

# Preventing Another Pandemic: How Changing the Legal Paradigm Governing Intensive Animal Agriculture Will Reduce the Risk of Future Zoonoses

Jane Kotzmann\* and Morgan Stonebridge\*

*The public health consequences tied to our relationships with animals are significant. The COVID-19 pandemic and previous instances of zoonotic disease emergence and re-emergence have demonstrated that human relationships with animals can have a profound impact on our health. In the US, the most prevalent human-animal relationship is the one we have with the animals that we eat. This relationship is defined and facilitated by intensive animal agriculture, a practice at high risk of causing zoonotic disease emergence. This Article explores the current regulatory regime governing intensive animal agriculture and argues that it is deficient in the context of zoonotic disease. It argues that this deficiency is a result of the legal anthropocentrism that manifests in practices inherent to intensive animal agriculture and demonstrates that such an approach is unable to adequately manage the risk of future zoonoses. This Article argues for a regulatory approach that acknowledges the interdependence of humans, animals, and the environment. It proposes Wild Law as the most appropriate framework to address the risk of zoonotic disease and concludes that intensive animal agriculture would not be permitted under a Wild Law approach due to its inherent inability to operate within the context of an interdependent human-animal-environment relationship.*

---

\* Alfred Deakin Postdoctoral Research Fellow, Deakin University Law School, Melbourne, Australia. Ph.D., Deakin University; Grad. Dip. Teach. (TFA), University of Melbourne; LL.B. (Hons), Deakin University; B.Com., Deakin University.

\* PhD Candidate, Deakin University Law School, Melbourne, Australia. LL.B. (Hons), Deakin University.

I. Introduction .....	459
II. Context.....	463
A. What Are Zoonotic Diseases? .....	463
B. Drivers of Emerging Zoonotic Infectious Diseases .....	464
C. The Impact of Human Behavior on Zoonotic Disease Emergence.....	471
III. Current Law in the United States in Relation To Intensive Animal Agriculture .....	474
A. Background.....	474
1. The Anthropocentric Foundation .....	474
2. Animals as Property.....	478
B. Regulation of Intensive Animal Agriculture in the US.....	479
1. Federal and State Animal Welfare Laws .....	480
2. Federal and State Public Health Laws Regulating Intensive Animal Agriculture .....	488
IV. Prevention is Better than Cure: Changing the Approach to managing the Risk of Zoonoses Posed by Intensive Animal Agriculture .....	499
A. One Health .....	499
1. Limitations.....	501
B. Wild Law.....	503
1. Limitations .....	510
C. Reform Recommendations.....	512
1. Regulation Informed by a Wild Law Approach.....	513
2. Developing a Connection with the Earth .....	514
V. Conclusion.....	515

## I. INTRODUCTION

“Epidemics afflict societies through the specific vulnerabilities people have created by their relationship with the environment, other species, and each other. Microbes that ignite pandemics are those whose evolution has adapted them to fill the ecological niches that we have prepared.”<sup>1</sup>

The COVID-19 pandemic has, in the United States and globally, underlined the devastating impacts an infectious disease outbreak can have on society. The consequences have been far reaching, with 879,971 COVID-19 deaths and 74,222,140 total cases in the United

---

<sup>1</sup>FRANK M. SNOWDEN, EPIDEMICS AND SOCIETY: FROM THE BLACK DEATH TO THE PRESENT ix (2020).

States alone as of January 28, 2022.<sup>2</sup> The impacts of COVID-19 have not just been felt in relation to public health. Significant restrictions have been imposed in response to the outbreak, with governments issuing shelter in place and stay at home orders, mandating face masks and closing businesses.<sup>3</sup> COVID-19 and the lockdowns imposed in an attempt to curb its transmission have also had a significant emotional impact, with many in the United States reporting negative mental health impacts<sup>4</sup>—connected in part to the economic consequences of the pandemic, which have resulted in many Americans experiencing unemployment and poverty.<sup>5</sup>

While the origin of SARS-CoV-2 (COVID-19) has been a point of contention and is still under investigation,<sup>6</sup> a leading theory is that the infection began in a non-human animal before passing—or “spilling over”—to human beings.<sup>7</sup> COVID-19 is therefore a zoonotic disease. The spill over theory aligns with the dire warnings that infectious diseases experts have been delivering for years. In 1988, for instance, Nobel prize recipient Joshua Lederberg warned that “[a]s one species, we have a common vulnerability...[t]he microbe that felled one child in a distant continent yesterday can reach yours today and seed a global pandemic tomorrow.”<sup>8</sup> More recently, in 2013, David

---

<sup>2</sup>COVID Data Tracker, CTRS. FOR DISEASE CONTROL & PREVENTION, [https://covid.cdc.gov/covid-data-tracker/#trends\\_totalcases](https://covid.cdc.gov/covid-data-tracker/#trends_totalcases) [<https://perma.cc/QLR7-EAPW>] (last visited May 13, 2022).

<sup>3</sup>COVID-19 Restrictions, USA TODAY (Mar. 18, 2022), <https://www.usatoday.com/storytelling/coronavirus-reopening-america-map/> [<https://perma.cc/K83Y-2CWN>].

<sup>4</sup>Nirmita Panchal et al., *The Implications of COVID-19 for Mental Health and Substance Use*, KFF (Feb. 10, 2021), <https://www.kff.org/coronavirus-covid-19/issue-brief/the-implications-of-covid-19-for-mental-health-and-substance-use/> [<https://perma.cc/GF9P-LNX7>].

<sup>5</sup>PAHO Highlights Under-Recognized Mental Health Crisis in the Americas Due to COVID-19, PAN AM. HEALTH ORG. (Nov. 24, 2021), <https://www.paho.org/en/news/24-11-2021-paho-highlights-under-recognized-mental-health-crisis-americas-due-covid-19> [<https://perma.cc/8YB7-ZHM6>]; *Tracking the COVID-19 Economy's Effects on Food, Housing, and Employment Hardships*, CTR. ON BUDGET & POL'Y PRIORITIES, <https://www.cbpp.org/research/poverty-and-inequality/tracking-the-covid-19-economys-effects-on-food-housing-and> [<https://perma.cc/5UNE-WBTR>] (last visited May 10, 2022).

<sup>6</sup>See Amy Maxmen, *US COVID Origins Report: Researchers Pleased with Scientific Approach*, NATURE (Aug. 27, 2021), <https://www.nature.com/articles/d41586-021-02366-0> [<https://perma.cc/9WV3-4C4C>]; Agence France-Presse, *Last Chance: WHO Reveals New Team to Investigate Covid Origins*, THE GUARDIAN (Oct. 13, 2021), <https://www.theguardian.com/world/2021/oct/14/last-chance-who-reveals-new-team-to-investigate-covid-origins> [<https://perma.cc/H63Z-26KW>].

<sup>7</sup>See OFF. OF THE DIR. OF NAT'L INTEL., UPDATED ASSESSMENT ON COVID-19 ORIGINS 1 (2021), <https://www.dni.gov/index.php/newsroom/reports-publications/reports-publications-2021/item/2236-unclassified-summary-of-assessment-on-covid-19-origins> [<https://perma.cc/5EYV-SJPP>].

<sup>8</sup>Joshua Lederberg, *Medical Science, Infectious Disease and the Unity of Humankind*, 260 AM. MED. ASS'N J. 684, 685 (1988).

Quammen wrote “[n]ow disease experts wonder about the ‘next big one’—when will it come, what will it look like, from which reservoir host will it spill over, and how many people will it kill?”<sup>9</sup> Quammen aptly identified that “[t]he worst new diseases of the future, like those of the recent past, will be zoonotic.”<sup>10</sup> Thus, despite the warnings, societies globally are grappling with the impacts of a global pandemic caused by a zoonotic disease, as predicted decades in advance.

Zoonotic diseases are innately connected to the relationships between humans and animals. The emergence or re-emergence of zoonotic diseases like COVID-19 are fundamentally driven by changes in the human-animal relationship and the associated increase in contact.<sup>11</sup> As Frank Snowden, emeritus professor in history and the history of medicine explains, “[e]pidemics afflict societies through the specific vulnerabilities people have created by their relationship with the environment, other species, and each other.”<sup>12</sup> In the context of the US, there is no relationship between humans and animals more substantial or prevalent than the one we hold with the animals raised for human consumption. The United Nations (UN) has recognized the risk that this creates in terms of future zoonoses in a 2020 report entitled “Preventing the Next Pandemic.”<sup>13</sup> In it, the UN identified an increasing demand for animal protein and the intensification of animal agriculture as key drivers of zoonotic disease.<sup>14</sup>

The transition to intensive animal agriculture has likely been one of the most significant changes in the human-animal relationship since the transition from hunter-gatherer societies to large agricultural communities.<sup>15</sup> Intensive animal agriculture operations—the largest of which are known as concentrated animal feeding operations

---

<sup>9</sup>David Quammen, *Disease: The Next Big One*, N.Y. TIMES (Oct. 14, 2013), <https://www.nytimes.com/2013/10/15/opinion/disease-the-next-big-one.html> [<https://perma.cc/7W5D-XUJ>].

<sup>10</sup>*Id.*

<sup>11</sup>U.N. ENV'T PROGRAMME & INT'L LIVESTOCK RSCH. INST., PREVENTING THE NEXT PANDEMIC: ZOOONOTIC DISEASES AND HOW TO BREAK THE CHAIN OF TRANSMISSION 15–17 (2020) [hereinafter PREVENTING THE NEXT PANDEMIC].

<sup>12</sup>SNOWDEN, *supra* note 1, at ix.

<sup>13</sup>*See generally*, PREVENTING THE NEXT PANDEMIC, *supra* note 11.

<sup>14</sup>In total, the report identified seven driving factors behind the emergence of zoonotic diseases, including: 1) increasing human demand for animal protein; 2) unsustainable agricultural intensification; 3) increased use and exploitation of wildlife; 4) unsustainable utilization of natural resources accelerated by urbanization, land use change and extractive industries; 5) increased travel and transportation; 6) changes in food supply; and 7) climate change. PREVENTING THE NEXT PANDEMIC, *supra* note 11, at 15–17.

<sup>15</sup>Michael Greger, *The Human/Animal Interface: Emergence and Resurgence of Zoonotic Infectious Diseases*, 33 CRITICAL REVIEWS IN MICROBIOLOGY 243, 253 (2007).

(CAFOs)—fulfill the current demand for substantial quantities of animal protein. They do so by replacing human labor with machinery, confining large numbers of animals indoors with minimal space, and providing the animals with specialized feed, designed to efficiently increase mass at low-cost, instead of allowing the animals to forage or graze.<sup>16</sup> Underpinned by productivity, efficiency, and profit, these operations are able to effectively meet the mass demand for animal food products in the United States at an economically low cost. However, as recognized by the UN, they also pose an unacceptably high risk in terms of zoonotic disease.

Considering this risk, this Article analyses the regulations governing intensive animal agriculture and asks whether they are sufficient to adequately minimize the risk of zoonotic disease emergence. Part I begins by explaining what a zoonotic disease is, what drives transmission, and the impact of human behavior on zoonotic disease emergence. Part II considers the context of the legal framework, the impact that animal welfare laws have on the zoonoses potential of intensive animal agriculture, the effectiveness of measures such as surveillance, depopulation and disposal, and regulation by the Environmental Protection Agency (EPA). It outlines the deficiencies in the current regulatory framework and concludes that current regulation is insufficient to address the risk that intensive animal agriculture poses in terms of future zoonotic disease outbreaks.

Informed by this discussion, Part III of this Article explores possible alternative legal frameworks for regulating intensive animal agriculture. Both One Health and Wild Law are considered as possible options, and the benefits and limitations of each are evaluated. This Article argues that Wild Law is the most appropriate framework to address the zoonotic disease risk as it recognizes the interdependence of human, animal, and environmental health and will produce the necessary paradigm shift. Nevertheless, Wild Law remains vague in terms of its practical operation and a wholesale application of a Wild Law paradigm to the regulation of animal agriculture is unlikely to be politically palatable. Given these considerations, we recommend in Part IV that the most obvious reform suggested by a Wild Law analysis be pursued. Intensive animal agriculture is inconsistent with a Wild

---

<sup>16</sup>Bernard E. Rollin, *This Ain't Agriculture*, in THE ROUTLEDGE HANDBOOK OF HUMAN-ANIMAL STUDIES 84, 90 (Garry Marvin & Susan McHugh eds., 2014); Lindsay Walton & Kristen King Jaiven, *Regulating Concentrated Animal Feeding Operations for the Well-Being of Farm Animals, Consumers, and the Environment*, in WHAT CAN ANIMAL LAW LEARN FROM ENVIRONMENTAL LAW? 205, 207 (Randall S. Abate ed., 2d ed. 2020).

Law approach, as it is unable to operate within a framework that demands equal consideration of humans, animals, and the environment. Therefore, to adequately minimize the zoonotic disease risk posed by animal agriculture, this Article recommends the immediate phasing out of intensive animal agriculture. As a Wild Law approach to the regulation of animal agriculture would require phasing out intensive operations, it would also discontinue factors inherent to their operation that pose an unacceptable risk in terms of zoonotic disease. This approach would address the risk of zoonotic disease outlined in this Article.

## II. CONTEXT

### A. What Are Zoonotic Diseases?

The COVID-19 pandemic has familiarized contemporary society with the threat of zoonotic diseases—that is, diseases that originate in non-human animals. Zoonotic diseases constitute approximately 75% of all newly emerging or re-emerging diseases that infect humans and, as has been demonstrated, pose a significant threat to public health.<sup>17</sup> The non-human animal that begins the process of zoonotic disease emergence is known as the reservoir host. The reservoir host will carry a pathogen, such as a virus, parasite or bacteria that can cause disease. The reservoir host will typically be largely unaffected, but the pathogen may jump to humans or to an intermediary animal before making a further jump to humans. This ‘jump’ is referred to as ‘spillover’,<sup>18</sup> and the consequences of a successful spillover to humans can be devastating. As Quammen outlines, a virus is “the most troublesome.”<sup>19</sup> This is because viruses are “abundant, adaptable, not subject to antibiotics, and only sometimes deterred by antiviral drugs.”<sup>20</sup>

A successful spillover is one where the pathogen jumps and adapts to a human host, becomes established in a local human population and then spreads. In this instance, a zoonotic disease will have successfully emerged. Not all zoonotic diseases are successful. In fact, it is likely that even if spillover occurs, that disease will reach a dead-end and fail to become established in a human population. This may be

---

<sup>17</sup>PREVENTING THE NEXT PANDEMIC, *supra* note 11, at 11.

<sup>18</sup>See Peter Daszak et al., *Emerging Infectious Diseases of Wildlife—Threats to Biodiversity and Human Health*, 287 *SCIENCE* 443, 446 (2000). See also DAVID QUAMMEN, *SPILLOVER* (2012).

<sup>19</sup>David Quammen, *Out of the Wild*, 281 *POPULAR SCI.* 54, 56 (2012).

<sup>20</sup>*Id.*

because that pathogen fails to adapt to the immune response of its human host, or because it does not transmit effectively or efficiently between people.<sup>21</sup> If a zoonotic disease does successfully emerge it may become epidemic or pandemic. In the first instance, the disease will affect people in a given locality, and in the latter instance, the disease will spread across countries and continents.

### B. Drivers of Emerging Zoonotic Infectious Diseases

Contact between humans and animals is fundamental to zoonotic disease emergence.<sup>22</sup> Increased contact provides pathogens with the opportunity to make the jump from animal to human, an opportunity seized by evolution.<sup>23</sup> The UN released a report identifying seven major drivers of zoonotic disease emergence—all of which were anthropogenic and a number of them related directly or indirectly to our relationship with the animals we consume.<sup>24</sup> Despite wet markets being identified as the likely source of COVID-19, increasing demand for animal protein and unsustainable agricultural intensification are the most relevant drivers of zoonotic disease in the United States. This is because live wildlife markets are significantly less common in the United States than intensive animal agriculture. The consumption of animal protein and the associated intensification of animal agriculture therefore present the greatest opportunity for pathogen spillover.

The United States is one of the largest meat consuming countries in the world, with the average American consuming around 58 pounds of beef, 53 pounds of pork, and 110 pounds of poultry in 2019.<sup>25</sup> Comparatively, in 1991, the average American consumed around 67 pounds of beef, 50 pounds of pork, and 80 pounds of poultry.<sup>26</sup> Despite the reduction in the consumption of beef since 1991, the large

---

<sup>21</sup>See Ishan Kukreti, *Bats Spread Viruses, so do Humans*, 29 DOWN TO EARTH 38, 39 (2020).

<sup>22</sup>Increased or full automation of intensive animal agricultural practices—to reduce contact between humans and animals—would further jeopardize animal welfare. Given developments in animal welfare science and particularly our improved understanding of animal sentience, this is highly undesirable. Further, certain factors that are currently inherent to intensive animal agriculture, such as transport of the animals from farm to abattoir, could not foreseeably be automated and thus the risk of zoonotic disease outbreaks would remain even if automation were to increase.

<sup>23</sup>Quammen, *supra* note 19, at 59.

<sup>24</sup>PREVENTING THE NEXT PANDEMIC, *supra* note 11, at 15–17.

<sup>25</sup>OECD, *Meat Consumption*, OECD I LIBRARY, [https://www.oecd-ilibrary.org/agriculture-and-food/meat-consumption/indicator/english\\_fa290fd0-en](https://www.oecd-ilibrary.org/agriculture-and-food/meat-consumption/indicator/english_fa290fd0-en) [https://perma.cc/5T35-EWN3] (last visited Nov. 2, 2021).

<sup>26</sup>*Id.*

increase in poultry consumption means that Americans are eating 24 pounds more animal protein per year than they were around thirty years ago. Further, Americans consume significantly more animal protein than people in many other countries. For instance, the average amount of animal protein consumed per person globally in 2019 was 14 pounds of beef, 24 pounds of pork, and 32 pounds of poultry—around 151 pounds less than the total in the United States.<sup>27</sup>

Intensive animal agriculture, which is the second key driver of zoonotic disease identified by the UN, facilitates these high levels of meat consumption. Intensification of agriculture is evident in relation to all commonly farmed animals in the United States, with intensive operations supplying approximately 99% of all meat products.<sup>28</sup> Moreover, industrialization has increased significantly over the last 20 years.<sup>29</sup> Driven by increasing consumer demand for animal protein, intensified operations seek to increase the production of animal products using minimal space, labor, and expenditure. Industrialization of animal agriculture in the United States is best illustrated by CAFOs. The EPA defines CAFOs as operations that contain more than 1,000 ‘animal units’ for a period of at least forty-five days.<sup>30</sup> An animal unit is the equivalent of 1,000 pounds of a live animal, and thus a CAFO is an operation that contains at least 1,000 cattle, 2,500 pigs, or 125,000 chickens raised for meat consumption.<sup>31</sup> The most recent data suggests that CAFOs supply around 50% of the total number of animals slaughtered for consumption, despite making up only 5% of animal agriculture operations in the US.<sup>32</sup> This Article uses the term ‘intensive’ to refer to CAFOs as well as intensified operations that do not meet the CAFO threshold.

As mentioned above, the farming operations that produce animals typically used for food, such as pigs, poultry, and beef cattle, have been massively scaled up. Pig and poultry farming have seen a rapid

---

<sup>27</sup>*Id.*

<sup>28</sup>Lindsay Walton & Kristen King Jaiven, *Regulating CAFOS for the Well-Being of Farm Animals, Consumers, and the Environment*, 50 ENV'T L. REP. 10485, 10486 (2020). See also SUSAN A. SCHNEIDER, *FOOD, FARMING, AND SUSTAINABILITY: READINGS IN AGRICULTURAL LAW* 24 (Carolina Academic Press, 2d ed. 2016).

<sup>29</sup>SCHNEIDER, *supra* note 28, at 436–46.

<sup>30</sup>*Animal Feeding Operations*, USDA NAT'L RES. CONSERVATION SERV., <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/livestock/afo/> [https://perma.cc/RH4F-8TET] (last visited Nov. 4, 2021).

<sup>31</sup>*Id.* See also SCHNEIDER, *supra* note 28, at 168–71.

