phylogenetics refers to “the ancestral relatedness of groups of organisms, whether alive or extinct” and can be determined by the DNA sequencing of species. Omar Sultan Haque, *Phylogenetics*, BRITANNICA, <https://www.britannica.com/science/phylogenetics> (last visited Mar. 16, 2021).

10. Speciation is defined as “[t]he formation of new and distinct species in the course of evolution.” John L. Gittleman, *Speciation*, BRITANNICA, <https://www.britannica.com/science/speciation> (last visited Mar. 16, 2021); See Rebecca J. Safran & Patrick Nosil, *Speciation: The Origin of New Species*, 3 NATURE EDUCATION KNOWLEDGE 10, 17 (2012) (breaking down the different ways in which speciation occurs).

I. BACKGROUND: PHYLUM

Biodiversity, as an overarching concept, refers to all the species within an ecosystem, their genetic variation, and how species interact with one another within their ecological web.¹¹ Biologists further break biodiversity down into genetic diversity, species diversity, and ecosystem diversity.¹² Genetic biodiversity refers to the variance of genetic material within an individual in a species.¹³ Species biodiversity points to the number of individuals in the population capable of contributing variance to the genetic material within a species.¹⁴ Finally, ecosystem biodiversity pans the lens out further by looking to: how diverse an actual ecosystem is; the quantity of individuals that exist within each species; and the number of species that coexist within the ecosystem.¹⁵ Biodiversity is a critical means of determining the health of populations and ecosystems.¹⁶ This notion is not new to the worlds of science and law.¹⁷ Scientists, working alongside legislators, have begun to implement biodiversity metrics into law.¹⁸ Phylogenetics, on the other hand, has not been utilized to its fullest extent to push conservation law to its next stage.¹⁹

To take conservation law's next step for the success of all species, agency decisionmakers and attorneys should understand that phylogenetics is many things. First, it is the evolutionary tree of species and how the genes contained within the individuals of those species allow for the genetic iteration of what

11. *Biodiversity*, ECOLOGICAL SOC'Y OF AM. (Fall 1997), <https://www.esa.org/wp-content/uploads/2012/12/biodiversity.pdf>.

12. *Id.*

13. *Id.*

14. *Id.*

15. *Id.*

16. *See Biodiversity Critical to Maintaining Healthy Ecosystems*, U.S. GEOLOGICAL SURV. (Jan. 15, 2016), <https://www.usgs.gov/center-news/biodiversity-critical-maintaining-healthy-ecosystems#:~:text=Researchers%20have%20found%20clear%20evidence,than%20those%20depleted%20of%20species> (explaining an ecological study completed on five continents showing that “you cannot have sustainable, productive ecosystems without maintaining biodiversity in the landscape”).

17. *What is Biodiversity?*, SLOW FOOD, <https://www.essedra.com/biodiversity/biodiversity/#:~:text=The%20term%20E2%80%9Cbiological%20diversity%20%80%9D%20was,Kind%20of%20Country%20advocating%20conservation> (last visited Apr. 11, 2022).

18. *See generally* Cyrille de Klemm & Clare Shine, *Biological Diversity Conservation and the Law: Legal Mechanisms for Conserving Species and Ecosystems*, 29 IUCN ENV'T L. CENTRE (1993) (documenting the development of U.S. and international law in species conservation).

19. *See id.* (showing that the basis for legal conservation theory is based in genetic biodiversity); Sophia Franke et al., *Predicting Regional Hotspots of Phylogenetic Diversity Across Multiple Species Groups*, 26 DIVERSITY & DISTRIB. 1305, 1306 (2020) (“The protection of phylogenetic diversity has become a priority in conservation biology”) [hereinafter Franke et al.]; Phylogenetics refers to the evolutionary history of how a species has evolved over time given the interplay of genetic material contained within its taxonomic tree. *See* Dr. Sanchari Sinha Dutta, *What is Phylogenetic Analysis?*, NEWS-MED. LIFE SCI. <https://www.news-medical.net/health/What-is-Phylogenetic-Analysis.aspx> (last updated Mar. 9, 2021).

a species is.²⁰ Second, phylogenetics is how the genetic code of closely related species interacts over generations, and the interplay between the evolutionary relationship of species.²¹ Phylogenetics helps us answer evolutionary history and relationship questions—e.g., how much genetic overlap exists between the green and brown anole and where did their evolutionary history diverge to create two distinct species?²² Phylogenetics helps us determine: (1) whether there is a possibility that these anoles will evolve with the constraints that the Anthropocene presents, and; (2) whether they will be able to reproduce with one another to assist the genus in surviving habitat and resource constraints.²³ Additionally, we must ask whether each species performs a distinct or supplementary role within its respective ecosystem.²⁴

Biodiversity and phylogenetics overlap in the study of ecosystem health. At the surface level, both can point to deficiencies or strengths that exist within ecosystems and populations.²⁵ The critical difference between the two theories lies in how humans understand the world around them when attempting to conserve habitat, prevent species die-off, and create future species diversity.²⁶ Phylogenetics provides the ability to look at the micro-world within the macro-problem.²⁷ The push to use phylogenetics in

20. See Douglas E. Soltis & Pamela S. Soltis, *The Role of Phylogenetics in Comparative Genetics*, 132 PLANT PHYSIOLOGY 1790, 1790–91 (2003) (noting that tracing phylogenetic relationships over time assists in the greater understanding of other scientific fields) [hereinafter Soltis]; Ouchi-Melo et al., *supra* note 5, at 3247–66 (using the Cerrado region of Brazil to show phylogenetic use as a successful means of ecosystem conservation).

21. See Soltis, *supra* note 20, at 1790–1800 (analyzing the concept of phylogenetics in relation to various plant species as they coexist with other species in their ecosystems and how biologists can implement methodology to develop understanding of the evolutionary trees); Ouchi-Melo et al., *supra* note 5, at 3258 (discussing how the interplay between species richness in a geographical zone and phylogenetic diversity within a singular species can affect future evolutionary lineages).

22. The green anole is a species of lizard native to Florida. In the 1950's, the native Cuban brown anole was introduced to Florida and has since become an invasive species, largely outcompeting the green anole. Yoel Stuart, *Invasive Species Trigger Rapid Evolution for Lizards in Florida*, THE CONVERSATION (Nov. 4, 2014), <https://theconversation.com/invasive-species-trigger-rapid-evolution-for-lizards-in-florida-33491>. Scientists have analyzed the available genetic material found in both species to assess whether there is enough genetic overlap to produce a hybridized anole. See generally Dan G. Bock et al., *Changes in Selection Pressure Can Facilitate Hybridization During Biological Invasion in a Cuban Lizard*, 118 PNAS 1, 1–10 (2021), <https://www.pnas.org/doi/pdf/10.1073/pnas.2108638118>.

23. See Hoffmann, *supra* note 7, at 483–84 (noting that phylogenetic analyses can be a critical tool in species preservation as climate change progresses and habitat range and availability shift); Ouchi-Melo et al., *supra* note 5, at 3262 (discussing how conservation based solely on taxonomic classifications ignores the nuances of species preservation and that the inclusion of phylogenetics could lead to a more successful conservation method in future environmental changes).

24. Franke et al., *supra* note 19, at 1311.

25. Ouchi-Melo et al., *supra* note 5, at 3247–49.

26. *Id.*

27. Key to this analysis is looking at: which species contain a large variance in genetic material; how they coexist with other species (both genetically and in the roles they play); which species have the ability to bend their evolutionary trees back towards other closely-related species; and given the inevitable

conservation law is more than just looking towards preserving species that currently exist. Phylogenetics is a proactive means of ensuring that species have the genetic tool kit to evolve and speciate through increased constraints.²⁸

When constraints or events (like habitat removal or decreased resource availability) occur—which significantly decrease the numbers of individuals within a population—genetic bottlenecks can take place.²⁹ Genetic bottlenecks occur when a species loses a large portion of the individuals from their population.³⁰ The result is less variety in the genetic material available for the remaining species to exchange.³¹ When individuals who contain beneficial DNA or evolutionarily advantageous gene variations die, those genes die too.³² The end result is that the remaining individuals have less genetic material at their disposal to assist in adapting and evolving to newly presented challenges.³³ As climate change accelerates, these constraints and events become not only more frequent but also more severe.³⁴ The nearly nationwide wildfires and the quantity and size of hurricanes that have occurred in 2020 are prime examples of these effects.³⁵

Now to the anthropocentric question, and thus the question that drives policy: why should we care? All species (humans included) are interdependent with one another.³⁶ It is not simply that we want variety in our flowers or enjoy watching videos of animals doing silly things; our ability

Anthropogenic constraints they will face, which species are most genetically viable for this mode of preservation. See Marc W. Cadotte et al., *Phylogenetic Diversity Promotes Ecosystem Stability*, 93 *ECOLOGY* S223, S223–24, S230–31 (2012) (recognizing the interplay between phylogenetics and biodiversity in promoting a stable ecosystem) [hereinafter Cadotte et al.].

28. See Maron et al., *supra* note 8, at 732–33 (noting that the foreseeable increase of climate-based disruptions to habitats and resources will effect species success); Cadotte et al., *supra* note 27, at S230–31 (discussing that as the phylogenetic diversity in populations increases, so does the health of the ecosystem of which they are a part).

29. See Maron et al., *supra* note 8, at 732–35 (discussing the results of their study on climate-based disruptions to habitats and the resulting resource bottlenecks effects to species).

30. *Genetic Bottleneck*, *supra* note 8.

31. *Id.*

32. A well-known basic principle within the field of biology is that if there are no genes present in a species when they reproduce, those genes will not be passed along to offspring.

33. See Maron et al., *supra* note 8, at 737–38 (noting that as climate change accelerates resource bottlenecks, there is less genetic and phenotypic diversity for species to work with in adaptation).

34. Jeff Berardelli, *How Climate Change is Making Hurricanes More Dangerous*, YALE CLIMATE CONNECTIONS (July 8, 2019), https://yaleclimateconnections.org/2019/07/how-climate-change-is-making-hurricanes-more-dangerous/?gclid=EAIaIQobChMI0qr31eLI7AIVgTUrCh0vka9-EAAYASAAEgLH5_D_BwE; IPCC, AR5 CLIMATE CHANGE SYNTHESIS REP. at 53, 73, 78 (2015) [hereinafter IPCC]; IPBES, *supra* note 2, at 51.

35. See Sarah Kaplan & Andrew Ba Tran, *More Than 40 Percent of Americans Live in Counties Hit by Climate Disasters in 2021*, WASH. POST (Jan. 5, 2022), <https://www.washingtonpost.com/climate-environment/2022/01/05/climate-disasters-2021-fires/> (noting how extensive the climate change related disasters were in 2021 alone).

36. Maria Neira, *Our Lives Depend on a Healthy Planet*, WORLD HEALTH ORG. (June 3, 2015), <https://www.who.int/mediacentre/commentaries/healthy-planet/en/> [hereinafter Neira].

to breathe, eat, and have access to clean water is dependent on the species with which we share the planet.³⁷ From the microbes in the water, to the algae that cleans it, to the fish that feed on the algae, and the fish that feed on those fish, ecosystems can serve us when in balance or pollute us when out of control.³⁸ Both aquatically and terrestrially similar trophic relationships exist.³⁹ Each species has a role to play in the larger system, including among each other.⁴⁰ Species may be able to come and take the place of others in that trophic relationship but only up to a limit.⁴¹ As climate change accelerates, these constraints and events become not only more frequent but also more severe.⁴² Over time, that means humans lose the species they depend upon for our basic survival needs.⁴³

Even with various technologies at our disposal, we cannot rely on these systems to design our solutions as the problems become apparent, although many have made that assertion.⁴⁴ On a small scale (relative to altering the DNA of all species on the planet), we have already engaged in this practice.⁴⁵

37. *Id.*

38. While ocean currents distribute nutrients through upwelling, whales move nutrients up and down coast lines through their migration. In simplistic terms, whales create food for all of the fish we so thoroughly enjoy. See Christopher E. Doughty et al., *Global Nutrient Transport in a World of Giants*, 113 PROC. NAT'L ACAD. SCI. U.S.A. 868, 869, 871 (2016) (reporting on the effects whales have on ocean nutrient distribution).

39. For example, the types of grasses contained in a prairie determine how much nitrogen that patch of earth takes in. Different varieties of plants in ecosystems determine our quality of air. See David W. Kicklighter, et al., *Future Nitrogen Availability And its Effect on Carbon Sequestration in Northern Eurasia*, 10 NATURE COMM'N 3024 (2019) (discussing how human impacts on Eurasian ecosystems have shifted available nitrogen levels and therefore the amount of carbon sequestration amongst plants).

40. See *Ecological Interactions*, KHAN ACAD., <https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-ecological-relationships/a/ecological-interactions> (last visited Mar. 16, 2021) (explaining ecological concepts of how species interact with one another).

41. *Id.*

42. See IPBES, *supra* note 2, at 27–29 (discussing the human impacts on other species, and noting that some species' evolutionary cycle has increased because of constraints, but others have been greatly hindered).

43. See Neira, *supra* note 36; SARAH MATSUMOTO ET AL., CITIZENS' GUIDE TO THE ENDANGERED SPECIES ACT 8 (2003), https://earthjustice.org/sites/default/files/library/reports/Citizens_Guide_ESA.pdf (noting that we have nearly lost species that have critical medicinal properties such as cancer treatments) [hereinafter MATSUMOTO ET AL.].

44. See e.g., Heidi Ledford, *CRISPR, the Disrupter*, 522 NATURE 22, 24 (2015) (reporting on the use of CRISPR gene editing technology for agriculture and ecosystems by disseminating the altered genetic codes of species into their larger populations over time); see also e.g., Becky Mackelprang, *Can the Gene Editing Technology Known as Crispr Help Reduce Biodiversity Loss Worldwide?*, ENSIA (Sept. 13, 2019), <https://ensia.com/features/crispr-biodiversity-coral-food-agriculture-invasive-species/#:~:text=In%20the%20short%20term%2C%20agriculture,United%20States%20in%20early%202019.&text=No%20single%20solution%20can%20save,solutions%20can%20cause%20more%20problems> (breaking down the ways in which humans have been changing the genetics of other species in various ecosystems over time, and how CRISPR is the latest version of this solution to biodiversity loss due to climate change) [hereinafter Mackelprang].

45. Humans have been breeding other species based on the selectivity of genes since the advent of agriculture. The practice of genetically modifying organisms presents potential issues of limiting the

We have genetically modified organisms so that species with these adjusted genetic compositions meet our own needs.⁴⁶ Genetically engineered organisms (GEOs) are one specific type of this genetic modification.⁴⁷ But there are many unknowns to this practice.⁴⁸ Corn and soybeans are insidious examples of this genetic tailoring. We have spliced these GEO crops with bacterial genes to make them more resilient.⁴⁹ We do not yet know the long-term effects on cows, pigs, humans, etc. who consume bacterial genes regularly. We are also unaware of how these GEO species will reproduce or interact with their non-altered counterparts, if at all.⁵⁰ This lack of understanding about the consequences of a new scientific application implicates that we should use the precautionary principle.⁵¹ This principle implies that we should hesitate, further review, and potentially resist introducing new processes or technologies with unknown consequences into the environment.⁵² The more we alter the natural world around us, the more unforeseen consequences flow from these adjustments. We then start the process anew.⁵³

overall gene pool. We have based these breeding practices on the problems or pests we have seen in the past, but removal of these genes may hinder species success in dealing with future problems we have yet to encounter. See Mackelprang, *supra* note 44 (discussing the history of food diversity and human selected gene preservation in agriculture).

46. *Science and History of GMOs and Other Food Modification Processes*, FDA, <https://www.fda.gov/food/agricultural-biotechnology/science-and-history-gmos-and-other-food-modification-processes> (last visited Mar. 16, 2021).

47. See A. A. Snow et al., *Genetically Engineered Organisms and the Environment: Current Status and Recommendations*, 15 *ECOLOGICAL APPLICATIONS* 377, 378–79 (2015) (advising on the ways to monitor the effects of GEOs on the environment, other species, and agriculture as this technology moves forward).

48. See Theresa Philips, *Genetically Modified Organisms (GMOs): Transgenic Crops and Recombinant DNA Technology*, 1 *NATURE EDUCATION* 213 (2008) (pointing to the known and unknown effects of GMOs on crops, pollinators, economics, and human philosophical concerns) [hereinafter Philips]; Gabriel Rangel, *From Corgis to Corn: A Brief Look at the Long History of GMO Technology*, HARVARD U. (Aug. 2015), <http://sitn.hms.harvard.edu/flash/2015/from-corgis-to-corn-a-brief-look-at-the-long-history-of-gmo-technology/> (illustrating the history of GMOs and GEOs along with where the technology is progressing as a food source).

49. Philips, *supra* note 48, at 213 (showing that soybeans are spliced with bacteria that makes them tolerant to the herbicide Roundup and corn in circulation is spliced with bacterial genes making them resistant to pests).

50. See Heather Landry, *Challenging Evolution: How GMO's Can Influence Genetic Diversity*, HARV. UNIV. (Aug. 10, 2015), <https://sitn.hms.harvard.edu/flash/2015/challenging-evolution-how-gmos-can-influence-genetic-diversity/> (discussing whether genetically modified organisms can lead to decreased genetic diversity and looking at the genetic implications of GMO and non-GMO breeding).

51. See David Kriebel et al., *The Precautionary Principle in Environmental Science*, 109 *ENV'T HEALTH PERSP.* 871, 871–75 (2001) (providing an overview of the precautionary principle, why it is important in the realm of science, and the implications of the uncertainty when utilizing new technology in the public realm).

52. See *id.* at 871–72 (illustrating how science and policy making should work within these bounds when attempting to solve environmental issues such as climate change).

53. See *id.* at 872–73 (providing case studies of when the precautionary principle is not used).

II. STATUTORY & REGULATORY ORDER

The ESA comes close to forcing agencies to work with nature rather than against it—but not close enough. Congress should integrate species-specific phylogenetic data into our current legal conservation framework and shift the lens towards making sure environmental management utilizes this metric. To create this more proactive measure, Congress could use the lessons we have learned under the ESA (evaluating the successes and failures of the Act’s structure and implementation) to enact a Phylogenetic Preservation Act. Working alongside the scientific community, agencies can identify and list species that meet certain phylogenetic criteria. This will enable us to work towards protecting species and their habitats, like the way we do with endangered and threatened species.

A. *The Endangered Species Act*

The ESA is one of the most expansive means of protecting non-human species in the United States.⁵⁴ Its stated purpose is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved”⁵⁵ However, the ESA may not be able to live up to its intended goal. Species are losing individuals at acceleration rates faster than the ESA can provide adequate protections (due to both financial and procedural constraints).⁵⁶ While there have been many great successes on the endangered species front, threatened species vastly have remained listed.⁵⁷ The ESA has done some great work in preventing the

54. MATSUMOTO ET AL., *supra* note 43, at 4–5.

55. 16 U.S.C. § 1531(b) (2018); *See* H.R. Rep. No. 93–412, at 5 (1973) (“From the most narrow point of view, it is in the best interests of mankind to minimize the losses of genetic variations. The reason is simple: they are potential resources.”).

56. *See e.g.*, Jacob Wallace, *NOAA to Protect 6K Square Miles of Coral Reef Habitat*, GREENWIRE (Nov. 30, 2020), <https://stevens2.vermontlaw.edu:2073/greenwire/2020/11/30/stories/1063719477> (noting that it took a lawsuit filed in 2019 by the Center for Biological Diversity for five threatened coral species that were listed in 2014 to receive protections) [hereinafter Wallace]; *see also e.g.*, Liz Kimbrough, *No Endangered Listing For Monarch Butterflies as Western Count Hits Alarming Low*, MONGABAY (Dec. 16, 2020), <https://news.mongabay.com/2020/12/no-endangered-listing-for-monarch-butterflies-as-western-count-hits-alarming-low/> (discussing that while the Western Monarch Butterfly is experiencing an alarmingly sharp decline in their population numbers, they will not be listed under the ESA as the resources to do so are lacking) [hereinafter Kimbrough]; Noah Greenwald et al., *Extinction and the U.S. Endangered Species Act*, 1 PEERJ 1, 5 (2019) (noting that as of 2019, there are over 500 species waiting to be listed by FWS and that the FWS currently takes approximately 12 years list a species) [hereinafter Greenwald].

57. There are still many species whose populations the scientific community considers threatened, but the Services has not listed as “threatened.” *See The IUCN Redlist of Threatened Species*, IUCN, <https://www.iucnredlist.org/> (last visited Mar. 16, 2021) (providing a regularly updated list and status update of species whose populations are considered threatened with extinction by the scientific community) [hereinafter *IUCN Redlist*]; Compare *As Scientists Warn of Biodiversity Crisis, Trump*

extinction of species that became listed, but this method of conservation is only kicking the proverbial bucket down the road. With climate change constraints increasing in frequency and magnitude, simply preventing the extinction of a species is not a long-term solution.⁵⁸ Even at its best, the hurdles that stand in the way of the ESA's success in achieving its intended purpose merely slow down a species' migration from a threatened to an endangered listing.⁵⁹

The Fish & Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS)⁶⁰ (collectively Services) are the primary agencies responsible for putting the intent of the ESA into action through listing and managing these species and their *critical habitats*.⁶¹ The ESA defines *species* as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature."⁶² The ESA enables agencies to list species as either *endangered* or *threatened* when their population numbers are nearing extinction.⁶³ A species is considered *endangered* if it is "in danger of extinction throughout all or a significant portion of [their] range"⁶⁴ Although, insects that are deemed pests cannot be given endangered listing protections.⁶⁵ A species can qualify as *threatened* if it is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of [their] range."⁶⁶ Each of these listed species can also be divided into Distinct Population Segments (DPS's).⁶⁷ A DPS designation

Administration Guts Endangered Species Act, THE NATURAL RESOURCES DEFENSE COUNCIL (Aug. 12, 2019), <https://www.nrdc.org/experts/nrdc/scientists-warn-biodiversity-crisis-trump-administration-guts-endangered-species-act> (noting a success rate of saving 99% of listed species from extinction), with Louis Jacobson, *Only 1 Percent of Endangered Species List Have Been Taken Off List, Says Cynthia Lummis*, POLITIFACT (Sept. 3, 2013), <https://www.politifact.com/factchecks/2013/sep/03/cynthia-lummis/endangered-species-act-percent-taken-off-list/#:~:text=September%203%2C%202013-,Only%201%20percent%20of%20endangered%20species%20list%20have%20been%20taken,falcon%20and%20the%20American%20alligator> [hereinafter Jacobson].

58. See Greenwald et al., *supra* note 56, at 5–6 (finding that of the 97 listed species who have gone extinct, the population numbers were much too low for 55 of them for the ESA to have likely prevented extinction).

59. *Id.* (noting that the current number of species awaiting listing in combination with the extended time frame that FWS takes to provide protections to these species will likely result in more future extinctions).

60. See, e.g., Deborah F. Buckman, *Construction and Application of Threatened Species Requirements Under Sec. (4a) and (b) of the Endangered Species Act of 1973*, 16 U.S.C.A. § 1533(a) and (b), 6 A.L.R. Fed. 3d Art. 2 (2015) (breaking down the issues presented with listing a species as threatened and discussing pivotal cases from the circuit courts).

61. Also known as National Oceanic & Atmospheric Administration (NOAA) Fisheries. See *id.*

62. 16 U.S.C. § 1532(16) (2018).

63. 50 C.F.R. § 402.01 (2002).

64. 16 U.S.C. § 1532(6) (2018).

65. 16 U.S.C. § 1532(6) (2018).

66. 16 U.S.C. § 1532(20) (2018).

67. *Little Known But Important Feature of the Endangered Species Act*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/pacific/news/grizzly/esafacts.htm> (last visited Mar. 16, 2021).

separates segments of vertebrate species populations so that only part of a species can be listed, delisted, and managed at a more localized level, where threats to existence may differ.⁶⁸ A DPS designation allows the Services to manage listed vertebrate species geographically rather than taxonomically.⁶⁹ For example, the Grizzly Bear is listed as a threatened species and has six DPS's in the United States, which are each managed in relation to their needs.⁷⁰

Once a species becomes listed, it is entitled to a panoply of federal protections under the ESA to prevent the species from becoming extinct.⁷¹ The ESA provides each listed species with substantial legal protections that more abundant species are not afforded.⁷² Key to these protections are: (1) the *critical habitat* designation; (2) the consultation requirement for every proposed federal action where the species is present; (3) the *take* prohibitions limiting harm to listed species; (4) the *recovery plan* used to revive the existing number in the species; and (5) the *monitoring* of the species once they have “recovered.”⁷³ This note considers each in turn.

1. Listing

Congress has set out criteria for when and how the Services can place a species on either the endangered or threatened lists.⁷⁴ The Services each follow a five-factor analysis to determine whether a species should be listed.⁷⁵ These five factors are: “[1] the present or threatened destruction, modification, or curtailment of its habitat or range; [2] overutilization for commercial, recreational, scientific, or educational purposes; [3] disease or predation; [4] the inadequacy of existing regulatory mechanisms; or [5] other natural or manmade factors affecting its continued existence.”⁷⁶ If any of

68. *Id.*

69. *Id.*

70. See *Endangered Species|Mammals|Grizzly Bear*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/mountain-prairie/es/grizzlybear.php> (discussing the state of Grizzly Bears and their management recovery plans in each of the six distinct population segments) (last visited Jan. 6, 2021).

71. U.S. FISH & WILDLIFE SERV., *DELISTING A SPECIES* 1–2 (Apr. 2011), <https://www.fws.gov/endangered/esa-library/pdf/delisting.pdf> [hereinafter FWS DELISTING]; *Listing Species Under the Endangered Species Act*, NOAA FISHERIES (June 2, 2020), <https://www.fisheries.noaa.gov/national/endangered-species-conservation/listing-species-under-endangered-species-act> [hereinafter NOAA Listing].

72. 16 U.S.C. § 1533 (2018); FWS DELISTING, *supra* note 71, at 1–2; NOAA Listing, *supra* note 71.

73. 16 U.S.C. § 1533 (2018); See MATSUMOTO ET AL., *supra* note 43, at 15–22, 32–33, 35–37 (relaying the fundamentals of pivotal provisions in the ESA).

74. 16 U.S.C. § 1533(a)(1) (2018); FWS DELISTING, *supra* note 71, at 1–2; NOAA Listing, *supra* note 71.

75. 16 U.S.C. § 1533(a)(1) (2018); FWS DELISTING, *supra* note 71, at 1–2; NOAA Listing, *supra* note 71.

76. 16 U.S.C. § 1533(a)(1)(A)–(E) (2018).

these factors present a danger to the existence of a species, the species must be listed.⁷⁷

Looking at the five-factor analysis, numerous advocates have argued that many more species deserve listing due to the climate change impacts that have already occurred.⁷⁸ Two of these listing factors are becoming even more salient: “the present or threatened destruction, modification, or curtailment of its habitat or range,” and “other natural or manmade factors affecting its continued existence.”⁷⁹ With species that could potentially receive threatened listing protections, these two factors hinge on how the Services interpret the *foreseeable future*.⁸⁰ In 2019, Congress finally defined this term and reinforced the species-by-species assessments made by the Services.⁸¹ While still theoretically dependent on the *best available science, foreseeable future* now means “only so far into the future that the Services can reasonably determine that both the future threats and the species’ responses to those threats are likely.”⁸² However, this definition still leaves open much room for interpretation in light of climate change and species’ ability to adapt with enough genetic variation in their populations. If the Services are simply looking at whether the species will foreseeably exist in the future, this does not account for whether they have enough genetic variance to adapt to climate and habitat changes that may accelerate faster than they can evolve. This definition of *foreseeability* should be reevaluated under the Phylogenetic Preservation Act.

2. Critical Habitats

Critical habitats are the geographical areas that threatened or endangered species occupy at the time of their listing that are deemed “essential to the conservation of the species” and “may require special management considerations or protection” to conserve the species.⁸³ Using the *best available* scientific data, critical habitats are supposed to provide the species with food, shelter, breeding grounds, and space for natural behavior.⁸⁴ The

77. *Id.*; FWS DELISTING, *supra* note 71, at 1–2; See NOAA Listing, *supra* note 71. (noting the five-factor analysis that the Services use when determining whether to delist a species under the ESA).

78. See CONG. RSCH. SERV., THE ENDANGERED SPECIES ACT AND CLIMATE CHANGE: SELECTED LEGAL ISSUES 4–7 (2019) (discussing the legal arguments used by advocates for ESA listing expansion due to climate change and the courts’ interpretation of ‘foreseeable future’ scope in light of the five-factor listing criteria) [hereinafter CONG. RSCH. SERV.].

79. 16 U.S.C. § 1533(a)(1)(A), (E) (2018).

80. See 16 U.S.C. § 1533(b)(1)(B)(ii) (2018) (“[T]he Secretary shall give consideration to species which have been . . . identified as in danger of extinction or likely to become so within the foreseeable future . . .”).

