A "FOOD SYSTEMS THINKING" ROADMAP FOR POLICYMAKERS AND RETAILERS TO SAVE THE ECOSYSTEM BY SAVING THE ENDANGERED HONEY PRODUCER FROM THE DEVASTATING CONSEQUENCES OF HONEY FRAUD

Michael T. Roberts

UCLA School of Law
Resnick Center for Food Law & Policy

ABOUT THE RESNICK CENTER FOR FOOD LAW & POLICY

The Resnick Center for Food Law and Policy provides cutting-edge legal scholarship to promote food systems thinking and to improve the health of all people and the planet.

Statement of Independence and Objectivity:

The Resnick Center for Food Law and Policy is committed to the highest standards of independent inquiry, academic excellence and rigor. Research findings and conclusions are never altered to accommodate other interests, including those of funders, other organizations, or government bodies and officials.

ACKNOWLEDGMENTS

This White Paper was researched and written by Michael T. Roberts, Founding Executive Director of the Resnick Center for Food Law and Policy at the University of California, Los Angeles School of Law. Diana Winters, Assistant Director of the Resnick Center, assisted with cite-checking sources and editing suggestions.

This paper was supported by a gift from the American Honey Producers Association, but the contents and recommendations in this White Paper are solely the product of the Resnick Center and reflect its independent research and thinking about food fraud and specifically honey fraud over the last several years, even prior to the making of this gift. The recommendations of this White Paper also do not represent the views of the University of California, Los Angeles, School of Law.

The Resnick Center for Food Law and Policy
UCLA School of Law
385 Charles E Young Dr. E
Los Angeles, CA 90095

resnickcenter@law.ucla.edu
https://law.ucla.edu/centers/social-policy/resnick-center-for-food-law-and-policy/about/

CONTENTS

PREFACE

This White Paper recognizes how complicated the food supply chain is and how difficult it can be for stakeholders to see the big picture. This challenge is particularly true when it comes to the problem of the endangered US honey producer via honey fraud in the United States.

This White Paper invites both policymakers and retailers to engage in food-systems thinking and recognize two critical points. The first point is the symbiotic relationships and interdependence between the domestic production of authentic honey, the critical eco-sytem role of honeybees as pollinators in the United States, and the livelihoods of the managers of these honeybee pollinators – the honey producers. The second point is the destructive force of honey fraud in undermining these symbiotic activities and the resultant threat to the ecosystem.

To address these two points, this White Paper makes a number of food-systems recommendations to policymakers and retailers – two stakeholder groups who can really make a difference – in order to save the endangered honey producer from fraud and in turn benefit the ecosystem.

This White Paper follows on the heels of the Resnick Center's previous publication on food fraud: *The Pursuit of Food Authenticity: Recommended Legal and Policy Strategies to Eradicate Economically Motivated Adulteration (Food Fraud)* (2016). The Resnick Center is also pleased to partner recently with the United Nations Food and Agriculture Organization (FAO) on a series of research and advisory initiatives, the first one of which is addressing food fraud on a global scale.

LIST OF ABBREVIATIONS

AHPA ..... American Honey Producer's Association
CCFICS ..... Codex Committee on Food Import and Export Inspection and Certification Systems
CFSAN ..... Center for Food Safety and Applied Nutrition
CRP ..... Conservation Reserve Program
CSR ..... Corporate Social Responsibility
EMA ..... Economically Motivated Adulteration
EPA ..... Environmental Protection Agency
FAO ..... Food and Agriculture Organization of the United Nations
FDA ..... Food and Drug Administration
FDCA ..... Food, Drug, and Cosmetic Act
FSMA ..... Food Safety Modernization Act
FTC ..... Federal Trade Commission
GAO ..... Government Accountability Office
IOM ..... Institute of Medicine
NIS ..... FDA's Nutrition Innovation Strategy
NMR ..... Nuclear Magnetic Resonance
SPS ..... Sanitary and Phytosanitary Agreement
USDA ..... United States Department of Agriculture
USGS ..... U.S. Geological Survey
USP ..... US Pharmacopeia
WHO ..... World Health Organization
WTO ..... World Trade Organization

1. Introduction

A powerful concept that should bind together two distinctive but connected "honey" problems in the "food system" – the threat to pollination via the disappearance of the honey bee and the threat to the livelihood of honey producers via honey fraud – is espoused by a rich and complex term: symbiosis. For a number of reasons, however, the approaches to these two problems by stakeholders, including most prominently, policymakers and retailers, have been highly fragmented and un-symbiotic. In short, these two stakeholders have addressed the first problem – the threat to pollination and subsequently to the ecosystem – while missing the second problem – the endangered honey producer – to the detriment of their efforts to address the pollination problem. The endangered honey producer, as will be shown in this paper, is a victim of honey fraud, a stubborn problem that threatens the very existence of a commercial supply of honey in the United States, notwithstanding the growing demand for honey and the increase in retail honey prices. In short, this anomaly – domestic honey producers in a state of crisis even while the popularity and demand for honey products soars – is due to a market distortion, namely fraud.[1]