<sup>32</sup>DOUG GURIAN-SHERMAN, UNION OF CONCERNED SCIENTISTS, *CAFOS UNCOVERED: THE UNTOLD COSTS OF CONFINED ANIMAL FEEDING OPERATIONS 2* (2008), [https://www.organicconsumers.org/sites/default/files/cafos\\_uncovered.pdf](https://www.organicconsumers.org/sites/default/files/cafos_uncovered.pdf) [https://perma.cc/7BE9-7EUJ] (last visited Nov. 4, 2021).



transformation from small-scale operations to large, intensely concentrated systems. This is perhaps unsurprising given that the United States is the second-largest producer of pork<sup>33</sup> and the largest producer of poultry in the world.<sup>34</sup> In the case of pigs, the scaling-up of the industry is represented by the 70% decline in the number of pig farms in the United States since 1990, despite an increase in the total number of farmed pigs over the same period.<sup>35</sup> As Kelloway and Miller explain, this is “due primarily to a decline in small farms and a rise in large concentrated feeding operations.”<sup>36</sup> A 2008 report by the Pew Commission on Industrial Farm Animal Production explains that “over the last 14 years, the average number of animals per swine operation has increased 2.8 times.”<sup>37</sup> Hsu outlines that in 2012 approximately 96% of all pigs were reared on farms that held at least 1,000 pigs, compared to 7% of all pigs in 1969.<sup>38</sup> This substantial increase demonstrates the transition from largely extensive, small-scale farms to intensely concentrated pig farming operations—a transition that has made the United States one of the world’s largest pork exporters.<sup>39</sup>

An almost identical transition is evident in poultry farming. In 2020, over 9.25 billion broiler chickens—that is, chickens raised for meat consumption—were harvested in the US.<sup>40</sup> Intensive broiler operations are fundamental to this level of output.<sup>41</sup> The Second World War made the consumption of chicken more common, with national campaigns encouraging the population to consume more poultry and less beef, pork, and lamb to save those products “for the army and our allies.”<sup>42</sup> The intensification of the poultry industry occurred

---

<sup>33</sup>*Pork Resources*, USDA, <https://www.usda.gov/topics/animals/animal-production> [<https://perma.cc/K6KR-JJLC>] (last visited Nov. 4, 2021).

<sup>34</sup>MARIN WEAVER, OFF. OF INDUS., U.S. INT’L TRADE COMM’N, POULTRY INDUSTRY & TRADE SUMMARY 1-2 (2014).

<sup>35</sup>*Hogs & Pork*, USDA, <https://www.ers.usda.gov/topics/animal-products/hogs-pork/sector-at-a-glance/> [<https://perma.cc/XH8D-ZVP7>] (last visited Nov. 6, 2021).

<sup>36</sup>CLAIRE KELLOWAY & SARAH MILLER, FOOD AND POWER: ADDRESSING MONOPOLIZATION IN AMERICA’S FOOD SYSTEM 4 (2021).

<sup>37</sup>PEW COMM’N ON INDUS. FARM ANIMAL PROD., PUTTING MEAT ON THE TABLE: INDUSTRIAL FARM ANIMAL PRODUCTION IN AMERICA 6 (2008) [hereinafter PEW REPORT].

<sup>38</sup>Shi-Ling Hsu, *Scale Economies, Scale Externalities: Hog Farming and the Changing American Agricultural Industry*, 94 OR. L. REV. 23, 30 (2015).

<sup>39</sup>*Id.* at 27.

<sup>40</sup>*Broiler Chicken Industry Key Facts 2020*, NAT’L CHICKEN COUNCIL, <https://www.nationalchickencouncil.org/statistic/broiler-industry-key-facts/> [<https://perma.cc/8LSC-QYXT>] (last visited May 10, 2022).

<sup>41</sup>PEW REPORT, *supra* note 37, at 7.

<sup>42</sup>*Meatless, Wheatless . . . and Patriotic: Posters of the US Food Administration*, NEW-YORK HISTORICAL SOCIETY, <https://blog.nyhistory.org/meatless-wheatless-patriotic/> [<https://perma.cc/3WGN-BVL3>].

relatively swiftly following the increase in consumption, with a 1956 report stating that “[g]rowers with a capacity of 1,500 to 10,000 birds fear that they cannot compete successfully with single enterprise growers who use mass production methods and have broiler capacities of 13,000 and perhaps eventually 50,000 or more.”<sup>43</sup> Today, approximately 99% of the more than 9 billion broiler chickens produced in the United States are raised in intensive operations.<sup>44</sup>

The trend towards intensification is also evident in cattle. Approximately 82% of all beef cattle in the United States are raised on intensive operations.<sup>45</sup> Cattle are typically moved to a feedlot for the final phase of production,<sup>46</sup> where they can be confined for a period of 90 to 300 days to fatten, or ‘finish’ them for slaughter.<sup>47</sup> Feedlots containing 1,000 or more heads of cattle supply around 80-85% of all fed cattle, and feedlots that contain at least 32,000 heads of cattle supply approximately 40% of fed cattle.<sup>48</sup> Thus, operations that meet the threshold of a CAFO supply around 85% of all fed cattle. As the U.S. Department of Agriculture (USDA) outlines, “[t]he industry continues to shift towards a small number of very large, specialized feedlots.”<sup>49</sup> This trend in animal agricultural operations exacerbates the risk of zoonotic disease, as the industrialized conditions create a heightened opportunity for pathogens to spill over.

Intensive animal agriculture presents several key risks in relation to zoonotic disease emergence, all arising from factors inherent to the industrialized farming model. These include overcrowding, genetic uniformity, the use of antimicrobials, and the movement of waste and other materials into the external environment. Regarding overcrowding, high densities of animals are a defining element of intensive operations. Large populations are confined in small areas, resulting in increased contact between the animals. For instance, intensively

---

<sup>43</sup>MONICA R. GISOLFI, *THE TAKEOVER: CHICKEN FARMING AND THE ROOTS OF AMERICAN AGRIBUSINESS* 51 (2017) (quoting W.W. HARPER & O.C. HESTER, *INFLUENCE OF PRODUCTION PRACTICES ON MARKETING OF GEORGIA BROILERS* 25 (1956)).

<sup>44</sup>Jacy Reese Anthis, *US Factory Farming Estimates*, SENTIENCE INST. (Apr. 11, 2019), <https://www.sentienceinstitute.org/us-factory-farming-estimates> [https://perma.cc/9ME2-2A5M].

<sup>45</sup>Trevor J. Smith, *Corn, Cows, and Climate Change: How Federal Agricultural Subsidies Enable Factory Farming and Exacerbate U.S. Greenhouse Gas Emissions*, 9 WASH. J. ENV'T L. & POL'Y 26, 48 (2019).

<sup>46</sup>Paul L. Greenwood, *Review: An Overview of Beef Production from Pasture and Feedlot Globally, as Demand for Beef and the Need for Sustainable Practices Increase*, ANIMAL, July 15, 2021, at 2.

<sup>47</sup>*Cattle & Beef*, USDA, <https://www.ers.usda.gov/topics/animal-products/cattle-beef/sector-at-a-glance/> [https://perma.cc/38A9-C3UX].

<sup>48</sup>*Id.*

<sup>49</sup>*Id.*

farmed pigs have about eight square feet of space each.<sup>50</sup> Large populations of animals with high levels of contact can increase the spread of pathogens between them, which may influence the way the disease evolves—potentially creating a disease that is more transmissible or virulent amongst human beings.<sup>51</sup>

Large numbers of animals kept in industrial systems may have a further impact on zoonotic disease emergence due to associated welfare concerns. The high stocking densities inherent to intensive animal agriculture increase frustration within the animals, due to their inability to express natural behaviors. This frustration may manifest in acts of aggression towards other animals. For example, chickens may peck other birds,<sup>52</sup> and pigs may bite the tail of other pigs.<sup>53</sup> The animals are subject to painful interventions such as beak trimming or tail docking to manage these behaviors.<sup>54</sup> Procedures such as these are considered routine husbandry practices within intensive operations and are commonly performed on young animals without pain relief.<sup>55</sup> The procedures can cause chronic pain, physiological stress, and a lower level of overall welfare amongst the animals,<sup>56</sup> which may also contribute to increasing an animal's vulnerability to disease.<sup>57</sup>

Genetic uniformity is also inherent to industrialized animal agriculture, particularly poultry and pig operations. For example, just two breeds of broiler chickens—the 'Cobb 500' and 'Ross 308'—account for most of the more than nine billion chickens produced in the US.<sup>58</sup> These chickens have been selectively bred to have large breasts,

---

<sup>50</sup>Michelle B. Nowlin, *Sustainable Production of Swine: Putting Lipstick on a Pig*, 37 VT. L. REV. 1079, 1084 (2012).

<sup>51</sup>J. OTTE ET AL., INDUSTRIAL LIVESTOCK PRODUCTION AND GLOBAL HEALTH RISKS 6 (2007).

<sup>52</sup>Anastasia S. Stathopoulos, *You Are What Your Food Eats: How Regulation of Factory Farm Conditions Could Improve Human Health and Animal Welfare Alike*, 13 N.Y.U. J. LEGIS. & PUB. POL'Y 407, 413 (2010); Erin Gilgen, *Friends, Food or Fiber: Comparing the Legal Frameworks Protecting Farmed Animals in the United States and the Republic of Ireland*, 72 RUTGERS U. L. REV. 867, 871.

<sup>53</sup>Silvana Pietrosevoli & Clara Tang, *Animal Welfare and Production Challenges Associated with Pasture Pig Systems: A Review*, 10 AGRIC. 223, 234 (2020).

<sup>54</sup>*Id.* at 235.

<sup>55</sup>Justin Marceau, *How the Animal Welfare Act Harms Animals*, 69 HASTINGS L.J. 925, 937–38 (2018).

<sup>56</sup>Greger, *supra* note 15, at 253; Marceau, *supra* note 55, at 937.

<sup>57</sup>Greger, *supra* note 15, at 254.

<sup>58</sup>Sarah Mock, *From Farm to Factory: The Unstoppable Rise of American Chicken*, GUARDIAN (Aug. 17, 2020), <https://www.theguardian.com/environment/2020/aug/17/from-farm-to-factory-the-unstoppable-rise-of-american-chicken> [<https://perma.cc/R2R5-KEA8>]; Michael Scaturro, *How Chickens Became Like Apple and Android Phones*, HEATED (Jan. 15, 2020), <https://heated-medium.com/how-chickens-became-like-apple-and-android-phones-85378e97799e> [<https://perma.cc/23RH-3REC>].

white feathers, and to grow quicker and more efficiently.<sup>59</sup> While selective breeding allows producers to meet consumer demand, the process results in decreased genetic diversity.<sup>60</sup> Low genetic diversity in animal populations can be problematic in terms of zoonotic disease emergence as it may result in decreased immune resistance to pathogens, making the animals more susceptible to disease.<sup>61</sup> Further, large populations of genetically homogenous animals may influence the transmission rate and virulence of pathogens. The Food and Agriculture Organization (FAO) explains the issue, stating that, “in *monocultures* involving mass rearing of genetically identical animals that are selected for high feed conversion, an emerging hyper-virulent pathogen will rapidly spread within a flock or herd.”<sup>62</sup> Trevor Drew further explains that large populations of genetically uniform animals “may select highly pathogenic viral clades, leading to explosive outbreaks of novel disease.”<sup>63</sup> Thus, the large groups of genetically similar animals that are fundamental to industrialized agriculture may operate to heighten the risk of zoonotic disease emergence, as well as the overall danger of the disease.

To manage animal health considering the welfare concerns detailed above, intensive operations commonly utilize antimicrobials. They are administered, often pre-emptively, for the treatment and prevention of diseases and to promote growth.<sup>64</sup> Antibiotic resistance—which occurs when a microorganism develops an ability to resist the effects of antibiotics—is recognized as a “major global public health threat.”<sup>65</sup> The non-therapeutic use of antibiotics in animal agriculture is a key contributor to this threat, given around 80% of all antibiotics sold in the United States are used for animal agriculture.<sup>66</sup>

---

<sup>59</sup>Scaturro, *supra* note 58.

<sup>60</sup>PEW REPORT, *supra* note 37.

<sup>61</sup>Trevor W. Drew, *The Emergence and Evolution of Swine Viral Diseases: To What Extent Have Husbandry Systems and Global Trade Contributes to Their Diversity?*, 30 REVUE SCIENTIFIQUE ET TECHNIQUE 95, 96, 102 (2011); Greger, *supra* note 15, at 243.

<sup>62</sup>FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, WORLD LIVESTOCK 2013: CHANGING DISEASE LANDSCAPES 20 (2013) (emphasis in original).

<sup>63</sup>Drew, *supra* note 61.

<sup>64</sup>Marvi Ali, *Antibiotic Resistance and Ineffective Regulations for Factory Farming*, 10 WAKE FOREST J.L. & POL'Y 87, 87 (2019).

<sup>65</sup>*Antimicrobial Resistance Information from FDA*, FOOD & DRUG ADMIN., (Jan. 1, 2022), <https://www.fda.gov/emergency-preparedness-and-response/mcm-issues/antimicrobial-resistance-information-fda> [<https://perma.cc/2U9A-5JM9>]; *National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS)*, CENTERS FOR DISEASE CONTROL AND PREVENTION (Nov. 21, 2019), <https://www.cdc.gov/narms/faq.html> [<https://perma.cc/U4YQ-DDUU>].

<sup>66</sup>Michael J. Martin, Sapna E. Thottathil & Thomas B. Newman, *Antibiotics Overuse in Animal Agriculture: A Call to Action for Health Care Providers*, 105 AM. J. PUB. HEALTH 2409, 2409 (2015).

The FDA implemented a ban on the use of medically important antibiotics as growth promoters in 2017, and the use of antibiotics for prevention and treatment of disease now requires veterinarian authorization.<sup>67</sup> Despite this, data released by the FDA in 2019 shows a 9% increase in the sale and distribution of medically important antibiotics in animal agriculture between 2017 and 2018.<sup>68</sup> Strains of bacteria in intensively farmed animals that develop a resistance to antibiotics threaten the efficacy of antibiotic use in humans.<sup>69</sup> Overuse and misuse of antibiotics in intensive animal agriculture contribute to the threat of zoonotic disease transmission by both increasing an animal's susceptibility to illness and reducing the available treatment options for bacterial diseases that are available to humans.

Finally, the emission of material such as litter, dander, and animal waste represents a potential gap in biosecurity and may facilitate the spread of pathogens into the environment. Ventilation systems are a necessary component of intensive operations; however, they may aid the transmission of pathogens to nearby animals through the discharge of pollutants into the external environment.<sup>70</sup> Large volumes of animal waste are also an unavoidable element of intensive animal agriculture, with pig CAFOs in North Carolina alone producing approximately 10 billion pounds of wet animal waste per year.<sup>71</sup> Pathogens in animal waste may come into contact with wild or domestic animals, and may also contaminate water, which increases the risk that a disease will spread.<sup>72</sup> Taken together, the various factors that are inherent to industrial animal agriculture, including high densities of genetically uniform animals, antibiotic use, and the potential for pathogen spread into the environment, significantly increase the risk of zoonotic disease emergence.

---

<sup>67</sup>*Antibiotic/Antimicrobial Resistance (AR/AMR)*, CENTERS FOR DISEASE CONTROL AND PREVENTION, (Nov. 22, 2021) <https://www.cdc.gov/drugresistance/food.html> [<https://perma.cc/2CZL-S9DN>].

<sup>68</sup>Chris Dall, *FDA Details Rising Sales of Antibiotics for Meat Production*, CTR. FOR INFECTIOUS DISEASE RSCH. & POL'Y (Dec. 11, 2019), <https://www.cidrap.umn.edu/news-perspective/2019/12/fda-details-rising-sales-antibiotics-meat-production> [<https://perma.cc/VKK8-DAKJ>].

<sup>69</sup>Ali, *supra* note 64, at 87.

<sup>70</sup>OTTE ET AL., *supra* note 51, at 9; Bryony A. Jones et al., *Zoonosis Emergence Linked to Agricultural Intensification and Environmental Change*, 110 PROC. NAT'L ACAD. SCI. U.S. 8399, 8401 (2012).

<sup>71</sup>*North Carolina Pure Farms, Pure Waters*, WATERKEEPER ALL., <https://waterkeeper.org/north-carolina-pure-farms-pure-waters/> [<https://perma.cc/2TTV-D8HL>] (last visited Jan. 23, 2022).

<sup>72</sup>Jones et al., *supra* note 70, at 8401.

### C. The Impact of Human Behavior on Zoonotic Disease Emergence

The threat of intensive animal agriculture has been evidenced by previous instances of zoonotic disease emergence. One such example is Nipah Virus, which first infected humans in 1997.<sup>73</sup> Nipah Virus made the jump from fruit bats to pigs on an intensive pig farm in Malaysia.<sup>74</sup> As Jones et al. outline, “[r]espiratory spread of infection between pigs was facilitated by high pig farm density and transport of pigs between farms to the main outbreak area in south Malaysia.”<sup>75</sup> In this outbreak, the large number of susceptible pigs acted as an intermediary host before spillover to humans occurred.<sup>76</sup> A second example can be found in strains of highly pathogenic avian influenza, such as H5N1. This virus was first detected in humans in 1997, with domestic poultry acting as the intermediary host.<sup>77</sup> Intensive poultry farming was recognized, at least in part, as the root cause behind the emergence of H5N1.<sup>78</sup>

The swine flu pandemic can also be attributed to intensive animal agriculture—specifically, to intensive pig farms in the US.<sup>79</sup> While the virus was first identified in humans in Mexico, virologists determined that the strain detected in Mexico was the same as the strain detected in intensive pig farms in North Carolina years earlier.<sup>80</sup> Further, while a link has never been established, the town at the center of the outbreak, La Gloria, was located next to one of Mexico’s largest swine operations.<sup>81</sup> Finally, bovine spongiform encephalopathy, or ‘mad cow disease’, can also be linked to the way humans treat animals raised for consumption. Mad cow disease spread because cattle were commonly given feed containing parts of cattle that had been infected with the disease. This process of cannibalizing herbivorous cows was

---

<sup>73</sup>*Id.*

<sup>74</sup>Kukreti, *supra* note 21, at 43.

<sup>75</sup>Jones et al., *supra* note 70, at 8401.

<sup>76</sup>*Id.*

<sup>77</sup>Kukreti, *supra* note 21, at 44; Michael Greger, *Primary Pandemic Prevention*, 15 AM. J. OF LIFESTYLE MED., 498, 499–500 (2021).

<sup>78</sup>Greger, *supra* note 77, at 499; John Vidal, *Flying in the Face of Nature*, THE GUARDIAN, (Feb. 23, 2006), <https://www.theguardian.com/society/2006/feb/22/health.birdflu> [<https://perma.cc/YE9S-ZVAY>].

<sup>79</sup>Greger, *supra* note 77, at 499; PREVENTING THE NEXT PANDEMIC, *supra* note 11, at 1; Kukreti, *supra* note 21, at 44.

<sup>80</sup>*Id.* at 44.

<sup>81</sup>Jo Tuckman, “My Head Hurt a Lot” – Child Who Could Reveal Origin of Swine Flu Outbreak, THE GUARDIAN (Apr. 29, 2009), <https://www.theguardian.com/world/2009/apr/29/swine-flu-outbreak-mexico>.

prompted by the substantial volume of cattle raised for human consumption.<sup>82</sup> This is because human beings only consume about 40% of the weight of each cow slaughtered for consumption, leaving billions of pounds of animal parts that must be dealt with.<sup>83</sup> These parts were rendered into meat-and-bone meal and fed to cows, which also increased productivity in intensive operations.<sup>84</sup> A variant of mad cow disease—Creutzfeldt-Jakob disease—was then passed to humans who consumed the infected cattle. These various instances of zoonotic disease emergence demonstrate that intensive animal agriculture poses a significant risk to public health.

The Pew Commission recognized this risk in 2008 and emphasized that “[t]he present system of producing food animals in the United States is not sustainable and presents an unacceptable level of risk to public health.”<sup>85</sup> The production of ‘food animals’ in the United States has been largely unabated by this finding, with industrialization having increased since 2008.<sup>86</sup> Further, with the global population set to increase to 9.7 billion in 2050,<sup>87</sup> a significant increase in agricultural output will likely be required to meet the demand for animal products if meat consumption continues at current rates.<sup>88</sup> Given that agriculture already occupies approximately 50% of all habitable land, and farmed animals account for 77% of all farming land,<sup>89</sup> opportunity for agricultural expansion is somewhat limited. As a result, intensification of agriculture will likely increase, along with the risk of zoonotic disease emergence. As Jason R. Rohr et al. outline, this risk is exacerbated given that

the expansion and intensification of agriculture are disproportionately occurring in tropical, developing countries, where 75% of deaths are

---

<sup>82</sup>David Benatar, *The Chickens Come Home to Roost*, 97 AM. J. PUB. HEALTH 1545, 1545 (2007).

<sup>83</sup>MAXIME SCHWARTZ, HOW THE COWS TURNED MAD: UNLOCKING THE MYSTERIES OF MAD COW DISEASE xi (2004).

<sup>84</sup>*Id.* at xi, 147; *All About BSE (Mad Cow Disease)*, FOOD AND DRUG ADMIN. (Jul. 23, 2020), <https://www.fda.gov/animal-veterinary/animal-health-literacy/all-about-bse-mad-cow-disease> [<https://perma.cc/564Q-4YY2>].