81. CONG. RSCH. SERV., *supra* note 78, at 6–7.

82. 50 C.F.R. § 424 (2019) (emphasis added).

83. 16 U.S.C. § 1532(5)(A)–(B) (2018).

84. 16 U.S.C. § 1533(B)(2) (2018); MATSUMOTO ET AL., *supra* note 43, at 19–21.

ESA requires the Services to weigh these needs against the economic impact required to designate critical habitats.⁸⁵ The Services have discretion in their designation of critical habitats, so long as that choice does not lead to the extinction of the species.⁸⁶ However, these habitats do not necessarily extend to all the areas a listed species could occupy.⁸⁷ This presents a hiccup in the ESA as it comes into conflict with accelerated climate change.

The ESA requires that the Services designate critical habitats at the time they list, if feasible, but no longer than one year after the listing.⁸⁸ However, climate change is causing many species to migrate northward.⁸⁹ As a result, species that have been listed for decades may lose their habitat protections as they adapt to a changing planet. Even more so since critical habitats cannot extend into private property unless there are federal activities or finances associated with the land.⁹⁰

Once a species' critical habitat is established, an agency must consult with the appropriate Service for any federal action that may affect the existence of the species.⁹¹ This includes "any action authorized, funded or carried out by such agency . . . [that would] jeopardize [the species' existence or] adversely modif[y] [their habitat]." ⁹² As part of the consultation requirement, the Services must produce a biological opinion.⁹³ The biological opinion is used to assess whether the agency action may destroy or adversely modify the critical habitat or otherwise jeopardize the continued existence of the species.⁹⁴ Ordinarily, the Services only produce a biological opinion if the agency action determines that its action is likely to adversely affect a listed species.⁹⁵ To determine which listed species would be affected by the proposed action, the Services are required to use "the best scientific and commercial data available" in conducting the biological opinion.⁹⁶ If the

85. MATSUMOTO ET AL., *supra* note 43, at 20.

86. MATSUMOTO ET AL., *supra* note 43, at 21.

87. 16 U.S.C. § 1532(5)(C) (2018).

88. 16 U.S.C. § 1533(a)(3)(A), (b)(6)(C) (2018); Although legally required to designate critical habitats for listed species within one year, this doesn't always occur. In fact, there has been a backlog due to climate change that has required legal suit in order to enforce these ESA requirements. Five coral species listed in 2014 have just now starting to receive the protections thanks to the work of the Center for Biological Diversity. However, NMFS must still adhere to procedural requirements, like public comment periods, before concrete protections are in place. *See* Wallace, *supra* note 56.

89. *See* Craig Welch, *Half of All Species Are On The Move—And We're Feeling It*, NAT'L GEOGRAPHIC (Apr. 27, 2017), <https://www.nationalgeographic.com/science/article/climate-change-species-migration-disease#close> (discussing the observed pattern of species such as plants, insects, and fish shifting their range towards higher elevations and latitudes) [hereinafter Welch].

90. MATSUMOTO ET AL., *supra* note 43, at 21.

91. 16 U.S.C. § 1536(a)(2) (2018).

92. 16 U.S.C. § 1536(b) (2018).

93. 16 U.S.C. § 1536(a)(4) (2018).

94. 16 U.S.C. § 1536(a)(4) (2018).

95. 16 U.S.C. § 1536(a)(2) (2018).

96. 16 U.S.C. § 1536(c) (2018).

biological opinion finds that the agency action will jeopardize or adversely modify the critical habitat, the Services will then offer up a “reasonable and prudent alternative” to the proposed action.⁹⁷ The Services will “set forth the terms and conditions” to achieve this alternative as well as determine any incidental takes associated.⁹⁸

3. No-Take Protections

The ESA entitles species to the *take* prohibition protections, but the prohibition differs for endangered and threatened species. For endangered species, § 9 prohibits the *take* of the species without a permit.⁹⁹ *Take* is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”¹⁰⁰ Notably, *harm* is defined as “an act which actually kills or injures fish or wildlife” and “includes any significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding, or sheltering.”¹⁰¹ *Harassing* a species is “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.”¹⁰²

The ESA allows for incidental take permits (ITP) of species when the “taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.”¹⁰³ A non-federal project will only need an ITP if it results in *take*.¹⁰⁴ Listed plants are not subject to ITP because they are not given *take* protections under the ESA if the *take* occurs on private lands.¹⁰⁵ As it pertains to habitat modification, if a species is likely to be harmed (and therefore a *take* under the ESA), a permit is required.¹⁰⁶ *Harm* to a species occurs when habitat modification “actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding,

97. 16 U.S.C. § 1536(b)(3)(A) (2018).

98. 16 U.S.C. § 1536(b)(4) (2018).

99. 16 U.S.C. § 1538(a) (2018); 16 U.S.C. § 1539(a) (2018).

100. 16 U.S.C. § 1532(19) (2018).

101. 50 C.F.R. § 222.102 (2019).

102. 50 C.F.R. § 17.3 (2019).

103. 16 U.S.C. § 1539(a)(1)(B) (2018).

104. FWS, U.S. DEP’T OF INTERIOR, FWS/AES/067974, GUIDANCE ON TRIGGER FOR AN INCIDENTAL TAKE PERMIT UNDER SECTION 10(A)(1)(B) OF THE ENDANGERED SPECIES ACT WHERE OCCUPIED HABITAT OR POTENTIALLY OCCUPIED HABITAT IS BEING MODIFIED 2 (2018) [hereinafter FWS/AES/067974].

105. U.S. FISH & WILDLIFE SERV., ENDANGERED SPECIES LISTINGS: FREQUENTLY ASKED QUESTIONS 1 (2013), https://www.fws.gov/greatersagegrouse/factsheets/ESA%20Landowner%20Fact%20Sheet_080713.pdf [hereinafter FWS FAQ].

106. FWS/AES/067974, *supra* note 104, at 3–4.

feeding, or sheltering.”¹⁰⁷ The Services also require an ITP when the harassing of a species may occur during habitat modification.¹⁰⁸ *Harass* is defined to pertain to “acts or omissions which are done intentionally or negligently.”¹⁰⁹

The crux of this *take* loophole is that in order to require an ITP when modifying the habitat of a listed species, the actor must anticipate that harm will be done.¹¹⁰ The language requires that harm must be “reasonably certain to occur.”¹¹¹ Additionally, the action must meet all three aspects of the harm definition to trigger an ITP requirement.¹¹² The habitat modification must be significant, must “significantly impair an essential behavior pattern,” and must be “likely to result in the actual killing or injury of wildlife.”¹¹³ This all but eviscerates the intent of the ESA in preventing population decreases on non-federal property for threatened species not protected (or given limited protections) under the 4(d) rules.¹¹⁴

The 4(d) rule allows the respective managing Service to extend these same no-take protections to threatened species.¹¹⁵ By default, the 4(d) rule applies § 9 protections to threatened species, but the rule gives the Services opt-out flexibility to apply some, or all, of the protections afforded to endangered species.¹¹⁶ While FWS used to automatically apply § 9 protections to all threatened species with the option to decrease protections under 4(d) rules, NMFS has taken the inverse route.¹¹⁷ Unfortunately, FWS has since adopted the opt-in policy of NMFS.¹¹⁸

FWS, charged with managing the bulk of listed species, had previously extended 4(d) *take* protections afforded to endangered species to threatened species unless specifically indicated otherwise.¹¹⁹ The Trump Administration retracted this iteration of the ESA: “The U.S. Fish and Wildlife Service will

107. 50 C.F.R. § 17.3 (2019).

108. FWS/AES/067974, *supra* note 104, at 2–3.

109. *Id.* at 3.

110. *Id.* at 4–5.

111. *Id.* at 2.

112. *Id.* at 4–5.

113. *Id.* at 4.

114. Prime examples include threatened plant species that may be critical for feeding pollinating insects and birds which they themselves may be listed as threatened or endangered. *See e.g.*, Karen Anderson, et al., *Endangered Pollinators and Their Habitats*, POLLINATOR P’SHIP, <https://www.pollinator.org/shop/poster-2019> (last visited Mar. 16, 2021).

115. 16 U.S.C. § 1533(d) (2018).

116. YA-WEI LI, SECTION 4(D) RULES: THE PERIL AND THE PROMISE 2 (Defenders of Wildlife ESA Policy White Paper Series 2017), https://defenders.org/sites/default/files/publications/section-4d-rules-the-peril-and-the-promise-white-paper_0.pdf [hereinafter YA-WEI LI].

117. *Id.* at 3–4.

118. Press Release, U.S. Dep’t of Interior, Trump Admin. Improves the Implementing Regul. of the Endangered Species Act (Aug. 13, 2019), <https://www.doi.gov/pressreleases/endangered-species-act> [hereinafter Trump Press Release].

119. YA-WEI LI, *supra* note 116, at 2–3; Trump Press Release *supra* note 118.

[now] craft species-specific 4(d) rules for each future threatened species determination as deemed necessary and advisable for the conservation of the species”¹²⁰ This opt-in shift, in combination with the other rollbacks, places threatened species in even more need of assistance to maintain genetic diversity.¹²¹ It is worth noting that prior to 2019 and the Trump Administration environmental rollbacks, the Services listed species based “solely on the best scientific and commercial data available.”¹²² Now, with the addition of economic impacts as a metric for considering whether a listed species habitat is “critical” enough for the Services to protect it, the risk to threatened species has increased.¹²³

4. Recovery Plans

The purpose of these ESA protections is to recover, not merely conserve, listed species to the point where the Services can delist them.¹²⁴ The ESA requires that the Services draft Recovery Plans for each species to provide objective, measurable criteria to achieve this result.¹²⁵ The Services base these criteria on the same five-factor analysis used in listing the species, and Recovery Plans are written when listings occur.¹²⁶ The Services draft unique Recovery Plans for each species (or DPS) which address the factors that prompted initial listings and posed a threat to the species’ existence.¹²⁷ The ESA requires that these plans include “site-specific management actions” as

120. Jasmine Aguilera, *The Trump Administration’s Changes to the Endangered Species Act Risks Pushing More Species to Extinction*, TIME (Aug. 14, 2019), <https://time.com/5651168/trump-endangered-species-act/> [hereinafter Aguilera]; Trump Press Release, *supra* note 118.

121. On its face, it may seem advantageous to have a species-by-species 4(d) taking rule. However, prior to this Trump rollback, FWS applied an opt-out version for each species. The current iteration requires an opt-in standard, which makes it more challenging to apply the same protections to threatened species that endangered species receive. See *Legislative Attacks on the Endangered Species Act During the Trump Administration*, CTR. BIOLOGICAL DIVERSITY, https://www.biologicaldiversity.org/campaigns/esa_attacks/trumptable.html (last visited Mar. 16, 2020) (providing a complete interactive table of the rollbacks).

122. Approval for listing species or changing their status requires the approval of the Secretary of Commerce. This now requires the Services to consider economic factors when listing foreign species and designating critical habitats worthy of protection. 16 U.S.C. § 1533(a)–(b); Elly Pepper, *How Trump’s ESA Rollbacks Will Affect Foreign Species*, NAT. RESOURCES DEF. COUNCIL (Aug. 21, 2019), <https://www.nrdc.org/experts/elly-pepper/how-trumps-rollbacks-will-affect-foreign-species> [hereinafter Pepper].

123. Aguilera, *supra* note 120.

124. 16 U.S.C. § 1533(f) (2018).

125. 16 U.S.C. § 1533(f)(1)(B)(ii) (2018).

126. NAT’L MARINE FISHERIES SERV. & U.S. FISH & WILDLIFE SERV., INTERIM ENDANGERED AND THREATENED RECOVERY PLANNING GUIDANCE 2.1-1, 3.1-1, 5.1-9, (2010), <http://citeseerx.ist.psu.edu/viewdoc/download?sessionid=8C395E222A4723DE7F33D1B379F48FDE?doi=10.1.1.225.554&rep=rep1&type=pdf> [hereinafter NMFS & NOAA RECOVERY PLAN].

127. *Recovery of Species Under the Endangered Species Act*, NOAA FISHERIES (July 10, 2020), <https://www.fisheries.noaa.gov/national/endangered-species-conservation/recovery-species-under-endangered-species-act> [hereinafter NOAA *Recovery*].

well as estimates of the time and cost to get the species to the point of delisting.¹²⁸ Recovery Plans actions are not actually required to be implemented, but instead are guidance actions on how to lead a species to recovery.¹²⁹ The ESA does, however, require the Services to produce status updates every two years for listed species' plans.¹³⁰ The Services have occasionally created multi-species Recovery Plans when the critical habitats of certain species overlap.¹³¹ Florida provides a good example of state-created multi-species recovery plans.¹³² The Southern Florida Multi-Species Plan encompassed 68 listed species and focuses on "maintain[ing] biodiversity of natural communities."¹³³ This plan has been in place since 1999 and provides ample data regarding the effectiveness of grouping species management based on their geographical proximity.¹³⁴ Further, this plan could serve as a template for incorporating phylogenetics as a means of species recovery management.

5. Monitoring

If a species meets the criteria for delisting or down-listing, the ESA still requires that the Services continue to monitor them.¹³⁵ Monitoring "shall" continue for no less than five years after delisting to ensure the threats that initially promoted listing will not continue to threaten the species.¹³⁶ For species that have been down-listed, monitoring entails the same actions and protections described above for threatened species.¹³⁷ Delisted-species monitoring entails the listing agency creating a monitoring plan that is also based on the five factors the agency used in the initial listing of the species.¹³⁸

While the ESA does not require a formal plan, the Services have taken it upon themselves to draft plans for each delisted species as a means of

128. *Id.*

129. *Id.*

130. 16 U.S.C. § 1533(f)(3) (2018).

131. NMFS & NOAA RECOVERY PLAN, *supra* note 126, at 1.1-1; NOAA *Recovery*, *supra* note 127.

132. *See generally*, *South Florida Multi-Species Recovery Plan*, U.S. FISH & WILDLIFE SERV. (May 3, 2019), <https://www.fws.gov/verobeach/ListedSpeciesMSRP.html> (providing an overview of the plan, all of the listed species included, and pertinent documents regarding recovery of the species) [hereinafter *FWS Florida*].

133. *Id.*

134. *See id.* (providing detailed information on all of the species managed under the South Florida MSRP).

135. 16 U.S.C. § 1533(g) (2018).

136. 16 U.S.C. § 1533(g)(1) (2018); Down-listing can occur when the Services reclassifies an endangered species as threatened. *See FWS DELISTING*, *supra* note 71, at 1 (providing an overview of how and when delisting and down-listing occurs).

137. *FWS DELISTING*, *supra* note 71, at 1.

138. *FWS DELISTING*, *supra* note 71, at 1–2.

individualized monitoring.¹³⁹ The Services recommend using the same monitoring methods and techniques used in the Recovery Plan so that there is consistency and baseline data from which to assess the species' success after delisting.¹⁴⁰ The Services do permit a deviation from this if the "historical sampling methods [used in the Recovery Plan] are inadequate . . . or if more effective or efficient monitoring methods are available"¹⁴¹ However, if the updated monitoring methods and techniques require "more effort" than those methods originally used in the Recovery Plan, they are not to be implemented.¹⁴² This is highly problematic because monitoring species to ensure they do not merit re-listing requires scientific methodology which, in and of itself, is evolving.¹⁴³ Monitoring may require "more effort" simply to retrain personnel on a new method of data collection or a new technology system. Integrating assessments that determine whether a species has enough genetic variability to survive future constraints will inevitably require "more effort" than retaining the original plan's status quo. This may no longer represent changing threats from climate change.

Given all these protections, the ESA's goal to prevent extinction has thus far worked.¹⁴⁴ In 2019, "only four species have been confirmed extinct with another twenty-two possibly extinct following protection."¹⁴⁵ The ESA began protecting species in 1973.¹⁴⁶ The planet, as we have known it, has been one of relative stability.¹⁴⁷ The ESA has worked within the confines of this stability despite human actions to thwart it with carbon emissions. But this model of protection will not remain sustainable in the Anthropocene.

139. U.S. FISH & WILDLIFE SERV. & NAT'L MARINE FISHERIES SERV., POST-DELISTING MONITORING PLAN GUIDANCE UNDER THE ENDANGERED SPECIES ACT 1-1 (2008).

140. *Id.* at 2-1–2-2.

141. *Id.* at 2-2.

142. *Id.*

143. See, e.g., Dorothy Leonard Barton & William A. Kraus, *Implementing New Technology*, HARV. BUS. REV. (Nov. 1985), <https://hbr.org/1985/11/implementing-new-technology> (discussing the financial, social, and implementation costs of adopting new technology).

144. See Greenwald et al., *supra* note 56, at 4–6 (noting that their findings indicate a 99% success rate of the ESA saving species from extinction).

145. Greenwald et al., *supra* note 56, at 1. However, on September 29, 2021, FWS released a press release announcing the proposal to declare 23 species extinct. FWS notes that "[w]hile protections were provided too late for these 23 species, the ESA has been successful at preventing the extinction of more than 99% of species listed." See, Brian Hires, *U.S. Fish and Wildlife Service Proposes Delisting 23 Species from Endangered Species Act Due to Extinction*, U.S. FISH & WILDLIFE SERV. (Sept. 29, 2021), https://www.fws.gov/news/ShowNews.cfm?_ID=37017.

146. Greenwald et al., *supra* note 56, at 1.

147. See DAVID ATTENBOROUGH, *A LIFE ON OUR PLANET: MY WITNESS STATEMENT AND A VISION FOR THE FUTURE* 20 (Grand Cent. Publ'g, 1st ed. 2020) (noting that we have most recently moved into the Anthropocene, but the geological period preceding this, the Holocene, has been the most climate stable periods of earth's history).

Currently, more species need protection than the Services' resources can protect.¹⁴⁸

Most recently, the drastic decrease in western monarch butterfly populations brought this problem to the surface.¹⁴⁹ The FWS, while noting that the monarch (as well as other species) deserves ESA protections, stated that it will instead focus on those species most in need.¹⁵⁰ The FWS does not consider the western monarch butterfly sufficiently "threatened" to warrant listing, even though the species has a 68% chance of extinction within the next ten years and their population fell from 1.2 million in 1997 to less than 30,000 as of 2019.¹⁵¹ This does not bode well for the many other species whose existence the United Nations has projected will experience drastic population declines in the coming years, if not full extinction.¹⁵² If humans are to continue living on this planet, we will need to do more than just prevent the extinction of the species and ecosystems we depend on. We will need them to thrive. In order to thrive, all species will need genetic diversity in their populations to evolve and adapt through the effects we cannot mitigate in a changing climate.

B. The Phylogenetic Preservation Act: A Co-Conspirator to the ESA Family

The ESA has survived the test of time and spawned many state-ESA analogs.¹⁵³ While it has faults, this note does not suggest the ESA itself is facing extinction. Rather, it needs a partner to help it adapt. Learning from the extensive data on the ESA's efficacy in practice, Congress should develop a partner to supplement the areas in which the ESA is lacking. This note suggests the Phylogenetic Preservation Act (PPA). The PPA will take the structure of the ESA, modify it to incorporate phylogenetics as the *best available science*, and adjust some of the conservation inadequacies the ESA creates due to regulatory constraints. The PPA will look to the protections already in place under the ESA while redefining which species meet *threatened* or *endangered* listings. In continuing to drive home the necessity of proactive measures, we are approaching a point where species

148. See Kimbrough, *supra* note 56 (noting that the Services designate "warranted but precluded" status to species who should be listed under the ESA but will not receive protections due to insufficient resources to do so).

149. See *id.* (discussing that despite the drastic decrease in population, FWS will not list the Western Monarch Butterfly as there are species whose threats are more pressing).

150. See *id.* (relating statements made by the FWS when it chose to place the species in the "candidate" designation).

151. See *id.* (comparing the assessments made on the possible extinction of both the Eastern and Western Monarch species).

152. See generally, IPBES, *supra* note 2 (warning that more species are currently in risk of extinction than in any other period of human history); *Nature's Dangerous Decline*, *supra* note 2.

153. See e.g., VT. STAT. ANN. tit. 10, § 123 (codifying Vermont's Endangered Species Act).

biodiversity, as a whole, is projected to take a nosedive.¹⁵⁴ Addressing the need to incorporate more than a singular perspective on species preservation, and to look at ecosystem interactions through genetics, is a mode of using the *best available* scientific and commercial data.¹⁵⁵ The PPA, working with the ESA, is one of the ways we can strive to avoid future ecosystem collapse.

1. Listing

In looking to use phylogenetics, ESA *threatened* species tend to have more genetic variability due to the quantity of individuals remaining.¹⁵⁶ *Threatened* species have a stronger ability to evolve with others who share similar genetic material in the evolutionary tree, making them more appropriate candidates for this theory of conservation.¹⁵⁷ That does not mean that the PPA should leave the heavy lifting of managing endangered species to the ESA. As climate changes, so will the geographical areas in which endangered species are located.¹⁵⁸ As species migrate away from their current geographic ecosystems, they will interact with other species in those new ecosystems that may assist them with future genetic variance.¹⁵⁹ The PPA will work to identify those species whose genetic material is *threatened* or *endangered* in the foreseeable future, using the *best available science*.

The ESA definition of *species* already allows for the consideration of phylogenetics when interpreted to use the *best available science*. *Species* is defined as “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.”¹⁶⁰ Through using scientific analysis and modeling, we can determine which species are closely related, along with projections of future climate-induced migratory paths, to assess whether species have the potential to interbreed. The PPA would list a species as *genetically threatened* (GT) or *genetically endangered* (GE) based on many of the same listing factors enumerated in the ESA, but with a focus on threats

154. See generally, IPBES, *supra* note 2, at 13, 51 (warning of future biodiversity and ecosystems collapse unless global leaders take direct action); IPCC, *supra* note 34, at 2–16 (providing a full assessment of the status of worldwide biodiversity currently and future projections).

155. 16 U.S.C. § 1533(a)–(b) (2018).

156. See Ouchi-Melo et al., *supra* note 5, at 3247, 3248 (noting that prior methods of conserving species based on biodiversity “hotspots” and “taxonomic diversity” may not be the best way to protect ecosystems as more abundant species play key parts in contributing genetic material).

157. See *id.*; Maron et al., *supra* note 8, at 732–35 (discussing how species whose populations are already low have a much harder time succeeding when presented with new constraints like those produced by climate change).

158. See Welch, *supra* note 89 (noting that “[a]s the planet warms, species are shifting where, when, and how they thrive”).

159. See *id.* (discussing that scientists have observed terrestrial species “moving an average of ten miles per decade, while marine species are moving four times faster”).

160. 16 U.S.C. § 1532(16) (2018) (emphasis added).

to the genetic material contained within species.¹⁶¹ The Services would apply language similar to that used under the ESA to determine whether a species is GT or GE. Under the ESA, a species can be listed as *endangered* if they are “in danger of extinction throughout all or a significant portion of its range”¹⁶² A species can be listed as *threatened* if they are “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”¹⁶³ The PPA will use this same language but modify the statute to list a GE species as “a species that is in danger of extinction due to the isolation or extinction of genetic material.” The PPA will list GT species as species which are “likely to become a genetically endangered species within the foreseeable future.” This inclusive definition will look towards and apply which species have genetic and geographic overlap to qualify species who need protections as GT or GE.

The Services can achieve this by looking at the scientific data already collected on the phylogeny of species and comparing this data with those species currently listed as *threatened* under the ESA.¹⁶⁴ This data compilation would expand how the Services interpret the definition of *threatened* or *endangered*. Currently, an ESA species is listed as *threatened* on an individual taxonomic basis (or if a vertebrate, a DPS).¹⁶⁵ This perspective of conservation only looks at a particular species’ population levels, rather than a prospective method of using evolution to expand and assist in *speciation*.¹⁶⁶ Under the lens of phylogenetics, the PPA’s definition of a *threatened* species will encompass those species that are currently abundant in their populations but are the last remaining members of their genus. Under the ESA, these species would not qualify as *threatened* or *endangered* because their populations are not low enough, or they may not meet the five factors of listing.¹⁶⁷ But, as their habitats and access to food

161. 16 U.S.C. § 1533(a)(1) (2018).

162. 16 U.S.C. § 1532(6) (2018).

163. 16 U.S.C. § 1532(20) (2018).

164. TreeBASE, first launched in 1994, provides open-source database on the phylogeny of many species and works to collect and compare scientifically published work to link evolutionary trees. *See A Database of Phylogenetic Knowledge*, TREEBASE, <https://treebase.org/treebase-web/about.html> (last visited Mar. 16, 2021) [hereinafter TREEBASE].

165. Often, FWS and NOAA list species as “distinct population segment” (DPS) when they occupy large regions or are migratory. The Grizzly Bear is one such species that received a lot of contention when the Greater Yellowstone Ecosystem portion of their population was delisted from the ESA. This method of using DPS rather than a whole species may be beneficial in implementing phylogenetics. If only for the political and social push-back of ESA expansion on property rights. *See, e.g.,* Max Chaffetz, *Clarifying the Endangered Species Act’s “Distinct Population Segment” Policy Through the Lens of Grizzly Bears*, GEO. L. REV. (Apr. 5, 2019), <https://www.law.georgetown.edu/environmental-law-review/blog/clarifying-the-endangered-species-acts-distinct-population-segment-policy-through-the-lens-of-grizzly-bears/> (using the Grizzly Bear as a case study for the application of DPS under the ESA).

166. 16 U.S.C. § 1531 (2018).

167. 16 U.S.C. § 1531 (2018).

change, they may experience constraints that reach ESA listing standards.¹⁶⁸ The PPA is a preventative act which seeks to remedy this problem before the species requires ESA protections.

The ESA prohibits the listing of insects that are deemed pests and “would present an overwhelming and overriding risk to man.”¹⁶⁹ This is especially problematic in agriculture because the threat to an insect’s extinction hinges on the farming practices used at that moment in time.¹⁷⁰ We may find that an insect that has been nearly eradicated due to pesticides in fact contains critical medicinal properties or is key to pollinating a plant that an ESA-listed species depends on.¹⁷¹ We may also find that after years of using land as monoculture, these insects are actually critical in reclaiming and restoring depleted soils.¹⁷² Scientists have already warned of a coming worldwide insect species collapse.¹⁷³ To withhold protections from insects because they present issues to agriculture could lead us to unrecoverable ecosystem collapse. The PPA would protect insects based not only on their genetic variability but also their genetic relationship to other insects. The idea being that once protected, insects may mate and evolve with other species in their genus to prevent extinction in the future.

Unlike the ESA, the PPA would allow the listing of invertebrates as DPS.¹⁷⁴ The Services currently use a three-pronged analysis for determining if a species qualifies as a DPS.¹⁷⁵ The Services will ask: (1) how discrete the population is in relation to other members within its own species; (2) how significant the population is in relation to the species overall; and (3) whether that population of the species would require ESA listing if it were considered its own species.¹⁷⁶ Allowing invertebrates to qualify for DPS status would promote holistic species management. The PPA would use this same three-

168. See Welch, *supra* note 89 (noting that the Red Knot Chick and Alaskan Caribou are already experiencing decreased in populations due to food shortages from being out of sync with other species in their habitats that they are dependent upon).

169. 16 U.S.C. § 1532(6) (2018).

170. See Simon Worrall, *Without Bugs, We Might All Be Dead*, NAT’L GEOGRAPHIC (Aug. 6, 2017), <https://www.nationalgeographic.com/news/2017/08/insect-bug-medicine-food-macneal/> (noting that cockroaches are helping scientists understand antibiotic resistance because of the amount of time they spend in feces).

171. See *id.* (discussing the use of scorpion venom to identify tumors in the human brain).

172. See Andrew R. Moldenke, *Soil Arthropods*, USDA, https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/health/biology/?cid=nrcs142p2_053861#:~:text=They%20include%20insects%2C%20such%20as,to%20many%20different%20arthropod%20species (last visited Mar. 16, 2021) (discussing the roles of various insects in promoting soil health).

173. See, David L. Wagner, et al., *Insect Decline in the Anthropocene: Death by a Thousand Cuts*, 118 PNAS 2, 2 (finding that “climate change, habitat loss and degradation, and agriculture” were the leading causes of insect decline).

174. Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act, 61 C.F.R. § 4722 (1996).

175. 61 C.F.R. § 4722 (1996).

176. 61 C.F.R. § 4722 (1996).

prong analysis but enable expansion of DPS's to preserve and grow genetic variation among species. With insects in particular, this inclusion could prove critical because they play important roles in the success of other species.¹⁷⁷ A more localized and hands-on approach to invertebrate conservation would enable the Services to proactively preserve species.