Correcting course starts by linking these two problems – the disappearance of the honey bee and the honey producer – together and then applying food systems thinking where stakeholders focus on a goal (i.e., help save the ecosystem by ensuring economically sustainable, domestic honey production), gain knowledge (i.e., how honey fraud threatens domestic honey production), and think carefully on how to effect real

[1] This anomaly will be the subject of an article in the upcoming 2019 International Honey Market report, a regular feature in the American Bee Journal. This anomaly will also be the subject of a presentation by Ron Phipps, Vice-President of the Apimondia Scientific Commission on Beekeeping Economy, at the Apimondia World Honey of Congress (2019) in Montreal, Canada. Telephone Interview with Ron Phipps (July 13, 2019). (Excerpts of the pre-printed version of the upcoming 2019 International Honey Market report are on file with the author).

and holistic change in the food supply chain to achieve the goal (i.e., recommendations in this paper).

This paper aspires to help stakeholders correct course and link together these two "honey" problems by defining "food system," "food systems thinking," and "symbiosis" and then by framing the two honey problems in the context of these important concepts. Next, the paper articulates the un-symbiotic paradox. On one hand, stakeholders – policymakers and retailers – employ conservation strategies to save honeybee pollination in order to preserve the ecosystem and to keep stores filled with nutritious food products dependent on pollination. At the same time, these stakeholders miss the opportunity to quell the threat of honeybee pollination loss by permitting – unwittingly perhaps – a food market replete with fraudulent honey. This paper then realistically assesses the limited range of food systems thinking by regulators working within jurisdictional confines, especially when it comes to dealing with complicated problems like pollination and honey fraud. This paper concludes by recommending an overarching approach with practical steps by the White House or Congress, in addition to the Food and Drug Administration (FDA), to mobilize agency collaboration to connect the two problems and stop the fraud, thereby helping efforts to save pollination. Recognizing the challenges in moving forward a systems-thinking agenda in today's political climate, this paper suggests that food retailers may be best situated to correct the paradox. By accounting for the symbiotic relationship between sustainable pollination and a vibrant domestic honey production market, retailers, out of self-interest and under the auspices of corporate social responsibility, can leverage their unique position in the food supply chain and implement the practical steps suggested in this paper. Doing so will give retailers the satisfaction of helping to save the ecosystem while also accomplishing two important retailer goals: to keep store shelves stocked with a variety of nutritious food products and to create trust with consumers by ensuring the authenticity of the honey they purchase.

2. Definitions: Setting the Stage to Link the Pollination and Honey Fraud Problem

A. "Food System"

When addressing or resolving issues of food policy – in articles, books, speeches, policy statements, and everyday conversation – it is common to refer to the concept of a "food system." Indeed, the term is ubiquitous.[2] Thus, it makes sense to ask how problems, such as pollination threat or honey fraud, fit into the food system? Before answering this question, it helps to step back and ask three foundational questions: Is there really a food system? If yes, what is it? If no, is there still value in referring to a food system in terms of addressing or even framing food policy issues?

According to Merriam-Webster dictionary, a system is "a regularly interacting or independent group of items forming a unified whole" or "an organized set of doctrines, ideas, or principles usually intended to explain the arrangement or working of a systematic whole" or "an organized or established procedure" or a "harmonious arrangement or pattern" or an "organized society."[3] It is difficult to imagine how the complex set of disjointed activities involved in the making of food to the consumption of food could qualify as a unified whole or have any level of organized and harmonious principles, procedures, or patterns that satisfy the definition of a "system." In fact, it may

[2] *See* Harley Pope, *Systems Thinking and the Food System,* (October 27, 2017), https://medium.com/@ifstal/systems-thinking-and-the-food-system-b6ee025085e1. ("[A]s a concept, food systems are currently in vogue. The complexity and unintended consequences of our global supply chains are undeniable. Hardly a week goes by when there isn't a news story about some unsavory aspect of the food system that has been uncovered.").

[3] Merriam-Webster Online Dictionary, *available at* https://www.merriam-webster.com/dictionary/system.

be argued that use of the term "food system," belies the complexities involved with food, from farm to table.

Interestingly enough, the complexities in the making and consumption of food and all of the activity between these two points are often baked into the definition of a food system by referring to the system as a series of stages. As noted by the Committee on World Food Security: "[f]ollowing the FAO definition, a food system encompasses all the stages of keeping us fed: growing, harvesting, packing, processing, transforming, marketing, consuming and disposing of food . . . . [t]his is a very complex system with a long supply chain . . . ."[4] The Committee was referencing the global food system; however, the descriptor of a "food system" is used for a number of "food systems" – from national to regional to local.[5] Even the individual eater – all of us – has been allotted to a food system.[6] Describing the food system as a series of stages still begs the question: where is the "system" in these stages?

Notwithstanding the temptation to subscribe an all-encompassing systems structure to complicated food supply lines, objectively, it is difficult to assert that there really is a "system," as defined by Merriam-Webster: there is no structure, organization, method, or arrangement (common synonyms to "food system").[7] One does not need to look beyond the governance of food and specifically honey in the United States to illustrate this point. According to the General Accountability Office (GAO), fifteen agencies have

---

[4] Myriam Welvaert, The future food system: the world on one plate?, CFS Committee on World Food Security Blog (Nov. 20, 2016, 5:30 PM), *available at* http://www.fao.org/cfs/cfs-home/blog/blog-articles/article/en/c/448182/.