<sup>85</sup>PEW REPORT, *supra* note 37, at viii.

<sup>86</sup>See Christopher Walljasper, Midwest Center for Investigative Reporting, *Large Animal Feeding Operations on The Rise*, IOWA WATCH (Jun. 29, 2018), <https://www.iowa-watch.org/2018/06/29/large-animal-feeding-operations-on-the-rise/> [<https://perma.cc/3MT2-4S79>].

<sup>87</sup>*Population*, U. N., <https://www.un.org/en/global-issues/population> [<https://perma.cc/B53C-35YJ>] (last visited Jan. 23, 2022).

<sup>88</sup>FOOD AND AGRIC. ORG., GLOBAL AGRICULTURE TOWARDS 2050 (2009), [https://www.fao.org/fileadmin/user\\_upload/lon/HLEF2050\\_Global\\_Agriculture.pdf](https://www.fao.org/fileadmin/user_upload/lon/HLEF2050_Global_Agriculture.pdf) [<https://perma.cc/MQ3C-F6WD>].

<sup>89</sup>Hannah Ritchie, *Half of the World's Habitable Land is Used for Agriculture*, OUR WORLD IN DATA (Nov. 11, 2019), <https://ourworldindata.org/global-land-for-agriculture> [<https://perma.cc/J9SZ-FSTC>].

attributable to infectious diseases, where the risk of disease emergence might be greatest, and where disease surveillance and access to health care, particularly for those infections that accompany extreme poverty, are most limited.<sup>90</sup>

Thus, if current consumption trends continue, intensive animal agriculture is set to increase despite being recognized as a key driver of zoonotic disease, and the threat of zoonotic disease emergence will likely increase in tandem.

The expanding world population and increasing demand for animal food products necessitates a prioritization of food production—an interest that may outweigh the risk of zoonotic disease emergence posed by intensive animal agriculture. However, intensive animal agriculture may not be the most efficient system to meet these demands. As identified by Cassidy et al., “[w]hile efficiencies of feed-to-edible food conversions have increased over time, the ratio of animal product calories to feed calories is, on average, still only about 10%. This suggests using human-edible crops to feed animals is an inefficient way to provide calories to humans.”<sup>91</sup> Thus, rather than focusing on increasing intensive production, demand for food protein could instead be met with plant-based proteins. Shepon et al. explain that “[p]lant-based diets can also serve as a viable replacement for animal products, and confer larger mean environmental and food availability gains.”<sup>92</sup> These systems would also significantly reduce the zoonotic disease risk.

The COVID-19 pandemic has given the world a preview into the impact of a successful zoonotic disease emergence, with devastating consequences for public health and global economies. However, as Michael Greger identifies, COVID-19 could be just a “dress rehearsal” for much greater zoonotic threats.<sup>93</sup> For instance, while the H5N1 virus mentioned above has not yet gained the ability to easily transmit between human beings, more than half of all human beings infected by the virus have died.<sup>94</sup> Comparatively, in the United States the case

---

<sup>90</sup>Jason R. Rohr, *Emerging Human Infectious Diseases and the Links to Global Food Production*, 2 NATURE SUSTAINABILITY 445, 446 (2019).

<sup>91</sup>Emily S. Cassidy et al., *Redefining Agricultural Yields: From Tonnes to People Nourished Per Hectare*, ENV'T RSCH. LETTERS, Aug. 2013, at 2.

<sup>92</sup>Alon Shepon et al., *Energy and Protein Feed-To-Food Conversion Efficiencies in the US and Potential Food Security Gains from Dietary Changes*, 11 ENV'T RSCH. LETTERS, Oct. 2016, at 5 (citations omitted).

<sup>93</sup>Greger, *supra* note 77, at 499.

<sup>94</sup>*Id.*



fatality rate of COVID-19 is around 1.2%.<sup>95</sup> The threat of the next zoonotic disease may therefore be much greater than the current crisis. The next section of this Article considers the adequacy of the regulations in place to reduce this threat.

### III. CURRENT LAW IN THE UNITED STATES IN RELATION TO INTENSIVE ANIMAL AGRICULTURE

#### d. Background

##### 1. The Anthropocentric Foundation

Intensive animal agriculture and the laws that regulate it are representative of broader notions of domination that underpin the human-animal relationship. Human dominion over animals and the wider environment is a fundamental tenet of all western legal systems.<sup>96</sup> These systems place human beings at the center of existence, with all remaining elements of the earth left to occupy the periphery—a hierarchy that can be described as anthropocentric.<sup>97</sup> This is because human beings are positioned as subjects, independent and separate from non-human objects. Laws operate primarily for the interests of human beings under an assumed hierarchy that considers non-humans to be inferior ‘others.’<sup>98</sup> Accordingly, under western legal systems, the interests of animals are afforded only indirect consideration where doing so aligns with human interests. Robert Garner explains that “the level of protection afforded to an individual animal depends, not just—if at all—upon its needs and interests, but upon the institutional and legislative structure governing the particular use to which it is being put.”<sup>99</sup> Where the use of an animal results in some degree of benefit to human beings, the laws regulating that use typically subordinate animal interests in favor of human benefit.

This is illustrated by the regulation of intensive animal agriculture in the US, which permits industrial farming methods that maximize human benefit at the expense of animal welfare. A key component of

---

<sup>95</sup>*Mortality Analyses*, JOHNS HOPKINS UNIV. & MED., <https://coronavirus.jhu.edu/data/mortality> [https://perma.cc/7DM8-QL5X] (last visited Jan. 23, 2022).

<sup>96</sup>Peter Burdon, *The Earth Community and Ecological Jurisprudence*, 3 OÑATI SOCIO-LEGAL SERIES 815, 818 (2013); NICOLE GRAHAM, *LAWSCAPE, PROPERTY, ENVIRONMENT, LAW* 15 (2011).

<sup>97</sup>Cormac Cullinan, *A History of Wild Law*, in *EXPLORING WILD LAW: THE PHILOSOPHY OF EARTH JURISPRUDENCE* 12, 21 (Peter Burdon ed., 2011).

<sup>98</sup>Maneesha Deckha, *Critical Animal Studies and Animal Law*, 18 *ANIMAL L.* 207, 217–20 (2012).

<sup>99</sup>ROBERT GARNER, *POLITICAL ANIMALS: ANIMAL PROTECTION POLITICS IN BRITAIN AND THE UNITED STATES* 21 (1998).

the industrialized farming model is the large number of animals slaughtered each year. As mentioned above, over 9.25 billion broiler chickens were slaughtered in the United States in 2020.<sup>100</sup> There were also approximately 132 million pigs, 32.8 million cattle, 2.23 million lamb and sheep, and 456,400 calves slaughtered in 2020.<sup>101</sup> This means that there were over 9,417,486,400 animals slaughtered in 2020 in the US. This number does not include fish, whose deaths are measured in tons.<sup>102</sup> The sheer volume of animals slaughtered for human consumption each year is indicative of the way the law favors human benefit to the detriment of animal interests.

The legal anthropocentrism evident in the regulation of intensive animal agriculture permits the mass exploitation of non-humans to satisfy human interests. This extends to the industrial farming methods that facilitate mass exploitation. The efficient production of animal meat achieved by intensive animal agriculture is protected by the law and prioritized over animal welfare. For example, broiler chickens raised in intensive settings are kept in overcrowded sheds with around 20,000 to 30,000 other chickens, with less than one square foot of space per chicken.<sup>103</sup> As previously indicated, the large numbers of chickens and the level of confinement frustrates their natural behaviors, including their ability to socially organize and dust bathe.<sup>104</sup> In turn, this increases stress amongst the birds and causes aggressive behaviors such as feather pecking, which can result in harm to the chickens.<sup>105</sup> To counter this behavior, it is common

---

<sup>100</sup>Broiler Chicken Industry Key Facts 2020, NAT'L CHICKEN COUNCIL, <https://www.nationalchickencouncil.org/statistic/broiler-industry-key-facts/> [https://perma.cc/6K32-L4PN] (last visited Jan. 23, 2022).

<sup>101</sup>USDA, LIVESTOCK SLAUGHTER 2020 SUMMARY 6 (2021), <https://downloads.usda.library.cornell.edu/usda-esmis/files/r207tp32d/sj139x554/7w62g4561/lsan0421.pdf> [https://perma.cc/S8Z3-XWSZ].

<sup>102</sup>The U.S. produced 5.47 million tons of wild and farmed fish in 2017. Hannah Ritchie & Max Roser, *Fish and Overfishing*, OUR WORLD IN DATA (Oct. 2021), <https://ourworldindata.org/fish-and-overfishing> [https://perma.cc/EQ4S-WEN4].

<sup>103</sup>Mary Maerz, *Corporate Cruelty: Holding Factory Farms Accountable for Animal Cruelty Crimes to Encourage Systemic Reform*, 16 ANIMAL & NAT. RES. L. REV. 137, 143 (2020); Felicity Lawrence, *If Consumers Knew How Farmed Chickens Were Raised, They Might Never Eat Their Meat Gain*, THE GUARDIAN (Apr. 24, 2016), <https://www.theguardian.com/environment/2016/apr/24/real-cost-of-roast-chicken-animal-welfare-farms>; NAT'L CHICKEN COUNCIL, NATIONAL CHICKEN COUNCIL ANIMAL WELFARE GUIDELINES AND AUDIT CHECKLIST FOR BROILERS 12 (2020), [https://www.nationalchickencouncil.org/wp-content/uploads/2020/12/NCC-Animal-Welfare-Guidelines\\_Broiler-Breeders\\_Dec2019.pdf](https://www.nationalchickencouncil.org/wp-content/uploads/2020/12/NCC-Animal-Welfare-Guidelines_Broiler-Breeders_Dec2019.pdf) [https://perma.cc/XLR3-WDBD].

<sup>104</sup>Christine Parker et al., *The Meat in the Sandwich: Welfare Labelling and the Governance of Meat Chicken Production in Australia*, 45 J.L. & SOC'Y 341, 349 (2018).

<sup>105</sup>Tarah Heinzen & Abel Russ, *Using Emerging Pollution Tracking Methods to Address the Downstream Impacts of Factory Farm Animal Welfare Abuse*, 31 PACE ENV'T L. REV. 475, 480 (2014).

practice in the industrial poultry industry for producers to partially amputate the tip of a chicken's beak without anesthesia, using a hot-blade or infrared technology.<sup>106</sup> A chicken's beak contains pain receptors and this procedure can therefore cause them acute and chronic pain.<sup>107</sup>

Further, to maximize productivity, efficiency, and profit, broiler chickens have been selectively bred to reach slaughter weight rapidly with less feed. Zuidhof et al. demonstrated that the growth rate of broiler chickens has increased by over 400% from 1957 to 2005, while feed requirements reduced by around 50%.<sup>108</sup> Such rapid growth can strain their heart, lungs, and legs, impacting their balance, ability to walk, and leading to respiratory problems and heart attacks.<sup>109</sup> Intense confinement, high stocking densities, painful surgical procedures, and selective breeding are elements inherent to industrial poultry farming and each element substantially increases productivity, efficiency, and profit. It is also clear that these farming methods negatively impact the welfare outcomes of each chicken. The subordination of the latter in favor of the former is representative of legal anthropocentrism in the regulation of intensive animal agriculture.

Pigs in intensive settings face similar conditions, both in terms of confinement and surgical procedures. Male piglets in the United States are commonly castrated without anesthesia or analgesia.<sup>110</sup> Castration is performed to avoid boar taint in male pigs, which is an odor and taste in pork that consumers find unpleasant.<sup>111</sup> The procedure is commonly performed with a surgical blade in the first few days

---

<sup>106</sup>David N. Cassuto & Tala DiBenedetto, *Suffering Matters: NEPA, Animals, and the Duty to Disclose*, 42 U. HAW. L. REV. 41, 55 (2020); Tarah Heinzen & Abel Russ, *Using Emerging Pollution Tracking Methods to Address the Downstream Impacts of Factory Farm Animal Welfare Abuse*, 31 PACE ENV'T L. REV. 475, 480-81 (2014).

<sup>107</sup>Amanda Wright, *Improving the Welfare of Egg-Laying Hens Through Acknowledgement of Freedoms*, 9 J. ANIMAL & NAT. RES. L. 169, 176-77 (2013).

<sup>108</sup>M.J. Zuidhof et al., *Growth, Efficiency, and Yield of Commercial Broilers from 1957, 1978, and 2005*, 93 POULTRY SCI. 2970, 2980 (2014); Craig W. Tallentire et al., *Breeding for Efficiency in the Broiler Chicken: A Review*, 36 AGRONOMY SUSTAINABLE DEV. 66, 67 (2016).

<sup>109</sup>Lawrence, *supra* note 103; Cassuto & DiBenedetto, *supra* note 105106, at 52-53.

<sup>110</sup>*Literature Review on the Welfare Implications of Swine Castration*, AM. VETERINARY MED. ASS'N (May 29, 2013), [https://www.avma.org/sites/default/files/resources/swine-castration\\_bgnd.pdf](https://www.avma.org/sites/default/files/resources/swine-castration_bgnd.pdf) [<https://perma.cc/RB2C-BKCV>]; Kelsey Eberly, *Establishing and Enforcing a Right to Truthful Information about Pig Farming in a Fake News Era*, 34 J. LAND USE & ENV'T L. 291, 295-96 (2019).

<sup>111</sup>*Literature Review on the Welfare Implications of Swine Castration*, *supra* note 110.

of a piglet's life.<sup>112</sup> As pigs are sentient beings,<sup>113</sup> the procedure can cause acute pain.<sup>114</sup> “[H]igh-pitched squealing and pain-indicative behaviors, such as trembling and lying alone” can be observed.<sup>115</sup> Pigs in intensive operations also routinely have their tails cut with clippers without pain relief.<sup>116</sup> This industry practice is designed to prevent pigs from biting each other's tails, which can cause significant injury to the recipient pig and may lead to infection.<sup>117</sup> However, tail biting is largely a symptom of intensive conditions. Barren, overcrowded conditions increase tail-biting behavior, and tail docking is not required if welfare needs are met.<sup>118</sup> For instance, pigs have been found to be 50% less likely to engage in tail biting behavior if provided with straw.<sup>119</sup>

Female pigs in the United States are also commonly confined in gestation and farrowing crates that are essentially the same size as the pig and prevent her from turning around.<sup>120</sup> The intense confinement has significant welfare impacts resulting from an extended lack of exercise and an inability to perform natural behaviors.<sup>121</sup> While gestation crates are illegal in some U.S. states, and despite an industry commitment to a phase-out by 2022, they were still regularly used on more than 75% of United States pig farms in 2018.<sup>122</sup> As is typical of industrial farming methods, surgical procedures and intense confinement are utilized to increase efficiency while maintaining the welfare of the animals at a minimum level that ensures they will be productive

---

<sup>112</sup>Eberly, *supra* note 110, at 295–96.

<sup>113</sup>See Donald M. Broom, *Considering Animals' Feelings*, 1 ANIMAL SENTIENCE, 2016, at 8–9.

<sup>114</sup>Rebecca Morrison & Paul Hemsworth, *Tail Docking of Piglets 1: Stress Response of Piglets to Tail Docking*, 10 ANIMALS 1701, 1707 (2020).

<sup>115</sup>AM. VETERINARY MED. ASS'N, *supra* note 110, at 2.

<sup>116</sup>Eberly, *supra* note 110, at 295–96.

<sup>117</sup>Morrison & Hemsworth, *supra* note 114, at 1702.

<sup>118</sup>Eberly, *supra* note 110, at 296.

<sup>119</sup>Mhairi A. Sutherland & Cassandra Tucker, *The Long and Short of It: A Review of Tail Docking in Farm Animals*, 135 APPLIED ANIMAL BEHAV. SCI. 179, 180–81 (2011).

<sup>120</sup>See THE HUMANE SOC'Y OF THE U. S., AN HSUS REPORT: WELFARE ISSUES WITH GESTATION CRATES FOR PREGNANT SOWS 1 (2013); *Welfare Issues for Pigs*, COMPASSION IN WORLD FARMING (last visited Jan. 23, 2022) <https://www.ciwf.com/farmed-animals/pigs/welfare-issues/> [https://perma.cc/AXW5-H45W].

<sup>121</sup>THE HUMANE SOC'Y OF THE U. S., *supra* note 120, at 3.

<sup>122</sup>Lynne Curry, *After a Decade of Promises, Has the Food Industry Made Progress on Gestation Crates?*, CIV. EATS (Mar. 21, 2018), <https://civileats.com/2018/03/21/after-a-decade-of-promises-has-the-food-industry-made-progress-on-gestation-crates/> [https://perma.cc/GD49-NLF8]; Natasha Daly, *California Voted to Improve Pig Welfare. The Pork Industry is Facing a Reckoning.*, NAT'L GEOGRAPHIC (Aug. 13, 2021), <https://www.nationalgeographic.com/animals/article/california-voted-to-improve-pig-welfare-the-pork-industry-is-facing-a-reckoning> [https://perma.cc/RV52-U6YC].

and generate profit. Legalized practices such as these are indicative of the way in which the law prioritizes human interests over an animal's interest in its welfare.

Intensive animal agriculture and the laws that permit it can be described as inherently anthropocentric. The animals are 'othered' in a manner that allows their sentience to be disregarded. In turn, this allows standard industry practices, such as intense confinement and painful surgical procedures, to be carried out with only indirect consideration of the animal's interests. It is beneficial to producers to consider the interests of an animal in the context of maintaining a level of welfare that delivers the desired food product. For instance, neglecting the nutritional needs of an animal would not be in the interests of producers, as it would impact productivity and potentially compromise the end product, and thus the available profit. In practice, this mechanizes the animals and serves to make their welfare valuable only as it relates to efficiency and productivity. While this anthropocentric approach benefits human interests in the first instance, the failure to recognize the interdependency between human health and animal health increases the risk of zoonotic disease emergence which may be detrimental to human interests overall.

## 2. Animals as Property

Legal anthropocentrism in relation to animals is both facilitated and further defined by the legal status of animals in the United States, which is one of property.<sup>123</sup> As property, animals are unable to hold rights and can generally be treated as humans see fit, subject to some legal restrictions.<sup>124</sup> The property status of animals is fundamental to the legal anthropocentrism that they are subject to, as it positions them as resources to be valued only insofar as they benefit humans. Likewise, the status of humans as legal persons is fundamental to the view that humans are separate from and superior to all other beings.

This strict legal separation is, however, becoming somewhat blurred. For example, all fifty American states have animal cruelty legislation that seeks to protect animals from harm which constitutes an implicit recognition of animal sentience that is not evident in

---

<sup>123</sup>Jane Kotzmann & Morgan Stonebridge, *There is Value in Stating the Obvious: Why United States Legislatures Should Explicitly Recognize Animal Sentience in their Laws*, 30 CORNELL J. L. & PUB. POL'Y 425, 460 (2021); *Animals' Legal Status*, ANIMAL LEGAL DEF. FUND (last visited Jan. 23, 2022), <https://aldf.org/issue/animals-legal-status/> [<https://perma.cc/GL87-8CZK>].

<sup>124</sup>Jane Kotzmann, *Recognising the Sentience of Animals in Law: A Justification and Framework for Australian States and Territories*, 42 SYDNEY L. REV. 281, 283 (2020).

relation to other forms of property.<sup>125</sup> A further example in some states is a departure from the traditional assessment of damages. Generally, if a companion animal dies or is injured due to the intentional or reckless actions of a person, only the market value of the animal is considered by the courts when estimating damages.<sup>126</sup> However, some state legislatures have addressed this by allowing for the recovery of damages for emotional distress or burial costs.<sup>127</sup> In Illinois, for instance, owners of companion animals may recover the market value of their pets, as well as “veterinary expenses incurred on behalf of the animal, any other expenses incurred by the owner in rectifying the effects of the cruelty, pain, and suffering of the animal, and emotional distress suffered by the owner.”<sup>128</sup> While still confined within the traditional property framework, changes such as these represent the way incremental advancements are disentangling animals from traditional concepts of property.

Such advancements, however, are largely limited to companion animals. This is because farmed animals are typically subject to different legal protections than companion animals, which allows significant differences in their treatment. Thus, while companion animals have been awarded (limited) advancements that distance them slightly from their status as property, farmed animals remain positioned largely as resources—property to be used for the benefit of humans. The following sections will discuss the way the law treats farmed animals, and how this impacts the risk of zoonotic disease emergence.

#### e. Regulation of Intensive Animal Agriculture in the US

A complex patchwork of various federal and state laws is in place to regulate intensive animal agriculture, which both directly and indirectly impacts the extent to which intensive animal agriculture poses a risk for zoonotic disease transmission. Relevant laws relate to animal welfare, surveillance, depopulation and disposal and environmental protection. We provide an overview of these laws below.