To return to the western monarch butterfly, one of the impediments with the FWS not being able to list the species is that it did not qualify as a DPS.¹⁷⁸ Because they are invertebrates, the FWS classifies both the eastern and western monarch butterfly as one species.¹⁷⁹ Although their United States habitats do not overlap, population numbers and the recognized threats to their existence are viewed together.¹⁸⁰ This means that one cannot receive ESA protections until both need ESA protections. Applying this mode of DPS under the PPA would preempt this problem by listing and protecting the western monarch based on the genetic variance of its population, separate from that of the eastern monarch.¹⁸¹

As it currently stands, the *foreseeable future* requirement of listing a species does not itself rely on best¹⁸² Under the ESA, the time frame in which species are considered *threatened* depends on how far in the future humans can reasonably predict likely threats.¹⁸³ This allows the Services to use a subjective standard—rather than a standard based on solely scientific analysis—to introduce the human-centric constraint of time. While the Trump administration created this definition, and it may change under

177. See Stuart Reynolds, *What Happens to the Natural World if All of the Insects Disappear?*, THE CONVERSATION (Feb. 18, 2019), <https://theconversation.com/what-happens-to-the-natural-world-if-all-the-insects-disappear-111886> (discussing how insects form the basis of all trophic levels and that as insect populations decrease so do all of the species which depend on them for food, pollination, and processing organic matter).

178. Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly, 85 Fed. Reg. 81813 (Dec. 17, 2020) (to be codified at 50 C.F.R. § 17); 16 U.S.C. § 1532(16) (2018).

179. 16 U.S.C. § 1532(16) (2018).

180. It is worth noting that there has not been a finding of genetic variance amongst the eastern and western monarch butterflies. When they migrate south, they mate and exchange genetic data. See Carol Clark, *Butterfly Genomics, Emory Biologists Show How Monarchs Fly Differently But Meet Up and Mate*, EMORY UNIV., <https://news.emory.edu/features/2020/07/esc-butterfly-genomics/index.html> (last visited Mar. 16, 2021).

181. It is critical that since the Eastern and Western Monarch are able to mate, U.S. protections should work to protect the Western Monarch as its own distinct species. To not do so directly affects the populations and genetic variability within the Eastern population. *Id.*

182. The ESA's limitation of "foreseeable future" to only so far as humans can reasonably predict ignores much of the international scientific community's projections of future species die off at alarming levels. If the ESA took this scientific data into account, the Services would list many more U.S. species. See *IUCN Redlist*, *supra* note 57 (providing lists, data, and status reports of all species worldwide threatened with extinction).

183. 50 C.F.R. § 424 (2019).

Biden's initiative to address mitigation and adaptation to climate change,¹⁸⁴ the PPA would redefine this language by statute. However, even if future Administrations rectify some of this language, it is not good enough if it continues to use a near-sighted, anthropocentric lens.

The current anthropogenic definition of *foreseeable future* presents problems for the PPA.¹⁸⁵ The Services' use of *foreseeable future* should be based solely on the *best available science* (which would include international scientific analysis) and assess each species' genetic variability for success under the known effects of climate change. Scientists nearly unanimously agree that mass extinctions of species are in the foreseeable future even with the actions sought under the Paris Climate Accord.¹⁸⁶ In defining *foreseeable future*, the PPA should employ modeling of a species' current geographical ranges overlayed with their phylogenetic portfolio and apply known and projected changes to habitats as climate change accelerates. Modeling in this way would allow for a holistic analysis that can quickly and efficiently adjust to environmental changes. Scientists would still have to factor time frames into determining whether a species qualifies as GT or GE. Scientists can establish a baseline whereby identifying the potential risk for extinction of a species with no protections provides the initial control metric. From there, scientists can identify a probability rate to establish a threshold of how far in the future is too far to merit protections.¹⁸⁷ For example, if the PPA modeling of a species of mangrove without protections indicates that the mangroves face a 12% chance of extinction in the next 40 years, the PPA may hold off on extending protections and use its resources on more pressing threats.

Migratory species especially would benefit from GT listings. A threatened migratory species can have an expansive habitat and may not receive the protections needed except in United States territories where the

184. As of January 27, 2021, President Biden has already rolled back Trump Administration environmental policies and committed to preserving "30% of U.S. lands and coasts by 2030." See Sarah Gibbens, *The U.S. Commits to Tripling Its Protected Lands, Here's How it Could Be Done*, NAT'L GEOGRAPHIC (Jan. 27, 2021), <https://www.nationalgeographic.com/environment/2021/01/biden-commits-to-30-by-2030-conservation-executive-orders/>.

185. See 50 C.F.R. § 424 (2019) (defining "foreseeable future" to be "only so far into the future that the Services can reasonably determine that both the future threats and the species' responses to those threats are likely").

186. *U.N. Draft Plan Sets 2030 Target to Avert Earth's Sixth Mass Extinction*, THE GUARDIAN, <https://www.theguardian.com/environment/2020/jan/13/un-draft-plan-sets-2030-target-to-avert-earths-sixth-mass-extinction-aoe> (last updated Jan. 15, 2020) (noting that the goals of the Paris Accord are a "floor" not a "ceiling").

187. See, e.g., Matthew J.R. Cowley, et al., *Habitat-Based Statistical Models for Predicting the Spatial Distribution of Butterflies and Day-Flying Moths in a Fragmented Landscape*, 37 J. APPLIED ECOLOGY 60, 60–72 (2000) (showing how the application of statistical modeling can be used to project and predict butterfly and moth habitat range).

FWS has designated their habitat as *critical*.¹⁸⁸ A practical example is the Golden-winged Warbler, which is listed as *threatened* under the ESA. The Golden-winged Warbler is a migratory bird whose path extends from Canada to the Northern portions of South America.¹⁸⁹ This bird has experienced a 66% population decrease in the last 50 years.¹⁹⁰ However, it has begun mating with the Blue-winged Warbler, producing a hybridized species.¹⁹¹ Extending PPA GT protections to the Blue-winged Warbler and the hybridized species would preserve the evolutionary tree of these closely related species. This extension could potentially ensure that genetic variations within individual species persist, assisting all three species in surviving the Anthropocene.

2. Critical Habitats

While *critical habitats* are an important element of the ESA, that designation has its flaws. First, the ESA's critical habitat designation allows for the balance between the economic factors of designation and the needs of listed species.¹⁹² Additionally, *critical habitats* cannot extend onto private property unless there is federal activity or funding associated with the property.¹⁹³ These limits have a basis in restricting government overreach and resource allocation. The PPA's extension of DPS designation to all species can help alleviate these flaws as they pertain to federal property by creating micro-critical habitats.

Under the PPA, the Services would be able to provide piecemealed critical habitat protections for species whose populations are segmented. This would entail identifying habitats where GT or GE species exist and providing protection to these habitats so that the species can continue to exist in them. However, this theory may present opportunities for potential abuse and decreased overall protection. A GT or GE species total habitat should not simply be an aggregate of a great many micro-critical habitats. To combat this, the PPA will require a baseline total critical habitat acreage for each species listed as GT or GE depending on their respective needs. This cumulative baseline will also incorporate metrics to limit how small each

188. The Trump Administration has further rolled back ESA protections for foreign species and international cooperation on species conservation. This could have even more dire effects on threatened migratory species. See Pepper, *supra* note 122.

189. *Golden-Winged Warbler*, AM. BIRD CONSERVANCY, https://abcbirds.org/bird/golden-winged-warbler/?gclid=Cj0KCQiAwf39BRCCARIsALXWETwc9KCeKvzvhyImmNBW-QF0Jm8mL43_2xWBxMZYwhljrS609ErRjQaAkqKEALw_wcB (last visited Mar. 16, 2021).

190. *Id.*

191. *Id.*

192. MATSUMOTO ET AL., *supra* note 43, at 20–1.

193. *Id.* at 21.

micro-critical habitat can be. Each species' needs will be the same used in the ESA designation of critical habitat: food, shelter, breeding grounds, and space for natural behavior.¹⁹⁴ The PPA will focus on the goal of increasing or stabilizing genetic variation in the species when identifying these needs. Micro-critical habitats would allow for a more localized approach to species management because each service's field office can make management determinations as needed.

Under the ESA, this micro-critical habitat solution only assists species currently residing on federal lands.¹⁹⁵ While the United States owns and manages substantial quantities of public land, climate change will force some species off federal land onto private land.¹⁹⁶ To mitigate this problem, Congress could incorporate a grant program into the PPA to provide financial incentives for private property owners who opt-in to allocate portions of their land to preserve GT or GE species. The grant program should also include a provision that subsidizes private property within a buffer zone. A buffer zone would incorporate the overlap between the *critical habitat* for listed species under the ESA and the habitat of evolutionarily similar species listed under the PPA. Private property owners could select one of two grant program tiers: 1) lands specifically designated for GT or GE species, or 2) lands allotted as buffer zones. The PPA tiered system would allow for private property owners to decide how much governmental interaction and responsibility they want associated with their property. Additionally, the tiered system would allow the Services to invest constrained resources where they are most effective. The more financial investment the Services make on the property, the more constrained the private property owners use is of their land.

Currently, the Services and the Nature Conservancy have offered interactive mapping tools similar to Google maps.¹⁹⁷ These maps allow users to see exactly where a threatened or endangered species may exist.¹⁹⁸ The scientific community has published similar data on phylogenetics and has

194. *Id.* at 20.

195. 16 U.S.C. § 1533 (2018); *See Critical Habitat Under the Endangered Species Act*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/southeast/endangered-species-act/critical-habitat/> (last visited Mar. 16, 2021) (providing an overview of how critical habitats and private property relate to one another under the ESA) [hereinafter *FWS Critical Habitat*].

196. *See* CONG. RSCH. SERV., R42346, *FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA* (2020) (stating that "[t]he federal government owns roughly 640 million acres, about 28% of the 2.27 billion acres of land in the United States").

197. *Science & Data Maps*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/resources/maps> (last visited Mar. 16, 2021) [hereinafter *NOAA Maps*]; *Coastal Resilience Mapping Portal*, NATURE CONSERVANCY, <https://maps.coastalresilience.org/> (last visited Mar. 16, 2021) [hereinafter *NATURE Maps*]; *Conservation Planning Atlas*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/southeast/conservation-tools/conservation-planning-atlas/> (last visited Mar. 16, 2021) [hereinafter *FWS Atlas*].

198. *NOAA Maps*, *supra* note 197; *NATURE Maps*, *supra* note 197; *FWS Atlas*, *supra* note 197.

made this information open source.¹⁹⁹ The technology exists. The Services should implement strategic analysis, comparing a GT or GE species habitat range with that of other species that are most closely genetically related. Using the overlay of these two data sets can more effectively create the total protected habitat of species to reflect what species actually need to survive. Using scientific modeling and grant programs, these buffer zones would create financial incentives for private property owners. Private property owners who choose to participate would receive additional funding on a preservation scale, where the funding increases as the level of agreed-to protections increase. This would allow autonomy and multi-use of private property while financially supporting owners in their conservation efforts.

All of these proposed PPA programs implicate a large expense on behalf of the taxpayers. The Services already experience financial constraints, limiting their ability to fully implement the ESA.²⁰⁰ The PPA proposes adding yet another statute onto the Services' proverbial plate. Implementing the PPA will require hiring personnel, training and paying for new modeling systems, subsidies to private property owners, and providing boots on the ground enforcement of subsidy agreements. None of these proposals will be cheap. However, the alternatives are much more costly.²⁰¹ The loss of biodiversity on this planet affects all aspects of human survival.²⁰² As the loss accelerates, so may the financial costs.²⁰³ Investing in proactive measures now may help to slow down these future expenses and identify gaps in conservation.

The western monarch butterfly pulls all of this together in a real-world example. Monarchs "cannot survive without milkweed."²⁰⁴ Monarchs lay

199. See, e.g., Ralph Pethica et al., *TreeVector: Scalable, Interactive, Phylogenetic Trees for the Web*, PLOS ONE, Jan. 2010; see also e.g., Andrew F. Magee et al., *The Dawn of Open Access to Phylogenetic Data*, PLOS ONE, Oct. 2014 at 1; TREEBASE, *supra* note 164.

200. See, e.g., Robert Gordon, "Whatever the Cost" of the Endangered Species Act, It's Huge, COMPETITIVE ENTER. INST. (Aug. 20, 2018), <https://cei.org/studies/whatever-the-cost-of-the-endangered-species-act-its-huge/> (providing examples and breakdowns of how much money the FWS spends to administer the ESA) [hereinafter Gordon].

201. OECD, BIODIVERSITY: FINANCE AND THE ECONOMIC AND BUSINESS CASE FOR ACTION 26–7 (May 2019), <https://www.oecd.org/environment/resources/biodiversity/G7-report-Biodiversity-Finance-and-the-Economic-and-Business-Case-for-Action.pdf> (finding that between 1997 and 2011, the global cost of species biodiversity loss was "\$4-\$20 trillion per year in ecosystem services owing to land-cover change," \$20 billion annually due to inadequate ocean management, and \$6.3-\$10.6 trillion per year because of land degradation) [hereinafter OECD].

202. See *Biodiversity and Health*, WORLD HEALTH ORG. (June 3, 2015), <https://www.who.int/news-room/fact-sheets/detail/biodiversity-and-health> (breaking down just some of the ways that loss of species biodiversity impacts global human existence).

203. See OECD, *supra* note 201, at 26 ("Failure to address biodiversity loss is (and will continue to be) costly.").

204. *Create Habitat for Monarchs*, MONARCH JOINT VENTURE, <https://monarchjointventure.org/get-involved/create-habitat-for-monarchs#:~:text=Monarchs%20cannot%20survive%20without%20milkweed,milkweed%20to%20lay%20their%20eggs> (last visited Mar. 16, 2021).

their eggs in milkweed and as their caterpillars grow, they rely on it as a food source.²⁰⁵ Milkweed is native to the United States and there are 115 known species within the genus of milkweed.²⁰⁶ On the west coast, the common milkweed is only found in Oregon.²⁰⁷ As mentioned earlier, the western monarch does not qualify as a listed species under the ESA.²⁰⁸ Under the PPA, the western monarch would qualify as a DPS, distinct from the eastern monarch population. The PPA would enable the FWS to designate a buffer zone where the monarch's migratory path overlaps with areas where milkweed currently grows. Once established, private property owners could participate in the PPA's grant programs by planting native species of milkweed on their land.

Two critical hindrances to this grant program are private property and federal government entanglement. Because the federal government will be paying private property owners, the grant program may implicate other federal acts.²⁰⁹ For example, ESA critical habitat protections do not ordinarily extend to species on private property unless there is a *federal nexus* between the private property and the federal government.²¹⁰ This *federal nexus* can be established when federal funds are attached to the property.²¹¹ PPA federal funding to private lands would also make owners subject to the ITP requirements for any *take* of plants on their property.²¹² This could deter owners from wanting to participate in the PPA. The PPA will address this and relieve private owners of any additional responsibility for federal regulations outside of PPA grant program monitoring. While there is a governmental benefit from this federal entanglement in private property, the need to proactively prevent ecosystem failure through species conservation should outweigh these larger federal benefits.

205. *Id.*

206. David Taylor, *Common Milkweed (Asclepias syriaca L.)*, https://www.fs.fed.us/wildflowers/plant-of-the-week/asclepias_syriaca.shtml (last visited Mar. 16, 2021).

207. *Asclepias syriaca L. Common Milkweed*, USDA, <https://plants.usda.gov/core/profile?symbol=ASSY> (last visited Mar. 16, 2021).

208. Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly, 85 Fed. Reg. 81813 (Dec. 17, 2020) (to be codified at 50 C.F.R. § 17); 16 U.S.C. § 1532(16) (2018).

209. For example, under the ESA, this could subject private property owners to "critical habitat" designations on their lands. See *FWS Critical Habitat*, *supra* note 195 (noting that "critical habitat designations do not affect by private landowners if there is no federal 'nexus'").

210. *Id.*

211. *Id.*

212. FWS FAQ, *supra* note 105, at 1.

3. No-Take Protections

The *take* provision of § 9 presents plenty of issues in attempting to incorporate phylogenetics.²¹³ By expanding protections to species within an ESA listed species' phylogeny, the breadth of the *take* provision could step on some private property and industry toes.²¹⁴ With the quantity of species that the Services would list under the PPA, Congress would be hesitant to replicate the same protections given to ESA-listed species in favor of GT or GE species. Extending the ESA's *take* protections to PPA species would heavily burden private property owners. Under the ESA, all *take* is prohibited without a permit, but a permit is only required for non-federal projects that could lead to *incidental take*.²¹⁵ This is inadequate to affect real *take* protections.

Incorporating the tiered system of private property opt-in and the buffer zone theory into the PPA could fix some of these inadequacies. The buffer zone theory (advanced above) requires incorporating provisions to address no-take protections, creating either exemptions or permits depending on whether the GT or GE *take* occurs on federal or non-federal land.²¹⁶ The PPA would place an annual cap on the *take* of GT or GE species on federal property. Each GT or GE species would have their own unique permissible federal *take* limit. With private property, it would be a stretch to apply this same cap unless the land was already involved in the PPA grant program. Permissible *takes* through the ITP require knowledge that actions will lead to the *take* of a species.²¹⁷ Requiring private property owners to be on notice of all the GT or GE species on their land would be too heavy of a burden.

Under the ESA, threatened species may have lower levels of *take* protections under the Services' application of 4(d) rules.²¹⁸ The PPA would apply these same 4(d) rules to that GT and GE have some no-take protections

213. "In general, Section 9 of the ESA prohibits persons from importing, exporting, transporting, or selling endangered species of fish, wildlife, and plants in interstate or foreign commerce. It is also illegal to "take" an endangered fish or wildlife species or possess taken species. Take means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect," or an attempt to do the same. It is unlawful to import or export endangered plant species from the United States, or to remove, possess or maliciously damage or destroy such species on federal land or any other area in knowing violation of a state law or regulation." ERIN H. WARD, CONG. RSCH. SERV., IF11241, THE LEGAL FRAMEWORK OF THE ENDANGERED SPECIES ACT (ESA) (2019) [hereinafter IF11241].

214. See MATSUMOTO ET AL., *supra* note 43, at 44–52 (discussing the political challenges facing many portions of the ESA).

215. 16 U.S.C. § 1538(a) (2018); 16 U.S.C. § 1539(a) (2018); FWS/AES/067974, *supra* note 104, at 2.

216. Using the permissible taking language in Rule 4(d) could possibly assist with this. Allowing each Agency on a species-by-species basis to determine which taking permits and how lenient they are, could get over this hurdle. See YA-WEI LI, *supra* note 116, at 2–3 (discussing how rule 4(d) and rule 9 interact within the "take" provision of the ESA in regards to different agency implementation).

217. FWS/AES/067974, *supra* note 104, at 2.

218. 16 U.S.C. § 1533(d); YA-WEI LI, *supra* note 116, at 3–4.

but not to the same extent as endangered species under § 9. This plan maintains the localized attention and management goals of PPA listed species. A federal project will be subject to the same biological opinions required under the ESA if a *take* of a GT or GE species might occur in the process. This would additionally serve to increase knowledge and data points for the PPA database to track where species are located and the quantity of individuals in their populations.

One of the biggest issues of the § 9 no-take prohibition is that it does not apply to ESA-listed plants on private property.²¹⁹ An ITP is not required when the *take* of a plant occurs on private lands.²²⁰ This has cumulative effects on other species who rely on plants for food, shelter, and breeding.²²¹ Given the huge variance in phylogenetic relationships and reproduction rates, this could lead to many lost genetic variations in climate-change-susceptible regions like coastal zones.²²² For example, private property containing threatened plant species of mangroves could critically impact carbon sequestration.²²³ Mangroves can sequester six to eight tons of carbon per hectare from the atmosphere annually.²²⁴ In addition to the potential lost genetic variance, loss of mangroves can magnify the accumulation of carbon in the atmosphere. It is worth noting, however, that some of these species may fall under other federal protections outside of the ESA when located on private property.²²⁵

The PPA grant program will address the issues present with plant species on private land. One means of achieving more genetic variability in plants on private property is to offer incentives to protect and grow GT and GE plants. The PPA grant program may provide the most viable method to protect species on private lands. The PPA could tier the grant system and make

219. FWS FAQ, *supra* note 105, at 1.

220. *Id.*

221. While all species rely on plants for food, whether directly or indirectly, one prime example is pollinators such as bumblebees. See Nancy Ostiguy, *Pests and Pollinators*, NATURE EDUC. KNOWLEDGE (2011), <https://www.nature.com/scitable/knowledge/library/pests-and-pollinators-23564436/> (discussing the inter-reliance of pollinators and plants).

222. See 16 U.S.C. § 1538(a)(2) (2018) (providing some protections against harm to listed plants, but not to the extent that Sec. 9 “take” prohibitions provide).

223. See *Human Activities Such as Dredging and Careless Boating Are Threatening South Florida’s Mangroves and Seagrass*, FLA. KEYS NAT’L MARINE SANCTUARY, <https://floridakeys.noaa.gov/plants/msthreats.html#:~:text=Human%20activities%20such%20as%20dredging,South%20Florida's%20mangroves%20and%20seagrass&text=In%20the%20Florida%20Keys%2C%20human,have%20been%20destroyed%20for%20development> (last visited Mar. 16, 2021) (noting that in the last seventy years, 60% of mangroves have been lost to development in Monroe County, FL. alone).

224. See *About Blue Carbon*, BLUE CARBON INITIATIVE, <https://www.thebluecarboninitiative.org/about-blue-carbon> (last visited Mar. 16, 2021) (noting that these rates of carbon sequestration can be up to four times that of a “mature tropical forest”).

225. The Coastal Zone Management Act employs three federal programs that work alongside of states and local governments to acquire or procure easements on private land for coastal conservation. See *Coastal Zone Management Act*, NOAA, <https://coast.noaa.gov/czm/act/> (last visited Mar. 16, 2021).

funding dependent on the number of species of plants and area of land designated for conservation. For example, in areas with limited open space, like urban landscapes, residential homeowners could receive a \$100 per year supplement to plant milkweed in their yard.

4. Recovery Plans

Recovery Plans based on the listing factors of the ESA work to prevent a species from going extinct by addressing the threats that face them.²²⁶ Although these factors are still present for GT and GE species, they are not the best means of conserving genetic variability. Using the five-factor analysis as the sole metric used to determine whether a PPA-listed species met “recovery” would induce ramifications. The results would conflict with not only private property rights, but also the Services’ resource allocation. The PPA focuses on genetic variability and the interplay between phylogenetic relationships. Given the nature of this mode of listing, PPA-listed species will be more extensive than ESA-listed species. Constraining PPA recovery plans to the ESA listing factors in light of climate change is an unworkable solution. This could lead to the PPA being overly broad—which is not a feasible conservation tool. This is most notable on federal lands where implementing the PPA would require vast acreage, impacting timber and mineral leasing, as well as recreational use on public land.

Recovery Plans under the PPA should focus on genetic variability within phylogenetically related species. The Services can achieve this by mapping the phylogenetic lineage of species, overlaying this on topographical maps, and creating a database housing this information. Mathematical modeling can use algorithms to help the Services assess and list species as *threatened* or *endangered* in relation to the genus’ overall genetic pool. The PPA’s inclusion and utilization of DPS’s would allow the Services to create malleable Recovery Plans to fit each species’ needs—even more so on public land, as it would prevent blanket protections and plans for GT and GE species.

The United States’ gray wolf provides a good illustration of this problem.²²⁷ The FWS has divided the gray wolf into three DPS’s that are deemed separate and distinct from other populations of wolves in the United

226. 16 U.S.C. § 1533(a), (f) (2018).

227. See *The Fight for Northern Rocky Gray Wolves*, EARTHJUSTICE, <https://earthjustice.org/features/campaigns/wolves-in-danger-timeline-milestones> (last visited Mar. 16, 2021) (documenting the history of the legal protections and disputes over the gray wolf listing) [hereinafter *Gray Wolves*].

States.²²⁸ The species overall has experienced drastic reductions in their populations due to overhunting, habitat loss, and other human induced constraints.²²⁹ Over time, the northern Rocky Mountain gray wolf DPS population numbers have increased due to their afforded protections.²³⁰ However, the genetic lineage is widely debated.²³¹ Scientists question whether each individual of the species is actually a member of that distinct species.²³² There has been data collected to suggest that they are breeding within their evolutionary tree; that they are utilizing phylogenetic avenues of adaptation.²³³ The genetic data suggests that there are genetic overlaps between the wolves contained in each of the discrete DPS's.²³⁴ If this is true, then the success of the recovery plan for the western gray wolf is dependent upon the population of those phylogenetic peers. However, the PPA would be unable to extend a buffer zone with the same protections given to the gray wolf in its recovery plan. This will be a non-starter for cattle ranchers in their habitat area unless they willingly selected to be a part of the PPA grant program.²³⁵

One solution that Florida and Hawaii have attempted is a multi-species recovery plan.²³⁶ This concept is based not on phylogenetics, but rather on habitat overlap.²³⁷ While taxonomy is still a part of the analysis, the viability

228. See *Gray Wolf (Canis lupus)*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/home/wolfrecovery/> (last updated Nov. 6, 2020) (describing a brief history of the gray wolf under the ESA and providing further information about the Northern Rocky Mountain DPS, the Western Great Lakes DPS, and the Mexican Wolf DPS).

229. Mark Hofberg, *Why Delisting Gray Wolves From the Endangered Species Act Would Spell Trouble for the Species-And Our Shared Ecosystems*, IFAW (Mar. 27, 2019), https://www.ifaw.org/journal/why-delisting-gray-wolves-from-the-endangered-species-act-would-spell-trouble-for-the-species-and-our-shared-ecosystems?gclid=CjwKCAiA5IL-BRAzEiwA0lcWYhQNHj7V2-sT565TNjMECE39JUAOi9R7F9NIzrKJx44-pQBPyb6BoCKzoQAvD_BwE [hereinafter Hofberg].

230. *Id.*

231. See Bridgett M. vonHoldt et al., *Whole Genome Sequence Analysis Shows That Two Endemic Species of North American Wolf Are Admixtures of the Coyote and Gray Wolf*, 7 SCIENCE ADVANCES (2016) (discussing the results of their genetic sequencing of the eastern wolves and the fallacy to delist the western gray wolf).

232. *Id.*

233. *Id.*

234. *Id.* (noting that the alleles present in each of the wolf DPSs show the potential of interbreeding amongst wolves and that the tracing of coyote alleles present in wolf samples may provide further information about how long it has been since the individuals of each DPS produced offspring).

235. Wolves are apex predators and cattle ranchers have been pushing back against the take provision afforded to the gray wolf when it was listed due to the economic loss the wolf imposes on their herds. See Hofberg, *supra* note 229; *Gray Wolves*, *supra* note 227.

236. See FWS *Florida*, *supra* note 132; DRAFT REVISED RECOVERY PLAN FOR HAWAIIAN FOREST BIRDS, U.S. FISH & WILDLIFE SERV. ii-447 (Region 1, Portland, OR., 2003), <https://www.fws.gov/pacific/ecoservices/endangered/recovery/documents/hawaiiforestbirdsdraftrevisedrecoveryplan.pdf>. [hereinafter FOREST BIRDS FWS].

237. See FOREST BIRDS FWS, *supra* note 236, at viii-ix (explaining that all but two of the birds included in the plan share the same habitat regions).

of cooperative adaptation based on genes is not part of the analysis.²³⁸ Each of these state plans could serve as test models. Modeling can look to the success rates and data collected from these plans and determine their applicability in other states or regions. Working within § 6 of the ESA, states would most likely have to provide § 10 permits for the *take* or *harm* of unlisted species whose listed counterparts are genetically intertwined.²³⁹

5. Monitoring

Monitoring ESA-listed species ensures that after the Services delists or down-lists an ESA species, they are still a successful and viable species whose level of protection meets their needs.²⁴⁰ With climate change accelerating, it is not feasible to have a monitoring program for GT or GE species that mimics that of the ESA. The threats that GT and GE species face will be in constant flux with many shifting variables due to anthropogenic climate change, land use degradation, etc.

The PPA should instead use a database monitoring system that incorporates boots on the ground observations and citizen reporting. The database and modeling systems should work to identify not only which species currently face threats, but also which ones are subject to genetic decline that will affect the phylogenetic tree of their relatives. This monitoring program should begin at the onset of the PPA and continue to expand throughout each species' existence.²⁴¹ Because the PPA works to integrate the genetic pool of all phylogenetically related species into conservation, the down-listing or delisting of a species does not preclude the need to continually monitor them. Even if one member of the genus is not in need of PPA listing at one point in time, they may require those protections in the future based on the population or migration of other members of the genus. This model of monitoring will require extensive resources from the Services—especially at the onset of implementing the PPA. This will be expensive, but again, the cost of doing nothing to prevent species collapse will be much more expensive.²⁴²

238. See FWS *Florida*, *supra* note 132 (showing the breakdown of the multi-species plan based on taxonomy).

239. See IF11241, *supra* note 213 (outlining the ways in which the sections of the ESA interact with each other).

240. 16 U.S.C. § 1533(g) (2018).

241. The choice to use the term 'existence' reflects the reality that not all GT or GE listed species will survive the Anthropocene.