[5] *See id.* (local food systems differ from global food systems because they have a short food supply line, have presumably minimally processed food supplied by local farmers, and have local consumption).

[6] *See* Integrate, Food System Definition and Components, *available at* https://serc.carleton.edu/integrate/teaching_materials/food_supply/student_materials/1033 (last visited June 14, 2019).

[7] Another approach is taken by the National Research Council, Institute of Medicine (IOM), which holds that the "[f]ood system is woven together as a supply chain that operates within broader economic, biophysical, and sociopolitical contexts." IOM, A FRAMEWORK FOR ASSESSING EFFECTS OF THE FOOD SYSTEM (Nesheim MC, Oria M, Yih PT, eds., 2015). This definition raises all sorts of questions not addressed by the IOM: Who or what is it that weaves together the supply chain? What are the unifying principles? What do the broader contexts have to do with creating a system?

emerged with regulatory responsibilities over food per thirty main statutes.[8] In addition to these federal agencies, over 3,000 state and local agencies oversee the food supply, with jurisdiction over retail food establishments such as supermarkets and restaurants.[9] Amongst these agencies, it falls to the FDA to regulate the labeling of honey (and all food, except for meat and certain egg products)[10] and to ensure that honey (and again, all food, except for meat and certain egg products) is safe and not otherwise adulterated.[11] Any advertising of honey (and all food) products is regulated by the Federal Trade Commission (FTC).[12] The FTC arguably has concurrent authority with the FDA over fraudulent practices related to food labeling[13] and in the past has exercised this authority,[14] but in a Working Agreement established in 1954 between the FDA and FTC, the agencies agreed that the FTC will exercise sole jurisdiction over all advertising of food and the FDA will exercise sole jurisdiction over all labeling of these products.[15] The rise of e-commerce complicates the jurisdiction over food advertising and food labeling for these agencies.[16] The United States Department of Agriculture (USDA), which has broad statutory authority over agriculture and food (including the labeling and safety of meat and certain egg products), including its promotion,[17] has established the National Honey Board to administer a research and promotion program

---

[8] *See* Renée Johnson, CONG. RESEARCH SERV. RS22600, THE FEDERAL FOOD SAFETY SYSTEM: A PRIMER, summary page (January 17, 2014) (see appendix A for listing of major food agencies, their responsibilities, and primary authorities).

[9] *Id.* at 293.

[10] *See* 21 U.S.C. § 343.

[11] *See* 21 U.S.C. § 342.

[12] *See* MICHAEL T. ROBERTS, FOOD LAW IN THE UNITED STATES 290-303 (2016).

[13] The FTC has the authority to stop "unfair method of competition" and an unfair or deceptive act or practice," 15 U.S.C. § 45(a)(1)-(2) and 15 U.S.C. § 45.

[14] *See* Wesley E. Forte, The Food and Drug Administration and the Economic Adulteration of Foods, 41 INDIANA L. J. 346, 348 n. 11 (1966) (citing Fresh Grown Preserve Corp. v. FTC, 125 F.2d 917 (2d Cir. 1942) (FTC alleges unfair competition to label as "preserves" a food not containing at least 45 percent fruit); FTC v. Good-Grape Co., 45 F.2d 70 (6th Cir. 1930) (FTC alleges "Good-Grape" soft drink with no natural grape flavor)).

[15] 3 Trade Reg. Rep. (CCH) ¶ 9850 (1954), 20 WL 254582)).

[16] ROBERTS, *supra* note 12 at 293.

[17] *Id.* at 17-18; 27.

to expand domestic markets for honey and honey products.[18] The USDA also conducts conservation programs to protect honey bees.[19] The Environmental Protection Agency (EPA) regulates the use of pesticides directly on and around honey (and agricultural products in general).[20] In addition to federal agency regulation, another important public legal tool is the U.S. Farm Bill, which is created by congressional legislation and can be used to provide disaster relief to honey bee producers,[21] research funds to address threats from pests and diseases,[22] and exemption from labeling requirements.[23] States also regulate various aspects of honey – from product in the grocery store to pesticide application.[24]

It is clear that honey is the subject of extensive regulation. Much of this regulation, however, is disjointed and lacks a cohesive mission. For example, the one agency whose mission includes ensuring that honey producers prosper – the USDA – has no jurisdictional reach over fraudulent honey.[25] Notwithstanding the USDA's subject matter interest, the agency responsible for regulating honey fraud is the FDA. As will be seen later in this paper, the efforts by the FDA fall short in addressing not only honey

---

[18] *See* U.S. Department of Agriculture, National Honey Board, https://www.ams.usda.gov/rulesregulations/research-promotion/honey.

[19] *See* U.S. Department of Agriculture Natural Resources Conservation Service, Conservation Work for Honey Bees, https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/pollinate/?cid=stelprdb1263263.

[20] *See* U.S. Environmental Protection Agency, EPA Actions to Protect Pollinators, https://www.epa.gov/pollinator-protection/epa-actions-protect-pollinators.