---

<sup>125</sup>Kotzmann & Stonebridge, *supra* note 123 at 441; ANIMAL LEGAL DEF. FUND, *supra* note 123.

<sup>126</sup>Kotzmann & Stonebridge, *supra* note 123 at 460; ANIMAL LEGAL DEF. FUND, *supra* note 123.

<sup>127</sup>Debra D. Burke, *A Clarion Call for Emotional Damages in Loss of Companion Pet Cases*, 15 TENN. J.L. & POL’Y 250, 303–04 (2021); Sande L. Buhai, *Pets as Property: Signs of Change in the Law of Judgement Collections*, 26 ANIMAL L. 171 (2020).

<sup>128</sup>510 ILL. COMP. STAT. ANN. § 70/16.3 (West 2018).

### 1. Federal and State Animal Welfare Laws

The primary federal law relating to animal welfare in the United States is the Animal Welfare Act (AWA).<sup>129</sup> However, farmed animals are (and have always been) explicitly excluded from the protections provided under the AWA.<sup>130</sup> Given that farmed animals account for approximately 98% of all animals with which humans interact in the United States,<sup>131</sup> this is a significant exclusion and places a heavy onus on state legislatures to ensure the welfare of farmed animals. The Preventing Animal Cruelty and Torture Act 2019 (PACT Act) at first glance appears relevant to this discussion, as it prohibits causing “serious bodily injury” to an animal.<sup>132</sup> Nevertheless, the PACT Act is directed towards the prevention and criminalization of acts of animal cruelty that underlie the creation of animal ‘crush videos,’ rather than acts of animal cruelty more generally and thus lacks relevance to the issue of zoonotic disease transmission.

Given the federal legislative void,<sup>133</sup> all fifty states have enacted wide-ranging animal welfare legislation.<sup>134</sup> In some states, provisions have been enacted specifically to protect farmed animals, or livestock.<sup>135</sup> The prohibitions and the extent to which they protect farmed animals vary between states. To convey the way most intensively farmed animals in the United States are regulated, we provide an overview of animal welfare laws relevant to farmed animals in the five states with the highest number of large CAFOs. As noted above, an animal feeding operation is one where animals are confined in a place that lacks crops or other vegetation and fed for at least forty-five

---

<sup>129</sup>7 U.S.C. § 2131.

<sup>130</sup>7 U.S.C. § 2132(g). See also Walton & King Jaiven, *supra* note 16, at 216.

<sup>131</sup>David J. Wolfson & Mariann Sullivan, *Foxes in the Hen House: Animals, Agribusiness, and the Law: A Modern American Fable*, in ANIMAL RIGHTS: CURRENT DEBATES AND NEW DIRECTIONS 205, 206 (Cass R. Sunstein & Martha C. Nussbaum eds., 2004).

<sup>132</sup>18 U.S.C. § 48(a)(1), (f)(1).

<sup>133</sup>Note that the federal Humane Methods of Slaughter Act (7 U.S.C.A. §§ 1901–1907) is incorporated into the Federal Meat Inspection Act, which is discussed at Part II(B)(2) below. The Twenty-Eight Hour Law (49 U.S.C. § 80502) relates to the transportation of farmed animals but does not apply to poultry. The restrictions on confining animals also do not apply if those animals are transported by vehicle, and it is therefore unlikely to have significant impact on zoonotic disease emergence.

<sup>134</sup>*Laws that Protect Animals*, ANIMAL LEGAL DEF. FUND, <https://aldf.org/article/laws-that-protect-animals/> [https://perma.cc/SD48-5VEE] (last visited Apr. 16, 2022).

<sup>135</sup>For example, in Texas the Texas Penal Code § 42.09 prohibits cruelty to livestock. TEX. PENAL CODE ANN. § 42.09 (West 2021).

days within a twelve-month timeframe.<sup>136</sup> A large CAFO is defined by reference to the number of animals it confines. For example, a facility that confines cattle (other than mature dairy cows or veal calves) is large if it holds 1,000 or more cows.<sup>137</sup>

Pursuant to this approach, we look at the relevant legislation and cases in Iowa, Nebraska, Minnesota, North Carolina and California.<sup>138</sup> Iowa has by far the largest number of CAFOs in the US, with 3,896 CAFOs in operation.<sup>139</sup> Nebraska is the second largest state for CAFOs, with 1,743 CAFO facilities.<sup>140</sup> Following Nebraska, and in order of size are Minnesota (1,464 CAFOs), North Carolina (1,222 CAFOs) and California (1,083 CAFOs).<sup>141</sup>

a. Iowa

Iowa's general animal welfare legislation is found in Chapter 717B of the Iowa Code.<sup>142</sup> However, livestock are expressly excluded from these protections.<sup>143</sup> Further, under 717B.3A, where a person acts pursuant to laws that allow the conduct, they are not guilty of animal torture even if the act would seemingly fulfil the definition of intentionally or knowingly inflicting on an animal severe and prolonged or repeated physical pain that causes the animal's serious injury or death. In operation, this provision would seem to exempt common animal husbandry practices.<sup>144</sup>

---

<sup>136</sup>40 C.F.R. § 122.23(b) (2021); *Animal Feeding Operations (AFOs)*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/npdes/animal-feeding-operations-afos> [<https://perma.cc/9XPH-KPSP>] (last visited Jan. 26, 2022).

<sup>137</sup>40 C.F.R. § 122.23(b)(4) (2021).

<sup>138</sup>NPDES CAFO Regulations Implementation Status Reports, U.S. ENV'T PROT. AGENCY (May 19, 2021), <https://www.epa.gov/npdes/npdes-cafo-regulations-implementation-status-reports> [<https://perma.cc/MAD3-BDDB>].

<sup>139</sup>U.S. ENV'T PROT. AGENCY, NPDES CAFO PERMITTING STATUS REPORT: NATIONAL SUMMARY, END YEAR 2020, at 1 (2021), [https://www.epa.gov/sites/default/files/2021-05/documents/cafo\\_status\\_report\\_2020.pdf](https://www.epa.gov/sites/default/files/2021-05/documents/cafo_status_report_2020.pdf) [<https://perma.cc/RWF5-J7EC>] [hereinafter CAFO REPORT]. It is noteworthy that there has been some support for a moratorium on the creation of new CAFOs in Iowa. See Donelle Eller, *Group Takes Aim at Large Livestock Operations it says Pollutes Iowa's Water*, DES MOINES REG. (Feb. 9, 2021), <https://www.desmoinesregister.com/story/money/agriculture/2021/02/09/iowa-lawmakers-join-environmentalists-calling-halt-large-livestock-operations/4436620001/> [<https://perma.cc/75C3-5932>].

<sup>140</sup>CAFO REPORT, *supra* note 139.

<sup>141</sup>*Id.* For more detailed information relating to the number of animals raised as farmed animals in each state see the United States Agricultural Census 2017. U. S. DEP'T OF AGRIC., 2017 CENSUS OF AGRIC. (2019) <https://www.nass.usda.gov/Publications/AgCensus/2017/index.php> [<https://perma.cc/P357-5888>].

<sup>142</sup>IOWA CODE § 717B (2022).

<sup>143</sup>*Id.* § 717B.1.

<sup>144</sup>ANIMAL WELFARE INST., LEGAL PROTECTIONS FOR ANIMALS ON FARMS 3 (2018), <https://awionline.org/sites/default/files/uploads/documents/FA-AWI-LegalProtections->



In Iowa, separate protections for farmed animals are in Chapter 717 of the Iowa Code.<sup>145</sup> These protections are less than those provided for other animals under Chapter 717B.<sup>146</sup> Chapter 717 creates an offence of livestock abuse, which occurs where a “person intentionally injures or destroys livestock owned by another person,” subject to specified exceptions.<sup>147</sup> Similarly, it creates an offence of neglecting farmed animals, which occurs where “[a] person ... impounds or confines livestock” and fails to provide the farmed animals with care or sustenance, or “[i]njures or destroys livestock by any means which causes pain or suffering in a manner inconsistent with customary animal husbandry practices.”<sup>148</sup> The legislation empowers a law enforcement officer to rescue neglected farmed animals in specified circumstances where a search warrant for that purpose has been obtained, where entry onto the premises is compliant with federal and state laws, or where a veterinarian has stated that the farmed animal is neglected.<sup>149</sup> It also requires that farmed animals be provided with sustenance pursuant to court order.<sup>150</sup>

Also relevant to the treatment of farmed animals is Chapter 717A of the Iowa Code, entitled “Offenses Relating to Agricultural Production.”<sup>151</sup> This Chapter criminalizes various actions in relation to agricultural production facilities. These offences include: destroying an animal facility’s property or injuring or killing an animal confined at such a facility; exercising control over an animal facility or an animal confined at the facility with the purpose of divesting the facility of an animal or property; and entering an animal facility where the person knows it is not open to the public and has a specified intent.<sup>152</sup> It also creates an offence of agricultural production facility fraud, made out where a person attains access to an agricultural production facility by deception.<sup>153</sup> Similarly, agricultural production facility trespass is made out where a person uses deception to gain access to an

---

AnimalsonFarms-110714.pdf [https://perma.cc/A5NW-L6XC] [hereinafter AWI, LEGAL PROTECTIONS].

<sup>145</sup>Note that livestock is defined in the Code as “an animal belonging to the bovine, caprine, equine, ovine, or porcine species, ostriches, rheas, emus; farm deer as defined in section 170.1; or poultry.” IOWA CODE § 717.1(4) (2022).

<sup>146</sup>AWI, LEGAL PROTECTIONS, *supra* note 144, at 3.

<sup>147</sup>IOWA CODE § 717.1A (2022).

<sup>148</sup>*Id.* § 717.2.

<sup>149</sup>*Id.* § 717.2A.

<sup>150</sup>*Id.* § 717.3.

<sup>151</sup>*Id.* § 717A.

<sup>152</sup>*Id.* § 717A.2(1).

<sup>153</sup>*Id.* § 717A(1)(a)-(b).

agricultural production facility and has a specified intent.<sup>154</sup> The legislation also creates an offence of use of pathogens to threaten animals confined in an agricultural production facility.<sup>155</sup> While these offences are not aimed at ensuring animal welfare, their operation will impact the manner in which animals are kept in CAFOs, and thus the extent to which such organizations constitute a risk from the perspective of zoonotic disease transmission.

b. Nebraska

Like in Ohio, in Nebraska farmed animals are excluded from the protections set out in the state's anti-cruelty to animals legislation.<sup>156</sup> In 2010, the legislature in Nebraska enacted a specialized code for the welfare of farmed animals. The Livestock Animal Welfare Act 2010 criminalizes intentional, knowing or reckless abandonment, cruel neglect, or cruel mistreatment of farmed animals as well as "indecent with a livestock animal."<sup>157</sup> In this respect, livestock is defined as including cows, horses, pigs, sheep, goats, elk, deer, flightless birds, llamas and chickens.<sup>158</sup> Where law enforcement officers have reason to believe that a farmed animal offence is occurring, they are able to seek a warrant to inspect private property.<sup>159</sup>

While these prohibitions are a positive step for the protection of farmed animals in Nebraska, they are significantly limited by the exclusion of "[c]ommonly accepted animal welfare practices" (which include "animal husbandry practices common to the livestock animal industry"), "[c]ommonly followed practices occurring in conjunction with the slaughter of animals," "commonly accepted animal training practices," and "[c]ommonly accepted practices occurring in conjunction with sanctioned rodeos, animal racing, and pulling contests."<sup>160</sup> Essentially, these exclusions mean that where a practice is common in industry, it is acceptable, even if it constitutes abandonment, neglect or mistreatment. For example, keeping cows in feedlots (large outdoor pens on a soil surface) would be deemed acceptable despite associated welfare issues including potential heat stress.<sup>161</sup>

---

<sup>154</sup>*Id.* §§ 717A.3A, 717A.3B.

<sup>155</sup>*Id.* § 717A.4.

<sup>156</sup>NEB. REV. STAT. § 28-1004 (2022).

<sup>157</sup>*Id.* § 54-903.

<sup>158</sup>*Id.* § 54-902(9).

<sup>159</sup>*Id.* § 54-906.

<sup>160</sup>*Id.* § 54-907.

<sup>161</sup>Temple Grandin, *Evaluation of the Welfare of Cattle Housed in Outdoor Feedlot Pens*, 1 VETERINARY & ANIMAL SCI. 23, 23 (2016); James S. Drouillard, *Current Situation and Future Trends*

## c. Minnesota

In Minnesota, farmed animals are included within the scope of the general anti-cruelty legislation. Under the Prevention of Cruelty to Animals legislation, “animal” is defined as “every living creature except members of the human race.”<sup>162</sup> The statute creates offences including:

- torturing, treating cruelly, or neglecting animals that are unfit for labor;<sup>163</sup>
- depriving any animal of necessary food, water or shelter;<sup>164</sup>
- confining animals without providing exercise and change of air;<sup>165</sup>
- feeding cows with food that produces “impure or unwholesome milk”;<sup>166</sup>
- abandoning any animal;<sup>167</sup>
- instigating or furthering cruelty to animals.<sup>168</sup>

Minnesota’s anti-cruelty legislation does not exclude farmed animals from these protections. However, the penalty for cruelty to an animal is significantly lower if the animal is not a pet or companion animal.<sup>169</sup>

The legislation also contains several other prohibitions of relevance to farmed animals. These include a prohibition on docking horses,<sup>170</sup> poisoning animals,<sup>171</sup> injuring birds<sup>172</sup> and bestiality,<sup>173</sup> as well as provisions enabling care for animals that are not properly sheltered from the weather, fed or watered.<sup>174</sup> Of significance in the context of a discussion regarding zoonotic disease, § 343.28 makes it an offence for a person in charge of an animal that knows that the animal has, or has been exposed to, an infectious disease, to sell the animal or allow it to

---

*for Beef Production in the United States of America – A Review*, 31 ASIAN-AUSTRALASIAN J. OF ANIMAL SCI. 1007, 1008 (2018).

<sup>162</sup>MINN. STAT. § 343.20(2) (2022).

<sup>163</sup>*Id.* § 343.21(1).

<sup>164</sup>*Id.* § 343.21(2).

<sup>165</sup>*Id.* § 343.21(3).

<sup>166</sup>*Id.* § 343.21(4).

<sup>167</sup>*Id.* § 343.21(5)–(6).

<sup>168</sup>*Id.* § 343.21(7).

<sup>169</sup>*Id.* § 343.21(9).

<sup>170</sup>*Id.* § 343.25.

<sup>171</sup>*Id.* § 343.27.

<sup>172</sup>*Id.* § 343.30.

<sup>173</sup>*Id.* § 609.294.

<sup>174</sup>*Id.* § 343.29(1).

run at large or come into contact with another animal or another person without that person's informed consent.<sup>175</sup>

d. North Carolina

Legal protections for farmed animals in North Carolina are in the general anti-cruelty legislation. Pursuant to the Consolidated Cruelty Laws, the word “animal” refers to “every living vertebrate in the classes of Amphibia, Reptilia, Aves, and Mammalia except human beings.”<sup>176</sup> Nevertheless, while farmed animals clearly fall within this definition, the section expressly does not relate to “lawful activities conducted for purposes of... production of livestock, [or] poultry” or lawful activities conducted with the aim of supplying food for humans or animals.<sup>177</sup> Thus, the protections contained in the anti-cruelty legislation will not prohibit activities in relation to farmed animals that would otherwise fall within the boundaries of the law, even if they constitute cruelty. These provisions are somewhat bizarre as the law does not define what constitutes lawful activities, and thus it is “impossible to understand whether the statute exempts everything or nothing.”<sup>178</sup> Nevertheless, the provisions seem to be directed at exempting common farm animal husbandry practices from cruelty prohibitions.<sup>179</sup>

In terms of the substantive prohibitions, Article 47 of the legislation prohibits cruelty to animals, including intentionally injuring, depriving of necessary sustenance, torturing or mutilating an animal, causing or permitting an animal to experience unjustifiable pain, suffering or death, or abandoning an animal.<sup>180</sup> Article 49 provides protections for “livestock running at large,” and prohibits the intentional driving of farmed animals from their range, or killing or injuring such farmed animals.<sup>181</sup>

e. California

The general laws criminalizing cruelty to animals in California are contained in California Penal Code § 597. In this legislation, the term “animal” is defined as “every dumb creature.”<sup>182</sup> Clearly, therefore,

---

<sup>175</sup>*Id.* § 343.28.

<sup>176</sup>N.C. GEN. STAT. § 14-360(c) (2022).

<sup>177</sup>*Id.* § 14-360(c)(2); *Id.* § 14-360(c)(2a).

<sup>178</sup>Wolfson & Sullivan, *supra* note 131, at 213.

<sup>179</sup>AWI, LEGAL PROTECTIONS, *supra* note 144, at 3.

<sup>180</sup>N.C. GEN. STAT. § 14-360 (2021); N.C. GEN. STAT. § 14-361.1 (2022).

<sup>181</sup>*Id.* § 14-366.

<sup>182</sup>CAL. PENAL CODE § 599(b) (West 2020).

the provisions extend to farmed animals.<sup>183</sup> The legislation criminalizes various acts in relation to animals, including maliciously and intentionally maiming, mutilating, torturing or wounding an animal;<sup>184</sup> maliciously and intentionally killing an animal;<sup>185</sup> depriving an animal of food, water or shelter;<sup>186</sup> or subjecting an animal to unnecessary suffering.<sup>187</sup> However, these protections do not “interfere with the right to kill all animals used for food.”<sup>188</sup> While there is not an explicit exemption for common farming practices in California, the prohibition against causing suffering only applies to that which is “unnecessary.”<sup>189</sup> In practice, what constitutes “unnecessary” suffering is open to an interpretation that privileges human interests.<sup>190</sup>

California also has in place specific laws to protect some farmed animals. Chapter 13.8 of the Californian Health and Safety Code sets out prohibitions on specific actions in relation to these animals. In this respect, the legislation defines a “covered animal” as “any calf raised for veal, breeding pig, or egg-laying hen who is kept on a farm.”<sup>191</sup> It sets out prohibitions on: confining covered animals in a “cruel manner” and knowingly selling the meat of a covered animal that was confined in a cruel manner.<sup>192</sup>

#### f. Conclusion Regarding Animal Welfare Protections for Intensively Farmed Animals

There is minimal protection or regulation in place at the federal level for intensively farmed animals. State anti-cruelty to animals statutes therefore provide the primary protections to farmed animals. Regulation of the animal agriculture industry by animal welfare statutes is problematic because these statutes are generally criminal in nature, which means that the prosecution of animal cruelty offences is subject to the higher legal burden of proof, being beyond reasonable

---

<sup>183</sup>AWI, LEGAL PROTECTIONS, *supra* note 144, at 2.

<sup>184</sup>CAL. PENAL CODE § 597(a) (West 2020).

<sup>185</sup>*Id.*

<sup>186</sup>*Id.* § 597(b).

<sup>187</sup>*Id.*

<sup>188</sup>*Id.* § 599c.

<sup>189</sup>*Id.* § 597(b).

<sup>190</sup>Jane Kotzmann & Gisela Nip, *Bringing Animal Protection Legislation Into Line With its Purported Purposes: A Proposal for Equality Amongst Non-human Animals*, 37 PACE ENV'T L. REV. 247, 313 (2020).

<sup>191</sup>CAL. HEALTH & SAFETY CODE § 25991(f) (West 2022).

<sup>192</sup>*Id.* § 25990.

doubt.<sup>193</sup> While there is significant variance between states, animal cruelty provisions typically operate to privilege companion animals above farmed animals because of the different ways in which humans use them. For instance, in Iowa, Nebraska, and North Carolina, anti-cruelty legislation explicitly excludes practices involving farmed animals that would be unlawful if perpetuated against companion animals. In Minnesota, inflicting cruelty upon an animal will likely result in a more severe penalty if that animal is a pet. Finally, in California, the prohibitions against killing an animal or causing them unnecessary suffering are explicitly prevented from impacting the slaughter of animals for food. Inconsistencies such as these demonstrate the way in which anti-cruelty legislation perpetuates unequal treatment of animals before the law depending on the human benefit to be gained from their use.<sup>194</sup> In the context of zoonotic disease, these inequalities in protection contribute to creating the conditions that are conducive to disease transmission.