242. See OECD, *supra* note 201, at 26–27 (providing a breakdown of known costs from species biodiversity loss from 1997 to 2011).

A GENUS CONCLUSION

Climate change is accelerating.²⁴³ Congress has failed to take necessary actions and address the drastic steps needed in the face of this critical issue.²⁴⁴ The ESA can provide a potential framework to introduce phylogenetics into conservation law. As it stands, the ESA has succeeded in preventing the extinction of the vast majority of those species fortunate enough to be listed.²⁴⁵ However, when a species' population numbers are low enough to warrant listing, the genetic variation left within those populations may not be nearly enough to survive the Anthropocene.²⁴⁶ The Services that administer the ESA already face resource constraints in the ability to list species and provide adequate protection to already listed species.²⁴⁷ A new statute, such as the PPA, would proactively address the preservation of populations that have wide genetic variation within their evolutionary tree. Alongside providing a more proactive protection scheme, it would also provide additional funding and resources to meet this objective. The PPA has the potential to provide a federally funded, localized, and science-based approach to conservation law.

On a planetary scale, we are running out of time to technologically design our way out of our problems.²⁴⁸ A more simplistic solution, both economically (relative to the costs incurred from cumulative ecosystem collapse) and temporally, is to work with nature to assist species in evolving through the damage we have already created for them.²⁴⁹ There are certain consequences of our actions that cannot—and will not—be halted or changed in time.²⁵⁰ The Amazon Rain Forest, the lungs of our planet, has a low chance

243. IPCC, *supra* note 34, at 2–16.

244. The Biden Administration, thus far, has placed a strong emphasis on combating climate change and addressing adaptation and mitigation in response to the damage already done. However, the ability of Congress to take the hard initiative of implementing large scale response to species degradation is yet to be seen and may not be seen. See Jennifer Ludden, *Biden Will Face Major Limits to His Ambitious Climate Plans*, NAT'L PUB. RADIO (Nov. 8, 2020), <https://www.npr.org/2020/11/08/932160547/biden-will-face-major-limits-to-his-ambitious-climate-plans> (discussing the hurdles that lay ahead for Biden's climate initiative).

245. Jacobson, *supra* note 57.

246. See Hoffmann, *supra* note 7, at 480–82 (discussing how genetic variation, climate change pressures, and adaptation relate to trait selection in species ability to evolve with the rate of climate change).

247. In 2016 alone, it cost FWS and NMFS about \$1.5 billion dollars to administer the ESA when factoring in the consultation work done with other agencies. See Gordon, *supra* note 200.

248. See generally IPCC, *supra* note 34 (showing just how many actions we collectively need to make in order to avert the worst-case scenarios of climate change and the amount of time we have to do so).

249. See generally IPCC, *supra* note 34 (discussing a multitude of various challenges we face and making nature-based suggestions on how to prevent some of the worst effects of climate change).

250. See generally IPCC, *supra* note 34 (finding that certain effects from the carbon we have emitted into the atmosphere have been locked in as climate consequences).

of surviving as we wait for legal protections to be implemented.²⁵¹ Carbon emissions are projected to exceed the Paris Agreement's recommended parts per million in order to keep the planet below a warming of 2°C.²⁵² In the meantime, those within the legal field should be working alongside scientists to create proactive frameworks, not just reactionary ones.²⁵³ The problems we will collectively face downstream will require all hands on deck. One critical aspect of this puzzle is to provide species with all the tools possible to ensure that they can evolve and adapt through these problems as we attempt to solve them.

251. Matt Sandy & Sebastian Liste, *The Amazon Rainforest is Nearly Gone. We Went to the Frontline to See if it Could be Saved*, TIME (Sept. 12, 2019), <https://pulitzercenter.org/reporting/amazon-rainforest-nearly-gone-we-went-front-lines-see-if-it-could-be-saved>.

252. Nicola Jones, *How the World Passed a Carbon Threshold and Why it Matters*, YALE SCH. ENV'T (Jan. 26, 2017), <https://e360.yale.edu/features/how-the-world-passed-a-carbon-threshold-400ppm-and-why-it-matters> (noting that while we have globally exceeded the recommended 400 ppm carbon threshold of the Paris Agreement, an unlikely drastic reduction in emissions could still prevent a 2°C warming).

253. See Matthew Metz, *7 Ways Lawyers Can Join the Fight to Curb Climate Change*, A.B.A. J. (Feb. 27, 2020), <https://www.abajournal.com/voice/article/7-ways-lawyers-can-join-the-fight-to-curb-climate-change> (advocating for lawyers to use their skillsets to work on behalf of all of the problems we face with climate change).

BIG AG, ANTITRUST & CLIMATE CHANGE: THE ENVIRONMENTAL IMPACTS OF CONSTRAINED ECONOMIC CHOICE

*Alexandra Spring**

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INTRODUCTION

Much of the blame for agriculture’s greenhouse gas emissions is placed at the feet of beef cattle and those who raise them.¹ However, cattle can be managed in such a way to sequester greenhouse gases and build soil; such

* Associate Attorney at Tarrant, Gillies & Shems. My sincere thanks to Peter Carstensen, Daniel Hanley, and Sandeep Vaheesan for their thoughtful feedback and patience. Thank you to Jonathan Coppess for sending me down the winding path of agricultural policy, and to Sophia Kruszewski and Pat Parenteau for encouragement along the way. All errors are my own.

1. Tom Levitt, *What’s the Beef with Cows and the Climate Crisis?*, THE GUARDIAN (Oct. 27, 2021), <https://www.theguardian.com/environment/2021/oct/27/whats-the-beef-with-cows-and-the-climate-crisis>.

regenerative farming can mitigate climate change while protecting biodiversity.² The real problem lies in the predominant production methods, and the agribusinesses that promote their use. With concentrated economic power, agribusinesses can steer the methods of production.³ This paper contends that because these businesses do not incur the costs of environmental degradation, they are incentivized to promote environmentally destructive practices. Further, the widespread adoption of regenerative agriculture is impeded by concentrated market structures. The threshold issue underlying greenhouse gas emissions in the beef industry is therefore the unmitigated concentration of market power. Antitrust law offers the solution.

The premise of antitrust enforcement is that competitive markets with dispersed economic power benefit both market participants and consumers. To counter market concentration, antitrust law defines and prohibits unlawful mergers and business practices “to protect the process of competition.”⁴ A century ago, the Packers and Stockyards Act emerged as a solution to the meatpacker’s monopolistic control over livestock markets.⁵ Today, renewed enforcement of the same law can prevent buyers from applying inordinate pressure on producers and enable more competitive livestock markets.

This paper argues that dispersed economic power is essential for the competitive viability of regenerative beef production. Section I explores the potential to mitigate climate change through adaptive livestock management in a range of ecosystems, from Vermont to Zimbabwe. Section II examines the current structure of the United States beef market and argues that the associated constrained economic choice both exacerbates climate change by precipitating environmental harms and decreases adaptive capacity by inhibiting alternative supply chains. Section III evaluates the existing legal framework, looking to the Packers and Stockyards Act of 1921, the evolution of competition policy, the modern judicial interpretation of antitrust

2. Jean-Louis Peyraud & Michael MacLeod, *Study on Future of EU Livestock: How to Contribute to a Sustainable Agricultural Sector?*, 1, 18 (2020) (European Commission); Jason E. Rowntree et al., *Potential Mitigation of Midwest Grass-Finished Beef Production Emissions with Soil Carbon Sequestration in the United States of America*, *FUTURE FOOD: J. ON FOOD, AGRIC. & SOC’Y* 31, 36 (2016), https://www.researchgate.net/publication/311921284_Potential_mitigation_of_midwest_grass-finished_beef_production_emissions_with_soil_carbon_sequestration_in_the_United_States_of_America.pdf.

3. Tina L. Saitone & Richard J. Sexton, *Concentration and Consolidation in the U.S. Food Supply Chain: The Latest Evidence and Implications for Consumers, Farmers, and Policymakers Special Issue 2017 Federal Reserve*, *BANK KAN. CITY: ECON. REV.* 25, 38 (2017), https://www.kansascityfed.org/documents/764/Concentration_and_Consolidation_in_the_U.S._Food_Supply_Chain_The_Latest_Evidence_and_.pdf.

4. *The Antitrust Laws*, FTC, <https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/antitrust-laws> (last visited Apr. 15, 2022).

5. 7 USC § 181 (1921).

violations, and the challenge of reform in the face of concentrated political power. Section IV looks to the changing landscape of antitrust and introduces a first step in agriculture's antitrust reform: Vesting enforcement authority in an agency insulated from industry interests.

I. REGENERATIVE AGRICULTURE AS A CLIMATE CHANGE SOLUTION

Regenerative agriculture is a “holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density.”⁶ The holistic management approach can be applied to a variety of agriculture sectors, including livestock. Beef production, often cited for its major contribution to climate change,⁷ can have positive environmental impacts when practiced regeneratively.⁸ A 2020 European Commission study found “a reduction of animal production will not necessarily lead to more sustainable agri-food chains.”⁹ The study found that ruminants, in particular, “can have a positive impact on biodiversity and soil carbon via the maintenance of permanent grassland and hedges and optimized use of manure.”¹⁰ The European Commission study adds to a growing understanding of the nuanced relationship between agriculture and ecosystems.

A 2011 study through Texas A&M University evaluated the impacts of four land management techniques on Texas tall grass prairie.¹¹ The study looked at adaptive management using multi-paddock grazing, light continuous grazing, heavy continuous grazing, and management without grazing.¹² Continuous grazing allows livestock to electively graze a single enclosed paddock and is the most common grazing management technique in beef production.¹³ Under adaptive management, livestock are moved throughout multiple paddocks to allow land to rest between grazing periods.

6. Regenerative Agric. Initiative & The Carbon Underground, *What is Regenerative Agriculture?* REGENERATION INT'L, (Feb. 21, 2022), <https://regenerationinternational.org/wp-content/uploads/2017/02/Regen-Ag-Definition-2.23.17-1.pdf>.

7. David Vetter, *Got Beef? Here's What Hamburger is Doing to The Climate*, FORBES (Oct. 5, 2020), <https://www.forbes.com/sites/davidrvetter/2020/10/05/got-beef-heres-what-your-hamburger-is-doing-to-the-climate/?sh=39cd55515206.html>.

8. ALLAN SAVORY WITH JODY BUTTERFIELD, *HOLISTIC MANAGEMENT: A COMMONSENSE REVOLUTION TO RESTORE OUR ENVIRONMENT* 233 (Islandpress, 3rd ed. 2016) [hereinafter ALLAN SAVORY WITH JODY BUTTERFIELD].

9. Peyraud & MacLeod, *supra* note 2, at 69.

10. Peyraud & MacLeod, *supra* note 2, at 18; Ruminants are herbivorous, hoofed mammals, including cattle and goats, with a complex 3- or 4-chambered stomachs. *Ruminant*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/ruminant> (last visited Mar. 9, 2022).

11. W.R. Teague et al., *Grazing Management Impacts on Vegetation, Soil Biota and Soil Chemical, Physical and Hydrological Properties in Tall Grass Prairie*, 141 AGRIC., ECOSYSTEMS & ENV'T 310, 310 (2011).

12. *Id.*

13. *Id.* at 311.

The study found that continuous grazing (whether heavy or light) quickly degrades ecosystem health because livestock repeatedly target certain areas of a paddock.¹⁴ On the other hand, multi-paddock grazing allows ranchers to replicate wild ungulate behavior,¹⁵ respond to biological indicators, and manage grazing for desired results.¹⁶ Compared to all other techniques, adaptive multi-paddock management where “knowledge of . . . biological responses [wa]s incorporated into timely management decisions”¹⁷ had higher soil carbon, plant biomass, and water- and nutrient-holding capacity.¹⁸ Multi-paddock management led to greater ecosystem health than all other livestock management techniques, and even outperformed plots with no livestock.¹⁹

The fungal/bacterial ratio was also highest under adaptive multi-paddock management.²⁰ Fungal/bacterial ratios play a significant role in ecosystem health and carbon sequestration.²¹ Natural carbon storage occurs as photosynthesis fixes atmospheric carbon dioxide (CO₂) into plant biomass; removing CO₂ from the air.²² Plants have a symbiotic relationship with mycorrhizal fungi: In exchange for nutrient delivery, the plant roots provide energy in the form of carbon to the mycorrhizae.²³ This process creates soil with high soil organic matter and soil organic carbon. Some CO₂ is lost back to the atmosphere as microbes break down plants.²⁴ However, in a well-balanced system, carbon storage exceeds CO₂ losses, and soil organic carbon steadily grows.²⁵

The 2011 study demonstrates ruminant’s ancient role in this process. Just as plants coevolved with mycorrhizal fungi, plants coevolved with ruminants.²⁶ The grazing mammals contribute to soil health in several ways, including by encouraging carbon storage.²⁷ As they graze and selectively defoliate plants, the plants shed root mass to conserve energy.²⁸ The discarded root mass provides a feast of carbon-enriched compounds for

14. *Id.*

15. *Ungulate*, MERRIAM-WEBSTER ONLINE DICTIONARY, <https://www.merriam-webster.com/dictionary/ungulate> (last visited Mar. 9, 2022).

16. W.R. Teague et al., *supra* note 11, at 312.

17. *Id.* at 317.

18. *Id.* at 310.

19. *Id.*

20. *Id.*

21. Todd A. Onl & Lisa A. Schulte, *Soil Carbon Storage*, NATURE (2012), <https://www.nature.com/scitable/knowledge/library/soil-carbon-storage-84223790/>.

22. *Id.*

23. *Id.*

24. *Id.*

25. *Id.*

26. ALLAN SAVORY WITH JODY BUTTERFIELD, *supra* note 8, at 228.

27. *Id.* at 241.

28. *Id.*

bacteria and mycorrhizal fungi, increasing carbon storage and improving soil structure.²⁹ While carbon storage is complex and difficult to measure,³⁰ increased carbon storage decreases overall atmospheric carbon dioxide—one leading cause of climate change.³¹ Further, soil health and improved soil structure have a variety of benefits aside from carbon storage. For example, proper soil structure improves water retention and decreases erosion.³² Soil loss on some farms “exceeds the rate of soil formation by >2 orders of magnitude.”³³ The Intergovernmental Panel on Climate Change points to land degradation as “one of the biggest and most urgent challenges for humanity.”³⁴

The symbiotic relationship between ruminants and soil is demonstrated in even the most brittle ecosystems.³⁵ Allan Savory, a Zimbabwean ecologist, has dedicated his career to “kick starting land recovery” with grazing ruminants.³⁶ In one experiment, Savory regenerated land that had been bare for over 30 years by managing his herd to replicate the behavior of native grazers.³⁷ Over the course of a week, Savory moved his herd of 500 cattle onto the barren area at night and allowed the herd to graze elsewhere during the day.³⁸ The heavy ungulates broke up the solidified dirt with their hooves and infused the struggling soil with fertilizer (urine and dung).³⁹ After one week, grass started growing again.⁴⁰ Wild animals returned to the area to graze, and two years later, the land was densely covered with grass.⁴¹

Around the same time on the other side of the world, Gabe Brown was operating a 5,000-acre ranch in Bismarck, North Dakota.⁴² North Dakota’s

29. *Id.*

30. *See, e.g.*, COLE D. GROSS & ROBERT B. HARRISON, QUANTIFYING AND COMPARING SOIL CARBON STOCKS: UNDERESTIMATION WITH THE CORE SAMPLING METHOD, 82 SOIL SCI. SOC’Y AMERICA J. 949 (2018).

31. *FAQ: Carbon Dioxide and Climate Change*, UC SAN DIEGO SCRIPPS INST. OCEANOGRAPHY, <https://scripps.ucsd.edu/research/climate-change-resources/carbon-dioxide-and-climate-change> (last visited Apr. 15, 2022).

32. ALEXANDRA BOT & JOSÉ BENITES, THE IMPORTANCE OF SOIL ORGANIC MATTER, CHAPTER ONE 2 (2005), <https://www.fao.org/3/a0100e/a0100e04.htm#bm04>.

33. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SPECIAL REPORT: CLIMATE CHANGE AND LAND, CHAPTER 4: LAND DEGRADATION 347, https://www.ipcc.ch/site/assets/uploads/sites/4/2019/11/07_Chapter-4.pdf.

34. *Id.* at 348.

35. *Brittle and Nonbrittle Environments*, MANAGING WHOLES, <https://managingwholes.com/-ecosystem-brittleness.htm/> (last visited Feb. 21, 2022) (explaining Brittle ecosystems, a brittle ecosystem is one with a prolonged dry season, as opposed to year-round moisture).

36. ALLAN SAVORY WITH JODY BUTTERFIELD, *supra* note 8, at 233.

37. *Id.*

38. *Id.*

39. *Id.*

40. *Id.*

41. *Id.*

42. Gabe Brown, *Sustainable Farming and Ranching in a Hotter, Drier Climate*, YOUTUBE at 08:00, 51:49 (Nov. 29, 2017), https://www.youtube.com/watch?v=O394wQ_vb3s.

climate differs drastically from Zimbabwe's, but is similarly brittle with a long dry season.⁴³ Brown's operation started as a monoculture,⁴⁴ but after observing the fragility of his farm, his priority became growing and maintaining healthy soil.⁴⁵ Brown insists the most effective way to maintain soil health is to mimic nature—with high species diversity and adaptive livestock management.⁴⁶ Soil infiltration is one indicator of soil health; quick infiltration of rainwater indicates a stable structure and high organic matter.⁴⁷ When Gabe Brown began his operation in 1991, his soil could infiltrate half an inch of rainfall per hour.⁴⁸ After a decade of regenerative management, Brown's soil infiltrates one inch of rainfall in nine seconds.⁴⁹

In Vershire, Vermont, Niko Horster of Shire Beef is experimenting with raising cattle and building soil health simultaneously. The Northeastern United States is a non-brittle environment with relatively consistent rainfall. Horster says there are “plenty of theories about how soil carbon building works in non-brittle environments, but we don't have a lot of data yet.”⁵⁰ Thus far, most carbon sequestration research has focused on the top four to six inches of soil. This may not reflect optimal carbon storage in non-brittle ecosystems like Vermont.⁵¹ The increased rainfall and biological activity associated with non-brittle environments mean that carbon cycles are accelerated.⁵² Thus, more permanent carbon storage may occur deeper in soil as compared to brittle environments with lower biological activity.⁵³ In collaboration with Dartmouth College, Shire Beef and two other Vermont farms received a Conservation Innovation Grant to research carbon storage in the Northeast.⁵⁴ The researchers theorize that managing livestock with

43. *Climate Risk Profile: Zimbabwe*, WORLD BANK GROUP, i, at 3, https://climateknowledgeportal.worldbank.org/sites/default/files/2021-05/14956-WB_Zimbabwe%20Country%20Profile-WEB%20%281%29.pdf (last visited Mar. 10, 2022) (North Dakota's mean monthly temperatures range from about 12°F in January to 70°F in July, while Zimbabwe's mean monthly temperatures range from about 60°F in July to 76°F in December).

44. William C. Wetzel et al., *Variability in Plant Nutrients Reduces Insect Herbivore Performance*, 539 NATURE 425 (2016); Monoculture is the practice of cultivating a single crop or organism on agricultural land. *Monoculture*, MERRIAM WEBSTER, <https://www.merriam-webster.com/dictionary/monoculture> (last visited Apr. 19, 2022).

45. Brown, *supra* note 42, at 20:10.

46. *Id.* at 53:44.

47. U.S. DEP'T AGRIC., NAT. RES. CONSERVATION SERV., SOIL QUALITY INDICATORS:INFILTRATION, (1998) https://web.extension.illinois.edu/soil/sq_info/sq_intro.pdf.

48. Brown, *supra* note 42, at 07:21.

49. *Id.* at 07:40.

50. Interview with Nikko Horster, in South Royalton, Vt. (Sept. 7, 2020) (on file with author).

51. *Id.*

52. *Id.*

53. *Id.*

54. *Researching Strategies for Improving Vermont's Soil Health Through Perennial Grazing Crop Development Project*, DARTMOUTH COLL., https://www.nrcs.usda.gov/wps/portal/nrcs/detail/vt/programs/?cid=nrcs142p2_010522 (last visited Apr. 19, 2022).

deep-rooted perennial wheat grass may be more appropriate for carbon storage in Vermont, where rainfall inundates the top four to six inches of soil.⁵⁵ The research reflects an effort to tailor land management to different ecological conditions.

The key to holistic regenerative management is the ability to tailor practices to different biological and climatic indicators. A 2016 study of carbon sequestration through beef production concluded that “well-managed grazing and grass-finishing systems in environmentally appropriate settings can positively contribute to reducing the carbon footprint of beef cattle, while lowering overall atmospheric CO₂ concentrations.”⁵⁶ The results of the study are staggering—the careful management of livestock can lower CO₂ in the atmosphere. The study reinforces the importance of environmentally appropriate management. What works in Zimbabwe might not work in the Northeastern United States. As Allan Savory notes, solutions must overcome the notion that, “all environments respond in the same manner to the same influences.”⁵⁷

The ability to make ecosystem-specific management decisions requires decision-making autonomy, which inevitably requires dispersed economic power. In a market structure where power is concentrated in a few buyers, producers have no choice but to implement the practices favored by buyers. Certain livestock contracts, particularly prevalent in the hog and poultry industries, further decrease autonomy by allowing the downstream buyer to explicitly dictate the means of production.⁵⁸ These “resource-providing contracts introduce substantial buyer decision-making into the farm production process, thereby reducing farmer autonomy.”⁵⁹ The contracts employed in the beef industry do not explicitly dictate the means of production; agribusinesses instead dominate the market by controlling an inordinate percentage of processing facilities.⁶⁰ This processing bottleneck allows firms to exercise significant influence over producers.⁶¹ Antitrust law, which aims to protect fair competition in the marketplace, is primed to address the unprecedented concentration of economic power in the hands of a few multinational companies. Existing antitrust law must be enforced to

15, 2022) (scroll down to “2019 Vermont State Conservation Innovation Grants” to find the link to Dartmouth College’s abstract).

55. *Id.*

56. Rowntree et al., *supra* note 2, at 36.

57. ALLAN SAVORY WITH JODY BUTTERFIELD, *supra* note 8, at 34.

58. Saitone & Sexton, *supra* note 3, at 25, 38.

59. *Id.*

60. Mary K. Hendrickson et al., *Power, Food and Agriculture: Implication for Farmers, Consumers and Communities*, 1, 25 (University of Missouri, Working Paper, 2017), <https://philhowardnet.files.wordpress.com/2017/11/hendrickson-howard-constance-2017-final-working-paper-nov-1.pdf>.

61. *Id.* at 25.

disperse economic power, which ultimately will support alternative modes of production.

II. ANTITRUST REFORM AS A THRESHOLD ISSUE

Livestock agriculture sectors in the United States, including beef, witnessed rapid concentration over the last 50 years. In 1975, four firms slaughtered 28% of steers and heifers in the beef market.⁶² Based on 2016 data, four firms (Tyson, JBS, Cargill, and National Beef) now control 85% of steer and heifer slaughter.⁶³ The concentrated slaughter market limits buyer options for beef producers, often to a single regionally dominant firm, creating a monopsony.⁶⁴ As this paper argues, the resulting bottleneck constrains economic choice, which in turn exacerbates climate change and decreases the adaptive capacity of our national food system.

A. Agricultural Monopsony Exacerbates Climate Change

Agricultural markets dominated by a few powerful buyers predispose behavior that exacerbates climate change. Without competitors, a dominant firm can steer production.⁶⁵ If the dominant firm does not bear the environmental costs of production, the firm is able to extract “concessions from the farmer who has no one (outside of the farm ecology or farmworkers) to extract concessions from.”⁶⁶

The beef industry demonstrates this dynamic. Pre-1980, the meatpacking market was relatively decentralized.⁶⁷ Throughout the 1980s and 1990s, the buyer side of the beef market consolidated rapidly.⁶⁸ As the market concentrated, buyers started to gain decision-making power as the increasing

62. Christopher R. Kelley, *An Overview of the Packers and Stockyards Act*, ARK. L. NOTES, 35, 37 (2003).

63. Hendrickson et al., *supra* note 60, at 25.

64. PETER CARSTENSEN, THE PROSPECTS AND LIMITS OF ANTITRUST AND COMPETITIVE-MARKET STRATEGIES, FOOD AND THE MID-LEVEL FARM 227, 233 (Thomas A. Lyson et al. eds., 2008). A monopsony, also known as a buyer’s monopoly, is a market with only one buyer, or with a single buyer that dominates the market. See, e.g., *What is a Monopsony? Definition and Meaning*, MKT. BUS. NEWS, <https://marketbusinessnews.com/financial-glossary/monopsony-definition-meaning/> (last visited Feb. 23, 2022).

65. See e.g. *Pickett v. Tyson Fresh Meats, Inc.*, 420 F.3d 1272, 1286 (11th Cir. 2005) (Tyson uses market dominance to promote the production of high-yielding, not high-quality, cattle).

66. Hendrickson et al., *supra* note 60, at 30.

67. KENNETH H. MATHEWS, JR. ET AL., U.S. BEEF INDUSTRY: CATTLE CYCLES, PRICE SPREADS, AND PACKER CONCENTRATION i, 9 (Apr. 1999).

68. *Id.* at 10 (“The 1980s brought the term ‘merger mania’ to the beefpacking industry”); see also JOEL L. GREENE, CONG. RSCH. SERV., R41673, USDA’S “GIPSA RULE” ON LIVESTOCK AND POULTRY MARKETING PRICES 3 (2016). (quoting “from 1986 to 2008, the fourth-firm share of slaughter increased from 55% to 79% cattle”).

use of marketing agreements began to replace the cash market.⁶⁹ These agreements were originally pioneered by cattle producers, who sought a more efficient alternative to the hassle of negotiation.⁷⁰ Also called captive supply agreements, marketing agreements allow the meatpacker to “capture” the product before it enters the cash market.⁷¹ Marketing agreements set the price on the previous week’s cash market average, replacing negotiation between buyer and seller.⁷² Many agreements allow the meatpacker to adjust the price post-slaughter, depending on quality and yield.⁷³ Marketing agreements, therefore, introduce substantial buyer power, enabling meatpackers to incentivize certain product qualities over others.⁷⁴ However, with high regional concentration and three major firms (Tyson, JBS, and Cargill) controlling 75% of the market,⁷⁵ the majority of producers have only one buyer option. The “incentive” is more akin to a direct command.

In *Pickett v. Tyson Fresh Meats*,⁷⁶ the Eleventh Circuit described this convenient feature of captive supply agreements as allowing Tyson to incentivize an increase in “the overall quality and yield of [the] cattle.”⁷⁷ The court seemed to suggest that Tyson would incentivize higher quality cattle through captive supply agreements. The “quality” Tyson prefers, however, may be counterintuitive. Tyson is one of the world’s largest meatpackers, securing a dominant position after its 2001 acquisition of IBP, another meatpacking company.⁷⁸ The multinational corporation is a volume dealer, processing 10 million cattle a year at the time of the *Pickett* lawsuit.⁷⁹ Tyson’s priority is to provide large volumes of cheap meat to its primary customer: supermarket chains.⁸⁰ To this end, Tyson prefers high-yield cattle of lesser quality.⁸¹ Thus, Tyson structures its marketing agreements to “encourage producers to raise high-yielding cattle, not high-quality cattle.”⁸²

69. *Pickett v. Tyson Fresh Meats, Inc.*, 420 F.3d 1272, 1275-76 (11th Cir. 2005).

70. *Id.* at 1275.

71. Elliott Dennis, *Captive Supply: Nature, Extent, and Market Trends*, UNIV. NEB.-LINCOLN, AGRIC. ECONS. EXTENSION: FARM & RANCH MGMT. (June 10, 2019), <https://farm.unl.edu/captive-supply-nature-extent-and-market-trends.pdf>; see also Saitone & Sexton, *supra* note 3, at 38.

72. *Pickett*, 420 F.3d at 1276.

73. *Id.* at 1276.

74. *Id.* at 1285.

75. Hendrickson et al., *supra* note 60, at 25.

76. *Pickett*, 420 F.3d at 1276.

77. *Id.* at 1285.

78. Hendrickson et al., *supra* note 60, at 25-26.

79. *Pickett*, 420 F.3d at 1276.

80. *Id.* at 1285.

81. *Id.* at 1286.