[21] *See* U.S. Department of Agriculture Farm Service Agency, Emergency Assistance for Livestock, Honey Bees and Farm-raised Fish (ELAP), https://www.fsa.usda.gov/programs-and-services/disaster-assistance-program/emergency-assist-for-livestock-honey-bees-fish/index

[22] *See* Troy Fore, American Beekeeping Federation, Farm Bill Holds Much Promise for Beekeepers, https://www.abfnet.org/general/custom.asp?page=49

[23] *See* Lisa Rathke, Farm Bill Exempts Pure Maple, Honey From Added Sugars Label, AP News, Dec. 11, 2018, *available at* https://www.apnews.com/4ecffbcf546c4f4c940550045b6028dd.

[24] *See* Roberts, *supra* note 12 at 33-34; Sarah Breitenbach, PEW, To Save Bees, Some States Take Aim at Pesticides, July 29, 2015, available at https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/07/29/to-save-bees-some-states-take-aim-at-pesticides.

[25] *See* Helena Bottemiller Evich, et al., USDA Delays Honey Adulteration Report, Politico, Jan. 17, 2018, 10:00 AM, *available at* https://www.politico.com/newsletters/morning-agriculture/2018/01/17/usda-delays-honey-adulteration-report-075286.

fraud, but food fraud in general.[26] How honey and honey fraud are regulated is just one example of the overall fragmentated approach to the regulation of food, and this fragmentation is just one aspect of a very complex world of food production, manufacturing, marketing, distribution, trade, and consumption. The outcomes of these activities are also complex, from economic harm to nutrition and health considerations to environmental impacts: even with extensive regulation in place, it is no surprise that critics refer to the "food system," whatever it means, as broken.[27]

B. "FOOD SYSTEMS THINKING"

We now turn to the next predicate question: notwithstanding the seemingly insurmountable definitional challenges in identifying a "food system," is there still value in referring to a food system in terms of framing food policy issues? To answer this question, we must look at the "systems analysis" or "systems thinking" approach, which is a "methodology developed in the fields of engineering, business information systems, and computer programming specifically to manage complexity."[28] Several features stand out in this systems approach, including those of being goal and action oriented.[29]

Thinking about the food systems in this way – recognizing complexities, identifying goals, and taking action – helps frame the food systems approach as a way to resolve problems and create norms.[30] Dr. Harley Pope from Reading University (UK) explains that this type of food systems thinking is what distinguishes the food supply chain as a system

---

[26] *See generally* Michael T. Roberts and Whitney Turk, The Pursuit of Food Authenticity: Recommended Legal and Policy Strategies to Eradicate Economically Motivated Adulteration (Food Fraud) (2016), *available at* https://law.ucla.edu/~/media/Files/UCLA/Law/Pages/Publications/RES_PUB%20fraud%20report.ashx/?filedownload=1.

[27] *See* The Interacademy Partnership, Opportunities for Future Research and Innovation on Food and Nutrition Security and Agriculture, 2018, *available at* file:///Users/michaelroberts/Downloads/IAP%20FNSA_Global_web%20complete%2028Nov%20(2).pdf.

[28] Pope, *supra* note 2.

[29] *Id.*

[30] *See id.*

instead of just a collection of parts and identifies three challenges to taking action: incomplete knowledge, the limitations of human cognition, and a limited capacity to act.[31] It is no wonder then that strategists focus on interrelationships and cross-sectional collaboration as pathways to solve problems: these modes build knowledge, foster human cognition, and leverage capacity. For example, it has been pointed out that thinking in terms of food systems as a means to improve health enhances considerations of the interrelationships between production and environmental and health impacts, facilitates trans-disciplinary teams to address complex agricultural policy issues, and encourages specialists to operate from a generalist perspective.[32]

C. "SYMBIOSIS", "FOOD SYSTEMS THINKING", AND THE HONEY BEE

The concept of "symbiosis" can help in food systems thinking, especially in relation to problems like pollination threat and honey fraud. "Symbiosis" is both a scientific and non-scientific term that is rich in meaning and application. The Merriam-Webster dictionary defines the noun "symbiosis" as (1) "the living together in more or less intimate association or close union of two dissimilar organisms" and (2) "a cooperative relationship (as between two persons or groups).[33] Cambridge Dictionary emphasizes that this second definition elicits a dependency between

---

[31] *Id.*

[32] *See* G.F. Combs, Jr. et al., Thinking in Terms of Food Systems, *available at* http://www.css.cornell.edu/FoodSystems/Cnc96.html. *See also* Dr. John Ingram & Dr. Tara Garnett, Oxford, Environmental Change Institute, A Food Systems Approach, https://www.futurelearn.com/courses/food-systems-southeast-asia/1/steps/107819 (last visited July 3, 2019) (advocating food systems thinking as a way to build cross-sectoral collaboration and support for environmental change).