Further, many of these statutes appear to be subject to influence from industry, in that ‘commonly accepted industry practices’ are often exempted and are ultimately determined by industry itself.<sup>195</sup> As discussed above, industry practices are exempted from animal welfare legislation in Iowa, Nebraska and North Carolina. Beyond the analysis above, similar provisions can also be found in thirty-four other U.S. states.<sup>196</sup> The ultimate consequence of these provisions is that the industry itself can determine what does and does not constitute cruelty to farmed animals.<sup>197</sup> If a farmer wishes to, for example, cut off pigs’ tails without anesthesia, the farmer can do so if they are able to demonstrate that such a practice is common in industry. In other words, “[t]here is no legal limit to institutionalized cruel practices to farmed animals who live in states with customary farming exemptions.”<sup>198</sup> By permitting what would be cruel

---

<sup>193</sup>See Wolfson & Sullivan, *supra* note 131, at 209 (arguing that regulatory statutes would be preferable to general criminal statutes in relation to farmed animal welfare, because regulatory statutes would allow for the farming industry to be subject to regulatory enforcement of specific standards for animal welfare, allow for inspections to determine whether the treatment of animals aligns with the welfare standards, and make the industry answerable to a government agency concerning animal welfare).

<sup>194</sup>See Jane Kotzmann & Nick Pendergrast, *Animal Rights: Time to Start Unpacking What Rights and for Whom*, 46 MITCHELL HAMLINE L. REV. 157, 176–77 (2019).

<sup>195</sup>See Daniel Waltz, *No Longer Paper Tigers: Environmental Enforcement Strategies to Enhance Legal Protections for Animals*, in WHAT CAN ANIMAL LAW LEARN FROM ENVIRONMENTAL LAW? 50 (Randall S. Abate ed., 2d ed. 2020); see also Walton & King Jaiven, *supra* note 16, at 238.

<sup>196</sup>As at October 2018: AWI, LEGAL PROTECTIONS, *supra* note 144, at 2.

<sup>197</sup>Wolfson & Sullivan, *supra* note 131, at 206.

<sup>198</sup>*Id.* at 215.

practices in relation to other animals to be undertaken in relation to farmed animals, these provisions exacerbate the risk of zoonotic disease emergence in intensive animal farming settings.

Where anti-cruelty provisions do apply to farmed animals, enforcement of the laws is lacking.<sup>199</sup> For example, in Minnesota, where farmed animals are not exempt from the general welfare provisions, there are several instances involving one producer—Butterfield Foods—that have gone without prosecution. In February 2020, over 9,000 chickens were discovered frozen in trailers outside a Butterfield facility. The incident was not prosecuted due to “insufficient information and evidence to pursue criminal charges.”<sup>200</sup> The Animal Welfare Institute details a similar instance in August 2020, in which over 9,000 birds died from heat exposure after being left in trailers outside the holding shed.<sup>201</sup> Butterfield Foods was also not prosecuted for this incident.<sup>202</sup> Thus, the lack of enforcement of minimum standards of welfare may remove any disincentive provided by animal welfare protections to treat farmed animals cruelly, which in turn may heighten the risk of zoonoses.

## 2. Federal and State Public Health Laws Regulating Intensive Animal Agriculture

Regulation of intensive animal agriculture in the context of zoonoses is primarily targeted at controlling disease rather than preventing emergence. At a federal level, for example, there are laws to protect consumers by ensuring the safe production of meat products. The Federal Meat Inspection Act<sup>203</sup> operates to prevent the sale of meat

---

<sup>199</sup>See generally Mirko Bagaric, Jane Kotzmann & Gabrielle Wolf, *A Rational Approach to Sentencing Offenders for Animal Cruelty: A Normative and Scientific Analysis Underpinning Proportionate Penalties for Animal Cruelty Offenders*, 71 S.C. L. REV. 385, 399 (explaining that the cruelty offenses tried in court primarily relate to companion and non-livestock animals).

<sup>200</sup>Sean Ellertson, *Lindee Declines Prosecution for Alleged Butterfield Foods Incident*, ST JAMES PLAINDEALER (May 2, 2021), <https://www.stjamesnews.com/story/news/crime/2021/05/03/lindee-declines-prosecution-alleged-butterfield-foods-incident/7399271002/>. *No Charges Against Butterfield Foods For Thousands of Chickens That Froze to Death*, SOUTHERN MINNESOTA NEWS (Apr. 21, 2021), <https://www.southernminnesotanews.com/no-charges-against-butterfield-foods-for-thousands-of-chickens-that-froze-to-death/> [<https://perma.cc/3EWY-7BS2>].

<sup>201</sup>*Minnesota Law Enforcement Urged to Investigate Butterfield, Jennie-O for Animal Cruelty*, ANIMAL WELFARE INST. (Oct. 14, 2021), <https://awionline.org/press-releases/minnesota-law-enforcement-urged-to-investigate-butterfield-jennie-o-animal-cruelty>. [<https://perma.cc/8L5M-JV4E>].

<sup>202</sup>*Id.*

<sup>203</sup>21 U.S.C. §§ 601–695.

products that are adulterated or misbranded.<sup>204</sup> To ensure meat offered for consumption is unadulterated, slaughterhouses and other animal processing plants must have federal inspectors present.<sup>205</sup> Animals that show signs of disease must be slaughtered separately and examined after slaughter.<sup>206</sup> The Food and Safety Inspection Service (FSIS) – an agency of the USDA – is responsible for these inspections.<sup>207</sup> FSIS regulations require non-ambulatory (or ‘downed’) animals to be separated from the other animals and inspected for disease after slaughter, as an inability to stand or walk is an indicator of disease.<sup>208</sup> The animals may, however, be electrically prodded or forced to walk to their slaughter through other means.<sup>209</sup> This applies to all animals except cattle, as they are the only animals that cannot be slaughtered if non-ambulatory at any point in the slaughter process.<sup>210</sup> Cattle must be removed from the slaughter process and promptly euthanized, whereas other species may be held for slaughter. The holding of non-ambulatory animals for slaughter may incentivize efforts to make the animals rise and walk, to allow for their slaughter and to minimize economic loss.<sup>211</sup>

The regulation of the slaughter of downed animals is indicative of the conflict between animal welfare and human benefit. For example, downed animals clearly have an interest in avoiding prolonged suffering, which in the circumstances may best be achieved by immediate euthanasia. In contrast, euthanizing an animal causes a loss of profit and thus a reduction in human benefit. Federal laws allow for the slaughter of non-ambulatory animals (except cattle). However, downed animals pose an increased risk of disease—in part because their non-ambulatory state may be an indicator of disease, and because a downed animal has more contact with the ground and thus increased chance for contamination.<sup>212</sup> Allowing downed animals to

---

<sup>204</sup>21 U.S.C. § 602.

<sup>205</sup>9 C.F.R. § 302.3 (2021).

<sup>206</sup>21 U.S.C. § 603(a).

<sup>207</sup>See *Inspection*, FOOD SAFETY & INSPECTION SERV., <https://www.fsis.usda.gov/inspection> (last visited Jan. 26, 2022).

<sup>208</sup>Marya Torrez, *Health and Welfare Preempted: How National Meat Association v Harris Undermines Federalism, Food Safety, and Animal Protection*, 10 J. FOOD. L. & POL’Y 35 (2014); 9 C.F.R. § 309.2 (2021).

<sup>209</sup>Torrez, *supra* note 208, at 47.

<sup>210</sup>ANIMAL WELFARE INST., LEGAL PROTECTIONS FOR NONAMBULATORY (OR “DOWNED”) FARM ANIMALS 1–2 (2019), <https://awionline.org/sites/default/files/uploads/documents/19LegalProtectionsDowned.pdf> [<https://perma.cc/UXC7-RMNK>].

<sup>211</sup>*Id.* at 2.

<sup>212</sup>Andrea M. Repphun, *Pigs-in-a-Blanket: How Current Meat Inspection Regulations Wrap America in False Security*, 16 DRAKE J. AGRIC. L. 183, 187 (2011); Michael Greger, *Supreme Court Case:*



enter the food supply therefore poses an increased risk to human health. Accordingly, while the slaughter of non-ambulatory animals may provide economic benefit to human beings in the first instance, it also poses an increased risk of future zoonoses.<sup>213</sup>

a. Surveillance

Surveillance of infectious diseases is a fundamental element of zoonotic disease regulation in the United States. Responsibility at the federal level falls to the Commissioner of Food and Drugs, the Director of the Centers for Disease Control and Prevention (CDC), and the Secretary of Agriculture.<sup>214</sup> In practice, the CDC's National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) and the USDA's Animal and Plant Health Inspection Service (APHIS) are two of the leading federal agencies tasked with surveilling zoonoses. Both NCEZID and APHIS cooperate with and provide guidance to state and local health departments and other federal agencies.<sup>215</sup> NCEZID investigates, identifies, and monitors a wide range of infectious diseases, including more common foodborne diseases such as salmonella, as well as rare or emerging diseases.<sup>216</sup> APHIS takes a similar role in the monitoring and surveillance of both plants and animals and has recently announced a proposed framework to bolster surveillance capacity. The plan acknowledges a "lack of surveillance tools and strategies for the rapid detection and characterization of emerging and re-emerging pathogens at the human-animal-environment interface [and] inconsistent linkages between human and animal

---

*Meat Industry Sues to Keep Downed Animals in Food Supply*, NUTRITIONFACTS.ORG (Nov. 3, 2011), <https://nutritionfacts.org/2011/11/03/supreme-court-case-meat-industry-sues-to-keep-downed-animals-in-food-supply/> [<https://perma.cc/GM5K-ZDJA>].

<sup>213</sup>While correctly cooking tainted meat significantly reduces the risk of consuming foodborne disease-causing organisms, there are still an estimated 48 million cases of foodborne illness in the United States each year. Many of the food sources of such illnesses include meat and poultry. See *What You Need to Know about Foodborne Illnesses*, U. S. FOOD & DRUG ADMIN. (Feb. 17, 2022), <https://www.fda.gov/food/consumers/what-you-need-know-about-foodborne-illnesses#:~:text=While%20the%20American%20food%20supply,128%2C000%20hospitalizations%20and%203%2C000%20deaths> [<https://perma.cc/NL23-DE46>].

<sup>214</sup>7 U.S.C. § 8319.

<sup>215</sup>7 U.S.C. § 8310(a); *Our Partners*, NCEZID, CENTERS FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/ncezid/what-we-do/our-partners.html> [<https://perma.cc/P4GZ-EED4>] (last visited Jan. 27, 2022).

<sup>216</sup>*National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)*, CTRS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/ncezid/index.html> [<https://perma.cc/7BY6-82CA>] (last visited Jan. 27, 2022).

surveillance.”<sup>217</sup> Accordingly, the framework aims to create a system for early identification, “to potentially prevent or limit the next zoonotic disease outbreak, or the next global pandemic.”<sup>218</sup>

Disease surveillance in states with a high animal agricultural output is also a primary element of zoonosis regulation in the United States. In Iowa, the Center for Acute Disease Epidemiology (CADE) collaborates with the CDC and engages in investigation and education activities.<sup>219</sup> CADE also consults with agencies at the county and local level to provide education and guidance on infectious diseases.<sup>220</sup> Nebraska’s Animal and Plant Health Protection also engages in surveillance and inspection efforts to address the risk of zoonoses in agriculture.<sup>221</sup> In Minnesota, where there are over 1,000 CAFOs,<sup>222</sup> the surveillance role is filled in part by the Minnesota Department of Health (MDH). With the Upper Midwest Agricultural Safety and Health Center, the MDH tracks infectious diseases and studies how often these diseases infect agricultural workers, having determined that “[d]iseases shared by humans and animals are more likely to affect agricultural workers and their families than other Minnesotans.”<sup>223</sup> Similarly, in North Carolina, the Livestock Animal Health Programs collaborate with industry, federal and state agencies, and veterinarians to surveil zoonoses.<sup>224</sup> Finally, in California, the California Department of Food and Agriculture’s Animal Health and Food Safety Services Division contributes to disease detection and provides guidance on disease awareness.<sup>225</sup> There is a patchwork of federal, state, and

---

<sup>217</sup>ANIMAL & PLANT HEALTH INSPECTION SERV., U.S. DEP’T OF AGRIC., APHIS’ AMERICAN RESCUE PLAN (ARP) SURVEILLANCE PROGRAM: STRATEGIC FRAMEWORK (2022), [https://www.aphis.usda.gov/publications/aphis\\_general/arp-strategic-framework.pdf](https://www.aphis.usda.gov/publications/aphis_general/arp-strategic-framework.pdf) [<https://perma.cc/5NPX-RMJ4>].

<sup>218</sup>*Id.* at 1.

<sup>219</sup>*Center for Acute Disease Epidemiology*, IOWA DEPARTMENT OF PUBLIC HEALTH, <https://idph.iowa.gov/CADE> [<https://perma.cc/CUS4-V3F2>] (last visited Jan. 27, 2022).

<sup>220</sup>*Id.*

<sup>221</sup>*Animal and Plant Health Protection*, NEBRASKA DEP’T OF AGRIC., <https://nda.nebraska.gov/aphp/index.html> [<https://perma.cc/7BRH-UEH9>] (last visited Jan. 27, 2022).

<sup>222</sup>CAFO REPORT, *supra* note 139.

<sup>223</sup>*Surveillance for Zoonotic Diseases in Agricultural Workers in Minnesota*, UPPER MIDWEST AGRIC. SAFETY & HEALTH CENTER, <http://umash.umn.edu/portfolio/surveillance-for-zoonotic-diseases-in-agricultural-workers-in-minnesota/> [<https://perma.cc/9LLZ-STSP>] (last visited Jan. 27, 2022).

<sup>224</sup>*Vet Division – Livestock Animal Health Programs*, NORTH CAROLINA DEP’T OF AGRIC. & CONSUMER SERV., <https://www.ncagr.gov/vet/Livestock/index.htm> [<https://perma.cc/9KEJ-XVJC>] (last visited Jan. 27, 2022).

<sup>225</sup>*Animal Health Branch*, CAL. DEP’T OF FOOD & AGRIC., [https://www.cdffa.ca.gov/AHFSS/Animal\\_Health/](https://www.cdffa.ca.gov/AHFSS/Animal_Health/) [<https://perma.cc/AZ22-LZSV>] (last visited Jan. 27, 2022); *Animal Health and Food Safety Services Division*, CAL. DEP’T OF FOOD & AGRIC., <https://www.cdffa.ca.gov/AHFSS/> [<https://perma.cc/3MZ3-FT35>] (last visited Jan. 27, 2022).

local programs contributing to the surveillance of zoonoses in the United States. States hold the primary role as it relates to the detection and reporting of zoonotic diseases because the federal government does not have the power to mandate disease reporting.<sup>226</sup> Consequently, federal agencies rely largely on voluntary reporting of disease outbreaks.<sup>227</sup> As explained by Allen, this can hinder surveillance efforts and response time due to a lack of coordination amongst agencies.<sup>228</sup>

#### b. Depopulation and Disposal

A further element of the United States' regulatory response to zoonotic disease is depopulation, which is the mass killing of animals to prevent the spread of disease. Depopulation occurs where a disease has been introduced to an animal population.<sup>229</sup> Federally, APHIS has delegated authority to take remedial actions such as holding, seizing, or destroying any animal that is or may be moved in interstate commerce, and may carry or may have been exposed to disease.<sup>230</sup> APHIS describes depopulation as "one of the most effective ways to stop disease spread and protect U.S. animal health as a whole" and, accordingly, it is an important component of the U.S. regulatory space.<sup>231</sup> There is a number of different methods for depopulation. The American Veterinary Medical Association (AVMA) provides guidelines for producers undertaking mass depopulation. The guidelines provide methods that are "acceptable" or "acceptable with conditions," as well as methods that are "unacceptable."<sup>232</sup> Unacceptable methods are those deemed inhumane or that pose an increased risk of disease

<sup>226</sup>See Heather Anne Allen, *Improving Zoonotic Disease Outbreak Detection Practice in the US*, at 43 (Aug. 31, 2011) (Ph.D. dissertation, The George Washington University).

<sup>227</sup>*Id.*; James D. Holt et al., *Legal Considerations*, CTRS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/eis/field-epi-manual/chapters/Legal.html> (Dec. 13, 2018) [<https://perma.cc/2PUB-YNH5>]; Richard N. Danila et al., *Legal Authority for Infectious Disease Reporting in the United States: Case Study of the 2009 H1N1 Influenza Pandemic*, 105 AM. J. PUB. HEALTH 13, 13 (2015).

<sup>228</sup>Allen, *supra* note 226, at 43–46.

<sup>229</sup>See U.S. DEP'T OF AGRIC., EMERGENCY RESPONSE PROCEDURES – DEPOPULATION AND DISPOSAL (2015), [https://www.aphis.usda.gov/animal\\_health/downloads/animal\\_diseases/ai/ER-DepopDisposal.pdf](https://www.aphis.usda.gov/animal_health/downloads/animal_diseases/ai/ER-DepopDisposal.pdf) [<https://perma.cc/JQ9J-PAWX>].

<sup>230</sup>7 U.S.C. § 8306(a)(1)(B).

<sup>231</sup>U.S. DEP'T OF AGRIC., HIGHLY PATHOGENIC AVIAN INFLUENZA (2016), [https://www.aphis.usda.gov/publications/animal\\_health/2016/hpai\\_depopulation\\_disposal.pdf](https://www.aphis.usda.gov/publications/animal_health/2016/hpai_depopulation_disposal.pdf).

<sup>232</sup>AM. VETERINARY MED. ASS'N, AVMA GUIDELINES FOR THE EUTHANASIA OF ANIMALS: 2020 EDITION 111 (2020), <https://www.avma.org/sites/default/files/2020-01/2020-Euthanasia-Final-1-17-20.pdf>.

spread. However, the guidelines acknowledge that “there will be less-than-perfect situations” where unacceptable methods may be used.<sup>233</sup> There are also various methods of disposal once depopulation is complete, such as off-site incineration, on-site burial, below grade conventional burial, composting, and open burning. APHIS’s Foreign Animal Disease Preparedness and Response Plan lists on-site burial as the least suitable method in relation to public health risk, biosecurity, and pathogen inactivation.<sup>234</sup> Despite these risks, on-site burial is still permitted as a method of disposal.<sup>235</sup>

Producers depopulating and disposing of animals must also comply with state regulations, and states have broad discretion to control animal disease.<sup>236</sup> In Iowa, for instance, the Department of Agriculture and Land Stewardship has the power to “quarantine or destroy any animal exposed to or afflicted with an infectious or contagious disease.”<sup>237</sup> In respect to disposal, on-site burial is considered an effective method in Iowa, however, the site must first be approved by the Iowa Department of Natural Resources.<sup>238</sup> On-site burial is accepted as an appropriate method in Nebraska, with the Nebraska Department of Environment and Energy stating that burial “is often the method of choice for catastrophic livestock losses.”<sup>239</sup> A state permit is not required to undertake on-site burial in Nebraska.<sup>240</sup> In Minnesota, the Board of Animal Health, which is the primary body regulating disposal, notes that on-site burial “is usually not recommended for animals that have died from a disease” but may sometimes be “the only

---

<sup>233</sup>*Id.* at 9.

<sup>234</sup>U.S. DEP’T AGRIC. ET AL., EMERGENCY CARCASS MANAGEMENT DESK REFERENCE GUIDE, FAD PREP FOREIGN ANIMAL DISEASE PREPAREDNESS & RESPONSE PLAN 2-5 (2017), [https://www.aphis.usda.gov/animal\\_health/carcass/docs/carcass-disposal-guide.pdf#page=12](https://www.aphis.usda.gov/animal_health/carcass/docs/carcass-disposal-guide.pdf#page=12) [<https://perma.cc/H2N3-8PXP>].

<sup>235</sup>See U.S. DEP’T OF AGRIC. ET AL., EMERGENCY CARCASS MANAGEMENT DESK REFERENCE GUIDE, FOREIGN ANIMAL DISEASE PREPAREDNESS & RESPONSE PLAN (2017), [https://www.aphis.usda.gov/animal\\_health/carcass/docs/carcass-disposal-guide.pdf](https://www.aphis.usda.gov/animal_health/carcass/docs/carcass-disposal-guide.pdf) [<https://perma.cc/H2N3-8PXP>]. For further discussion, see CTR. FOR BIOLOGICAL DIVERSITY ET AL., PETITION FOR EMERGENCY RULEMAKING (Jun. 29, 2020), <https://www.nrdc.org/sites/default/files/petition-aphis-20200629.pdf> [<https://perma.cc/ED5K-44MM>] (requesting an emergency rule to prohibit unlined burial and on-site incineration until the resolution of the COVID-19 pandemic).

<sup>236</sup>*Campoamor v. State Live Stock Sanitary Bd.*, 136 Fla. 451, 457 (1938); Walton & King Jaiven, *supra* note 28, at 10492.

<sup>237</sup>IOWA CODE §163.2 (2021).

<sup>238</sup>IOWA DEPT. OF NAT. RES., MASS ANIMAL MORTALITY PLAN 24 (2019), <https://www.iowadnr.gov/Portals/idnr/uploads/files/disaster/MAMP%202019.pdf?ver=2019-09-09-112529-767> [<https://perma.cc/957F-FM4J>].