82. *Id.*

The most efficient method of producing large volumes of high-yield, low-quality beef is to move the animal from pasture to feedlot.⁸³

Tyson's dominance over the market does not stop at captive supply agreements. Farmers who opt out of marketing agreements and sell cattle on the cash market are not immune to Tyson's pressure. In *Pickett*, plaintiffs alleged Tyson used marketing agreements, coupled with its large market share, to manipulate prices on the cash market.⁸⁴ Due to Tyson's dominant position in the industry, the firm's withdrawal from the cash market "substantially decreased price pressure," causing prices to fall.⁸⁵ Tyson's marketing agreements benefit from low cash market prices because the marketing agreement prices are based on cash market averages.⁸⁶ Plaintiffs claimed that Tyson sought this outcome in violation of the Packers and Stockyards Act of 1921.⁸⁷ Tyson did not deny the behavior, but rather claimed it had adequate "competitive justifications."⁸⁸

The court ultimately ruled in favor of Tyson, and in doing so, glossed over the evident unequal market power in the beef industry. Through firm dominance and marketing agreements, Tyson can exert substantial influence over producers.⁸⁹ Even if farmers opt out of marketing agreements, they are forced to accept low prices on the cash market due to Tyson's influence on the market.⁹⁰ Depressed prices encourage farmers to cut costs and increase output to maintain profitability, incentivizing more efficient production.⁹¹ Switching to intensive agricultural operations and large feedlots becomes even more appealing as prices drop. In other words, unequal market power allows buyers to extract "concessions from the farmer, who has no one (outside of farm ecology or farmworkers) to extract concessions from."⁹²

As Tyson rose to dominance in the beef sector and captive supply agreements became prolific, the use of large and intensive feedlots also steadily increased in the 1980s and 1990s.⁹³ By 2011, 88% of fed cattle were

83. See, e.g., Jennifer M. Latzke, *Research Shows Amylase-enhanced Corn Hybrids Offer Cattle Feeding Efficiencies*, FARMPROGRESS (Nov. 3, 2021), <https://www.farmprogress.com/beef/feeding-high-octane-corn-can-put-feedlots-winners-circle>.

84. *Pickett*, 420 F.3d at 1277.

85. *Id.* at 1277.

86. *Id.*

87. *Id.*

88. *Id.* at 1278.

89. *Id.* at 1285.

90. *Id.* at 1277.

91. Dennis, *supra* note 71 ("Meatpacking is a margin business so per head operating costs drives profitability").

92. Hendrickson et al., *supra* note 60, at 30.

93. It is important to note that while the number of total feedlots has decreased since the 1980s, the overall capacity of feedlots has increased, as smaller feedlots (farmer-feeders) decline and the largest feedlots become more prolific. See, e.g., Bill Bullard, *Under Siege: The U.S. Live Cattle Industry*, 58 S.D. L. REV. 560, 564 (2013).

marketed by feedlots with capacity of over 1,000 cattle.⁹⁴ Within that category, 32% of all fed cattle came from feedlots holding 50,000 or more cattle.⁹⁵ As the high-capacity feedlots increase, the smallest category of feedlots (those with less than 1,000 head of cattle) are in rapid decline because even “small” feedlots cannot keep up with the demand of meatpackers.⁹⁶

As opposed to adaptive grazing management systems, feedlots prioritize economic efficiency without regard to ecosystem health or building soil organic carbon. Livestock confined to feedlots, also called animal feeding operations (AFOs), do not graze or forage, and live instead on exposed soil or inside buildings.⁹⁷ Exposed soil contributes significantly to atmospheric CO₂.⁹⁸ Feed for AFO-confined livestock must be grown elsewhere, and incurs the additional environmental costs of production and transportation.⁹⁹ Feed production accounts for about 45% of emissions from livestock agriculture.¹⁰⁰ On the other hand, high-quality forage in grazing systems have no transportation costs and contains higher levels of easily fermentable carbohydrates, leading to higher digestibility and lower methane outputs from cattle.¹⁰¹ The digestion process of ruminants, *enteric fermentation*, accounts for 39% of emissions from livestock,¹⁰² but can be significantly reduced through a diet of high-quality forage.¹⁰³ Further, manure storage accounts for 10% of livestock emissions.¹⁰⁴ Animal waste deposited on healthy pastures acts as a fertilizer and emits little or no methane.¹⁰⁵ On the other hand, cattle feedlots emit significant levels of methane, as well as

94. *Id.* at 564.

95. *Id.*

96. *Id.*

97. 40 C.F.R. § 122.23(b)(1) (2021) (An “animal feeding operation. . . means a lot or facility. . . where the following conditions are met: (i) Animals. . . have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and (ii) Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.”).

98. Judith D. Schwartz, *Soil as Carbon Storehouse: New Weapon in Climate Fight?*, YALE ENV’T 360 (Mar. 4, 2014), https://e360.yale.edu/features/soil_as_carbon_storehouse_new_weapon_in_climate_fight (“when soil is exposed, it oxidizes, essentially burning the soil carbon”).

99. GLEAM 2.0-Assessment of Greenhouse Gas Emissions and Mitigation Potential, FOOD & AGRIC. ORG. UN, <http://www.fao.org/gleam/results/en/#c300947> (last visited Apr. 16, 2022).

100. Giampiero Grossi et al., *Livestock and Climate Change: Impact of Livestock on Climate Change and Mitigation Strategies*, 9 ANIMAL FRONTIERS 69, 71 (2019).

101. Md Najmul Haque, *Dietary Manipulation: a Sustainable Way to Mitigate Methane Emissions from Ruminants*, J. ANIMAL SCI. & TECH. (2018) at 3.

102. Grossi et al., *supra* note 100, at 69.

103. Haque, *supra* note 101, at 8.

104. Grossi et al., *supra* note 100, at 69.

105. *Id.* at 70.

nitrous oxide and ammonia.¹⁰⁶ Many confined animal feeding operations (CAFOs)¹⁰⁷ store waste in open “manure lagoons.”¹⁰⁸ Over the course of a year, manure lagoons on the largest hog CAFOs hold more than one and half times the amount of waste as the city of Philadelphia produces annually.¹⁰⁹ The waste from these facilities contains excessive nutrients, microbial pathogens, and pharmaceuticals—burdening neighboring communities and ecosystems.¹¹⁰

The environmental costs of these production methods are not incurred by the agribusinesses that encourage their use. For instance, the Clean Water Act (CWA) directs the Environmental Protection Agency (EPA) to regulate water quality impacts from CAFOs, explicitly listing CAFOs as *point sources* of pollution.¹¹¹ However, the industry has successfully evaded regulation since the CWA’s enactment in the 1970s, because applying to the CWA permitting system has thus far been voluntary for CAFO operators.¹¹² Instead, the public incurs the environmental costs of the widespread use of CAFOs.¹¹³ Unequal market power leads to farming techniques that benefit agribusinesses but impose environmental costs on the public and contribute significantly to climate change.

B. Agricultural Monopsony Decreases Adaptive Capacity

While the monopsony market structure encourages practices that exacerbate climate change, it also decreases the food system’s capacity to adapt. Market concentration has led to a bottleneck of food processing and distribution across sectors, meaning that entire supply chains rely on

106. Mei Bai et al., *A Snapshot of Greenhouse Gas Emissions from a Cattle Feedlot*, 44-6 J. ENV’T QUALITY 1974, at 1974-78 (Oct. 9, 2015).

107. 40 C.F.R. § 122.23(b)(2) (2021) (defining a CAFO as an AFO of certain size, as determined by the head count of specific livestock).

108. U.S. GOV’T ACCOUNTABILITY OFF., GAO-08-944, CONCENTRATED ANIMAL FEEDING OPERATIONS: EPA NEEDS MORE INFORMATION AND A CLEARLY DEFINED STRATEGY TO PROTECT AIR AND WATER QUALITY FROM POLLUTANTS OF CONCERN 1 (2008).

109. *Id.* at 5.

110. JoAnn Burkholder et al., *Impacts of Waste from Concentrated Animal Feeding Operations on Water Quality*, 115 ENVIRONMENTAL HEALTH PERSPECTIVES 308, 308-310 (2007).

111. 40 C.F.R. §122.23 (2021) (naming CAFOs as a point source of pollution subject to permitting requirements).

112. National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations, 66 Fed. Reg. 2960-01, 3008 (Jan. 12, 2021) (“[S]ince the inception of the NPDES permitting program in the 1970s, a relatively small number of larger CAFOs has actually sought permits.”); *Waterkeeper All. Inc., v. EPA*, 399 F.3d 486, 506 n.22 (2d Cir. 2005) (noting that “. . . Large CAFOs are important contributors to water pollution and that they have, historically at least, improperly tried to circumvent the permitting process.”).

113. Doug Gurian-Sherman, *CAFOs Uncovered The Untold Costs of Confined Animal Feeding Operations*, UNION CONCERNED SCIENTISTS, (Apr. 2008), <https://www.ucsusa.org/sites/default/files/2019-10/cafos-uncovered-full-report.pdf>.

relatively few facilities.¹¹⁴ An unexpected interruption of one facility can lead to widespread supply chain disruption.¹¹⁵ The COVID-19 pandemic exemplified how the contemporary structure buckles under stress.¹¹⁶ With unexpected lockdowns, the so-called efficient system fell apart; without alternative channels of distribution, millions of gallons of milk were dumped, food rotted in fields, and livestock were euthanized.¹¹⁷ Meanwhile, food insecurity skyrocketed.¹¹⁸

Extreme weather events also strain supply chains. In the aftermath of Hurricane Katrina, disruptions of food supply chains led to panic and looting.¹¹⁹ A 2019 FEMA Supply Chain Resilience Guide exposed a large part of the problem: often “80 percent of key goods and services serving a densely populated area . . . depend on seven or fewer distribution centers.”¹²⁰ Bottlenecks of processing and distribution make the system increasingly fragile. The progression of climate change will impose increasing strain on supply chains, as the risk of a 1-in-100-year weather event gets progressively closer to a 1-in-30-year event.¹²¹

In the livestock sector, the processing bottleneck also constrains the viability of alternative systems. Currently, livestock farmers must go up against the “symbiotic vertical relationship between retail oligopoly¹²² and slaughterhouse oligopoly” to get products to the consumer.¹²³ As mentioned above, these oligopolies demand large volumes of cheaply produced meat,¹²⁴ and small and mid-sized regenerative farmers cannot compete with the industrial scale. In many instances, farmers elect large-scale production only because markets for smaller quantities of livestock are not available.¹²⁵ Regenerative agriculture and other alternatives to intensive livestock

114. CLAIRE KELLOWAY ET AL., BUILDING FOOD SYSTEMS RESILIENCY THROUGH DIFFERENT BUSINESS SCALES AND FORMS, OPEN MKTS. INST., 5 (2021), https://static1.squarespace.com/static/5e449c8c3ef68d752f3e70dc/t/60df0e09cc8302417c732010/1625230859521/USDA_SupplyChainsComment_LR_CK_JF.pdf.

115. *Id.* at 1.

116. Jennifer Clapp, *Spoiled Milk, Rotten Vegetables and a Very Broken Food System*, N.Y. TIMES, (May 8, 2020), <https://www.nytimes.com/2020/05/08/opinion/coronavirus-global-food-supply.html>.

117. *Id.*

118. DIANE WHITMORE SCHANZENBACH, FOOD RESEARCH & ACTION CENTER, NOT ENOUGH TO EAT: COVID-19 DEEPENS AMERICA’S HUNGER CRISIS (Sept. 2020), https://frac.org/wp-content/uploads/Not-Enough-to-Eat_Hunger-and-COVID.pdf.

119. Sid Mahanta, *A Year After Sandy, Food and Fuel Supplies are as Vulnerable as Ever*, REUTERS (Oct. 28, 2013), <https://www.reuters.com/article/idUS417782027820131028>.

120. U.S. DEP’T OF HOMELAND SEC., SUPPLY CHAIN RESILIENCE GUIDE 10 (April 2019), <https://www.fema.gov/sites/default/files/2020-07/supply-chain-resilience-guide.pdf>.

121. Tim Benton & Rob Bailey, *Extreme Weather and Food Shocks*, N.Y. TIMES (Sept. 8, 2015), <https://www.nytimes.com/2015/09/09/opinion/extreme-weather-and-food-shocks.html>.

122. *Oligopoly*, BLACK’S LAW DICTIONARY, Westlaw (11th ed. 2019).

123. Peter Carstensen, *Concentration and the Destruction of Competition in Agricultural Markets: The Case for Change in Policy*, 2000 WIS. L. REV. 531, 535 (2000).

124. CARSTENSEN, *supra* note 64, at 1286.

125. Hendrickson et al., *supra* note 60, at 6.

production depend on the availability of regional processing and distribution networks at a variety of scales.¹²⁶

Many regenerative livestock farmers cite the lack of scale-appropriate processing and distribution as their greatest barriers to the market.¹²⁷ Niko Horster of Vershire, Vermont, points to distribution cartels¹²⁸ as one of the most important challenges for farmers moving forward. “Cartels,” says Horster, “must be replaced by a local aggregation distribution scheme that farmers own.”¹²⁹ In a panel hosted by the Organic Consumer Association, the commonality between a poultry producer from Indiana, a Minnesotan bison producer, and an Iowan beef producer was the shared need for more scale-appropriate processing facilities.¹³⁰

Many advocate for the decentralization and diversification of food processing and distribution.¹³¹ Processing bottlenecks, advocates claim, should be replaced with a network of “small and midsize [facilities] that better fit the topography and climatic zones.”¹³² Roma’s Butchery in South Royalton, Vermont, is a hallmark example of a business tailored to the needs of a region. Roma’s opened in October of 2020 to accommodate the specific needs of livestock farmers in the area.¹³³ Liz Roma, owner and operator of Roma’s Butchery, opened the shop after years of struggling to maintain good land stewardship and profitability while also fitting into Vermont’s network of slaughterhouses.¹³⁴ The shop buys animals from local farmers, coordinates transportation for slaughter at local facilities, and then breaks down whole animals into cuts at the butcher shop.¹³⁵ Roma’s Butchery provides reliability for both farmers and processors, while delivering high-quality meat to consumers.¹³⁶

A network of small and midsize facilities tailored to local needs necessitates dispersed economic power and the producer autonomy of a competitive market. Instead, the decline of antitrust enforcement has resulted

126. Lauren Gwin & Arion Thiboumery, *Local Meat Processing: Business Strategies and Policy Angles*, 37 VT. L. REV. 987, 988(2013).

127. Jodi Helmer, *Covid-19 is Highlighting an Old Problem: The Lack of Meat Processing Plants*, FOODPRINT (July 13, 2020), <https://foodprint.org/blog/meat-processing-plants/> (last updated July 20, 2020).

128. A cartel is a group of independent entities that collude to reduce competition or fix prices. Cartel, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/cartel> (last visited Feb. 21, 2022).

129. Interview with Nikko Horster, in South Royalton, Vt. (Sept. 18, 2020) (on file with author).

130. Organic Consumer Association, *Boycott Big Meat Panel*, YOUTUBE, <https://www.youtube.com/watch?v=JVWMewR83Kw>.

131. KENNETH A. DALHBURG, PURSUING LONG-TERM FOOD AND AGRICULTURAL SECURITY IN THE US, FOOD AND THE MID-LEVEL FARM 20 (Thomas A. Lyson et al. eds., 2008).

132. *Id.* at 21.

133. Liz Roma, Personal Interview (Sept. 10, 2021) (on file with author).

134. *Id.*

135. *Id.*

136. *Id.*

in unprecedented concentration in livestock industries.¹³⁷ While a competitive market will not guarantee the widespread adoption of regenerative agriculture, this paper contends that it is a necessary condition of its economic viability. The modern concentration of market power in a few firms is a relatively new, and by no means immutable, trait of the United States agricultural system.¹³⁸ Reforming antitrust enforcement is therefore the threshold issue for tackling climate change mitigation and adaptation in the agriculture sector.

III. THE LEGAL FRAMEWORK THAT ALLOWED MARKET CONCENTRATION

A broad agricultural antitrust law has been on the books since the 1920s.¹³⁹ After the law's initial success and an era of deconcentration, antitrust standards in the agricultural sector have been largely unenforced.¹⁴⁰ This is due in large part to the laissez-faire approach that has dominated both competition and food policy since the 1970s.¹⁴¹ The effects of contemporary competition policy are evident in court decisions like *Pickett*.¹⁴² The effects of concentrated political power that accompanies concentrated economic power are evident in the Obama Administration's failed attempt to reform antitrust in agriculture.¹⁴³

A. *The Packers and Stockyards Act*

The state of the meatpacking industry at the turn of the last century was sordid.¹⁴⁴ Transparency was low and a handful of firms controlled two production necessities: slaughterhouses and railroads.¹⁴⁵ Then in 1906, the Federal Meat Inspection Act (FMIA) established federal grading of meat, which leveled the playing field for new entrants to the market.¹⁴⁶ The Federal Trade Commission Act of 1914 established the Federal Trade Commission (FTC), whose first major target was the meatpacking industry.¹⁴⁷ The FTC's 1919 report found that five meatpacking companies had acquired a dominant market position and that "the producer of livestock [was] at the mercy of

137. MATHEWS ET AL., *supra* note 67, at 10.

138. KELLOWAY ET AL., *supra* note 114, at 20.

139. 7 U.S.C. § 181 (1921).

140. Carstensen, *supra* note 123, at 534.

141. *Id.* at 536-537.

142. *Pickett v. Tyson Fresh Meats, Inc.*, 420 F.3d 1272, 1272 (11th Cir. 2005).

143. CHRISTOPHER LEONARD, *THE MEAT RACKET: THE SECRET TAKEOVER OF AMERICA'S FOOD BUSINESS* 286 (2014).

144. Carstensen, *supra* note 123, at 534.

145. *Id.*

146. *Id.*

147. Jon Lauck, *Toward an Agrarian Antitrust: A New Direction for Agricultural Law*, 75 N.D. L. REV. 449, 453 (1999).

these five companies.”¹⁴⁸ The report established that the companies’ profitability and rise to power was owed less to their efficiency and more to their monopolistic control over distribution.¹⁴⁹

In 1921, the Packers and Stockyards Act (PSA) introduced strong protections against anticompetitive behavior.¹⁵⁰ Under the PSA, it is unlawful to “use any unfair, unjustly discriminatory, or deceptive practice or device,” or to “[e]ngage in any course of business or do any act for the purpose or with the effect of manipulating or controlling prices, or of creating a monopoly in the acquisition of, buying, selling, or dealing in, any article, or of restraining commerce”¹⁵¹ The liberal text of the Act stands out among antitrust legislation, granting broader authority than the Sherman Act, Clayton Act, or Federal Trade Commission Act.¹⁵²

In the mid-1930s, the invention of refrigerated trucks meant that slaughterhouses no longer needed to be located on rail lines, encouraging further market entry.¹⁵³ The combination of this invention with the FMIA and PSA led to the “rapid deconcentration of meat packing” in the 1940s and 1950s.¹⁵⁴ This trend paralleled peak antitrust enforcement with the liberal Warren Court adopting strict rules on mergers and unfair competitive practices.¹⁵⁵

B. Coinciding Trends of Laissez-faire Food and Competition Policy

The cornerstone of American food policy is omnibus legislation that provides federal support to agriculture and nutrition assistance programs, known as the “farm bill.”¹⁵⁶ The first farm bill was enacted in 1933 in response to the twin disasters of the Great Depression and the Dust Bowl.¹⁵⁷ For the first few decades, the farm bill attempted to control production to stabilize prices. Policies included maximum acreage allotments and paying

148. Kelley, *supra* note 63, at 37 (quoting FTC, REPORT OF THE FEDERAL TRADE COMMISSION ON THE MEAT PACKING INDUSTRY 392 (1919)).

149. *Id.*

150. 7 U.S.C. § 181 (1921).

151. 7 U.S.C. § 192(a), (e) (1935).

152. Kelley, *supra* note 62, at 35-36.

153. Carstensen, *supra* note 123, at 534.

154. *Id.*

155. *See, e.g.,* Klor’s, Inc., v. Broadway-Hale Stores, Inc., et al., 359 U.S. 207 (1959); Brown Shoe Co. v. U.S., 370 U.S. 294 (1962); U.S. v. Phila. Nat’l Bank et al., 374 U.S. 321, 324 (1963); U.S. v. Sealy Inc., 388 U.S. 350 (1967).

156. RENÉE JOHNSON & JIM MONKE, CONG. RSCH. SERV., RS22131, WHAT IS THE FARM BILL? (2019).

157. Jonathan Coppess, *A Return to the Crossroad: Farming, Nutrient Loss, and Conservation*, 39 U.ARK. LITTLE ROCK L. REV. 351, 366 (2017).

farmers to take land out of production.¹⁵⁸ However, the 1970s marked a tectonic shift in federal food policy; the 1973 Farm Bill resoundingly encouraged production, rather than attempting to control it.¹⁵⁹

In 1971, President Nixon appointed Earl Butz as Secretary of Agriculture.¹⁶⁰ In 1972, the United States entered an unprecedented deal with the Soviet Union, where drought conditions had led to a shortage of wheat and feed grains.¹⁶¹ The United States agreed to lend the Soviet Union up to \$750 million to buy surplus United States grain in what resulted in the largest grain sale in United States history.¹⁶² Partially in response to the consequent export demand, the 1973 Farm Bill encouraged increased production through direct payments to farmers and deprioritized market intervention tactics aimed at controlling supply.¹⁶³ With the rise of the globalized economy and decline of the Soviet Union, “corporate size was equated with national economic survival.”¹⁶⁴ The Secretary of Agriculture’s message to the American farmer: “Get big or get out.”¹⁶⁵ Farmers across the nation responded—taking out loans to increase acreage and production.¹⁶⁶ Consequently, ownership of farms steadily concentrated into fewer hands.¹⁶⁷ Meanwhile, the laissez-faire approach to food policy coincided with a larger economic trend. Political support for “dispersed economic power as a social goal” was steadily declining, and the 1970s would usher in a new era of competition policy.¹⁶⁸

Antitrust suits were formerly evaluated on overall market structure, and the Warren Court intervened on mergers “whose effect ‘may be substantially to lessen competition, or to tend to create a monopoly . . . in any line of commerce in any section of the country.’”¹⁶⁹ The Chicago School’s approach urged courts to instead adopt an economic analysis into antitrust evaluations—specifically, to focus on consumer welfare through allocative efficiency.¹⁷⁰ Economist Aaron Director operationalized this approach, and

158. Zachary Cain & Stephen Lovejoy, *History and Outlook for Farm Bill Conservation Programs*, CHOICES MAG. (Apr. 9, 2004) <https://www.choicesmagazine.org/2004-4/policy/2004-4-09.htm>; See generally *Wickard v. Filburn*, 317 U.S. 111 (1942).

159. Jonathan Coppess, *A Brief Review of the Consequential Seventies*, FARMDOC DAILY (May 30, 2019), <https://farmdocdaily.illinois.edu/2019/05/a-brief-review-of-the-consequential-seventies.html>.

160. *Id.*

161. *Id.*

162. *Id.*

163. *Id.*

164. CARSTENSEN, *supra* note 64, at 237.

165. Alana Semuels, *‘They’re Trying to Wipe us Off the Map.’ Small American Farmers are Nearing Extinction*, TIMES (Nov. 27, 2019), <https://time.com/5736789/small-american-farmers-debt-crisis-extinction/>.

166. Coppess, *supra* note 157, at 386.

167. Carstensen, *supra* note 123, at 534.

168. CARSTENSEN, *supra* note 64, at 237.

169. *Brown Shoe Co. v. U.S.*, 370 U.S. 294, 324 (1962) (quoting Section 7 of the Clayton Act).

170. Lina M. Khan, *Amazon’s Antitrust Paradox*, 126 YALE L.J. 710, 719–720 (2017).

Judges Robert Bork and Richard Posner developed it further.¹⁷¹ Central to Chicago School's competition policy is the idea that unilateral economic behavior typically considered anticompetitive is actually motivated by a desire for efficiency, not monopolization.¹⁷² Higher efficiency would pass lower prices on to the consumer, and the market would correct against monopolization.¹⁷³ Therefore, courts should not intervene in seemingly anticompetitive unilateral action, so long as the action is in pursuit of efficiency.¹⁷⁴ By relying on the consumer welfare standard and the efficiency justification, the approach narrowed judicial intervention.¹⁷⁵

Non-interventionist competition policy took root in the courts in the late 1970s, and a focus on efficiency began to replace the focus on overall competition. In *Reiter v. Sonotone Corp.*, the Supreme Court adopted the efficiency-based consumer welfare standard, citing Robert Bork's suggestion that "Congress designed the Sherman Act as a 'consumer welfare prescription.'"¹⁷⁶ The adoption of this standard, as Barak Orbach points out, "was done with no discussion and was erroneous."¹⁷⁷ Legislative history reveals instead that Congress enacted the Sherman Act to prevent significant concentration of power for fear of a "king" of production.¹⁷⁸

President Reagan's pro-monopoly agenda aligned well with the Chicago School's approach. In 1981, Reagan appointed "Chicago-oriented scholar" Bill Baxter to the Antitrust Division of the Justice Department.¹⁷⁹ The Department "veered away from interventionist stances"¹⁸⁰ and narrowed the scope of antitrust laws in adoption of efficiency considerations.¹⁸¹

In 1980, four meatpacking companies controlled 32% of the market.¹⁸² Throughout the '80s, companies like Tyson Foods rose to dominance with

171. Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925 (1979).

172. *Id.* at 927.

173. *Id.* at 929.

174. *Id.* at 928.

175. Khan, *supra* note 170, at 719-720.

176. *Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979).

177. Barak Orbach, *Foreword: Antitrust's Pursuit of Purpose*, 81 FORDHAM L. REV. 2151, 2152 (2013); *see also* Lauck, *supra* note 147, at 460 (rejecting the notion that the Sherman Act supports a "singular pro-consumer agenda concerned with economic efficiency"); Herbert Hovenkamp, *Antitrust's Protected Classes*, 88 MICH. L. REV. 1, 29 (1989) ("to posit that Congress' principal concern in enacting the Sherman Act was high consumer prices is to suggest that Congress was dealing with a problem that did not exist").

178. Carstensen, *supra* note 123, at 531.

179. John E. Lopatka & William H. Page, *Economic Authority and the Limits of Expertise in Antitrust Cases*, 90 CORNELL L. REV. 617, 634 (2005) (describing Baxter as a "Chicago-oriented scholar").

180. Daniel A. Crane, *Chicago, Post-Chicago, and Neo-Chicago*, 76 UNIV. CHI. L. REV., 1911, 1912 (2009).

181. Linda Khan, *Obama's Game of Chicken*, WASH. MONTHLY (Nov. 9, 2012), <https://washingtonmonthly.com/2012/11/09/obamas-game-of-chicken/>.

182. *Id.*

“aggressive mergers and acquisitions” of competing firms.¹⁸³ In 1986, *Cargill v. Monfort* established the non-interventionist standard in the agricultural sector.¹⁸⁴ The Court’s holding limited a “competitor’s ability to challenge mergers” and led to rapid consolidation.¹⁸⁵ By 1990, four meatpacking companies controlled 72% of the market.¹⁸⁶ By the early 2000s, the meatpacking industry was more concentrated than it had been at the turn of the last century.¹⁸⁷

C. Practical Effects of the Efficiency Justification

In *Pickett v. Tyson Fresh Meats* mentioned above, the jury found that Tyson’s use of captive supply marketing agreements had an anticompetitive effect on the market for which Tyson lacked a legitimate justification.¹⁸⁸ The jury awarded \$1.28 billion in damages for the PSA violations.¹⁸⁹ However, the injured plaintiffs never reaped the reward.¹⁹⁰ The District Court for the Middle District of Alabama vacated the judgment, granting Tyson judgment as a matter of law.¹⁹¹ Judgment as a matter of law is granted only when a plaintiff “presents no legally sufficient evidentiary basis for a reasonable jury to find for him on a material element of his cause of action.”¹⁹² The Eleventh Circuit affirmed the ruling, agreeing that no reasonable jury could have found a violation of the PSA.¹⁹³ Judge Carnes of the Eleventh Circuit held that “[i]f a packer’s course of business promotes efficiency and aids competition in the cattle market, the challenged practice cannot, by definition, adversely affect competition.”¹⁹⁴ The court did not explain how Tyson’s behavior aids competition, other than to say that marketing agreements allow Tyson itself to remain competitive with other meatpackers who employ similarly manipulative practices.¹⁹⁵ Instead, the court equated competition to efficiency and continued the analysis from there. Because Tyson supplied several efficiency justifications for intentionally manipulating prices, the court found that Tyson did not adversely affect competition or violate the PSA.¹⁹⁶ In its analysis, the Eleventh Circuit followed in the Supreme Court’s

183. Hendrickson et al., *supra* note 60, at 25.

184. *Cargill, Inc. v. Monfort of Colo., Inc.*, 479 U.S. 104, 122 (1986).

185. Khan, *supra* note 181.

186. *Id.*

187. Kelley, *supra* note 62, at 37.

188. *Pickett v. Tyson Fresh Meats, Inc.*, 420 F.3d 1272, 1277 (11th Cir. 2005).

189. *Id.* at 1278.

190. *Id.*

191. *Id.*

192. *Id.*

193. *Id.* at 1280.