[33] Merriam-Webster Online Dictionary, *available at* https://www.merriam-webster.com/dictionary/symbiosis. An example given in the Merriam-Webster dictionary of symbiosis is where "the yucca moth lays her eggs in the seed pod of the yucca, she acts as a pollinator, and when the larvae hatch they feed on some, but not all, of the seeds. "Either way," as Merriam-Webster points out, "living together is what 'symbiosis' is all about." Indeed, the word originates "from the Greek symbiōsis, meaning "state of living together." *Id.*

people or organizations.[34] In a sense, food systems thinking employs a symbiotic approach to its framing. The interrelationship and dependency between stakeholder groups is essential to achieving the cross-sectoral collaboration that is key to systems thinking.

This paper builds on the concept of symbiosis on multiple levels. First, this paper notes that the pollination process by honey bees itself is highly symbiotic and depends on a number of factors.[35] Second, this paper underscores that the ecosystem and the state of living together as plants and humans is dependent on successful pollination by the honey bee. Finally, this paper recognizes the connection that herewith has escaped the major stakeholders – the symbiotic relationship between the domestic honey bee producer as a pollinator and as a maker of honey. For this symbiotic relationship to work, honey fraud must be eradicated, as this paper will show. If not, pollination will continue to decline, seriously disrupting the first two symbiotic concepts.

---

[34] *See* Cambridge Online Dictionary, *available at* https://dictionary.cambridge.org/us/dictionary/english/symbiosis. The Cambridge Dictionary specifically defines "symbiosis" as "a relationship between people or organizations that depend on each other equally." *Id.*

[35] *See* United Nations Food and Agriculture Organization, AG-Pollination, *available at* http://www.fao.org/agriculture/crops/thematic-sitemap/theme/biodiversity/pollination/en/.

3. Problem: The Endangered Pollinator Honey Bee

A. The Honey Bee and the "State of Living Together"

It is no small exaggeration to conclude that "the state of living together" as humans and plants – the essence of symbiosis – depends very much on pollinators.[36] As noted by a commissioned report by the Food and Agriculture Organization of the United Nations (FAO):

> Pollination is a keystone process in both human managed and natural terrestrial ecosystems. It is critical for food production and human livelihoods, and directly links wild ecosystems with agricultural production systems. The vast majority of flowering plant species only produce seeds if animal pollinators move pollen from the anthers to the stigmas of their flowers. Without this service, many interconnected species and processes functioning within an ecosystem would collapse.[37]

The FAO estimates that pollinators "affect 35 percent of the world's crop production, increasing outputs of 87 of the leading food crops worldwide, plus many plant-derived medicines."[38]

The important role of pollinators, especially the honey bees, in terms of food security was recognized by the White House in a press release issued in 2014:

---

[36] Pollination "is the transfer of pollen between the male and female parts of flowers to enable fertilization and reproduction." THE ASSESSMENT REPORT ON POLLINATORS, POLLINATION AND FOOD PRODUCTION, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) 26 (Simon G. Potts, et. al eds., 2017).

[37] United Nations Food and Agriculture Organization, FAO's Global Action on Pollination Services for Sustainable Agriculture, *available at* http://www.fao.org/pollination/en/.

[38] *Id. See also* IPBES, *supra* note 36 at 22 (of the 107 leading global crop types, production from 91 crops rely on varying degrees upon animal pollination).

> Insect pollination is integral to food security in the United States. Honey bees enable the production of at least 90 commercially grown crops in North America. . . .
>
> Pollinators contribute to more than 24 billion dollars into the United States economy, of which honey bees account for more than 15 billion dollars though their vital role in keeping fruits, nuts, and vegetables in our diets.
>
> Native wild pollinators, such as bumble bees and alfalfa leafcutter bees, also contribute substantially to the domestic economy. In 2009, the crop benefits from native insect pollination in the United States were valued at more than 9 billion dollars.[39]

Beyond the economic considerations, the pollinators contribute to the ecosystem or "quality of life" in ways that are immeasurable.[40]In the community of pollinators, the domesticated honey bee, also referred to as the managed honey bee, stands out as the most dominant and important pollinator largely due to the fact that there are more honey bees than other types of bee and pollinating insects.[41]

---

[39] The White House, Office of the Secretary, Fact Sheet: The Economic Challenge Posed by Declining Pollinator Populations, June 20, 2014, *available at* https://obamawhitehouse.archives.gov/the-press-office/2014/06/20/fact-sheet-economic-challenge-posed-declining-pollinator-populations.

[40] See IPBES, *supra* note 36 at 8-9 (this comprehensive science report on pollination evaluates the value of pollination in the context of ecosystems, biodiversity, evolution, the biosphere, humankind's shared evolutionary heritage, and biocultural diversity – all within the overarching concept of "systems of life . . . inextricably linked to humans, not as a separate entity.").

[41] *See* White House Pollinator Partnership Action Plan 5 (June 2016), *available at* https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Blog/PPAP_2016.pdf. ("[h]oney bees are the most important managed pollinators in the United States."). *See also* Simon G. Potts et al., *Global pollinator declines: trends, impacts and drivers*, Trends in Ecology and Evolution 345 (June 2010). Notwithstanding the dominance of the honey bee as a pollinator, there is considerable diversity of pollinators. Other pollinators include moths, flies, wasps, beetles and butterflies, as well as vertebrate pollinators (bats, several species of monkey, rodents, lemur, tree squirrels, olingo and kinkajou) and birds (hummingbirds, sunbirds, honeycreepers and some parrot species). United Nations Food and Agriculture Organization, FAO's Global Action on Pollination Services for Sustainable Agriculture, http://www.fao.org/pollination/background/en/.