<sup>239</sup>*Disposal of Animal Carcasses*, NEB. DEPT. OF AGRIC. (Feb. 26, 2021), <http://deq.ne.gov/Publica.nsf/Pages/06-201> [<https://perma.cc/Y6Z3-L85G>].

<sup>240</sup>*Id.*

option during disaster events.”<sup>241</sup> Similarly, in California, on-site burial is considered the “least desirable and environmentally safe alternative” but remains a viable option.<sup>242</sup> In North Carolina, the State Veterinarian’s Office—an agency of the North Carolina Department of Agriculture and Consumer Services (NCDA&CS)—holds regulatory authority in respect of disposal.<sup>243</sup> On-site burial remains a disposal option in North Carolina, however, sites are required to be pre-approved by the NCDA&CS.<sup>244</sup>

### c. Environmental Protection Agency

The EPA also has some authority regarding the zoonotic disease risk of intensive animal agriculture, due to the large amounts of animal waste produced. Animal waste from intensive operations can enter water bodies from various sources, including improper storage, overflow of waste lagoons following heavy rainfall, or over application of manure to land.<sup>245</sup> Animal waste discharges can have significant environmental effects and are a primary cause of ocean dead zones.<sup>246</sup> They also pose a significant risk in terms of zoonotic disease emergence as animal waste may contain pathogens that cause disease in humans.<sup>247</sup>

---

<sup>241</sup>MINN. BD. OF ANIMAL HEALTH, LIVESTOCK CARCASS DISPOSAL GUIDE 1, <https://www.bah.state.mn.us/media/Carcass-Disposal-Guide.pdf> [<https://perma.cc/BXR8-U55L>] (last visited Jan. 28, 2022).

<sup>242</sup>*Emergency Animal Disposal Guidance*, CAL. ENV’T PROT. AGENCY, <https://calepa.ca.gov/Disaster/Animals/> (last visited Jan. 28, 2022).

<sup>243</sup>See 2 N.C. ADMIN. CODE 52C.0102 (2021); N.C. GEN. STAT. § 106-403 (2021).

<sup>244</sup>See RAFI Staff, *Hurricane Florence: Mass Poultry Mortality Disposal Options for Farmers*, RAFI (Oct. 2, 2018), <https://www.rafiusa.org/blog/poultrymortalitydisposal/> [<https://perma.cc/QB2L-9GAJ>]; Justin Moore, *Emergency animal Mortality Disposal – N.C. Requirements*, NC STATE EXTENSION (Sep. 5, 2019), <https://ncdisaster.ces.ncsu.edu/2019/09/emergency-animal-mortality-disposal-n-c-requirements/> [<https://perma.cc/RUM4-VYLT>].

<sup>245</sup>See U.S. ENV’T PROT. AGENCY, PROPOSED REGULATIONS TO ADDRESS WATER POLLUTION FROM CONCENTRATED ANIMAL FEEDING OPERATIONS (2001), <https://www3.epa.gov/npdes/pubs/CAFO-brochure3.pdf> [<https://perma.cc/L2HW-FPYL>] (explaining why livestock waste is a concern for water quality).

<sup>246</sup>*Sources and Solutions*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/nutrientpollution/sources-and-solutions> [<https://perma.cc/K5MD-8JDK>] (last visited Jan. 28, 2022).

<sup>247</sup>ENV’T AM., AGRICULTURAL WASTE LAGOONS (2019), <https://environmentamerica.org/sites/environment/files/AccidentsFactsheet-ManureLagoons.pdf> [<https://perma.cc/B7BF-UH22>]; M.D. Sobsey et al., *Pathogens in Animal Wastes and the Impacts of Waste Management Practices on their Survival, Transport and Fate*, in ANIMAL AGRICULTURE AND THE ENVIRONMENT: NATIONAL CENTER FOR MANURE AND ANIMAL WASTE MANAGEMENT WHITE PAPERS 609 (J.M. Rice et al. eds., 2006), [https://fyi.extension.wisc.edu/manureirrigation/files/2014/03/ASABE\\_2006\\_Pathogens-in-Animal-Wastes-and-Impacts-of-Waste-Management-Practices.pdf](https://fyi.extension.wisc.edu/manureirrigation/files/2014/03/ASABE_2006_Pathogens-in-Animal-Wastes-and-Impacts-of-Waste-Management-Practices.pdf) [<https://perma.cc/J6M5-J2BP>].

The EPA is tasked with administering the Clean Water Act (CWA), which regulates the discharge of pollutants into waters of the United States.<sup>248</sup> The CWA created the National Pollutant Discharge Elimination System (NPDES), a federal permit system designed to regulate discharges into water from point sources. Amongst other conditions, the permit sets an effluent limit on discharge pollutants and restricts a point source from discharging in excess of that limit.<sup>249</sup> The NPDES program does not consider animal feeding operations (those operations not meeting the threshold of a CAFO) to be point sources, therefore excluding them from federal regulation under the CWA.<sup>250</sup> The CWA does, however, include CAFOs “from which pollutants are or may be discharged” in the definition of point source.<sup>251</sup> Therefore, in order to be considered a “point source,” large and medium CAFOs (over 1,000 animal units and between 301 and 1,000 animal units respectively) must have the potential to discharge pollutants. Large CAFOs with pollutant potential are automatically regulated as point sources and must seek a NPDES permit for actual discharges, however, a medium CAFO must only obtain a NPDES permit if discharges occur through a man-made device, or if the confined animals come into direct contact with water.<sup>252</sup> The EPA can also designate small or medium size animal feeding operations as CAFOs and require them to obtain a NPDES permit if that operation is a significant contributor of pollutants to water.<sup>253</sup>

Regulation of CAFOs under the CWA is further limited by a broad exemption for agricultural stormwater discharges. Stormwater runoff is excluded from the definition of “point source” and therefore any agricultural stormwater discharges from CAFOs are not subject to NPDES permit requirements.<sup>254</sup> Specifically, the EPA cannot require

---

<sup>248</sup>Randall S. Abate, *Anthropocene Accountability Litigation: Confronting Common Enemies to Promote a Just Transition*, 46 COLUM. J. ENV'T L. 225, 248 n.123 (discussing the loopholes that exist in relation to the EPA's regulation of CAFOs under the CWA).

<sup>249</sup>Jeffrey G. Miller, *Plain Meaning, Precedent, and Metaphysics: Interpreting the “Point Source” Element of the Clean Water Act Offense*, 45 ENV'T L. REP. NEWS & ANALYSIS 11129, 11133 (2015).

<sup>250</sup>U.S. ENV'T PROT. AGENCY, NPDES PERMIT WRITERS' MANUAL FOR CONCENTRATED ANIMAL FEEDING OPERATIONS ch. 2 (2012), [https://www.epa.gov/sites/default/files/2015-08/documents/cafo\\_permitmanual\\_chapter2.pdf](https://www.epa.gov/sites/default/files/2015-08/documents/cafo_permitmanual_chapter2.pdf) [<https://perma.cc/WMY6-SGGY>].

<sup>251</sup>33 U.S.C. § 1362(14).

<sup>252</sup>U.S. ENV'T PROT. AGENCY, REGULATORY DEFINITIONS OF LARGE CAFOs, MEDIUM CAFO, AND SMALL CAFOs (2015), [https://www.epa.gov/sites/default/files/2015-08/documents/sector\\_table.pdf](https://www.epa.gov/sites/default/files/2015-08/documents/sector_table.pdf) [<https://perma.cc/9Z2Z-N4WH>].

<sup>253</sup>40 C.F.R. § 122.23(c) (2021).

<sup>254</sup>Miller, *supra* note 249, at 1129; Anthony B. Schutz, *Agricultural Discharges Under the CWA: Old Questions and New Insights*, 52 U. PAC. L. REV. 567 (2021); Scott Yager & Mary-Thomas Hart,

NPDES permits for runoff from land that manure has been applied to (known as the land application area), if that runoff is precipitation related and if the manure has been applied in accordance with nutrient management practices.<sup>255</sup> The scope of the agricultural stormwater exemption was essentially limited to those discharges;<sup>256</sup> however, as Anthony Schutz explains, “[a]bsent a direct addition of pollutants on a dry day, rainfall always has something to do with a discharge from land-application areas”<sup>257</sup> and thus the exemption is potentially far reaching. More recently, the exemption has been expanded by the District Court for the Northern District of West Virginia in *Alt v. EPA*<sup>258</sup> to include discharges outside the land application area.<sup>259</sup> The court in *Alt v. EPA* considered whether pollutants such as manure and dander that were expelled from exhaust fans in poultry barns and carried to water when it rained were included in the agricultural stormwater exemption. In this case, the court found that the discharges were eligible for the exemption, and were therefore not discharges as the pollutants would remain in the farmyard but-for the addition of rain.<sup>260</sup> As Emily Kenyon explains, “[b]y expanding the scope of the agricultural stormwater exemption, this decision allows CAFOs to evade permitting requirements and pollute our waterways.”<sup>261</sup> This substantially limits the regulation of pathogens discharged from CAFOs into waters, which is a key risk in the context of zoonotic disease.

#### d. Deficiencies in the Current Regulatory Space

The U.S. approach to zoonotic disease regulation is reactionary and fails to address the root cause of emergence. This is clear considering the legal anthropocentrism that informs the regulation of intensive animal agriculture. Current federal and state regulation efforts prioritize short-term human interests over the welfare interests of non-

---

*The Tipping Point Source: Clean Water Act Regulation of Discharges to Surface Water via Groundwater, and Specific Implications For Nonpoint Source Agriculture*, 23 DRAKE J. AGRIC. L. 439 (2018).

<sup>255</sup>40 C.F.R. § 122.23(e) (2021). CAFOs subject to NPDES permits must implement a Nutrient Management Plan to be eligible for the storm water exemption. CAFOs that do not have NPDES permits do not require this plan, however, the application of manure to land must be done “in accordance with site-specific nutrient management practices.” *Id.*

<sup>256</sup>Emily Kenyon, *Enough of this Manure: Why the EPA Needs to Define the Agricultural Stormwater Exemption to Limit the “Runoff” from the Alt Court*, 92 N.Y.U. L. Rev. 1187, 1193–1200 (2017).

<sup>257</sup>Schutz, *supra* note 254, at 585.

<sup>258</sup>*Alt v. EPA*, 979 F. Supp. 2d 701, 705 (N.D. W. Va. 2013).

<sup>259</sup>Schutz, *supra* note 254, at 586–88.; Kenyon, *supra* note 256, at 1193–1200.

<sup>260</sup>*Alt v. EPA*, 979 F. Supp. 2d 714 (N.D. W. Va. 2013).

<sup>261</sup>Kenyon, *supra* note 256, at 1213.

human animals which—while satisfying economic motives—fails to adequately manage the zoonotic disease risk posed by intensive animal agriculture. Animal health is a primary consideration in the context of zoonoses, as animals with lower levels of overall welfare may be more susceptible to disease. Federal and state animal welfare laws are therefore a key aspect of the regulatory space and are also the aspect most aligned with addressing the root cause of zoonotic disease emergence. As has been outlined, federal regulation in this respect is minimal and state regulation is largely inadequate due to the broad exemptions for common farming practices and discriminatory levels of protection for farmed as opposed to other animals. In states such as California and Minnesota where anti-cruelty regulations do apply to farmed animals, the provisions operate in a manner that privileges intensive farming practices, and they lack meaningful enforcement. Inadequate enforcement fails to address instances of systemic cruelty within intensive farming operations and may in practice perpetuate conditions that increase the animals' susceptibility to disease.

The deficiencies in animal welfare regulation impact its ability address the root cause of zoonoses. As such, reactionary measures designed to control the emergence of zoonotic disease constitute a significant proportion of the U.S. regulatory response. While public health measures such as surveillance, depopulation, and restrictions on pollutant discharge are not aimed at prevention, they do form a vital part of limiting the impact of future zoonoses. However, as has been outlined, these measures are largely inadequate. In terms of surveillance, there is a recognized gap in the surveillance of human and animal diseases, and inadequate resources to rapidly detect and categorize emerging diseases at the federal level, which may significantly hinder response times. An adequate national response may be further hindered by the reliance on voluntary reporting from states to the CDC.

The process of depopulation and disposal is also flawed due to the continued use of disposal methods that are considered less desirable in the context of zoonotic disease. On-site burial remains an acceptable option in all of the states analyzed above, despite recognized disadvantages such as a risk to public health and biosecurity, and the potential survival of pathogens after burial.<sup>262</sup> In an outbreak, mass burial allows producers to cost-effectively dispose of animal carcasses at a speed closer to the depopulation rate, which reduces the number

---

<sup>262</sup>LORI MILLER ET AL., CARCASS MANAGEMENT FOR SMALL-AND MEDIUM-SCALE LIVESTOCK FARMS 3 (2018) <https://www.fao.org/3/CA2073EN/ca2073en.pdf> [<https://perma.cc/KLD3-XZ5H>].



of infected animal carcasses awaiting disposal.<sup>263</sup> While this is a clear advantage, the need to utilize a disposal method that poses a public health risk due solely to the significant numbers of animals being depopulated demonstrates that CAFOs pose an inherent and unacceptable risk in the context of zoonotic disease.

Finally, the EPA's contribution to zoonotic disease regulation via the CWA is also insufficient. In terms of large CAFOs, the CWA only considers such operations to be point sources where they have discharge potential. As explained above, the agricultural stormwater exemption significantly limits this requirement. Large CAFOs that only have precipitation related discharges may therefore demonstrate no discharge potential and be able to operate without a NPDES permit and thus largely without federal regulation as to water pollution. The decision in *Alt v. EPA*<sup>264</sup>—while only binding the EPA in the Northern District of West Virginia—is also a worrying development in terms of zoonotic disease risk. The decision exempts discharges of manure and feathers from ventilation systems that are carried to U.S. waters by precipitation from permitting requirements, effectively eliminating federal oversight of such discharges.<sup>265</sup>

In sum, the current regulatory regime fails to adequately address the zoonotic disease risk posed by intensive animal agriculture. Existing efforts are representative of legal anthropocentrism, in that they prioritize short-term human benefit over animal welfare. As a result, reactionary measures are favored over those designed to address the root cause of zoonoses, and such measures are themselves largely inadequate. Moreover, not only is current regulation insufficient in the context of zoonotic disease, government policy also actively encourages intensive farming practices through subsidies; government policies; and, in some jurisdictions, laws that favor the largest corporations.<sup>266</sup> Zoonotic diseases demonstrate that human health and animal health are interconnected. A regulatory regime that prioritizes short-term human health and human benefit fails to acknowledge human dependency on animal health, and therefore fails

---

<sup>263</sup>*Id.*; ABBEY NUTSCH & MARK SPIRE, CARCASS DISPOSAL: A COMPREHENSIVE REVIEW 13 (2004).

<sup>264</sup>*Alt v. EPA*, 979 F. Supp. 2d 701, 705 (N.D. W. Va. 2013).

<sup>265</sup>Kenyon, *supra* note 256, at 1193–1200.

<sup>266</sup>See Christina Sewell, *The Distracting notion of Meat's Impact on the Environment*, COLUM. J. INT'L AFFS. (Feb. 11, 2020); Heather McLeod-Kilmurray, *Does the Rule of Ecological Law Demand Veganism?: Ecological Law, Interspecies Justice, and the Global Food System*, 43 VT. L. REV. 455 (2019). See also SCHNEIDER, *supra* note 28, 30, 62–63; Walton & King Jaiven, *supra* note 16, at 214. For example, in Iowa, a law was passed in 2018 requiring grocery stores that sell cage-free, free-range, or enriched colony cage eggs to also sell conventional eggs from caged hens. AWI, LEGAL PROTECTIONS, *supra* note 144, at 8.

to adequately address the risk of zoonotic disease. This paper argues for a radical change to the current anthropocentric paradigm that underpins regulation of intensive animal agriculture. It calls for a focus on regulatory efforts that recognize the interconnectedness and interdependency of humans and animals. The following section analyzes the two dominant alternative paradigms and their potential impact on the zoonotic disease risk posed by intensive animal agriculture.

#### IV. PREVENTION IS BETTER THAN CURE: CHANGING THE APPROACH TO MANAGING THE RISK OF ZOOSES POSED BY INTENSIVE ANIMAL AGRICULTURE

##### A. One Health

One Health is centered on the connection between humans, animals, and the environment they share.<sup>267</sup> It acknowledges that the nature of zoonotic disease requires collaboration between sectors and advocates for a holistic approach at the human-animal-environment interface.<sup>268</sup> There is no single definition for One Health; however, the CDC defines the approach as “collaborative, multisectoral, and transdisciplinary,” stating that it works “at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnection between people, plants, and their shared environment.”<sup>269</sup> Clearly, at the heart of a One Health approach is cooperation between sectors focused on human health, animal health, and environmental health, with a goal of fully integrating research, disease surveillance and forecasting.

One Health was adopted by the American Veterinary Medical Association (AVMA) and the American Medical Association (AMA) in 2007.<sup>270</sup> Together, they formed the One Health Initiative task force that studied and delivered recommendations designed to facilitate integration of the One Health concept across multiple professions. The

<sup>267</sup>Chris Degeling et al., *Implementing a One Health Approach to Emerging Infectious Disease: Reflections on the Socio-Political, Ethical and Legal Dimensions*, 15 BMC PUB. HEALTH 1307 (2015).

<sup>268</sup>*One Health: It's for All of Us*, U.S. FOOD & DRUG ADMIN. (Jan. 14, 2021), <https://www.fda.gov/animal-veterinary/animal-health-literacy/one-health-its-all-us> [<https://perma.cc/BVE6-LF6J>].

<sup>269</sup>*One Health Basics*, CTNS. FOR DISEASE CONTROL & PREVENTION (Nov. 5, 2018), <https://www.cdc.gov/onehealth/basics/index.html#:~:text=One%20Health%20is%20a%20collaborative,plants%2C%20and%20their%20shared%20environment> [<https://perma.cc/PH94-DVEQ>].

<sup>270</sup>AM. VETERINARY MED. ASS'N, *ONE HEALTH: A NEW PROFESSIONAL IMPERATIVE 4* (2008), [https://www.avma.org/sites/default/files/resources/onehealth\\_final.pdf](https://www.avma.org/sites/default/files/resources/onehealth_final.pdf) [<https://perma.cc/J6LS-3FD2>].

task force published a report in 2008 recognizing that “[o]ur increasing interdependence with animals and their products may well be the single most critical risk factor to our health and well-being with regard to infectious diseases.”<sup>271</sup> The report made a series of recommendations, calling for collaboration between different sectors to complement the leadership role taken by the AMVA and the AMA.<sup>272</sup> In fulfillment of one such recommendation, the One Health Commission was founded in 2009 and continues today as a non-profit organization working towards “[a] world in which the interconnectedness of animals, environment, plants and people is deeply, and systemically recognized, valued and acted upon.”<sup>273</sup>

Outside of the United States, One Health has gained immense global support for its potential to alter the human-animal relationship and mitigate the risk of zoonotic disease outbreaks. For instance, the United Nations describes One Health as “the optimal method for preventing as well as responding to zoonotic disease outbreaks and pandemics.”<sup>274</sup> The World Health Organization, The Food and Agriculture Organization, and the World Organization for Animal Health have worked in collaboration since endorsing the ‘One World – One Health Framework’ in 2018.<sup>275</sup> The organizations released their second tripartite strategic document in 2017 that declares a focus on the “strengthening and modernization of early warning and surveillance/monitoring systems” and “the foresight, preparedness and response to emerging, re-emerging and neglected infectious diseases,” amongst other key areas.<sup>276</sup>

Practically, the approach can be seen in efforts to address antibiotic resistance in the US—particularly in the National Action Plan for Combating Antibiotic-Resistant Bacteria (CARB).<sup>277</sup> As detailed above,

---

<sup>271</sup>*Id.* at 3.

<sup>272</sup>*Id.* at 4.

<sup>273</sup>*Mission, Vision, Goals, Outcomes, ONE HEALTH COMM’N*, [https://www.onehealthcommission.org/en/why\\_one\\_health/mission\\_vision\\_goals\\_outcomes/](https://www.onehealthcommission.org/en/why_one_health/mission_vision_goals_outcomes/) [https://perma.cc/32GU-HN9D] (last visited Jan. 28, 2022).

<sup>274</sup>PREVENTING THE NEXT PANDEMIC, *supra* note 11, at 7.

<sup>275</sup>*One Health*, WORLD ORG. FOR ANIMAL HEALTH, <https://www.oie.int/en/what-we-do/global-initiatives/one-health/#ui-id-2> [https://perma.cc/RQQ5-STF2] (last visited Jan. 28, 2022); Yu-Ju Chien, *How Did International Agencies Perceive the Avian Influenza Problem? The Adoption and Manufacture of the ‘One World, One Health’ Framework*, 35 *SOCIOLOGY OF HEALTH & ILLNESS* 213, 214 (2012).