194. *Id.*

195. *Id.*

196. *Id.* at 1286.

direction from *Reiter* and erroneously claimed that the PSA was designed to promote efficiency.¹⁹⁷ The PSA was enacted in 1921, whereas the efficiency justification was not adopted until the late 1970s. The Act was not designed to promote efficiency but, as the court admitted later in the opinion, to “prevent unfair practices, price fixing and manipulation, and monopolization.”¹⁹⁸ As demonstrated by *Pickett*’s vacated judgment, the efficiency justification leaves the PSA toothless and injured plaintiffs with no relief.¹⁹⁹

Before the Chicago School’s approach, courts enforced antitrust laws to preserve competitive market structures.²⁰⁰ This included rulings that some scholars consider to be economically indefensible, which served as “low-hanging fruit” for the Chicago School to promote an alternative policy.²⁰¹ The Chicago School’s approach introduced economics into antitrust analysis, promising the use of “economics to analyze business conduct in an effort to maximize social welfare.”²⁰² However, several core assumptions of the theory have proven faulty. One of the most perilous of the Chicago School’s assumptions is that the market will correct against monopolization.²⁰³ The core members of the Chicago School assumed cartels were naturally unstable, that there were few barriers to market entry, and that monopolization would attract disruptive entry.²⁰⁴ Further, proponents of Chicago School’s theories view vertical integration and contracting as “unmitigated goods,” and the only consequence of mergers to be reduced costs.²⁰⁵ Based on these assumptions, the efficiency justification and decreased regulatory oversight are appropriate.

However, meat industry concentration data from the 1980s to the present prove that the market does not correct against monopolization.²⁰⁶ Without adequate antitrust enforcement, cartels have become prolific. The presence of cartels has established significant barriers to entry, many of which escape the Chicago School’s narrow definition.²⁰⁷ Further, mergers and vertical integration do not necessarily lead to greater efficiency and lower consumer

197. *Id.* at 1283.

198. *Id.* at 1287.

199. See also *Griffin et al. v. Smithfield Foods, Inc.*, 183 F. Supp.2d 824, 830 (E.D. Va. 2002); *London v. Fieldale Farms Corp.*, 410 F.3d 1295, 1305 (11th Cir. 2005) (holding that the defendant’s use of poultry contracts did not violate the Packers and Stockyards Act.).

200. Khan, *supra* note 170, at 718.

201. Herbert Hovenkamp, *The Looming Crisis In Antitrust Economics*, B. U. L. Rev. 493-4 (2021).

202. Herbert Hovenkamp & Fiona Scott Morton, *Framing the Chicago School of Antitrust Analysis*, 168 U. PA. L. REV. 1843, 1848 (2020).

203. *Id.*

204. *Id.*

205. *Id.*

206. *Id.* at 1852 (“The economic literature has come down solidly against the key early assumption of the Chicago thinkers that markets will self-correct.”).

207. *Id.* at 1861 (comparing the Chicago School and Harvard School definitions of entry barriers).

prices.²⁰⁸ Often “size confers bargaining power even though it does not confer any meaningful productive efficiency.”²⁰⁹ Leonard Weiss found that concentration *raises* prices without significantly raising profits in a 1989 comparison of concentration and price across sectors.²¹⁰ By many estimates, the price gap between what consumers pay for beef and what cattle producers earn is widening dramatically as prices go up for consumers and down for producers.²¹¹ Consumer welfare, even when simplified to lower prices, is not enhanced by industry concentration.²¹² As demonstrated by *Pickett*, the efficiency justification does not impede price manipulation or exploitative conduct, but instead encourages courts to excuse otherwise illegal behavior. Because “concentrated market structures promote anticompetitive forms of conduct,” the efficiency justification frustrates the very purpose of antitrust law.²¹³

The persistence of the Chicago School’s approach, despite its faulty logical footing, can be attributed to the notion that where size confers bargaining power, it also confers political power. As firms like Tyson Foods rose to dominance in their respective sectors, a coherent political message rose as well—conservative institutions, funded by firms that profit from decreased regulation, have gone to great lengths to maintain the non-interventionist status quo.²¹⁴ On the other hand, adequate antitrust enforcement provides diffuse benefits to market participants, consumers, and as demonstrated in the case of agriculture, the environment, through maintaining competitive markets with dispersed economic power. As is often the case with diffuse public goods, there is “no equivalent financial incentive to fund interventionist policy.”²¹⁵ In this sense market concentration is self-reinforcing, as dominant firms have the means and motive for locking in ideologies that serve their interests. The Chicago School’s non-interventionist policy has become an “economically outdated but nevertheless powerful tool of regulatory capture.”²¹⁶ The implications of concentrated political power in a few agribusinesses are evident in the Obama Administration’s failed attempt to enforce the PSA.²¹⁷

208. *Id.*

209. CARSTENSEN, *supra* note 64, at 235.

210. Carstensen, *supra* note 123, at 536 (citing Leonard W. Weiss, CONCENTRATION AND PRICE (1989)).

211. See, e.g., Donnelle Eller, ‘We’re Fighting for a Way of Life’: Pandemic Causes Iowa Cattle Farmers to Lose Money While Consumers Pay More, DES MOINES REG. (Nov. 12, 2020), <https://www.desmoinesregister.com/story/money/business/2020/11/12/covid-19-exposes-dysfunction-cattle-industry-why-cattle-producers-losing-money-when-consumers-paying/6076820002/>.

212. Khan, *supra* note 170, at 739.

213. *Id.* at 718.

214. Hovenkamp & Scott Morton, *supra* note 202, at 1851.

215. *Id.* at 1852.

216. *Id.* at 1844.

217. LEONARD, *supra* note 143, at 286.

D. Reform in the Face of Unprecedented Political Power

The early years of the Obama Administration held great potential for agriculture's antitrust reform. Even before President Obama was inaugurated, the 2008 Farm Bill directed the Secretary of Agriculture to "promulgate specified regulations" under the PSA.²¹⁸ Then-Senator Barack Obama's campaign appealed to rural American voters on a platform of agricultural reform and secured substantial support from farmers and ranchers across the country.²¹⁹ One pillar of the campaign was the promise to finally implement the PSA.²²⁰ In 2010, the Department of Justice (DOJ) and the United States Department of Agriculture (USDA) co-hosted workshops across the country to involve farmers in the regulatory process.²²¹ Despite facing retaliatory action from their agribusiness contractors, many farmers attended the workshops and "farmer after farmer [told] the same story, basically pleading for help."²²² The same year, the Grain Inspection, Packers and Stockyards Administration (GIPSA) proposed regulations under the PSA to clarify ambiguous terms and prohibit retaliatory action against farmers.²²³ The proposed regulations were collectively known as the GIPSA rules.

The rules garnered bipartisan support from members of Congress, but meat industry interests were quick to push back.²²⁴ Between the nation's largest meat companies and allied trade groups like the National Cattlemen's Beef Association and American Meat Institute, the meat industry has "one of the better-funded, better-coordinated lobbying machines in Washington."²²⁵ The trade groups and corporations together spent \$7.79 million lobbying in 2010.²²⁶ In one effort, the National Cattlemen's Beef Association pressed members of Congress to oppose the rules, claiming they would cost the

218. Food, Conservation, and Energy Act of 2008, Pub. L. No. 110-246, 122 Stat. 1651 (2008).
 219. *Real Leadership For Rural America*, OBAMA BIDEN CAMPAIGN, <https://sustainableagriculture.net/wp-content/uploads/2015/04/RuralPlanFactSheet-1.pdf> (last visited Feb. 23, 2022) [hereinafter OBAMA BIDEN Fact Sheet]; Howard Berkes, *Poll: McCain Lost Key Rural Support in Early October*, NAT'L PUB. RADIO (Oct. 23, 2008) <https://www.npr.org/templates/story/story.php?storyId=96008609>.

220. OBAMA BIDEN Fact Sheet, *supra* note 219.

221. *Public Workshops: Agriculture and Antitrust Enforcement Issues In Our 21st Century Economy*, DEP'T JUST., <https://www.justice.gov/atr/events/public-workshops-agriculture-and-antitrust-enforcement-issues-our-21st-century-economy-10> (last updated June 29, 2020).

222. Khan, *supra* note 181.

223. Implementation of Regulations Required Under Title XI of the Food, Conservation and Energy Act of 2008; Conduct in Violation of the Act, 75 Fed. Reg. 35,338 (proposed June 22, 2010).

224. Khan, *supra* note 181.

225. LEONARD, *supra* note 143, at 286.

226. *Id.* at 286.

United States economy \$14 billion and put 104,000 Americans out of work.²²⁷

Despite the momentum from the DOJ workshops, industry claimed victory in 2011. That year, House Appropriations Committee funding contained an appropriations rider. The “GIPSA rider” prohibited the USDA from defining competitive injury or likelihood of harm, and from finding (a) unjustified breach of contract, (b) retaliatory action, or (c) attempts to limit a producer’s rights without justification, as “unfair, unjustly discriminatory or deceptive.”²²⁸ The rider stopped reform dead in its tracks. It was included in appropriations bills for the next four years.²²⁹ The rider was not included in 2016, and on December 20 of that year, the outgoing Obama Administration proposed two amendments to the PSA and published a final interim rule.²³⁰ In September 2017, newly appointed Secretary of Agriculture Sonny Perdue “realigned” the USDA, moving Packers and Stockyards enforcement into the Agricultural Marketing Service (AMS).²³¹ The following month, the Trump Administration’s USDA withdrew the interim rule and announced it would take no further action on the two proposed rules.²³²

The Organization for Competitive Markets (OCM) sued the USDA in 2018, claiming their failure to comply with the 2008 Congressional directive “constitutes unlawful withholding of agency action” under the Administrative Procedure Act (APA).²³³ Despite the directive and deadline from Congress, the Eighth Circuit in *OCM v. USDA* held that the USDA did not violate the APA in failing to promulgate PSA regulations.²³⁴ The court pointed to the appropriations rider as “powerful if not conclusive evidence” that the USDA’s failure to promulgate regulations was not “agency action unlawfully withheld or unreasonably delayed.”²³⁵ However, following the trajectory of the DOJ workshops, initial bipartisan political support, and industry pressure, the appropriations rider is stronger evidence of agribusiness’s influence over agency decision-making.

227. Cindy Zimmerman, *New Study Shows GIPSA Rule Would Cost Jobs*, AGWIRED (Oct. 21, 2020), <https://agwired.com/2010/10/21/new-study-shows-gipsa-rule-would-cost-jobs/>.

228. AMERICAN FARM BUREAU FEDERATION [FB], GIPSA RULE – PACKERS AND STOCKYARDS ACT (Feb. 2019), <https://www.fb.org/files/GIPSA2019.pdf>.

229. *Org. for Competitive Mkts. v. U.S. Dep’t of Agric.*, 912 F.3d 455, 461 (8th Cir. 2018).

230. Scope of Sections 202(a) and (b) of the Packers and Stockyards Act, 81 Fed. Reg. 244 (Dec. 20, 2016) (interim final rule; request for comments).

231. *Secretary Perdue Announces USDA Improvements for Customer Service & Efficiency*, USDA (Sept. 7, 2017), <https://www.usda.gov/media/press-releases/2017/09/07/secretary-perdue-announces-usda-improvements-customer-service>.

232. *Org. for Competitive Mkts.*, 912 F.3d at 458.

233. *Id.* at 458.

234. *Id.* at 463.

235. *Id.*

In January of 2020, the AMS proposed new criteria to determine violations of the PSA.²³⁶ These criteria direct the Secretary of Agriculture to find undue or unreasonable preferences only where the action cannot be justified: (a) on the basis of a cost savings; (b) on the basis of meeting a competitor's prices; (c) on the basis of meeting other terms offered by a competitor; or (d) as a reasonable business decision that would be customary in the industry.²³⁷ According to OCM, the new criteria “do almost nothing to protect producers from harm,” and “clearly reveal Sonny Perdue’s unwillingness to address meatpacker abuses.”²³⁸ This is unsurprising, given AMS’s reputation for close ties to industry.²³⁹

The GIPSA rider and the enforcement policy under AMS are evidence of a federal agency preferring industry giants over independent farmers. This preference is a corollary of agency capture, which results from the unimpeded concentration of economic power.²⁴⁰ And yet, in *OCM v. USDA*, the court pointed to the GIPSA rider as a justification for lack of enforcement of the PSA.²⁴¹ So, with paradoxical logic, the court pointed to a symptom of the very harm the PSA was enacted to address to excuse lack of enforcement of the PSA.

IV. SOLUTIONS

The Biden Administration has committed to tackling climate change and promoting fair competition in the economy.²⁴² In the agricultural sector, these are synergistic goals. To tackle climate change in livestock agriculture, the Administration must first address market concentration. The last time livestock markets were relatively competitive, two major factors precipitated the era: lower barriers to entry (through the federal grading of meat and invention of refrigerated trucks) and antitrust legislation tailored to agriculture (the Packers and Stockyards Act).²⁴³ Replicating this trend, a dual approach should encourage market entry for regenerative agriculture and enforce antitrust law to ensure a competitive market.

236. Undue and Unreasonable Preferences and Advantages Under the Packers and Stockyards Act, 85 Fed. Reg. 1771 (proposed Jan. 13, 2020) (to be codified at 9 C.F.R. pt. 201).

237. Undue and Unreasonable Preferences and Advantages Under the Packers and Stockyards Act, 85 Fed. Reg. 1771 (proposed Jan. 13, 2020) (to be codified at 9 C.F.R. pt. 201).

238. Organization for Competitive Markets, *Captured: How Agribusiness Controls Regulatory Agencies and Harms Producers and Consumers* (Aug. 24, 2020), https://competitivemarkets.com/wp-content/uploads/2020/08/Regulatory-Capture-Paper_Final.pdf.

239. *Id.*

240. Hovenkamp & Scott Morton, *supra* note 202, at 1844.

241. *Org. for Competitive Mkts. v. U.S. Dep’t of Agric.*, 912 F.3d 455, 463 (8th Cir. 2018).

242. Exec. Order No. 14008, 86 Fed. Reg. 7619 (Jan. 27, 2021); Exec. Order No. 14036, 86 Fed. Reg. 36987 (July 9, 2021).

243. Kelley, *supra* note 62, at 35.

A. Promoting Regenerative Agriculture

To promote regenerative agriculture, the social and environmental costs of intensive animal feeding operations should be internalized, while simultaneously, the viability of regenerative livestock operations should be bolstered.

In 2019, Caius Willingham of the Center for American Progress, and Andy Green, now serving as the Department of Agriculture Senior Advisor for Fair and Competitive Markets, put forth several policy recommendations in their report: *A Fair Deal for Farmers: Raising Earnings and Rebalancing Power in Rural America*.²⁴⁴ One recommendation to balance the scales for farmers is to pass legislation that would ensure “processors are held jointly responsible for violations of public policy,” including environmental harms.²⁴⁵ Internalizing the environmental costs of CAFOs requires a multifaceted approach. The National Sustainable Agriculture Coalition (NSAC) recommends promulgating new National Pollutant Discharge Elimination System (NPDES) guidelines, disallowing CAFOs to self-certify—and largely avoid—regulation by the Clean Water Act.²⁴⁶ Not only do CAFOs skirt environmental regulations, in many instances, they also receive federal funding through conservation programs.²⁴⁷ The Environmental Quality Incentives Program (EQIP) is a voluntary conservation incentive program that encourages farmers to employ conservation measures on working lands.²⁴⁸ The 2002 Farm Bill opened the program to CAFOs for waste management,²⁴⁹ and 50% of EQIP funding is now allocated to livestock operations.²⁵⁰ Several states strongly prioritize CAFOs over other livestock operations, funneling public conservation money to these polluting entities.²⁵¹ In some cases, CAFOs would “not be economically feasible without [EQIP] subsidization.”²⁵² Loopholes that

244. Caius Z. Willingham & Andy Green, *A Fair Deal for Farmers: Raising Earnings and Rebalancing Power in Rural America*, CTR. FOR AM. PROGRESS (May 7, 2019), <https://www.americanprogress.org/article/fair-deal-farmers/>.

245. *Id.*

246. NATIONAL SUSTAINABLE AGRICULTURE COALITION, PRESIDENTIAL TRANSITION BRIEFING PAPERS: FOOD & AGRICULTURE PRIORITIES FOR ADMINISTRATIVE ACTION 32 (2020), <https://sustainableagriculture.net/wp-content/uploads/2020/12/NSAC-Final-Transition-Team-Document-2020.pdf>.

247. *Id.*

248. *Env't Quality Incentives Program*, U.S. DEP. AGRIC. NAT. RES. CONSERVATION SERV., <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/> (last visited Apr. 16, 2022).

249. Gurian-Sherman, *supra* note 113, at 3.

250. *Action 10: Eliminating Waste-Management Subsidies CAFOs Receive Under EQIP*, JOHN HOPKINS CENTER FOR LIVABLE FUTURE (June 2020), <https://clf.jhsph.edu/sites/default/files/2020-06/apha-cafo-10.pdf>.

251. Gurian-Sherman, *supra* note 113, at 3.

252. *Id.*

allow CAFOs to benefit from federal conservation programs like EQIP should be closed.

As CAFOs begin to reflect their true cost, Congress should pass legislation that supports alternative forms of livestock agriculture. The Agricultural Resilience Act, introduced to the House in April 2021, would support regenerative farmers to achieve net-zero emissions from agriculture no later than 2040.²⁵³ Among other measures, the bill sets an ambitious goal of establishing “advanced grazing management, including management-intensive rotational grazing, on at least 50 percent of all grazing lands by not later than 2030 and 100 percent of all grazing land by not later than 2040.”²⁵⁴

Regenerative livestock agriculture should also be supported through the promotion of scale-appropriate processing facilities. In July 2021, the USDA announced it would invest \$500 million to expand “meat & poultry processing capacity as part of efforts to increase competition, level the playing field for family farmers and ranchers, and build a better food system.”²⁵⁵ Further, the Strengthening Local Processing Act, introduced to the Senate in February 2021, would support small and very small meat and poultry processing facilities through the establishment of grants and scale-appropriate Hazard Analysis and Critical Control Points (HACCP) guidance, among other measures.²⁵⁶ The Family Farm Action Alliance further advocates investing in regenerative practices through the Farm Credit Service (FCS), by requiring a “10% set aside of FCS profits to be re-lent to promote environmentally sustainable agriculture.”²⁵⁷ However, all efforts to bolster regenerative agriculture must coincide with antitrust reform.

B. Reforming Antitrust in Agriculture

Antitrust under the Chicago School approach has been ineffective at preventing industry concentration.²⁵⁸ Antitrust enforcement across sectors should abandon the efficiency justification of the consumer welfare standard,

253. H.R. 2803, 117th Cong. (1st Sess. 2021).

254. *Id.*

255. *USDA Announces \$500 Million for Expanded Meat & Poultry Processing Capacity as Part of Efforts to Increase Competition, Level the Playing Field for Family Farmers and Ranchers, and Build a Better System*, USDA (July 9, 2021), <https://www.usda.gov/media/press-releases/2021/07/09/usda-announces-500-million-expanded-meat-poultry-processing>.

256. S. 370, 117th Cong. (2021).

257. FAMILY FARM ACTION ALLIANCE, *USHERING IN A BETTER FUTURE FOR FARM AND AGRICULTURE: POLICY RECOMMENDATIONS TO THE 117TH CONGRESS* (2020), https://farmaction.us/wp-content/uploads/2021/01/Ushering-in-a-Better-Future_Policy-Recommendations_FINAL.pdf.

258. Leah Nylen, *Biden Launches Assault on Monopolies*, POLITICO (July 8, 2021), <https://www.politico.com/news/2021/07/08/biden-assault-monopolies-498876>.

and instead, prioritize maintaining fair competition and decentralized market structures.²⁵⁹

The Biden Administration has signaled a focus on fair competition with Executive Order 14036: Promoting Competition in the American Economy,²⁶⁰ and with several notable appointments. Lina Khan, who was appointed the Chair of the Federal Trade Commission in July, is a leading proponent of antitrust reform. Khan's breakthrough article, *Amazon's Antitrust Paradox*, argued that the consumer welfare standard is "unequipped to capture the architecture of market power in the modern economy."²⁶¹ Jonathan Kanter, a "leading advocate . . . [of] strong and meaningful antitrust enforcement and competition policy" now serves as the Assistant Attorney General for the Justice Department's Antitrust Division.²⁶² Tim Wu, Special Assistant to the President for Technology and Competition Policy, similarly advocates for the phasing out of the consumer welfare standard in favor of a *protection of competition* standard.²⁶³ Rohit Chopra, previously a commissioner at the FTC, now leads the Consumer Financial Protection Bureau (CFPB).²⁶⁴ In his time at the FTC, Commissioner Chopra has been an "outspoken consumer advocate,"²⁶⁵ pushing the FTC to employ all statutory authority to penalize unfair and deceptive practices.²⁶⁶

In the agriculture sector, antitrust reform has garnered some attention, but climate change initiatives have taken a different route. The Growing Climate Solutions Act (GCSA), for instance, would direct the USDA to facilitate farmer participation in private carbon offset markets.²⁶⁷ These markets have received overwhelming support from agriculture industry leaders, who see the markets as an additional revenue stream.²⁶⁸ However,

259. Carstensen, *supra* note 123, at 534.

260. Exec. Order No. 14036, 86 Fed. Reg. 36987 (July 9, 2021).

261. Khan, *supra* note 170, at 710.

262. *President Biden Announces Assistant Attorney General for Antitrust*, WHITE HOUSE (July 20, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/07/20/president-biden-announces-jonathan-kanter-for-assistant-attorney-general-for-antitrust/>.

263. Tim Wu, *After Consumer Welfare, Now What? The "Protection of Competition" Standard in Practice*, COMPETITION POL'Y INT'L COL. PUB. L. RSCH PAPER NO. 14-608 (2018).

264. Martha C. White, *Biden's CFPB Nominee Rohit Chopra Brings 'Substantive' Regulatory Expertise*, NBC NEWS (Mar. 2, 2021), <https://www.nbcnews.com/business/business-news/biden-s-cfpb-nominee-rohit-chopra-brings-substantive-regulatory-expertise-n1259257>.

265. Theresa Y. Kananen & Edward A. Marshall, *A New Sheriff in Town: Former FTC Commissioner Rohit Chopra Chosen to Lead CFPB*, ARNALL, GOLDEN, GREGORY, LLP (Jan. 20, 2021), https://www.agg.com/news-insights/publications/a-new-sheriff-in-town-former-ftc-commissioner-rohit-chopra-chosen-to-lead-cfpb/?CID=mvbriief_mac.

266. Rohit Chopra & Samuel A.A. Levine, *The Case for Resurrecting the FTC Act's Penalty Offense Authority*, 170 U. PA. L. REV. 71, 98–99 (2021).

267. S. 1251, 117th Cong. (2021).

268. *Growing Climate Solutions Act Supporters*, US SENATE COMM. AGRIC., NUTRITION, & FORESTRY, <https://www.agriculture.senate.gov/imo/media/doc/GCSA%20Supporters.pdf> (showing supporters such as the National Cattlemen's Beef Association, North American Meat Institute, and Tyson) (last visited Apr. 16, 2022).

the markets as currently designed do little to promote holistic regenerative agriculture and may even accelerate market concentration.²⁶⁹ Rather than support a carbon credit trading scheme, federal agriculture policy should focus on restoring competition.

Ostensibly, agriculture should be the most competitive industry in our economy. The PSA grants broad authority to the Secretary of Agriculture, granting “‘jurisdiction to deal with *every* unjust, unreasonable, or discriminatory regulation or practice’ involved in the marketing of livestock.”²⁷⁰ Partially due to decades of regulatory capture, the sector is instead dominated by a handful of firms.

In June of 2021, the USDA announced its intent to propose three rulemakings designed to promote enforcement of the PSA.²⁷¹ First, the USDA will propose a rule to clarify unfair and deceptive practices, undue preferences, and unjust prejudices.²⁷² A second proposed rule will address poultry grower tournament systems.²⁷³ Finally, the third proposed rule will “clarify that parties do not need to demonstrate harm to competition in order to bring an action under section 202(a) and 202(b)” of the PSA.²⁷⁴

The goals of the proposed rules closely resemble the 2010 GIPSA rules, and if they are finalized, would likely go a long way towards enforcing the PSA. However, the rules will face similar political peril as the 2010 GIPSA rules. Therefore, along with the promulgation of these rules, enforcement authority should be granted in an agency appropriately insulated from industry interests.

As mentioned above, former Secretary Sonny Perdue moved Packers and Stockyards enforcement to the Agricultural Marketing Service, an agency historically compromised by industry influence.²⁷⁵ Groups like the Organization for Competitive Markets advocate for moving that authority.²⁷⁶ The Biden Administration should vest PSA enforcement authority in a relatively impartial, independent agency.

Center for American Progress’s *A Fair Deal for Farmers* recommended creating an Independent Farmers Protection Bureau.²⁷⁷ The proposed Bureau would replicate the CFPB and be housed within the USDA. The Bureau’s

269. Claire Kelloway, *Private Carbon Programs Funnel Farm Data to Gig Ag.*, FOOD & POWER (Sept. 30, 2021), <https://www.foodandpower.net/latest/regen-connect-carbon-markets-big-data-9-21.pdf>.

270. Kelley, *supra* note 62, at 35.

271. U.S. DEP’T OF AGRIC., PRESS RELEASE NO. 0130.21, USDA TO BEGIN WORK TO STRENGTHEN ENFORCEMENT OF THE PACKERS AND STOCKYARDS ACT, <https://www.usda.gov/media/press-releases/2021/06/11/usda-begin-work-strengthen-enforcement-packers-and-stockyards-act.pdf>.

272. *Id.*

273. *Id.*

274. *Id.*

275. Organization for Competitive Markets, *supra* note 238.

276. *Id.*

277. Willingham & Green, *supra* note 244.

duties would be congruent with the DOJ and FTC, not preemptive. The Bureau would monitor agricultural markets,²⁷⁸ work to internalize environmental and social harms,²⁷⁹ and facilitate farmer organization.²⁸⁰ However, if the USDA houses the Bureau, there is a significant risk of agency capture.

The CFPB is an independent agency created after the 2008 financial crisis to protect consumers from predatory lending.²⁸¹ The CFPB has supervisory, enforcement, and rulemaking authority, to ensure “markets for consumer financial services and products are fair, transparent, and competitive.”²⁸² The CFPB is funded directly from the Federal Reserve, avoiding Congressional appropriation.²⁸³

Rather than create a new bureau within the USDA, Congress should vest the Packers and Stockyards Act’s enforcement authority directly in the existing CFPB. The CFPB’s central mission of ensuring fair, transparent, and competitive markets aligns well with the goal of protecting independent farmers.²⁸⁴ The newly expanded Consumer and Independent Farmer Protection Bureau (CIFPB) could protect independent farmers with direct funding from the Federal Reserve, avoiding future appropriations issues like the Obama-era GIPSA rider. The CIFPB’s enabling legislation must specify strict qualifications for independent farmers so that the protections are not co-opted to protect large firms posing as independent farmers.²⁸⁵ The enabling legislation should explicitly reject the Chicago School’s antitrust approach.²⁸⁶ With broader jurisdiction, the CIFPB could protect consumers

278. *Id.* (IFPB would oversee and certify spot markets, require processors to file pricing formulas for public availability, and investigate and ban exploitative contracts).

279. *Id.* (by “ensuring that processors are held jointly responsible for violations of public policy—such as environmental pollution, workplace safety, health and food safety standards”).

280. *Id.* (through organizing for collective bargaining, and establishing a Farmer Fair Share Boards, a complaint hotline, and regional offices in every major agricultural center).

281. Zixta Q Martinez, *Consumers Count: Five Years Standing Up for You*, CONSUMER FIN. PROT. BUREAU (Jul. 21, 2016), <https://www.consumerfinance.gov/about-us/blog/consumers-count-five-years-standing-you/>.

282. CHERYL R. COOPER & DAVID H. CARPENTER, CONG. RSCH. SERV., IF10031, INTRODUCTION TO FINANCIAL SERVICES: THE CONSUMER FINANCIAL PROTECTION BUREAU (2021).

283. The Trump Administration made several attempts to subject CFPB funding to Congressional review. In 2019, David Perdue (cousin of Sonny Perdue) introduced a bill to the Senate that would subject CFPB to the appropriations process. S.453, 116th Cong. (1st Sess. 2019).

284. *About Us*, CONSUMER FIN. PROT. BUREAU, <https://www.consumerfinance.gov/about-us/> (last visited Apr. 16, 2022).

285. Peter C. Carstensen, *Agricultural Cooperatives and the Law: Obsolete Statutes in a Dynamic Economy*, 58 S.D. L. REV. 462, 462–64 (2013).