B. HONEY BEE LOSS

It is a testament to the importance of honeybees to the national and global ecosystems and agricultural economy that a decline in honeybee population is framed in apocalyptic terms.[42]

The decline in the honeybee population has triggered a "pollination crisis,"[43] that has caught the attention of policymakers, as evidenced by the 2014 White House Press Release:

> The number of managed honey bee colonies in the United States has declined steadily over the past 60 years, from 6 million colonies (beehives) in 1947 to 4 million in 1970, 3 million in 1990, and just 2.5 million today. Given the heavy dependence of certain crops on commercial pollination, reduced honey bee populations pose a real threat to domestic agriculture.
>
> . . . .
>
> Since 2006, commercial beekeepers in the United States have seen honey bee colonies loss rates increase to an average of 30% each winter, compared to historical loss rates of 10 to 15%. In 2013-14, the overwintering loss rate was 23.2%, down from the 30.5% the previous year but still greater than historical averages and the self-reported acceptable winter mortality rate.[44]

The government's concern over the decline in domestic honey bee stocks in the United States and the resulting threat to the ecosystem is supported by leading

---

[42] Nick Holland, *The Economic Value of Honeybees*, BBC, April 23 2009, 23:41 UK, http://news.bbc.co.uk/2/hi/business/8015136.stm.

[43] *See also* Marcelo A. Aizen & Lawrence D. Harder, *The Global Stock of Domesticated Honey Bees Is Growing Slower Than Agricultural Demand for Pollination*, ScienceDirect 915 (June 9 2009) (the term "pollination crisis" highlights the potential effects of a global pollinator decline on the human food supply).

[44] White House, Fact Sheet: The Economic Challenge Posed by Declining Pollinators Populations (June 20, 2014), *available at* https://obamawhitehouse.archives.gov/the-press-office/2014/06/20/fact-sheet-economic-challenge-posed-declining-pollinator-populations.

scientists in the field.[45] Preliminary results from an annual nationwide survey conducted by the University of Maryland-led nonprofit Bee Informed Partnership shows that beekeepers across the United States lost over 40 percent of their honey bee colonies from April 2018 to April 2019, the highest winter losses ever recorded.[46] The decline of American honey bees has also been described as a mystery, with no single driver responsible.[47] As noted in the 2014 White House Press Release:

> The recent increased loss of honey bee colonies is thought to be caused by a combination of stressors, including loss of natural forage and inadequate diets, mite infestations and diseases, loss of genetic diversity, and exposure to certain pesticides. Contributing to these high loss rates is a phenomenon called colony collapse disorder (CCD), in which there is a rapid, unexpected, and catastrophic loss of bees in a hive.[48]

Given the grave concern over the loss of honey bees, it is expected that stakeholders, especially the government and food retailers who stock their shelves full of food dependent on pollination – fruits, vegetables, nuts, dairy, and lots of other products – would make an effort to reverse course for the honey bee.

---

[45] *See e.g.*, Potts, *supra* note 41; *see also* Decline in Bee Population is Putting Global Food Industry at Risk, Fortune, Feb. 26, 2019, *available at* http://fortune.com/2016/02/26/bees-global-food/.

[46] See Selina Bruckner, et. al, Honey Bee Colony Losses 2018-2019: Preliminary Results, Bee Informed (June 19, 2019, 2:00 PM EST), https://beeinformed.org/results/2018-2019/.

[47] *See* Aizen, *supra* note 43. *See also* IPBES, *supra* note 36 at 36 (the lack of data makes it "very difficult to link long-term pollinator declines with specific direct drivers.").

[48] White House, Fact Sheet, *supra* note 44. *See also* Dave Goulson, et al., Bee declines driven by combined stress from parasites, pesticides, and lack of flowers, Science, Mar. 27, 2015, at 1435 (habitat loss, habitat degradation, parasites, and pesticides).

C. Conservation Efforts to Save the Honey Bee

Efforts by the government to mitigate the loss of honey bees and other pollinators have focused on honey bee health and on pollinator habitat. The White House in 2014, issued a Presidential Memorandum that mandated the creation of a federal strategy to promote the health of honey bees and other pollinators.[49] The strategy focused on the establishment of a Pollinator Health Task Force, co-chaired by the USDA and EPA.[50] Two years later, this Task Force, under the signatures of the Secretary of USDA and the Administrator of the EPA, released a *Pollinator Partnership Action Plan* that seeks broad collaboration from government and non-government entities to provide scientific information to reverse pollinator losses.[51] The overarching goals of the Task Force included reducing honey bee colony losses and restoring or enhancing pollinator habitat acreage.[52] The *Action Plan* does not contemplate the ability of the manager of the pollinating honey bee – the honey producer – to deliver sufficient honey bees to pollinate.[53]

Retailers also have shown a particularly strong interest in the saving of the honey bee as a pollinator, blending self-interest with social responsibility. In the most aggressive step

---

[49] *See* Presidential Memorandum, Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators (June 20, 2014), *available at* https://obamawhitehouse.archives.gov/the-press-office/2014/06/20/presidential-memorandum-creating-federal-strategy-promote-health-honey-b.