<sup>276</sup>*Id.*

<sup>277</sup>OFF. OF THE ASSIST. SEC’Y FOR PLANNING AND EVALUATION, NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA, 2020–2025 (2020), <https://aspe.hhs.gov/reports/national-action-plan-combating-antibiotic-resistant-bacteria-2020-2025> [https://perma.cc/YD8L-XHVJ] [hereinafter CARB].

antibiotic resistance poses a severe risk in the context of zoonoses in terms of increasing farmed animals' susceptibility to disease and simultaneously reducing the effectiveness of medically important antibiotics for human use.<sup>278</sup> The CARB plan, developed by the Federal Task Force on CARB, details a range of objectives to be achieved between the period of 2020–2025 to prolong the effectiveness of antibiotics.<sup>279</sup> The CARB plan has five goals, identical to those set in the first CARB plan which ran from 2015–2020.<sup>280</sup> One such goal is to “[s]trengthen [n]ational [o]ne [h]ealth [s]urveillance [e]fforts to [c]ombat [r]esistance.”<sup>281</sup> The CARB plan also explicitly adopts a One Health approach and emphasizes that “[a]ntibiotic resistance is unquestionably a One Health Issue, impacting the health of humans, animals, plants, and the environment.”<sup>282</sup> More than merely paying lip service to the One Health concept, the Task Force itself is comprised of representatives from various agencies focused on human, animal, and environmental health, including the Department of Health and Human Services, the USDA, the Department of Defense, the Department of the Interior, and the EPA (amongst others).<sup>283</sup> As Margaret Foster Riley identifies, the CARB plan also features a focus on antibiotic resistance in the environment—an element that has previously seen little attention.<sup>284</sup>

### 1. Limitations

While presenting as a promising mechanism to guide the necessary changes at the human-animal-environment interface, One Health faces various challenges that have hindered its ability to have a significant, practical impact. Firstly, the concept is often defined differently by various organizations depending on their particular focus (be it human, animal, or environmental health).<sup>285</sup> There is generally a shared

---

<sup>278</sup>Ali, *supra* note 64, at 87; CARB, *supra* note 277.

<sup>279</sup>CARB, *supra* note 277, at 5; Mary J. Gilchrist et al., *The Potential Role of Concentrated Animal Feeding Operations in Infectious Disease Epidemics and Antibiotic Resistance*, 115 ENV'T HEALTH PERSPS. 313 (2007).

<sup>280</sup>CARB, *supra* note 277, at 11; THE WHITE HOUSE, NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA (2015), [https://obamawhitehouse.archives.gov/sites/default/files/docs/national\\_action\\_plan\\_for\\_combating\\_antibiotic-resistant\\_bacteria.pdf](https://obamawhitehouse.archives.gov/sites/default/files/docs/national_action_plan_for_combating_antibiotic-resistant_bacteria.pdf) [<https://perma.cc/PLX3-EKQQ>].

<sup>281</sup>CARB, *supra* note 277, at 11.

<sup>282</sup>*Id.* at 23.

<sup>283</sup>*Id.* at 7.

<sup>284</sup>*Id.* at 4; Margaret Foster Riley, *One Health Pandemic Prevention and Mitigation: The Role of the FDA*, 76 FOOD & DRUG L.J. 200, 229 (2021).

<sup>285</sup>C. Barton Behravesh, *One Health: Over a Decade of Progress on the Road to Sustainability*, 38 REVUE SCIENTIFIQUE ET TECHNIQUE 21, 22 (2019).

foundation to the differing definitions; however, the lack of a single definition or approach allows room for interpretations that favor a particular portion of the human-animal-environment interface—most typically in favor of human health.<sup>286</sup> In part, this can be attributed to the difficulty in establishing a shared definition of health for humans, animals, and the environment.<sup>287</sup>

This is especially pertinent given that human, animal, and environmental health may at times be in conflict.<sup>288</sup> For example, as discussed above, a primary element of the U.S. regulatory response to zoonotic disease is depopulation. In a disease outbreak, depopulated animals can include those infected with the disease, as well as those that had contact with diseased animals, and those in high-risk areas such as surrounding facilities.<sup>289</sup> Accordingly, animals not infected with a disease may be depopulated. This carries clear benefits in terms of protecting public health, especially given the impracticality of other disease containment methods for large populations of animals.<sup>290</sup> However, depopulation of animals in such circumstances carries little benefit for animal health. In conflict situations such as this, the ambiguity of One Health may facilitate an approach that does not equally value all elements of the human-animal-environment interface.

Secondly, political-economic factors hinder efforts to operationalize One Health at the structural level required. In a STEPS Working Paper, Galez et al. explore why implementation of One Health has been wanting despite receiving significant rhetorical support.<sup>291</sup> Through a series of interviews with stakeholders, all with an active professional involvement in One Health, Galez et al. found that funding flows and political interest were largely confined to a global “outbreak” narrative.<sup>292</sup> This narrative focuses on zoonotic disease at the transmission level, with implementation efforts directed towards disease

---

<sup>286</sup>Joost Van Hertem et al., *One Health as a Moral Dilemma: Towards a Socially Responsible Zoonotic Disease Control*, 66 ZOOSES PUB. HEALTH 26, 28 (2019).

<sup>287</sup>*Id.* at 31.

<sup>288</sup>*Id.* at 28–31.

<sup>289</sup>U.S. DEP’T OF AGRIC., FOREIGN ANIMAL DISEASE PREPAREDNESS & RESPONSE PLAN (2015), [https://www.aphis.usda.gov/animal\\_health/emergency\\_management/downloads/nahems\\_guidelines/mass\\_depopeuthan.pdf](https://www.aphis.usda.gov/animal_health/emergency_management/downloads/nahems_guidelines/mass_depopeuthan.pdf) [<https://perma.cc/5X74-799K>]; Andréia G. Arruda et al., *A Systematic Literature Review on Depopulation Methods for Swine*, ANIMALS, Nov. 2020, at 2.

<sup>290</sup>For example, given the sheer number of animals in intensive systems and the limited space they share, isolating sick animals from healthy animals is likely impractical.

<sup>291</sup>VICTOR GALAZ ET AL., THE POLITICAL ECONOMY OF ONE HEALTH RESEARCH AND POLICY (2015), <https://steps-centre.org/wp-content/uploads/One-Health-wp3.pdf> [<https://perma.cc/UN7M-FEHP>].

<sup>292</sup>*Id.* at 20.

surveillance and pharmaceutical solutions.<sup>293</sup> As one interviewee explained in reference to the avian influenza outbreak in the early 2000s, “[avian influenza] allowed us to focus on something that was a tangible threat and source significant amounts of money from contingency funds. Talking about generic threats at the human-animal interface—zoonoses—is less arresting and makes it harder to draw funds down.”<sup>294</sup>

In effect, efforts directed at addressing the drivers of zoonotic disease, such as intensive animal agriculture, are not incentivized and, as Galez et al. identify, face additional challenges in terms of “confronting powerful interests and entrenched political-economic relations.”<sup>295</sup> This limitation is connected to the previously mentioned inequality between the different spheres of the One Health concept. If political impetus is directed largely at the point of transmission, One Health efforts may emphasize the human health sphere. The animal and environment spheres may therefore receive only secondary attention in service of human health as the primary beneficiary. Such an approach would likely impede the ability of One Health to bring about the paradigm shift necessary to address the risk of zoonotic disease.

In sum, the ambiguity of One Health, the “outbreak” focus, and the prioritization of human health likely renders the One Health approach inadequate in its current form to mitigate the zoonotic disease risk posed by intensive animal agriculture.

#### B. Wild Law

Like One Health, Wild Law, also known as Earth Jurisprudence, recognizes the interdependence of humans, animals, and the environment. However, Wild Law goes further by proposing an alternative legal framework that situates humans within the broader limits of the Earth. As touched on above, U.S. laws are inherently anthropocentric because they operate in favor of humans and treat all other beings as secondary. Wild Law proposes a framework that is designed to dismantle this legal anthropocentrism. Advocates for Wild Law describe the current legal system as human-centric, and human relationships with animals and the environment as separate, hierarchical, and

---

<sup>293</sup>*Id.* at 13, 15, 20; I. Johnson, A. Hansen & P. Bi, *The Challenges of Implementing an Integrated One Health Surveillance System in Australia* 65 ZOOSES & PUB. HEALTH 229, 234 (2018).

<sup>294</sup>GALAZ, *supra* note 291, 13.

<sup>295</sup>*Id.* at 18.

subservient to human needs.<sup>296</sup> Cormac Cullinan, a pioneer of Wild Law, identifies the current system as one that “reserves all rights and privileges to use and enjoy Earth to humans and reduces all other aspects and creatures of the Earth status of objects for the use of humans.”<sup>297</sup>

It is this framework that produces concepts of dominion and structures an economic relationship between humans and the Earth.<sup>298</sup> The notion that Earth and its non-human inhabitants are resources to be exploited by humans has developed a worldview whereby humans are not considered part of the reciprocal relationship between Earth and its inhabitants.<sup>299</sup> In the context of zoonotic disease, this framework facilitates intensive animal agriculture, which operates irrespective of the limits of the Earth.<sup>300</sup> Wild Law challenges this legal anthropocentrism and points to the segregation of human and Earth as the cause behind the current ecological threats faced by humanity.<sup>301</sup>

In the view of Wild Law, current threats cannot be addressed within the existing legal framework because the threats are themselves symptoms of that framework. As Cullinan explains, “our legal and political establishments perpetuate, protect, and legitimize the continued degradation of the Earth by design, not by accident.”<sup>302</sup> Therefore, Wild Law calls for a radical alteration of current concepts of legality and governance. In this respect, in Wild Law, legality is seen as central to social change.<sup>303</sup> For example, Cullinan outlines that “[i]n order for any fundamental change in how a society perceives itself to be

---

<sup>296</sup>See Peter Burdon, *The Great Jurisprudence*, in *EXPLORING WILD LAW: THE PHILOSOPHY OF EARTH JURISPRUDENCE* 59, 59–61 (Peter Burdon ed., 2011) (describing anthropocentrism in the law).

<sup>297</sup>CORMAC CULLINAN, *WILD LAW: A MANIFESTO FOR EARTH JUSTICE* 65 (2003).

<sup>298</sup>See Ian Mason, *One in All: Principles and Characteristics of Earth Jurisprudence*, in *EXPLORING WILD LAW: THE PHILOSOPHY OF EARTH JURISPRUDENCE*, *supra* note 296, at 35 (discussing the human view of nature as a ‘resource’).

<sup>299</sup>See Ian Lowe, *Wild Law Embodies Values for a Sustainable Future*, in *WILD LAW: IN PRACTICE* 2, 12 (Michelle Maloney & Peter Burdon eds., 2014).

<sup>300</sup>See Michelle Maloney, *Ecological Limits, Planetary Boundaries and Earth Jurisprudence*, in *WILD LAW: IN PRACTICE*, *supra* note 299, at 193 (discussing how to define the ecological boundaries of the Earth); Christine Parker, Fiona Haines & Laura Boehm, *The Promise of Ecological Regulation: The Case of Intensive Meat*, 59 *JURIMETRICS* 15.

<sup>301</sup>See UN ENVIRONMENT, *GLOBAL ENVIRONMENT OUTLOOK*, GEO-6, at 142 (2019); Felicity Deane & Katie Woolaston, *Coal Mines and Wild Law: A Judgement for the Climate*, in *LAW AS IF THE EARTH REALLY MATTERED: THE WILD LAW JUDGEMENT PROJECT* 125 (Nicole Rogers and Michelle Maloney eds., 2017); Michelle Maloney, *Building an Alternative Jurisprudence for the Earth: The International Rights of Nature Tribunal*, 41 *VT. L. REV.* 129, 132 (2016).

<sup>302</sup>CULLINAN, *supra* note 297, at 62.

<sup>303</sup>Jamie Murray, *Earth Jurisprudence, Wild Law, Emergent Law: The Emerging Field of Ecology and Law – Part 1*, 35 *LIVERPOOL L. REV.* 215, 225.

translated into any actual change in how it functions, it is necessary first to change that society's idea of law."<sup>304</sup> Wild Law is therefore predicated on the idea that the necessary societal changes cannot be realized "unless we simultaneously entirely reconceptualise the jurisprudence of the dominant culture."<sup>305</sup>

In this respect, the alternative legal framework proposed by Wild Law recognizes human dependency on the Earth system and the reciprocal nature of this relationship.<sup>306</sup> A fundamental principle of Wild Law is that all members of the Earth community are rights holders.<sup>307</sup> This is a clear divergence from the existing property regime in the US, in which humans are positioned as subjects and all other elements of nature as objects.<sup>308</sup> Thomas Berry, who articulated the foundation of Wild Law, defined these rights in stating that "[e]very component of the Earth community, both living and non-living has three rights: the right to be, the right to a habitat or place to be, and the right to fulfil its role in the ever-renewing process of the Earth Community."<sup>309</sup> The rights held by each member of the Earth community are limited only by the rights of other members "to the extent necessary to maintain the integrity, balance and health of the communities within which it exists."<sup>310</sup> Berry explained that these rights "originate where existence originates."<sup>311</sup> That is, under Wild Law, laws are derived from the universe as opposed to human legal systems.<sup>312</sup> This means that human laws that do not align with the laws of the universe are invalid, as they operate outside of the limits of the Earth.

It is helpful at this point to define key terms employed in Wild Law. Firstly, "Earth community" refers to the land and all its inhabitants, capturing all organisms. As Peter Burdon explains, "[a]ll organisms are subjects—they have interiors and life worlds."<sup>313</sup> References to

---

<sup>304</sup>CULLINAN, *supra* note 297, at 58.

<sup>305</sup>*Id.* at 58; Murray, *supra* note 303, at 225.

<sup>306</sup>Michelle Maloney & Patricia Siemen, *Responding to the Great Work: The Role of Earth Jurisprudence and Wild Law in the 21<sup>st</sup> Century*, 5 ENV'T & EARTH L.J. 6, 12 (2015); *see also*, Cameron Holley et al., *Environmental Security and the Anthropocene: Law, Criminology, and international Relations*, 14 ANNUAL REV. L. & SOC. SCI. 185, 191 (2018).

<sup>307</sup>*See* Cullinan, *supra* note 97.

<sup>308</sup>*See* Murray, *supra* note 303, at 219-220.

<sup>309</sup>THOMAS BERRY, THE ORIGIN, DIFFERENTIATION AND ROLE OF RIGHTS (2001), <http://www.ties-edu.org/wp-content/uploads/2018/09/Thomas-Berry-rights.pdf> [<https://perma.cc/G437-GT87>].

<sup>310</sup>Cullinan, *supra* note 97, at 13.

<sup>311</sup>BERRY, *supra* note 309.

<sup>312</sup>CULLINAN, *supra* note 297, at 78.

<sup>313</sup>Burdon, *supra* note 96, at 821.



the “Earth” and the “universe” take their literal definitions. That is, the “Earth” is the planet humans share with the Earth community, and “universe” can be understood as the broader cosmos.<sup>314</sup> Considering laws as being derived from the universe means they are found and interpreted by humans, as opposed to being made.<sup>315</sup> This may be seen as reminiscent of natural law,<sup>316</sup> in which a universal higher law “is discoverable by humans through a process of reason.”<sup>317</sup> While natural law is, in general, inherently anthropocentric given its primary concern with humans,<sup>318</sup> Burdon claims that “Earth Jurisprudence can correctly be described as a theory of natural law.”<sup>319</sup> Wild Law also draws clear guidance from many indigenous perspectives that hold ecological integrity at the heart of governance.<sup>320</sup> Fundamentally, Wild Law is an eco-centric framework concerned with positioning humans within the context of the Earth. It involves an acknowledgement that laws are derived from the universe and thus human laws must be consistent with the limits of nature and be aligned with the health of Earth and its inhabitants.

Implementing Wild Law would require a fundamental and radical change to the current legal system. An example of how this change might look in the U.S. can be found in the Klamath River. The Native American Yurok Tribe has a deep connection with the Klamath River, which flows through Oregon and California.<sup>321</sup> The relationship between the Yurok Tribe and the Klamath River has existed since time immemorial.<sup>322</sup> The Yurok Tribe’s culture, economies, and religion

---

<sup>314</sup>Herman Greene, *Cosmology and Earth Jurisprudence*, in *EXPLORING WILD LAW: THE PHILOSOPHY OF EARTH JURISPRUDENCE*, *supra* note 296, at 126.

<sup>315</sup>Peter Burdon, *A Theory of Earth Jurisprudence*, 37 *AUSTL. J. OF LEGAL PHIL.* 28, 33 (2012).

<sup>316</sup>Natural Law theory has itself been subject to extensive criticism, particularly its premise on a universal human nature and objective perspective by which to interpret human good. *See generally* Kent Greenawalt, *How Persuasive Is Natural Law Theory?*, 75 *NOTRE DAME L. REV.* 1647 (2000).

<sup>317</sup>Lynda Warren, *Wild Law: The Theory*, 18 *ENV'T L. & MGMT.* 11, 13 (2006); Peter Burdon, *A Theory of Earth Jurisprudence*, 37 *AUSTL. J. OF LEGAL PHIL.* 28, 33 (2012).

<sup>318</sup>Burdon, *supra* note 296, at 61.

<sup>319</sup>Burdon, *supra* note 315, at 34.

<sup>320</sup>Kristen Anker, *Law As . . . Forest: Eco-logic, Stories and Spirits in Indigenous Jurisprudence*, 21 *L. TEXT CULTURE* 191, 194 (2017); Helena Howe, *Making Wild Law Work: The Role of “Connection with Nature” and Education in Developing an Ecocentric Property Law*, 29(1) *J. OF ENV'T L.* 19, 32 (2016).

<sup>321</sup>*See* Anna V. Smith, *How the Yurok Tribe Is Reclaiming the Klamath River*, *HIGH COUNTRY NEWS* (June 11, 2018), <https://www.hcn.org/issues/50.10/tribal-affairs-how-the-yurok-tribe-is-reclaiming-the-klamath-river> [<https://perma.cc/M99U-5FE9>].

<sup>322</sup>KATHLEEN SLOAN, *YUROK TRIBE ENV'T PROGRAM, YUROK AND THE KLAMATH RIVER* 3 (2011), [https://media.fisheries.noaa.gov/dam-migration/yurok\\_klamath\\_doi\\_2011.pdf](https://media.fisheries.noaa.gov/dam-migration/yurok_klamath_doi_2011.pdf) [<https://perma.cc/J5QN-Y8V8>].

are connected to the Klamath River, and they rely on salmon from the river as a source of food.<sup>323</sup> As Beth Rose Middleton Manning and Kaitlin Reed explain, “[w]ithin Yurok epistemology, the natural world is composed of living beings; the river, the trees, and the salmon are intimately connected to Yurok culture—they are relatives.”<sup>324</sup> The health of the river, and thus the health of the salmon, is of considerable importance to the Yurok Tribe. However, there have been several adverse impacts to the health of the river and the Yurok Tribe’s way of life. In a 2011 report on the Yurok and the Klamath River for the Department of the Interior, Dr. Kathleen Sloan explains that many of these impacts result from “management decisions regarding commercial fisheries, the establishment and abolition of canneries, and the construction of a series of dams in the upper basin.”<sup>325</sup> The impact of runoff from agricultural fertilizers and pesticides has also contributed to the ill health of the river.<sup>326</sup>

In response to the Klamath River’s declining health, the Yurok Tribal Council passed a resolution on May 9, 2019, declaring that the river has rights of personhood.<sup>327</sup> The resolution confirms that the Klamath River has the right “to exist, flourish, and naturally evolve; to have a clean and healthy environment free from pollutants; to have a stable climate free from human-caused climate change impacts; and to be free from contamination by genetically engineered organisms.”<sup>328</sup> As Geneva Thompson explains, “[e]ven though the ordinance is newly developed, the principle has existed precontract, and the Yurok Tribe is simply codifying rights the Klamath River has always had.”<sup>329</sup> This resolution allows cases to be adjudicated in Yurok Tribal Court on behalf of the Klamath River.<sup>330</sup> That is, cases can be brought against entities that violate the rights of the Klamath River through the infliction of ecological damage.<sup>331</sup> Tribal courts are reflective of

---

<sup>323</sup>*Id.* at 7.

<sup>324</sup>Beth Rose Middleton Manning & Kaitlin Reed, *Returning the Yurok Forest to the Yurok Tribe: California’s First Tribal Carbon Credit Project*, 39 STAN. ENV’T L.J. 71, 85–86.

<sup>325</sup>SLOAN, *supra* note 322, at 4.

<sup>326</sup>Geneva E.B. Thompson, *Codifying the Rights of Nature*, 59 JUDGES’ J. 12, 14.