286. See Khan, *supra* note 181 (describing the effect the Chicago School antitrust approach has on small-scale farmers); Hovenkamp & Scott Morton, *supra* note 202, at 1848.

from predatory lending and exploitative markets, and protect independent farmers from similar harms.²⁸⁷

CONCLUSION

Competitive agricultural markets are a necessary condition of regenerative agriculture's economic viability. Regenerative agriculture requires adaptive management—incorporating knowledge of biological processes into decision-making. Buyer-side monopolies prevent adaptive livestock management, instead encouraging the use of animal feeding operations. Dispersed economic power would allow livestock farmers to adapt to biological and climatic pressures rather than employ a one-size-fits-all model to different ecosystems. Therefore, addressing concentration is a threshold issue to climate change mitigation and adaptation in agriculture. The road ahead will not be easy—power, once gained, is reluctantly surrendered. Nevertheless, the threats of ecosystem degradation and climate change require that we cross this threshold.

287. See, e.g., *Welcome to DATCP*, WIS. DEP'T AGRIC., TRADE, & CONSUMER PROT., <https://datcp.wi.gov/Pages/Homepage.aspx> (describing the DATCP's mission to “partner with all the citizens of Wisconsin to grow the economy by promoting quality food, healthy plants and animals, sound use of land and water resources, and fair marketplace.”).

THIS LAND IS MY LAND, THIS LAND IS YOUR LAND, BUT WHERE IS THE ENVIRONMENTAL JUSTICE?

*Mariana Muñoz**

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INTRODUCTION

Throughout the United States' history, Native Americans have faced many broken promises, lies, deceit, and mistrust. This pattern arises in a variety of forms, including being embedded and structurally sustained via the application of laws and broken treaties.¹ When it comes to the environmental

* J.D., Vermont Law School, 2021; Bachelor of Arts in Political Science 2014 and Master's in Social Work and Public Policy, summa cum laude from The University of Vermont 2018. A special

justice movement, it has not had the same impact or association with the Native American community as compared to the Black or Latino communities.²

Recently, the *McGirt v. Oklahoma*³ case made headlines regarding the ongoing negotiations between the government and the Native American Community.⁴ In *McGirt*, the Supreme Court held the State of Oklahoma lacked jurisdiction to prosecute McGirt and other members of federally recognized tribes.⁵ That said, the implications of the decision will ripple through all spheres of law, including environmental law. So, what does this decision have to do with environmental justice and environmental law? The answer is not so simple.

The Court decided *McGirt* with a textualist approach and expressed Congress's plenary power over tribes.⁶ The holding provides a platform for examining treaties between the United States and federally recognized tribes—specifically the rights the treaties grant, encompassing topics including environmental burdens and regulations.⁷

Parts I and II of this Note analyze the overall relationship between Native Americans and the United States as well as the relationship between Native Americans and the Environmental Justice Movement. Part III will examine *McGirt v. Oklahoma*—the Supreme Court's most recent Federal Indian Law case—and its environmental implications. Additionally, this Note will examine the way states have worked with tribes when it comes to environmental regulations under the scope of sovereignty. This Note will

thanks to my husband, Jace Curtis for his support as well as Jerry Thomas and Arielle King for their early input and advice on this paper.

1. US COMM'N ON CIV. RTS., *BROKEN PROMISES: CONTINUING FEDERAL FUNDING SHORTFALL FOR NATIVE AMERICANS* 11 (2018), <https://www.usccr.gov/files/pubs/2018/12-20-Broken-Promises.pdf> (stating "Our nation has broken its promises to Native Americans for too long.").

2. See generally Jamie Vickery & Lori M. Hunter, *Native Americans: Where in Environmental Justice Research?*, 29 SOC. NAT. RES. 1, 12 (Jan. 1, 2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4835033/pdf/nihms748858.pdf> (stating Native American EJ issues challenge traditional western conceptions of research collection and understanding and providing guidance on how to further broaden EJ scholarship).

3. *McGirt v. Oklahoma*, 140 S. Ct. 2452, 2482 (2020).

4. See Hunter McEachern, *State, Local, Tribal Leaders Meet for McGirt Decision Discussion*, KFOR (Sept. 24, 2020), <https://kfor.com/digital-first/state-local-tribal-leaders-meet-for-mcgirt-decision-discussion/> (mentioning the meeting of leaders in the jurisdiction).

5. *McGirt*, 140 S. Ct. at 2482.

6. See Troy A. Eid, *McGirt v. Oklahoma: Understanding what the Supreme Court's Native American Treaty Rights Decision Is and Is Not*, GREENBERG TRAURIG LLP (Aug. 12, 2020), <https://www.gtlaw.com/en/insights/2020/8/mcgirt-v-oklahoma-understanding-what-the-supreme-courts-native-american-treaty-rights> (discussing the case and its implications arising in the jurisdictional and treaty context); see also David K. TeSelle, *Review of McGirt v. Oklahoma—How the Supreme Court and Justice Gorsuch's Revolutionary Textualism Brought America's "Trail of Tears" Promise to the Creek Nation Back from the Dead*, NAT'L L. REV. (Aug. 5, 2020), <https://www.natlawreview.com/article/review-mcgirt-v-oklahoma-how-supreme-court-and-justice-gorsuch-s-revolutionary> (analyzing Justice Gorsuch's textualist approach to the decision).

7. Eid, *supra* note 6.

argue that although the *McGirt* case is technically one of criminal law, the Court's decision to hold the Federal Government to its word has far-reaching consequences. The consequences of the decision will reach all levels of interaction between government, Native American lands, and individuals when it comes to how environmental justice may be advocated or accomplished. Part IV of this Note will examine how this decision by the Supreme Court not only affects that case and individuals but instead has far-reaching consequences that lead to further unequal distribution of environmental harms. This Note argues that the *McGirt* decision is significant in facing climate change as courts must decide whether holding the "government to its word" includes environmental protection and how environmental degradation should be distributed. Finally, Part V recommends tribal leaders and the government collaborate to protect and enforce *McGirt's* environmental implications. The Note looks to New Jersey's recently passed environmental justice law as an example of a new administration putting environmental justice in the forefront.

I. BACKGROUND

A. A History of Broken Promises

The United States has a long history when it comes to environmental oppression at the hands of a few.⁸ Throughout the last 500 years, the government has lied to, betrayed, prosecuted, and slaughtered Native Americans.⁹ Conflict arising from tribe efforts to maintain treaty rights and State sovereignty led to the rise of the Indigenous Environmental Movement (IEM).¹⁰ Thus, the fight in which Native Americans are still engaged in is not only one of law but of societal survival.¹¹ The Environmental Justice and Indigenous Environmental Movements fight to keep sovereignty and treaty promises while defending Native American culture, lifestyle, and survival as a nation and people in the United States.¹²

8. See Robert D. Bullard, *Environment and Morality Confronting Environmental Racism in the United States*, UNRISD (Oct. 1, 2004), [https://www.unrisd.org/80256B3C005BCCF9/\(httpAuxPages\)/543B2B250E64745280256B6D005788F7/\\$file/bullard.pdf](https://www.unrisd.org/80256B3C005BCCF9/(httpAuxPages)/543B2B250E64745280256B6D005788F7/$file/bullard.pdf) (mentioning the correlation between land and people exploitation to that of pollution distribution).

9. See generally Brett Clark, *The Indigenous Environmental Movement in the United State: Transcending Borders in Struggles Against Mining, Manufacturing, and the Capitalist State*, 5 ORG. & ENV'T, 410-442 (Dec. 1, 2002) (correlating the indigenous environmental movement to the economic dynamics of capitalism and abuse of Native American treaty rights).

10. *Id.*

11. *Id.* at 411.

12. *Id.* at 413.

The government and Native American's relationship is founded on conquest, internal colonialism, and capitalism.¹³ Within this relationship, the government should incorporate and respect tribes' existence as nations. In fact, the mere existence of tribes as sovereign nations grants a unique position when it comes to negotiations with the government—for control of lands, resources, and culture.¹⁴ However, that is not the case every time.

Racial oppression and degradation are longstanding traditions in the United States.¹⁵ This is a country where inequality is normalized and reinforced time and time again, whether it is through the economic sphere, the political sphere, educational sphere, or social sphere.¹⁶ This normalized and reinforced inequality has hit the Native American community hard. Native Americans have less than 4% of the land they once had before 1492.¹⁷ Native Americans have fought to preserve their land and culture while the Federal Government's acts—labeling them as savages and obstacles—threatened their mere existence.¹⁸ Moreover, even when there were times of agreement and treaties were signed guaranteeing land to the tribes, time and time again, the government ignored or betrayed the treaties for the benefit of White development.¹⁹ This conflict climaxed in the 19th century with the creation of the reservation system and laws created to strip and reassign Native American lands to White citizens.²⁰

As of today, governmental acts such as the breaking of treaty promises and allotment of land stripped from Native Americans have resulted in the oppression of the community. The judicial system has supplemented and directed these outcomes. For example, in the 1903 Supreme Court decision of *Lone Wolf v. Hitchcock*, the Court put Native Americans at the mercy of the government by making “the federal government the permanent trustee of indigenous lands and lives” despite any treaties that said otherwise.²¹ Furthermore, the discovery of natural resources on reservation land led the federal government to create programs that would depopulate the reservations. These programs encouraged migration to urban areas with the enticing offer of jobs and economic support.²² Nonetheless, these

13. *Id.* at 411.

14. *Id.* at 413.

15. See Clark, *supra* note 9, at 415 (listing four primary components of racial oppression).

16. *Id.* at 415; Jack Healy & Adam Liptak, *Landmark Supreme Court Ruling Affirms Native American Rights in Oklahoma*, N.Y. TIMES (Jul. 11, 2020), <https://www.nytimes.com/2020/07/09/us/supreme-court-oklahoma-mcgrt-creek-nation.html>.

17. Clark, *supra* note 9, at 416.

18. *Id.* at 416.

19. *Id.* (citing the Dawes Act of 1887 which allotted plots of land to White individuals from land stripped from Native Americans).

20. *Id.*

21. *Id.* at 417.

22. *Id.* at 418.

governmental acts were fueled by ill-meaning motives to dissolve the reservation system but while permitting companies to prioritize profit over people.²³ Thus, the IEM was born and continues to guide negotiations between Native Americans and the government regarding environmental decision-making.

B. The Environmental Justice Movement

The Environmental Justice Movement focuses on acknowledging the systemic and institutional oppression that communities of color continually face throughout this country.²⁴ By extension, the movement attempts to correct the injustices resulting from environmental racism. The movement spearheads this by acknowledging structural, governmental, and legal oppression. It combats environmental harm and the unequal benefit and burden distribution resulting from environmental degradation at the hands of decision-makers—including the judicial system.

One lasting legal principle lies at the core of the Environmental Justice Movement—President Clinton’s Environmental Justice Executive Order (Order).²⁵ The Order governs actions by federal agencies and asks agencies to “identify . . . and address[,] . . . as appropriate, disproportionately high and adverse human health or environmental effects of [their] programs, policies, and activities on minority populations” *without* creating a right of action.²⁶ Additionally, the Order urges agencies to address enforcement problems by encouraging program revisions that promote enforcement of all health and environmental statutes.²⁷ However, the Order lacks enforceability—specifically concerning agency decision-making by explicitly considering environmental justice with other factors such as profit.

The United States Environmental Protection Agency (EPA) defines *Environmental Justice* as the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws,

23. *Id.* (stating the consequences of these actions to include poisoning from uranium).

24. See generally, *Principles of Environmental Justice*, LVEJO, <http://lvejo.org/wp-content/uploads/2015/04/ej-jemez-principles.pdf> (last visited: Apr. 17, 2022) (acknowledging the significant historical connections that people of color have with the environment while encouraging meaningful participation people of color combating the legal wrongs inflicted upon communities of color for centuries).

25. Exec. Order No. 12898, 3 C.F.R. 859 (1995), reprinted in 42 U.S.C. § 4321 (1994).

26. ‘Big disparity’: 70% of Louisiana’s Coronavirus Deaths are African Americans, *Governor Says*, WDSU NEWS (Apr. 6, 2020), <https://www.wdsu.com/article/covid-19-impacts-in-louisiana-high-death-rate-among-african-americans/32058042#>; Willie G. Hernandez, *Environmental Justice: Looking Beyond Executive Order No. 12,898*, 14 UCLA J. ENV’T L. & POL’Y 181, 181-208 (1995), <https://escholarship.org/uc/item/9z4545x9>.

27. *Id.* at 203.

regulations and policies.”²⁸ Environmental Justice embraces the principle that all people and communities have a right to equal protection and enforcement of environmental laws and regulations.²⁹ But research supporting the movement highlights race as the single best statistical indicator—providing evidence of environmental racism.³⁰ Thus, indicating the extent to which society has denied indigenous communities and communities of color the rights and benefits that the majority enjoys—legal environmental protections.³¹

C. Native Americans and Tribal Interplay with the Environmental Justice Movement

The Environmental Justice Movement and associated scholars fail to examine and include the Native American perspective and struggle regarding the unequal distribution of environmental harm.³² For example, when speaking of the Environmental Justice Movement, racial groups are usually lumped into one category such as: “communities of color” or “people of color.”³³ What those labels fail to address is the unique political, cultural, and social distinctions among different races all while failing to illuminate the fact that race itself is a social construct created to highlight the pyramid of who has power.³⁴ Therefore, problems of environmental injustice will persist until more attention is paid to Native Americans and their different perspectives and attitudes towards nature.³⁵

28. *Environmental Justice*, EPA, <https://www.epa.gov/environmentaljustice> (last visited Apr. 17, 2022).

29. *About Environmental Justice*, DR. ROBERT BULLARD: FATHER ENV’T JUST., <https://drrobertbullard.com> (last visited Apr. 17, 2022).

30. Robert W. Collin, *Environmental Equity: A Law and Planning Approach to Environmental Racism*, 11 VA. ENV’T. L.J. 495, 496 (1992); see also Richard Lazarus, *Environmental Racism? What’s That? What is it?*, 2000 UNIV. ILL. L. REV. 255, 255-74 (2000), <https://scholarship.law.georgetown.edu/facpub/160> (mentioning the term coined by civil-rights community organizer and activist, Reverend Ben Chavis, who first used it to encapsulate the issues associated with the landfill in Warren County, North Carolina).

31. Lazarus, *supra* note 30, at 255-74.

32. See Jana L. Walker et. al., *A Closer Look at Environmental Injustice in Indian Country*, 1 SEATTLE J. SOC. JUST. 379, 379 (2002) (stating Native American environmental views and concerns are often absent from the mainstream environmental justice dialogue and literature and therefore exacerbating environmental injustice further).

33. Eric K. Yamamoto & Jen-L W. Lyman, *Racializing Environmental Justice*, 72 COLO. L. REV. 311, 333 (2001).

34. *Id.* (citing to Richard Lazarus, *Distribution in Environmental Justice: Is there a Middle Ground?*, 9 ST. JOHN’S J. LEGAL COMMENT 481, 485 (1994) and stating it is a flaw to treat all racial groups the same way and that decision makers often disregard cultural beliefs that “affect environmental protection standards”).

35. Yamamoto & Lyman, *supra* note 33, at 336; see also Walker et. al., *supra* note 32, at 379-401 (noting that it is “erroneous . . . to assume . . . [t]ribes and their members suffer environmental injustices of the same type . . . or in the same way as do other minority, ethnic, or low income communities.”).

Consequently, the Environmental Justice Movement is not without shortcomings. The biggest being that there has been no official adoption of a federal environmental justice law proposed thus far. Thus, communities and individuals impacted have resorted to alternative legal means to advocate on their behalf. For example, Black and Latino communities have traditionally relied on Civil Rights law when combating environmental harm because existing environmental discourse focuses on human impacts on the environment and not the people it may impact.³⁶ Accordingly, even a movement founded in justice, at times fails to fulfill its mission, at least when it comes to Native American communities. The reasoning behind why a movement, which focuses on justice fails this community, can be traced to three major reasons: “(1) standard EJ indicators may not apply to indigenous experiences of environmental injustice given cultural distinctiveness [both across Native American communities themselves and between them and the broader culture]; (2) challenging with defining ‘Native American’, [debates continue over who qualifies as a ‘member’ of a tribal population (carded members vs. those who claim Native American ancestry)]; (3) tribal sovereignty requires different research approaches and policy prescriptions.”³⁷

Simply put, the Environmental Justice Movement at times—as well as the government and laws—is unable to fully encompass the Native American communities’ connection and struggles with the environment. Because of the *McGirt* decision, tribal leaders and government decision-makers must collaborate to successfully protect each and every one of its citizens from an unequal distribution of environmental harm in the face of climate change, which does not discriminate.

36. See *Tile VI and Environmental Justice*, EPA, <https://www.epa.gov/environmentaljustice> (last visited Apr. 17, 2022); Kristen Lombardi et al., *Environmental Racism Persists, and the EPA is One Reason Why*, CTR. PUB. INTEGRITY (Aug. 3, 2015), <https://publicintegrity.org/environment/environmental-racism-persists-and-the-epa-is-one-reason-why/> (stating “The U.S. Environmental Protection Agency’s Office of Civil Rights is charged with investigating complaints of discrimination filed against state and local agencies that receive EPA funds and, upon unearthing evidence of injustice, making things right.”).

37. Jamie Vickery & Lori M. Hunter, *Native Americans: Where in Environmental Justice Theory and Research?*, INST. BEHAV. SCI. UNIV. COLO. BOULDER (Mar. 2014) (working paper), <https://ibs.colorado.edu/pubs/pop/pop2014-0004.pdf>; see also Dian Gilio-Whitaker, *What Environmental Justice Means in Indian Country*, KCET (Mar. 6, 2017), <https://www.kcet.org/shows/earth-focus/what-environmental-justice-means-in-indian-country> (explaining the complications that arise for Native Americans such as being citizens of both lands and spirit in a way which collides with the Environmental Justice framework of distributive justice and capitalism as core American values leading to complicated relationships with agency and government due to political vulnerability and volatility).

II. LEGAL ANALYSIS

A. The Landmark Decision: McGirt v. Oklahoma

The Supreme Court issued its landmark 5-4 decision in *McGirt v. Oklahoma* on July 9, 2020. The Court held the Muscogee (Creek) Nation reservation boundaries stated in the 1886 treaty remained intact.³⁸ In the 1997 case, Jimcy McGirt, a Seminole Nation citizen, was convicted in Oklahoma state court for the rape of a child and sentenced to 1,000 years plus life in prison.³⁹ McGirt argued that the Major Crimes Act only permitted the federal government to prosecute a Native American for conduct occurring in *Indian Country*.⁴⁰ McGirt, therefore, alleged in post-conviction proceedings that the State of Oklahoma did not have jurisdiction over him as an Indian Citizen because the crime was committed in *Indian Country* on the Muscogee (Creek) Nation reservation.⁴¹ However, the state court rejected McGirt's argument and held the crime was committed on land where the State had jurisdiction.⁴² Therefore, the key issue facing the Court was whether McGirt committed his crimes in *Indian Country*.⁴³ Oklahoma argued the subject land was no longer a reservation due to disestablishing actions taken to join the Union.⁴⁴ The Court analyzed whether a reservation was ever created between the United States Government and the Muscogee (Creek) Nation through treaties and promises made.⁴⁵ The Court held that "[b]ecause Congress has not said otherwise, we hold the government to its word."⁴⁶ Thus, the Muscogee (Creek) Nation was never disestablished and continues to exist today, giving rise to a multitude of questions regarding the next steps in everything from criminal convictions and prosecution to environmental regulations and law.

38. McGirt v. Oklahoma, 140 S. Ct. 2452, 2482 (2020); Robert J. Miller & Torey Dolan, *The Indian Law Bombshell: McGirt v. Oklahoma* (August 10, 2020) (working paper), <https://ssrn.com/abstract=3670425>; Richard Wolf & Kevin Johnson, *Supreme Court Says Eastern Oklahoma Remains Native American Territory*, USA TODAY (Jul. 9, 2020), <https://www.usatoday.com/story/news/politics/2020/07/09/supreme-court-allows-native-american-jurisdiction-half-oklahoma/3208778001/>.

39. McGirt, 140 S. Ct. at 2482.

40. See *id.* at 2459 (citing *Inegonsott v. Samuels*, 507 U.S. 99, 102–03 (1993) “State courts generally have no jurisdiction to try Indians for conduct committed in ‘Indian country.’”).

41. *Id.* at 2459.

42. *Id.*

43. *Id.* at 2460.

44. *Id.*

45. *Id.* at 2460–63.

46. *Id.* at 2459.

Supreme Court jurisprudence has long held that Congress possesses the authority to abrogate Indian treaties.⁴⁷ Moreover, with that comes the authority to unilaterally diminish or disestablish an Indian reservation which may have been recognized or created as a result of those treaties.⁴⁸ Consequently, under the Fifth Amendment, the government must pay just compensation for taking treaty property rights.⁴⁹ Similarly, in *Solem v. Barlett* the Court established an analytical structure for cases dealing with disestablishing issues using a three-part test.⁵⁰ The test laid out what would guide the Court with the caveat that only Congress can diminish or disestablish a reservation and such actions “will not be lightly inferred.”⁵¹ First, under the test, only Congress can alter the terms of an Indian treaty by diminishing a reservation, but its “intent to do so must be clear and plain.”⁵² Second, the Court states the “explicit language of cession and unconditional compensation are not prerequisites for a finding of diminishment.”⁵³ Therefore, courts can also examine:

events surrounding the passage of a surplus land Act . . . [if it reveals a] widely held, contemporaneous understanding . . . the affected reservation would shrink as a result of the proposed legislation, [courts] have been willing to infer that Congress shared the understanding that its action would diminish the reservation, notwithstanding the presence of statutory language that would otherwise suggest reservation boundaries remain unchanged.⁵⁴

Third, courts can additionally look to subsequent history and events when determining if Congress had specific intent to diminish a reservation when it enacted the statute in question—including the treatment of the land thereafter and what demographically inhabited the land.⁵⁵ Shockingly, the *McGirt* Court did not apply this three-step test when coming to its holding.⁵⁶

47. *Solem v. Barlett*, 465 U.S. 463, 470 (1984); *Lone Wolf v. Hitchcock*, 187 U.S. 553, 566-68 (1903).

48. *Solem*, 465 U.S. at 470; *Hitchcock*, 187 U.S. at 566-68.

49. *United States v. Sioux Nation of Indians*, 448 U.S. 371, 423-24 (1980); *see also* *Menominee Tribe of Indians v. United States*, 391 U.S. 404, 413 (1968) (expressing that if Congress breached treaty promises in relation to a tribe it would then “subject the United States to a claim for compensation by destroying property rights conferred by treaty.”).

50. *Solem*, 465 U.S. at 463.

51. *Solem*, 465 U.S. at 470.

52. *South Dakota v. Yankton Sioux*, 522 U.S. 329, 343 (1998).

53. *Solem*, 465 U.S. at 471.

54. *Id.*

55. *Id.*

56. *McGirt v. Oklahoma*, 140 S. Ct. 2452, 2459-82 (2020).

The Court held that the creation of the Creek Reservation was in fact executed because “on the far end of the Trail of Tears was a promise,”⁵⁷ and the Oklahoma State illegally exceeded its authority and jurisdiction by applying laws inside the Creek Reservation and others for over one hundred years.⁵⁸ Further, the Court concluded that Congress not only established the reservation for the Creeks but had “guarantied” the Creek Nation the land west of the Mississippi as a “permanent home to the whole Creek Nation of Indians.”⁵⁹ But the lands granted to the Creeks were not free; it was payment for their agreement to sell its other lands to Alabama, to the United States, and move west.⁶⁰ Arguably, the Court reviewed various statutes under step two of *Solem*, looking for evidence that Congress disestablished the Creek Reservation.⁶¹ The State’s argument pointed to the 1901 Act, which allotted reservation land to individual tribe members as opposed to the Indian Nation as a whole in an effort to prove disestablishment of the Creek Nation.⁶² However, the argument failed as the Court stated that allotment of a reservation does not diminish or disestablish it.⁶³ In this case, Congress did not intend to disestablish the reservation by enacting the 1901 Creek Allotment Act because, instead of ceasing the land, Congress chose to proceed with allotment.⁶⁴ Thus, the 1901 Act did not have any bearing on the boundaries of the reservation. The Court also looked at other statutes cited by the State, where Congress attacked tribal sovereignty and governance in the Creek Nation after Oklahoma became a state.⁶⁵ However, the Court found no precedent nor any explicit or ambiguous statement from Congress relating to disestablishment of the Creek Nation’s reservation, and thus, it continues to exist, whole.⁶⁶ More importantly, the Court held that steps two and three

57. *Id.* at 2459.

58. Miller & Dolan, *supra* note 38.

59. *McGirt*, 140 S. Ct. at 2460; *see also* Treaty with the Creeks, 7 Stat. 417 (stating under article four: land in the Indian territory to be the permanent and comfortable home of the Nation).

60. *McGirt*, 140 S. Ct. at 2460.

61. *Id.*

62. *Mattz v. Arnett*, 412 U.S. 481, 497 (1973).

63. *Id.* (looking at when the court confiscated gill nets owned by Yurok or Klamath River Indians in the area located within original reservation boundaries and held that the Act of 1892 provided that all lands embraced in what was the Klamath River Reservation were subject to settlement, entry, and purchase under homestead laws, and the Reservation was not terminated and remained ‘Indian country’ in which Indians could not be deprived of any right under federal treaty or statute with respect to hunting, trapping, or fishing).

64. *Id.*

65. *McGirt*, 140 S. Ct. at 2465–68 (stating that “in all this history there simply arrived no moment when any Act of Congress dissolved the Creek Tribe or disestablished its reservation.”); *see also McGirt*, 140 S. Ct. at 2487 (Roberts, C.J., dissenting) (noting in the dissent that “no one here contends that any individual congressional action or piece of evidence, standing alone, disestablished the Creek reservation.”).

66. *McGirt*, 140 S. Ct. at 2459, 2482.

of *Solem* are only interpretative and are not an alternative way to prove disestablishment or diminishment.⁶⁷

The Court did not stop at the particulars of Mr. McGirt's case, which concerned criminal jurisdiction, as it argued and highlighted civil law and jurisdiction in the dissent.⁶⁸ The majority briefly disputed the issues as "dire warnings are just that and not a license for us to disregard the law" and "the magnitude of a legal wrong is no reason to perpetuate it."⁶⁹ In other words, even though the federal government and Oklahoma State previously did not stay true to their word, they should not benefit from illegally applying jurisdiction in *Indian Country* for the past one hundred years and counting—a dramatic shift from past Court precedent and the highlight of this decision.

B. Indian Nation Post McGirt: Generally

The aftermath of the *McGirt* decision generated an immediate response from both the Oklahoma State government and the tribes.⁷⁰ One such response was the creation of the Oklahoma Commission on Cooperative Sovereignty to explore the effects of the decision by Governor Kevin Stitt, of Oklahoma.⁷¹ The Governor's reasoning behind the commission was to present recommendations that would be best for all Oklahoma citizens.⁷² Appropriately, the Commission stated that their recommendations arise from the idea that "if people don't know what the rules are that govern Oklahoma, people and commercial businesses will leave for other states . . . it hurts the [t]ribes and every Oklahoman the same."⁷³

An important result of the Court's decision is that all lands within the boundaries litigated are *Indian Country*, including all Indian land and *non-Indian fee* lands.⁷⁴ Thus, the decision changed the geographic circumference of the jurisdiction. However, civil authority within *Indian Country* will

67. *Id.* at 2468–81.

68. *Id.* at 2482 (Roberts, C.J., dissenting) (stating: "The decision today creates significant uncertainty for the State's continuing authority over any area that touches Indian affairs . . .").

69. *Id.* at 2480.

70. See generally T.A. LeBrun, *Supreme Court Ruling Regarding Oklahoma Reservation*, MESSAGE MEDIA (Jul. 17, 2020), https://www.messagemedia.co/millelacs/news/supreme-court-ruling-regarding-oklahoma-reservation/article_794ce5a6-c5dd-11ea-99bd-ab5c1f71061f.html.

71. Garrett Giles, *Stitt Holds Press Conference on McGirt v. Oklahoma*, BARTLESVILLE RADIO (Oct. 22, 2020), <http://www.bartlesvillradio.com/pages/news/265652020/press-conference-on-mcgirt> (notably the commission is made up of industry leaders and no tribal leaders).