[50] *See id. See also* U.S. Geological Survey, Fact Sheet, Assessing the Impact of the Conservation reserve Program on Honey Bee Health (Feb. 2019), *available at* https://pubs.usgs.gov/fs/2018/3082/fs20183082.pdf (In 2014, the USDA and the U.S. Geological Survey (USGS) formed a partnership to assess the impact of the Conservation Reserve Program (CRP) on honey bee health and determine how the cost effectiveness of the CRP could be improved to promote pollinator habitat. This USGS assessment generated important findings to improve USDA's program delivery and demonstrated the importance of the CRP to honey bees, beekeepers, agricultural producers, and the public.).

[51] *See* Pollinator Health Task Force, The White House, Pollinator Partnership Action Plan (June 2016), *available at* https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Blog/PPAP_2016.pdf.

[52] *See id.*

[53] Field studies provide conflicting evidence of effects based on species studies and pesticide usage. Recent research focusing on neonicotinoid insecticides shows evidence of lethal effects on wild bees and some evidence of impacts on their pollination, but the evidence of effects on managed honey bee colonies is conflicting. IPBES, *supra* note 35 at 22.

by a retailer to deal with honeybee decline, Walmart has filed a patent for robotic bees that could be used to pollinate crops just like real bees.[54] The "autonomous robotic bees" would act like drones and carry pollen from one plant to another, using sensors and cameras to find crops.[55] The objective appears to be to develop drone technology that could boost food production if honeybee populations continue to dwindle in the decades to come.[56] Notwithstanding Wal-Marts good intentions, some experts believe that the robot pollinator bee would not be nearly as effective as the honey bee and that it makes more sense to protect the natural pollinators than to develop new technology.[57]

Whole Foods has engaged in some creative presentations to demonstrate the consequences of the declining honey bee population. Teaming up with the Xerces Society, for example, Whole Foods, showcased in its Lynnfield store in Massachusetts how many of their dairy department products would cease to exist without bees. Items that would disappear included fruit-flavored yogurts, and chocolate milk, a 50 percent reduction in milk products, and a reduction in cheese products, almond milk, fruit juices.[58] Continuing this theme, Whole Foods has also developed visuals as part of a Share the Buzz campaign to show how empty a grocery store looks like without bees.[59] To further raise awareness about the importance of supporting honey bee populations, Whole Foods stores have hosted "Human Bee-In" events with family friendly activities,

---

[54] *See* Bob Fredericks, Walmart may be building drone army of robot bees to pollinate crops, New York Post, Mar. 14, 2018, *available at* https://nypost.com/2018/03/14/walmart-may-be-building-drone-army-of-robot-bees-to-pollinate-crops/.

[55] *Id.*

[56] *See id.*

[57] *See* Crystal Ponti, Rise of the Robot Bees: Tiny Drones Turned Into Artificial Pollinators, NHPR (2018), *available at* https://www.nhpr.org/post/rise-robot-bees-tiny-drones-turned-artificial-pollinators#stream/0 (citing Quinn McFrederick, an entomologist at University of California, Riverside, who believes it makes more sense to protect natural pollinators than to create new technology). See also Fredericks, supra note 54; Scott Hoffman Black & Eric Lee-Mäder, Xerces Society, Can Robobees Solve the Pollination Crisis? Wings, Spring 2018, *available at* https://xerces.org/2018/09/17/robobees/.

[58] Whole Foods Market Company News, Give bees a chance – the dairy aisle needs pollinators too, Whole Foods Newsroom, Jun. 18, 2014, *available at* https://media.wholefoodsmarket.com/news/give-bees-a-chance-the-dairy-aisle-needs-pollinators-too.

[59] *See* Nick Visser, *This is What Your Grocery Store Looks Like Without Bees,* HuffPost, Jun. 17, 2014, *available at* https://www.huffpost.com/entry/store-without-bees_n_5500380.

sampling and food demonstrations.[60] Consumers have also been encouraged to buy "bee-friendly" products that were noted in signage in stores with "Give Bees a Chance."[61]

Other food retailers have focused on specific steps to protect honey bee health from Neonicotinoids, an insecticide that is alleged to harm honey bees and wild bees.[62] For example, Costco sent a letter to suppliers encouraging them to phase out the use of neonicotinoids for the protection of pollinators.[63] Kroger has pledged to protect pollinators by phasing out plants that have been treated with neonicotinoids.[64]

4. Problem: The Endangered Honey Producer

A. Missing Link to the Honey Bee Declining Population Problem

Given all of the attention and resources being devoted to saving the honey bee as a pollinator, it is remarkable that saving the endangered manager of the honey bee does not appear to be an urgent priority for stakeholders. Without a vibrant beekeeper

[60] See *id.*

[61] *Id.*

[62] See B.A. Woodcock et al., *Country -specific effects of neonicotinoid pesticides on honey bees and wild bees*, Science, 1393-1395 (2017).

[63] See Flora Pan, *Costco asks suppliers to drop neonicotinoids in effort to save bees*, CBC News, July 11, 2018, *available at https://www.cbc.ca/news/canada/windsor/costco-pollinator-policy-neonics-ontario-farmers-1.4743248*.