<sup>327</sup>Anna V. Smith, *Some Indigenous Communities Have a New Way to Fight Climate Change: Give Personhood Rights to Nature*, MOTHER JONES (Sept. 29, 2019), <https://www.motherjones.com/environment/2019/09/some-indigenous-communities-have-a-new-way-to-fight-climate-change-give-personhood-rights-to-nature/>.

<sup>328</sup>Yurok Tribal Council Res. 19-40, Resolution Establishing the Rights of the Klamath River (May 9, 2019), <http://files.harmonywithnatureun.org/uploads/upload833.pdf> [<https://perma.cc/ZAV2-7RQ4>].

<sup>329</sup>Thompson, *supra* note 326.

<sup>330</sup>*Id.*

<sup>331</sup>The Yurok Tribal Council, *supra* note 328.

the original sovereignty and inherent self-governing power of Native nations. Thompson outlines that, “[s]ince time immemorial, Native nations have had inherent authority to develop, exercise, and enforce civil and criminal regulatory and adjudicatory authority over the individuals throughout their territories.”<sup>332</sup> The extent to which this authority applies to the conduct of non-members is limited; however, the decision in *Montana v. United States* confirmed that Native nations “may also retain inherent power to exercise civil authority over the conduct of non-Indians on fee lands within its reservation when that conduct threatens or has some direct effect on the political integrity, the economic security, or the health or welfare of the tribe.”<sup>333</sup> Thus, the rights of the Klamath River operate within these jurisdictional limits. Establishing legal personhood for the river, in recognition of the reciprocal relationship between the Yurok Tribe and the Klamath River, is an example of the operationalization of Wild Law within the US. It represents an eco-centric conceptualization of the law and demonstrates that rights can be applied outside of their current anthropocentric understanding.

In terms of how Wild Law would be applied to intensive animal agriculture, any changes would be informed by the interdependent human-animal-Earth relationship.<sup>334</sup> Firstly, changes to the current system of animal food production would be necessary. Intensive animal agriculture does not operate for the good of the entire Earth system, and fails to acknowledge the interdependence of humans, animals, and the environment. This can be seen in the unacceptable risk of zoonotic disease described in the preceding sections. As explained above, under Wild Law, each member of the Earth community—including animals—has a right to be, a right to habitat, and a right to fulfil its role in the Earth community.<sup>335</sup> These rights are balanced against and limited only by the rights of other members of the Earth community. The exact rights applicable to each member are not defined, nor is the process for determining which rights prevail when balancing those held by each member of the Earth community. However, it appears clear given the impact of intensive animal agriculture on animals and the environment, and the associated impact of

---

<sup>332</sup>Thompson, *supra* note 326.

<sup>333</sup>*Montana v. United States*, 450 U.S. 544, 565–66 (1981); Thompson, *supra* note 326.

<sup>334</sup>MELISSA HAMBLIN, *WILD LAW AND DOMESTICATED ANIMALS: A WILD LAW APPROACH TO THE REGULATION OF FARMING INDUSTRIES IN AUSTRALIA* (2011); Glen Wright, *Animal Law and Earth Jurisprudence: A Comparative Analysis of the Status of Animals in two Emerging Critical Legal Theories*, 9 *AUSTL. ANIMAL PROT. L.J.* 5, 17 (2013).

<sup>335</sup>BERRY, *supra* note 309.

zoonotic disease emergence on humans, that intensive animal agriculture would be inconsistent with a Wild Law approach. Thus, as a starting point, changes to the current system of animal agriculture would be necessary.

The extent of the necessary changes can be understood through the principles of Wild Law articulated by Berry. In particular, the following passage provides guidance as to the impact of Wild Law on animal agriculture and the consumption of animals more generally:

Planet earth is a single community bound together with interdependent relationships. No living being nourishes itself. Each component of the Earth community is immediately or mediately dependent on every other member of the community for the nourishment and assistance it needs for its own survival. This mutual nourishment, which includes the predator-prey relationship, is integral with the role that each component of the earth has within the comprehensive community of existence.<sup>336</sup>

Human consumption of animals is not inherently inconsistent with Wild Law. Berry explicitly endorses a predator-prey relationship as part of Wild Law, which, presumably, applies to humans in the same manner as it applies to non-humans. As Heather McLeod-Kilmurray identifies, not all animal products are produced in exploitative ways, “[m]any societies—such as some indigenous peoples, hunter-gatherers, and fishing groups—have maintained balanced relationships with other species and ecosystems for generations as interdependent communities of life . . . .”<sup>337</sup> Given the guidance indigenous perspectives and lifeways have provided to Wild Law, it appears likely that Wild Law’s treatment of animal consumption by humans would follow a similar vein. That is, intensive animal agriculture would be replaced by eco-centric animal consumption guided by the health of the entire Earth system. The rights of animals to be, to habitat, and to fulfil their role in the Earth community would not be limited more than required for humans to exercise their own rights. Similarly, the rights of humans would not be limited any more than is required for animals to exercise their rights. Thus, under Wild Law, animal consumption is permitted to the extent that it is necessary for humans to fulfil their right “to be”; however, consumption over and above the extent of this right would be in violation of the rights of animals.<sup>338</sup> Such a change would correct many of the aforementioned factors that contribute to

---

<sup>336</sup>*Id.*

<sup>337</sup>McLeod-Kilmurray, *supra* note 266, at 466.

<sup>338</sup>Issues surrounding what constitutes “necessary” animal consumption, particularly in the context of culture, would need to be addressed; however, these issues sit outside the scope of this paper.

the zoonotic disease risk posed by intensive animal agriculture. Specifically, eco-centric modes of animal consumption—such as those practiced by indigenous peoples, would likely improve animal welfare, maintain genetic diversity, minimize the need for mass depopulation and disposal, and substantially reduce the discharges of animal waste into waters of the United States. Therefore, Wild Law would likely produce the necessary paradigm shift and provide the necessary framework to reduce the zoonotic disease risk posed by intensive animal agriculture.

### 1. Limitations

Wild Law promises to deliver the radical paradigm shift necessary to correct the human-animal-environment relationship. However, the substantive changes demanded by the approach will likely meet significant resistance. The recognition of the rights of nature and non-human animals would substantially alter current ways of life for most people. It would impact the ways in which some humans generate income, and their current relationships with the places they live—particularly in regional communities. For example, many people within rural communities view animal agriculture as integral to their security and as a source of generational stability.<sup>339</sup> Place attachment—which can be described as the bond between individuals and place—often exists for farmers and their land.<sup>340</sup> A transition away from anthropocentric relations with animals and the environment may therefore be seen as a loss of stability and an affront to their relationship with their land. Many people also have complex social relationships intertwined with the food they eat and the entertainment they seek,<sup>341</sup> and thus the drastic alterations to human behavior would have far reaching consequences—not just economically, but emotionally. While this may potentially work against Wild Law as a viable alternative framework, fundamentally rebalancing the relationships between humans, animals, and the environment is necessary to address—amongst other global problems—the zoonotic disease risks posed by intensive animal agriculture.

---

<sup>339</sup>See Courtney E. Quinn & Angela C. Halfacre, *Place Matters: An Investigation of Farmers' Attachment to Their Land*, 20 HUM. ECOLOGY REV. 117 (2014).

<sup>340</sup>Joseph Malanson, *Returning Right-To-Farm Laws to Their Roots*, 97 WASH. U. L. REV. 1577 (2020).

<sup>341</sup>See Eva C. Monterrosa et al., *Sociocultural Influences on Food Choices and Implications for Sustainable Healthy Diets*, 41 FOOD & NUTRITION BULL. 59 (2020).

The viability of Wild Law is further challenged by its practical implementation. The need to transition away from the anthropocentric hierarchy that positions humans as subjects and nature as a collection of legal objects underpins Wild Law, and the theory can therefore be understood as a critique of current property law systems. Wild Law proposes granting legal rights to nature in what would be an eco-centric reconceptualization of property in the United States. While, as discussed, this drastic reconceptualization is warranted, Wild Law is challenged by the same logistical vagueness that limits the One Health approach. While there are some instances of nature specific rights in the United States,<sup>342</sup> these are limited and are not as extensive as that envisioned under Wild Law. There is also insufficient detail surrounding the Wild Law alternative to current property systems, particularly in terms of how the rights held by members of the Earth community will be balanced against other members' rights. As was discussed in regard to One Health, a lack of a robust and detailed framework to address this balancing exercise may result in decisions that favor human interests. The limited practical implementation of Wild Law, combined with the need for further development of the scope and meaning of the rights of nature, means that the ability of the framework to respond to the zoonotic disease risk posed by intensive animal agriculture is essentially untested. This represents an obstacle in the implementation of Wild Law that would need to be overcome as the theory advances.

---

<sup>342</sup>Some successful and some unsuccessful. Consider the Klamath river, detailed above, as well as the Lake Erie Bill of Rights (LEBOR), through which the residents of Toledo in Ohio recognized the rights of Lake Erie and its watershed "to exist, flourish, and naturally evolve." TOLEDO, OHIO, MUN. CODE ch. XVII, § 253 (2019). The Lake Erie Bill of Rights also allowed the residents of the city and the city itself to sue corporations and governments on behalf of the lake. The city of Toledo was immediately sued by an agricultural business, and in 2020, LEBOR was invalidated by the federal district court, ruling that "LEBOR is unconstitutionally vague and exceeds the power of municipal government in Ohio," although also noting that through LEBOR, residents pursued a "well-intentioned goal: the protection of Lake Erie." Eric Heisig, *Federal Judge Strikes Down Toledo's Lake Erie Bill of Rights as Unconstitutional, Says Sweeping Law is Too Vague*, CLEVELAND.COM (Feb. 28, 2020), <https://www.cleveland.com/court-justice/2020/02/federal-judge-strikes-down-toledos-lake-erie-bill-of-rights-as-unconstitutional-says-sweeping-law-is-too-vague.html> [<https://perma.cc/J7CX-CCUM>]. Consider also the "Bill of Rights for Sustainability" in Santa Monica, California. The 2013 Bill grants "[n]atural communities and ecosystems . . . fundamental and inalienable rights to exist and flourish" within Santa Monica. SANTA MONICA, CAL., MUN. CODE § 12.02.030(b) (2019). See Erin Ryan et al., *Environmental Rights for the 21<sup>st</sup> Century: A Comprehensive Analysis of the Public Trust Doctrine and Rights of Nature Movement*, 42 CARDOZO L. REV. 2447 (2021) (discussing instances of rights of nature laws enacted in the U.S. and throughout the World).

A further challenge faced by Wild Law is that it necessarily requires human interpretation of the rights and needs of nature.<sup>343</sup> No non-human members of the Earth community can represent themselves in an adjudication of their rights, nor are they able to contribute to the development of those rights. To represent the interests of the broader Earth community is to do so through a human intermediary and therefore through what could be described as an inherent bias towards the interests of humans. As Kristen Stilt identifies, there is an added difficulty in interpreting the rights of non-human animals when compared to the rights of nature.<sup>344</sup> The rights of a river, for instance, are typically interpreted in line with some human interest. That is, the river has rights consistent with returning it to full health to allow humans to have full enjoyment of the river for practices such as “agriculture, hunting, fishing, and artisanal mining.”<sup>345</sup> Stilt explains that “[t]he implication of rights of river judgements is not that a river simply seeks to be left alone. The purpose of a river in these decisions is to serve humans, through access to water, transportation, and the animals who live in them.”<sup>346</sup> In contrast, the rights of animals are not as readily interpreted to align with human interests. Animal rights under a Wild Law approach would therefore require a substantially larger reworking of current ways of life and may be more open to misrepresentation.

### C. Reform Recommendations

Despite the difficulties outlined above, Wild Law appears to be the most appropriate fundamental framework by which to address the zoonotic disease risk posed by intensive animal agriculture. Wild Law would require a progressive discontinuance of intensive animal agriculture, which would address the key zoonotic disease risks that are inherent to the practice. Unlike a One Health approach, it will produce the necessary paradigm shift by challenging the legal anthropocentrism that informs the current regulation of animal agriculture. Wild Law offers a framework that recognizes the interdependence of humans, animals, and the environment, and seeks to ensure a balanced relationship. That said, while Wild Law provides a more promising alternative paradigm than One Health, it is not perfect. Any real attempt to take a Wild Law approach to the regulation of animal

---

<sup>343</sup>See Greene, *supra* note 314, at 134.

<sup>344</sup>Kristen Stilt, *Rights of Nature, Rights of Animals*, 134 HARV. L. REV. 276, 284 (2021).

<sup>345</sup>*Id.*

<sup>346</sup>*Id.*

agriculture would require extensive consideration of who has rights and how those rights are balanced against each other, which is outside the scope of this Article. Nevertheless, this Article proposes that the basic concept of Wild Law, wherein the law recognizes and respects the interdependence of humans, animals, and the environment, be used to reform the laws relating to animal agriculture. In this respect, it is worthwhile noting that there have been some suggestions of a transition to eco-centric regulation in the United States in the recent past.<sup>347</sup>

### 1. Regulation Informed by a Wild Law Approach

Full implementation of Wild Law would require drastic legal reform, which is unlikely to be politically palatable or desirable. Accordingly, reform should proceed progressively, with the most pressing matters at the forefront. As mentioned, Wild Law requires further development, particularly in relation to how the rights of each member of the Earth system would be balanced against the conflicting interests of other members. However, it does provide a vehicle for analyzing and seeking alternatives to current problems, such as intensive animal agriculture. Utilizing the key concepts of Wild Law—primarily by recognizing the interdependence of humans, animals, and the environment—may allow humans to develop better laws and systems of governance that move away from current anthropocentric modes.

Against this background, this Article suggests that Wild Law be used to inform the regulation of animal agriculture. Because of its pandemic potential, intensive animal agriculture is a pressing concern and should be the first focus for reform. A Wild Law approach would require regulation of animal agriculture that is not anthropocentric. That is, agricultural practices that only benefit human beings in the short-term, to the detriment of animals and the environment, would not be permitted. Wild Law would also require governance of animal agriculture to be guided by the interdependence of humans, animals, and the environment. Thus, regulation informed by Wild Law would need to take a holistic approach—recognizing human health, environmental concerns, and animal welfare as predominant goals.

This Article does not recommend—in the first instance—awarding substantive rights to animals or the environment to give effect to this change. Rather, Wild Law should be used as a legal tool to guide the regulatory changes. For instance, in practice, this could require the

---

<sup>347</sup>RANDALL S. ABATE, CLIMATE CHANGE AND THE VOICELESS: PROTECTING FUTURE GENERATIONS, WILDLIFE, AND NATURAL RESOURCES 11 (2020).



true costs of regulatory decisions concerning animal agriculture to be considered. This would factor in the impacts of a decision on animal welfare, the environment, human health, and the economy. In this respect, this Article suggests that adopting Wild Law as a guiding framework would require that intensive animal agriculture be phased out. This is because intensive systems operate for short-term human benefit to the detriment of future human generations, animals, and the environment, and cannot be reconciled with concepts of human-animal-environment interdependence.

Utilizing Wild Law as the vehicle for change would be advantageous as it would require an explicit recognition of—or an explicit commitment to—the key concepts underpinning the framework. This would clearly signal a reorientation towards eco-centric regulatory efforts and would provide a guiding principle by which to answer difficult questions in relation to the necessary reforms. A commitment to the concepts of interdependency underpinning Wild Law could set a baseline that cannot be repudiated. This could bolster reform efforts by providing an additional barrier to lobbying from large animal agriculture organizations.<sup>348</sup>

Finally, as a Wild Law approach to governance of animal agriculture would require ending intensive animal agricultural practices, this approach would address the zoonosis risk detailed in this Article. Specifically, by requiring a phase-out of intensive operations, discharges of animal waste into the waters of the United States and instances of mass depopulation and disposal would be reduced, and genetic diversity and higher levels of animal welfare would be fostered. These practices are inherent to intensive animal agriculture and pose a considerable risk in relation to zoonotic disease outbreaks. Therefore, the risk of future zoonoses would be substantially reduced if intensive operations were progressively discontinued.

## 2. Developing a Connection with the Earth

This paper has emphasized that the human-animal-Earth relationship under a Wild Law approach is one underpinned by interdependence and balance. For such a relationship to be reflected in law, cultural change must also occur. A perspective must be fostered that rejects current anthropocentric understandings of our relationship to nature. This new perspective must be guided through education and informed by knowledge of the interdependence of humans and

---

<sup>348</sup>See Oliver Lazarus et al., *The Climate Responsibilities of Industrial Meat and Dairy Producers*, 165 CLIMATE CHANGE 30 (2021) (discussing climate change lobbying).

nature. As Helena Howe identifies, “[w]hile we can take the lesson offered from indigenous communities we will need actively to forge this connection. Developing the sense of ‘oneness’ with nature and of belonging to a community of beings needed to support a Wild Law of property will take time and require practical strategic endeavour.”<sup>349</sup>

Directing efforts at forging a predominant eco-centric perspective would facilitate the progressive implementation of a Wild Law approach and may also reduce the need for legal reform to demand radical changes of human behavior—that is, it may encourage radical changes to human behavior before such changes are imposed by law. Reforms that are informed by Wild Law concepts may be in opposition to current relationships that humans hold with the land. For instance, a Wild Law approach to the governance of animal agriculture may alter what people eat, what they wear, and how they generate income (among others). Devoting attention to building the relationship with nature that Wild Law is predicated on may reduce some resistance to the legal reform called for. It may also encourage and enable consumer action that decreases current reliance on intensive animal agriculture and therefore contribute to combating the risk of zoonotic disease.<sup>350</sup>

## V. CONCLUSION

The COVID-19 pandemic has demonstrated the devastating impact that zoonoses can have on public health and national economies. Zoonotic disease emergence is connected to the merging of the human-animal interface. In the US, this is best represented by the intensification of animal agriculture, which is recognized by the UN as a key driver of zoonoses. Intensified operations have responded to the mass demand for animal protein in the United States—a demand that could not be met with small-scale agriculture alone. However, several inherent features of these operations pose an unacceptably high risk in the context of zoonotic disease. These include low levels of animal welfare, genetic uniformity, excessive use of antibiotics, reliance on mass depopulation and on disposal methods that are least recommended in terms of pathogen inactivation, and the discharge of animal waste and other related pollutants into U.S. waters. As such,

---

<sup>349</sup>Howe, *supra* note 320, 32.

<sup>350</sup>It must be acknowledged, however, that some people face additional obstacles that hinder them from taking consumer action. Necessary legal frameworks must first be put in place to prevent them from being unfairly disadvantaged in pursuit of ecological goals.

intensive animal agriculture must be adequately regulated to mitigate this risk.

This Article has argued that the regulation of intensive animal agriculture is indicative of legal anthropocentrism. This is represented by the hierarchical ordering of human interests over and above the interests of animals, which results in practices that have minimal concern for the welfare of animals outside the context of profitability. While these structures are designed to serve short-term human interests, this Article has established that they are directly related to the increased risk of zoonotic disease emergence. The current regulatory space fails to adequately protect animal welfare—a primary factor in reducing the risk of emergence. Farmed animal welfare is undermined by broad exemptions from animal welfare requirements for common farming practices, and poor levels of enforcement in states where anti-cruelty legislation applies to farmed animals. Measures such as surveillance, depopulation, and federal oversight of farm discharges into U.S. waters fail to address the root causes of zoonotic disease and are insufficient even in terms of reactionary measures. Thus, the U.S. approach to zoonotic disease is inadequate to address the inherent risks posed by intensive animal agriculture.

On this basis, a radical paradigm shift is necessary to alter the legal anthropocentrism that informs the current regulatory regime. The anthropocentric structures that facilitate the mass exploitation of animals and the environment in favor of short-term human benefit must undergo an eco-centric reconceptualization to combat the risk of zoonotic disease.<sup>351</sup> This Article has argued that the fundamental tenets of Wild Law provide the most appropriate framework for legal reform of animal agriculture, which should be the first focus of reform given the pressing zoonoses concerns. A Wild Law approach would demand an eco-centric reconceptualization of current legal and governance systems and would require human activities to operate within the context of the Earth's limits. In this respect, intensive animal agriculture would be inconsistent with a Wild Law approach. This Article has recommended that regulation of animal agriculture take a Wild Law approach by recognizing the interdependence of humans, animals, and the environment. This would require a phasing out of intensive animal agriculture, which will adequately address the risk of zoonotic

---

<sup>351</sup>Amongst other global issues.

disease raised in this Article by ceasing practices that produce conditions conducive to zoonotic disease outbreaks.<sup>352</sup>

---

<sup>352</sup>Capitalism drives the need for increasingly efficient production that results in a heightened risk of zoonotic disease emergence in the context of intensive animal agriculture; however, a broader analysis of capitalism lies outside the scope of this Article.