72. *Id.*

73. *Id.*

74. Dylan R. Hedden-Nicely & Monte Mills, *The Civil Jurisdiction Landscape in Eastern Oklahoma Post McGirt v. Oklahoma*, ROCKY MNT. MIN. L. FOUND. 1, 1, <https://www.rmmlf.org/-/media/Files/natural-resources-law-network/august-2020/the-civil-jurisdiction-landscape-in-eastern-oklahoma.pdf?la=en> (last visited Apr. 17, 2022).

remain divided under the guise of tribal membership and land.⁷⁵ Thereby, under the Court's precedent in *Worcester v. Georgia*, tribes were recognized as sovereign nations—distinct political communities with authority within their jurisdiction.⁷⁶ The Court also established a general rule, containing two exceptions, for tribes that lack civil authority over non-Indian conduct on land that is not controlled by the Cherokee Nation.⁷⁷ The Court's first exception recognized tribal authority to regulate activities of nonmembers who are in "consensual relationships with the tribe or its members," e.g., business dealings, contracts, and leases.⁷⁸ Second, the Court states that tribes may retain inherent authority of nonmembers where their conduct is seen to "threaten" or "effect [the] political integrity, economic security, or . . . health and welfare of the tribe."⁷⁹ Thus, the Creek Nation can continue to regulate and exercise authority over its members anywhere on reservation land.⁸⁰ However, when it comes to nonmembers, even after *McGirt*, the Nation would need to show that the nonmember's conduct or the need to regulate them fits under either of the exceptions established in *Montana v. United States*.⁸¹

Conversely, throughout history, states have generally been free in controlling anything "to the point where tribal self-government would be affected."⁸² However, after the *McGirt* decision, if a question of jurisdiction were to arise involving only Native Americans, "federal interest in encouraging tribal self-government [would] [be] at its strongest" and would preempt state law.⁸³ But the bottom line is that Oklahoma law applies unless preempted because it interferes with "traditional notions of Indian self-government" or extensive federal control.⁸⁴

75. *Id.*

76. *Worcester v. Georgia*, 31 U.S. 515, 530 (1832) (considering a White individual, Worcester, who was living on Cherokee Nation land and under law, was required to receive a permit and take an oath of allegiance to the State failed to do so and was convicted. The State then offered to pardon Worcester and in exchange, he would leave Cherokee Nation immediately—he refused, and the court held that Tribal Nations were sovereign, and the States have no authority to pass laws regarding said tribal nations).

77. *See Montana v. United States*, 450 U.S. 544, 565 (1981) (holding tribal powers limited to that only what is necessary to protect tribal self-government).

78. *Id.*

79. *Id.* at 566.

80. *Id.*

81. Hedden-Nicely & Mills, *supra* note 74 at 2.

82. *Id.* at 3 (citing *McClanahan v. State Tax Comm'n of Arizona*, 411 U.S. 164, 179 (1973) where the Court analyzed Arizona trying to tax a non-Indian trucking company who was exclusively operating on a reservation by way of a contract).

83. *Id.*

84. *Id.*

C. Indian Nation Post McGirt: Environmental Law and Regulation

One must acknowledge cultural notions when creating environmental law and regulation in *Indian Country*. Tribal governments and lands are home to historically oppressed and disadvantaged racial minorities.⁸⁵ Consequently, federal environmental laws were extended to tribal lands in the late 1980s and 1990s, making tribes eligible to shoulder the implementation and exercise the authority of said laws—just like states.⁸⁶ The extension, therefore, provides tribes the opportunity to address concerns critical to their members and land.⁸⁷ But Tribal courts have faced obstacles when asserting their sovereign authority. For example, the federal government continues to fall short in letting go of control and authority over tribal lands and the valuable natural resources within tribal land.⁸⁸ Per a study that examines the relationship between tribal governments and the federal government, tribes continue to endure “systemic regulatory neglect of environmental implementation.”⁸⁹

Environmental law first came about in the 1970s under the notion of regulatory federalism, where the federal government and states share responsibility for environmental protection.⁹⁰ For example, historically, the United States EPA established environmental quality standards, and states could opt-in to share the responsibility for implementation and enforcement.⁹¹ However, when it comes to the unique relationship between tribal governments and the federal government—via the Constitution, treaties signed, statutes, executive orders, and judicial decisions—environmental regulation and law, when first established, had no mention of tribal lands and tribal citizens.⁹² In fact, tribal governments and citizens were unsupported until the passage of Ronald Reagan’s 1984 Federal Indian Policy (FIP).⁹³ FIP establishes two themes: (1) the federal government will follow the principle of self-government granted to tribes, and; (2) the federal government will work directly with tribal governments on a “government-to-government” basis.⁹⁴ The policy brought to light what is known as the trust

85. Mellie Haider & Manuel P. Teodoro, *Environmental Federalism in Indian Country: Sovereignty, Primacy, and Environmental Protection*, 49 POL’Y STUD. J. 887, 889 (May 29, 2020), <https://onlinelibrary.wiley.com/doi/epdf/10.1111/psj.12395>.

86. *Id.*

87. *Id.*

88. *Id.*

89. *Id.* at 3.

90. *Id.* (highlighting the Clean Air Act and the Clean Water Act as examples of such laws).

91. *Id.* at 3.

92. *Id.*

93. *Id.* at 5.

94. *Id.*

doctrine and establishes the federal government's fiduciary responsibility to federally recognized tribes and citizens.⁹⁵

More telling, the 1987 amendments to environmental laws authorize the EPA to treat federally recognized tribes similar to states when implementing and managing environmental programs.⁹⁶ These amendments recognize tribal governments as lead authorities that set standards and manage programs consistent with federal standards.⁹⁷ Today, tribal authority is present in the context of the Clean Air Act and the Clean Water Act.⁹⁸ After 1987, tribes became the primary authority if the tribe is (1) federally recognized; (2) has the capacity to carry out substantial governmental duties and powers over the reservation; (3) possesses the requisite legal authority over reservation resources, and; (4) is deemed to be capable of carrying out the statutory requirements of the law.⁹⁹ One caveat is that the EPA retains authority over whether a tribe adequately meets the four requirements and managing programs until they are "willing and able to assume full responsibility."¹⁰⁰

The *McGirt* decision does not diminish state authority as feared by the Oklahoma governor and the oil sector.¹⁰¹ Almost immediately after the Court's July 9, 2020, decision, Governor Stitt went on the offensive. Stitt publicly stated that he must get Congress to pass legislation to override the decision.¹⁰² Stitt claimed the only acceptable solution was federal legislation that consolidated all criminal and civil issues that involve the five tribal reservations under State control.¹⁰³ In pursuit of this goal, Governor Stitt

95. *Id.* (pointing to the Supreme Courts' acknowledgment of the fiduciary duty in *Cherokee Nation v. Georgia*, 30 U.S. 1 (1831), declaring tribes as domestic dependents and the federal government as a ward to its guardian).

96. *Id.* at 5-6.

97. *Id.*

98. See generally Haider & Teodoro, *supra* note 85, at 22 (doing an analysis of the CWA and tribal sovereignty leading to stricter standards and more accountability); see also Sarah Deer & Elizabeth Ann Kronk Warner, *Raping Indian Country*, 39 COLUM. J. GENDER & L. 31, 38 (2019) (stating that the CWA can authorize tribes to "implement federal programs within the scope of their inherent tribal powers" and further the CAA does delegate authority to tribes).

99. Haider & Teodoro, *supra* note 85, at 6.

100. *Id.*

101. Letter from Andrew R. Wheeler, *Approval of State of Oklahoma Request Under Section 10211(s) of the SAFATEA of 2005*, EPA (Oct. 1, 2020), <https://www.law360.com/articles/1316789/attachments/0>; Emma Whitford, *Okla. Gov. Gets EPA's Green Light to Regulate Tribal Lands*, LAW 360, <https://www.law360.com/articles/1316789>.

102. Ti-Hua Chang, *Oklahoma Governor Pushing to Undo Tribal Sovereignty Ruling*, TYT NETWORK (Sept. 3, 2020), <https://tyt.com/stories/4vZLCHuQrYE4uKagy0oyMA/48MFWZV1Nivr5yGCZW07Ao>.

103. *Id.*; Tim O'Donnell, *Controversial EPA Decision gives Oklahoma Governor Regulatory Power over Tribal Lands*, WEEK (Oct. 5, 2020), <https://theweek.com/speedreads/941823/controversial-epa-decision-gives-oklahoma-governor-regulatory-power-over-tribal-lands>; Chuck Hoskin Jr., *The Tribes and the State can Solve any Problems Created by the Supreme Court's McGirt Rulings . . . But*

requested the EPA to override tribal sovereignty over environmental issues.¹⁰⁴ The request was supported through a midnight rider clause attached to a 2005 transportation appropriations bill passed by Senator Inhofe.¹⁰⁵ However, the clause applies exclusively to Oklahoma tribes and grants the EPA—and Oklahoma, upon request—the right to assume regulatory control over certain environmental laws.¹⁰⁶

The EPA granted the request on October 5, 2020, under section 10211(a) of the 2005 Safe Accountable Flexible Efficient Transportation Equity Act (SAFETEA).¹⁰⁷ In justification of the decision the EPA noted:

[it] generally excludes Indian country from its approvals of state environmental regulatory programs. However, where a federal statute expressly provides for the state program administration in Indian country, the EPA must apply that law and approve a proper request for such state administration.¹⁰⁸

Notably, however, the EPA's statutory and regulatory authority over state program review remains even if SAFETEA requires first-instance approval.¹⁰⁹ Thus, this decision "continue[s] to regulate . . . areas where the state has consistently implemented these environmental programs under the steady oversight" of the EPA.¹¹⁰

D. Collaboration by Way of Example

Accordingly, the relationship struck between tribes and the EPA remains delicate when it comes to environmental protection. That said, in the months after the *McGirt* decision, both the EPA and the federal government have gone ahead with decisions rooted in fear of losing control in one sphere of regulatory authority.¹¹¹ In other words, just because the Court's decision now

Only if we Work Together, TULSA WORLD (Nov. 8, 2020), https://tulsaworld.com/community/skiatook/opinion/chuck-hoskin-jr-the-tribes-and-the-state-can-solve-any-problems-created-by-the/article_29649216-1eaf-11eb-a8c1-43388c12a4aa.html.

104. O'Donnell, *supra* note 103.

105. *Id.*

106. *Id.* (highlighting that the rider is one method in which Oklahoma can protect and control the regulation of fossil fuels a large industry in the state and its champion in Congress James Inhofe).

107. Letter to Gov. Stitt, *Re: Approval of State of Oklahoma Request Under Section 10211(a) of the Safe Accountable Flexible Efficient Transportation Equity Act of 2005*, EPA (Oct. 1, 2020), <https://www.law360.com/articles/1316789/attachments/0>; see also Ruth H. Hopkins, *The US is Undermining a Supreme Court Ruling on Native Rights*, ALJAZEERA (Oct. 27, 2020), <https://www.aljazeera.com/opinions/2020/10/27/us-is-already-defying-supreme-court-ruling-on-native-rights/> (motioning how the Trump administration used Public Law 109-59 in justifying its decision).

108. Letter to Gov. Stitt, *supra* note 107.

109. *Id.*

110. *Id.*

111. *Id.*

places non-Indian cities within reservation boundaries does not mean those cities will fail. Quite the opposite—data collection by the National Congress of American Indians represents that such communities flourish under their reservation status.¹¹²

1. Tacoma, Washington

Tacoma, Washington is one example of a non-Indian city that thrives within reservation boundaries. In 1990, a large portion of Tacoma became part of the Puyallup reservation following a long disagreement between the tribe and local government.¹¹³ Tacoma began to revitalize its downtown and marina area, which included the reservation after the designation.¹¹⁴ The revitalization continues to this day which makes Tacoma a center for investment, education, and artistic drive.¹¹⁵ While Tacoma's growth and prosperity was not the sole result of its inclusion within reservation boundaries, inclusion did not stifle growth as the government feared.¹¹⁶ Instead, reservation status enabled the building of a casino, a 400 slip-marina, cutting edge science centers, and many retail store fronts.¹¹⁷ Tacoma's inclusion within the reservation made the Puyallup Tribe the seventh largest employer in the country.¹¹⁸

Furthermore, the Puyallup tribe provides Tacoma (and the county) ample charitable giving from which every citizen benefits.¹¹⁹ The prosperity resulting from this collaboration is the University of Washington-Tacoma's (UW Tacoma) opening of convocations and launching of programs that serve to "infuse Native ways of knowing into UW Tacoma[s] teaching, learning, and research."¹²⁰ Furthermore, key signs of respectful collaboration have developed between the Puyallup tribe and the government. The developments include flying the Puyallup Nation flag at the City Council building and renaming the Puyallup River Bridge to the Fish Wars Memorial Bridge.¹²¹ Thus, inclusion of Tacoma into Puyallup territory and the resulting

112. Bethany R. Berger, *McGirt v. Oklahoma and the Past, Present, and Future of Reservation Boundaries*, 169 U. PENN. L. REV. 250, 286 (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3694051.

113. *Id.* at 287.

114. *Id.*

115. *Id.* at 287-88.

116. *Id.*

117. *Id.* at 287.

118. *Id.* at 287-88.

119. *Id.* at 288 (highlighting the fact that in 2019 alone, the tribe donated "nearly four million dollars to local charities: almost two million [] under its gaming compact with the state).

120. *Id.* (quoting UNIV. OF WASH.-TACOMA, REPORT TO THE PUYALLUP TRIBE OF INDIANS, BUILDING EXCELLENCE THROUGH SCIENCE AND TRADITION ACCOMPLISHMENTS THROUGH AUGUST, 2016 3 (2016).

121. *Id.* (recognizing treaty rights established between the tribe and the local government).

collaboration between the tribe and the local government is an example of where tribal and local governments work together to the benefit of a region. The Puyallup tribe's collaboration with the local government ultimately improved the protection of the rights of citizens, specifically, increased environmental protections.¹²²

2. Pender, Nebraska

Another example of tribal and local government collaboration is that of Pender, Nebraska. Collaboration between the parties was not a result of mere chance—it was a result of litigation in *Nebraska v. Parker*.¹²³ In *Parker*, the Court held Pender and its surrounding area were within the Omaha reservation boundary as “Congress did not intend to diminish [the] Omaha Indian Reservation when it enacted the 1882 [Allotment] Act.”¹²⁴ Although the Court held Pender was within reservation boundaries, the State argued inclusion would lead to serious disruption and consequences for the community.¹²⁵ Ultimately, the Court found that the State's concerns were compelling but irrelevant to Congress's actions in the 1882 Allotment Act.¹²⁶

To date, the State's concerns about Pender's inclusion within reservation boundaries are unfounded. The population and town are thriving, as evidenced by the opening of a new clinic, community center, and hospital, alongside many retail spaces.¹²⁷ Pender's success highlights that just because a town is set to be within reservation boundaries it does not mean it will fail. Collaboration between governments is not something to fear—but to desire. Thus, Pender proves yet again that tribal and local government collaboration leads to ample opportunity for prosperity in all spheres.

III. THE UNRECOGNIZED CONSEQUENCES

The Supreme Court decision in *McGirt* has far reaching consequences which result in further unequal distribution of environmental harm for Native Americans. Therefore, *McGirt* is of increased importance in the face of climate change. After *McGirt*, courts will have to hold the “government to its word” outside of the criminal context.¹²⁸ Ultimately, the courts will have

122. See *infra* Sect. II (D)(2).

123. *Nebraska v. Parker*, 136 S. Ct. 1072 (2016) (examining the action brought by Village and retailers selling alcoholic beverages against the Omaha Tribal Council alleging that under the 1882 Act the tribe was barred from imposing its beverage control ordinance against them but the court held that “Congress did not intend to diminish Omaha Indian Reservation when it enacted 1882 Act.”).

124. *Id.* at 1080.

125. Brief for Petitioner at 20, 23, *Nebraska v. Parker*, 136 S. Ct. 1072 (2016) (No. 14-1406).

126. *Parker*, 136 S. Ct. at 1082.

127. Berger, *supra* note 112, at 38.

128. *McGirt v. Oklahoma*, 140 S. Ct. 2452, 2459 (2020).

to answer two questions; who is worthy of environmental protection and how should environmental degradation be distributed?

In the Cherokee Nations' case, they will need to once again try and mend a bridge that was untied at the seams by the Governor's actions—especially, when the Oklahoma Attorney General Mike Hunter had originally agreed to a legislative proposal with the tribes.¹²⁹ The proposal would of given the Native Americans the right to collect taxes and exercise authority within all spheres to the extent that it may “threaten the welfare of [the] tribe.”¹³⁰ Since the day of the EPA's decision, the Cherokee Nation, along with five other tribes, reacted to Governor Stitt's letter and the EPA.¹³¹ Specifically, the tribe's expressed disappointment in the lack of consultation, as this decision provided all parties involved with an “immense opportunity . . . [to] step away from the disagreements of the past.”¹³² Meanwhile, others express the opinion that this regulatory power results from Stitt's relationship with Wheeler and is representative of how politicians take action to undermine the Court and local authorities when their desired result is lacking.¹³³

All of this to say that both the *McGirt* and EPA's decision have far-reaching, long-term implications in the environmental sphere, especially as each relates to regulation of oil and gas companies—a major industry in Oklahoma—which largely operates on tribal land.¹³⁴ Another aspect implicated is waters that lie inside reservation land. Initially, many feared *McGirt* granted general jurisdiction over the entire eastern part of the State, implicating the environmental regulation of a large portion of the State's

129. Fraser Wayne et. al., *Implications for the Energy Industry in Light of the U.S. Supreme Court Decision in McGirt v. Oklahoma*, KIRKLAND & ELLIS LLP (Aug. 13, 2020), <https://www.kirkland.com/publications/blog-post/2020/08/supreme-court-mcgirt-decision>.

130. *Id.*

131. *Id.*

132. Amre Proman, *NACC, Davenport Host Tea Discussing McGirt v. Oklahoma*, YALE DAILY NEWS (Nov. 6, 2020), <https://yaledailynews.com/blog/2020/11/06/nacc-davenport-host-tea-discussing-mcgirt-v-oklahoma/>; see also Sean Murphy, *EPA Grants Stitt Request for State Oversight on Tribal Lands*, SEATTLE TIMES (Oct. 5, 2020), <https://www.seattletimes.com/nation-world/nation/epa-grants-stitt-request-for-state-oversight-on-tribal-lands/> (mentioning that the Cherokee Nation Principal Chief was “disappointed that the EPA ignored his tribe's request to consult individually with the agency about the change.”).

133. Jeff Turrentine, *In Oklahoma, “Yet Another Broken Promise” to Native Americans*, NRDC PERSP. (Oct. 21, 2020), <https://www.nrdc.org/stories/oklahoma-yet-another-broken-promise-native-americans> (indicating that governor Stitt “teamed up with the head of EPA to keep tribes from regulating . . .”).

134. Proman, *supra* note 132 (stating that “roughly 25 percent of Oklahoma's Oil and Gas wells and sixty percent of its oil refineries are impacted” by the decision).

water.¹³⁵ But, since the EPA granted the State authority to enforce existing environmental law in Oklahoma, that fear has abated.¹³⁶

At the heart of Governor Stitt's request is the belief of outsiders that Native Americans "lack the intelligence to balance and protect adequately their own economic and environmental interests."¹³⁷ Why risk leaving those decisions to such individuals? After all, these decisions impact the country's overall wealth and values, especially those of White citizens.

So, what does this mean realistically? Well, it means that the EPA granted the state of Oklahoma:

permission to dump hazardous waste, including formaldehyde, mercury, lead, asbestos, toxic air pollutants and toxic pesticides, [alongside the ability to] oversee underground injection control for fracking, and [the] release [of] enormous amounts of urine and feces that contaminate land and water on tribal lands [from animal farms].¹³⁸

The EPA decision undermines the Courts' holding which authorizes the Creek Nation to regulate its own land. The decision permits the further poisoning of land and indigenous peoples—reverting back to the old days of broken promises.¹³⁹ Moreover, by justifying and approving this undermining of the Court's ruling, the Trump administration tried to "give the fossil fuel industry life support as it takes its last dying breath."¹⁴⁰ Further, "[w]ho benefits? [Climate change deniers like] Trump and his cronies . . . who are financially supported by big oil and gas."¹⁴¹

Another implication of the *McGirt* decision is future environmental legal claims rooted in tribal treaty rights. Although *McGirt* recognizes the importance of honoring government signed treaties, recent developments on the Court jeopardize *McGirt's* holding.¹⁴² Specifically, Amy Coney Barrett's replacement of Justice Ruth Bader Ginsburg increases the likelihood of a

135. Micah Goodwin, *Does McGirt Cede Oklahoma Waters to Native American Tribes?*, MITCHELL, WILLIAMS LLP (Jul. 21, 2020), <https://www.mitchellwilliamsllaw.com/does-mcgirt-cede-oklahoma-waters-to-native-american-tribes>.

136. Ti-Hua Chang, *EPA Grants Oklahoma Control Over Tribal Lands*, TYT (Oct. 5, 2020), <https://tyt.com/stories/4vZLCHuQrYE4uKagy0oyMA/65Oa5a0nYI4rljnOqxhUto>; Wayne et. al., *supra* note 129.

137. Yamamoto, *supra* note 33, at 331.

138. Hopkins, *supra* note 107.

139. *Id.* (noting the EPA's decision will lead to "diminishing their quality of life and stealing potential tax revenue and resources such as fresh water, [as well as] [pos[ing] a serious threat to . . . health and safety that is downright genocidal.").

140. *Id.*

141. *Id.*

142. *Id.*

completely different outcome if a state and tribe were to battle it out again on similar facts.¹⁴³

IV. RECOMMENDATION

A. It Takes a Village: What Collaboration Can Achieve

The EPA's approval of Governor Stitt's request for regulatory control over tribal lands does not indicate an end to a tribes' ability to achieve environmental justice. It is still possible to move forward instead of backwards, but only if all parties involved work together.¹⁴⁴ One example could be taxation of non-Indian individuals for their land by the tribes via an exception under *Montana v. United States*.¹⁴⁵ Another possibility could be enforcement of regulations on non-tribal citizens if "residents' consent . . . or [the regulated matter] creates a direct effect on the health or welfare of the tribe" by the tribes.¹⁴⁶ Ultimately, such collaboration would enable tribes to reflect their cultural and environmental perspectives in the current regulatory framework. To boot, collaboration would mean that policies and programs would be enforced and applied in a more unified manner as there would be several parties invested in a unified political force.¹⁴⁷

With successful collaboration between the tribes and government comes interaction, and the possible merger of environmental law and tribal preference. This merger is referred to as the "tribes-as-states" (TAS) framework.¹⁴⁸ Even after the EPA's decision in Oklahoma, the possibility for tribal environmental laws is still alive but success rests on communication, and a change in perspective from an individual approach to a *it takes a village* mindset.¹⁴⁹

143. Alex Brown, *Once-Ignored Promises to Tribes Could Change the Environmental Landscape*, PEW TRUST (Dec. 1, 2020), <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2020/12/01/once-ignored-promises-to-tribes-could-change-the-environmental-landscape>.

144. See Grant D. Crawford, *Environmental Concerns Now Issue in Wake of Creek Ruling*, TAHLEQUAH DAILY PRESS (July 29, 2020), https://www.tahlequahdailypress.com/news/environmental-concerns-now-issue-in-wake-of-creek-ruling/article_ad980748-3e8b-5fde-bb9c-d33567036028.html (quoting Cherokee Nation Principal Chief Chuck Hoskin Jr. "All Oklahomans benefit when the tribes and state work together in the spirit of mutual respect, and this knee-jerk reaction to curtail tribal jurisdiction is not productive.").

145. Hedden-Nicely & Mills, *supra* note 74, at 2.

146. Proman, *supra* note 132.

147. Haider, *supra* note 85, at 9-10.

148. *Id.* at 22.

149. Alleen Brown, *Half of Oklahoma is "Indian Country" What If All Native Treaties Were Upheld?*, INTERCEPT (Jul. 17, 2020), <https://theintercept.com/2020/07/17/mcgirt-v-oklahoma-indian-native-treaties/> (noting the *McGirt* decision as one that "opens up a space to imagine a different kind of United States, where all treaties are upheld.").

The mindset that comes with environmental decisions needs to shift. Often, when it comes to environmental allegations and decisions, a balancing test of the potential harm and the potential good comes into play.¹⁵⁰ But, the rights reserved for tribes by treaty should not be left to a subjective balancing test under the eye of the party responsible for the continued harm and pollution of their land and people.¹⁵¹ Instead, treaty rights and overall environmental justice should be at the forefront of decision-makers' minds and conversations.

A successful example is the recent New Jersey Environmental Justice law, which resulted from collaboration between community groups and the government.¹⁵² The New Jersey Environmental Justice law mandates an "Environmental Justice Impact Statement" before a department may consider an application for a permit complete.¹⁵³ The law requires each permit applicant to conduct a valid public hearing in the overburdened community and provide a transcript to the New Jersey Department of Environmental Protection.¹⁵⁴ Departments must then consider application materials during their decision-making process.¹⁵⁵ If the department finds that the renewal or addition of a permit for that facility would "disproportionately impact overburdened communities . . . [they] *must* deny the permit application."¹⁵⁶ The biggest impact of the law is that it directs the New Jersey Department of Environmental Protection to create and enforce rules, regulations, and guidance that comply with the new law.¹⁵⁷ Just as New Jersey chose the path of collaboration and inclusivity in the name of environmental justice,

150. Brown, *supra* note 143.

151. *Id.* (stating: "But when you're dealing with the diminishment of a right reserved by tribes, there ought not to be that balancing test.").

152. See generally Brianna Baker, *He Helped Pass a Historic EJ bill. But He's Just Getting Started*, GRIST (Oct. 14, 2020), <https://grist.org/fix/he-helped-pass-a-historic-environmental-justice-bill-but-hes-just-getting-started/> (mentioning Nicky Sheats role in the passage of the current NJ Environmental Justice law as an "activist, lawyer and policy researcher.").

153. N.J. STAT. ANN. §13:1D-160 (2020).

154. Julius Redd et al., *New Jersey Governor Signs Landmark Environmental Justice Legislation into Law*, BEVERIDGE & DIAMOND PC (Sept. 23, 2020); EJ 2020 Glossary, *Overburdened Community*, EPA, <https://www.epa.gov/environmentaljustice/ej-2020-glossary#:~:text=Overburdened%20Community%20%2D%20Minority%2C%20low%2D,disproportionate%20environmental%20harms%20and%20risks> (defining an overburdened community as "Minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks. This disproportionality can be as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. Increased vulnerability may be attributable to an accumulation of negative or lack of positive environmental, health, economic, or social conditions within these populations or places. The term describes situations where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities.").

155. Redd et al., *supra* note 154.

156. *Id.* (emphasis added).

157. *Id.*

Oklahoma and the Creek Nation have time to do the same. They could look at the New Jersey law as a model and include the protection and requirement of an Environmental Justice Impact Statement for all environmental decisions on the reservation moving forward.

A light began gleaming at the start of the Biden Administration. It promises to put environmental justice at the forefront and highlights the need to do so to combat climate change successfully. Moving forward, it will be increasingly interesting to see how the Biden administration, with its actions such as Executive Order 13990, prioritizes environmental justice¹⁵⁸ and how the current conservative Supreme Court handles clashes between the government and tribes attempting to regulate the environment. However, tribes can at least count on a bit more support from the executive branch than they have in the past four years of the Trump administration.

CONCLUSION

Communities of color face an unequal distribution of environmental harm—that is no secret.¹⁵⁹ However, Native Americans have long been facing not only an unequal distribution of environmental harm, but blatant attacks on their society and culture at the hands of the United States since 1492.¹⁶⁰ That is until the judiciary stepped in. The Court in *McGirt* held it would make the government stick “to its word” regarding land signed to the Creek through treaties.¹⁶¹ This decision arises in the criminal jurisdiction context, but the impacts ripple all throughout—specifically, on how the government may regulate or enforce laws in the environmental context on land that is now part of the Creek Reservation, and thus, jurisdiction. The solution to relax some of the lasting historical tension and mistrust as well as to achieve a form of environmental justice is a trust fall; a collaboration in good faith on behalf of all parties involved. The government and tribes can look to New Jersey as an example in moving toward environmental justice

158. See Exec. Order No. 13990, 86 Fed. Reg. 7037 (Jan. 20, 2021) (stating: “(e) In carrying out the actions directed in this section, heads of agencies shall seek input from the public and stakeholders, including State local, Tribal, and territorial officials, scientists, labor unions, environmental advocates, and environmental justice organizations.”).

159. See generally 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#:~:text=Environmental%20Racism,-Environmental%20racism%20refers&text=Communities%20of%20color%20are%20disproportionately,waste%20are%20people%20of%20color>.

160. DAVID E. STANNARD, *AMERICAN HOLOCAUST: THE CONQUEST OF THE NEW WORLD* 146 (New York: Oxford University Press, 1992) (describing the harm as “The worst human holocaust the world had ever witnessed . . .”).

161. *McGirt v. Oklahoma*, 140 S. Ct. 2452, 2459 (2020).

with the support of a new administration behind them who has placed environmental justice at the forefront.¹⁶²

162. See Exec. Order No. 13990, 86 Fed. Reg. 7037 (Jan. 20, 2021); Rebecca Hersher, *Hope and Skepticism as Biden Promises to Address Environmental Racism*, NPR (Jan. 29, 2021), <https://www.npr.org/2021/01/29/956012329/hope-and-skepticism-as-biden-promises-to-address-environmental-racism> (stating “The Biden administration has pledged an aggressive, broad-based approach to achieve environmental justice. Among a raft of executive actions on the climate Biden signed on Wednesday was one creating a White House council on environmental justice and a pledge that 40% of the benefits from federal investments in clean energy and clean water would go to communities that bear disproportionate pollution.”).