[64] See Rebekah Marcarelli, *Kroger Makes Commitment to Save the Bees*, Winsight Grocery Business, Jun. 26, 2018, *available at* https://www.winsightgrocerybusiness.com/retailers/kroger-makes-commitment-save-bees. *See also* Laura Drotleff, *Pollinator Update: Regulators And Retailers Are Influencing Pollinator Policy,* Greenhouse Grower, Apr. 21, 2016, *available at* https://www.greenhousegrower.com/production/pollinator-update-regulators-and-retailers-are-influencing-pollinator-policy/ (other large retailers and garden centers are providing pollinator-friendly plants).

population who manage the honeybees, all of the attempts to save pollination will be to no avail.[65]

The key to understanding the significance of this oversight is to appreciate the symbiotic relationship between a beekeeper's honey production and pollination. Commercial honey producers typically also provide pollination services. Their livelihood depends on both sources of income. As noted by the USDA Economic Research Service, "[A] beekeeper's revenue comes from the sale of two co-products – pollination services and honey."[66] Recent data from the USDA, National Agricultural Statistics Service (2017), supports this assessment: "at the national level the shares of beekeeper income from honey and pollination services are about equal, with beekeepers with more than 5 colonies earning total revenues of $338 million from pollination services and $335 million from honey in 2016."[67]

This symbiotic connection between the economic vitality of domestic honey production and sustainable pollination was recognized by the European Union (EU) Parliament in 2008 in addressing the plight of the honey producer due to imported honey. A resolution of the European Parliament, noted that while "honey may be imported from various regions of the world, [] only bees, in sufficient numbers, can guarantee pollination." Parliament then called for action to "to tackle unfair competition from apiculture products originating in third countries, which is partly the result of lower

[65]The history of beekeeping for pollination is interesting and fairly recent. While beekeeping dates back to the seventh century, the use of honey bees for pollination services in renting started in New Jersey in 1909. MAGUELONNE TOUSSAINT-SAMAT, HISTORY OF FOOD 28 (1992). In the 1950s, pollination by honey bees developed after USDA research documented the yield benefits of honey bees. Alan L. Olmstead & Donald B. Wooten, *Bee Pollination and Productivity Growth: The Case of Alfalfa*, 69 American Journal of Agricultural Economics 56-63 (Feb., 1987).

[66] Peyton M. Ferrier et al., *Economic Effects and Responses to Changes in Honey Bee* Health, USDA Economic Research Service, Report No. 246 4 (March 2018).

[67] *Id.*

production costs" and "to make it compulsory to indicate the country of origin of bee honey on labels . . . ."[68]

Referencing the EU Parliament resolution, two scholars – Marcelo A. Aizen and Lawrence D. Harder – framed the connection between pollination loss and honey producers leaving the industry due to cheap imported honey as follows:

> [A]lthough the mysterious colony collapse disorder has recently had an impact on American honey bees, the half-century decline in their numbers may partly reflect decisions by honey producers to leave the industry in the face of competition from cheaper imported honey, given that the USA became increasingly reliant on imported honey beginning in the late 1960s."[69]

Dr. Aizen and Dr. Harder further assert that this economic dynamic is the primary hinge point for pollination: "Indeed, the economics of honey production, including the global division of human labor that is a hallmark of economic globalization, likely influence the global dynamics of managed honey bees more than agricultural and biological requirements for pollination."[70] They conclude that while "[t]his conclusion does not detract from real biological problems in the honey-bee populations of some countries; however, it emphasizes that solutions to those problems must be motivated locally, rather than globally, and must acknowledge the dominant influence of economics in the pollination represented by every spoonful of honey.[71]"

An explanation for why policymakers in the United States have missed the symbiotic link between protecting honey producers and honeybee pollination may be that the endangered honey producer problem is economic rather than environmental or biological, thereby not registering with government agencies focused strictly on environmental, biological, and ecological policies. This oversight underscores the

---

[68] European Parliament resolution on the situation in the beekeeping sector, Nov. 10, 2008, *available at* http://www.europarl.europa.eu/sides/getDoc.do?type=MOTION&reference=B6-2008-0579&language=EN.

[69] *See* Aizen and Harder, *supra* note 43, at 916.

[70] *Id.*

[71] *Id.* at 916-17.

difficulty in achieving a food systems thinking approach where the regulatory regime is siloed to the point of missing even what appears to be an otherwise obvious link.

B. THREAT TO HONEY PRODUCERS VIA HONEY FRAUD (ECONOMICALLY MOTIVATED ADULTERATION)

What is missing from the "economic" analysis by Dr. Aizen and Dr. Harder and the EU Parliament 2008 Resolution, however, is that nefarious cheating in the form of honey adulteration is a significant cause for the cheaper imported honey. In other words, cheap honey being imported into the United States, which displaces domestic authentic honey, is the result of not only cheap labor costs and low cost of production, but also and most notably, fraudulent honey. The end result of this "market manipulation" caused by this adulteration is there will be "no future for honest hard-working beekeepers,"[72] which does not bode well for the ecosystem and the ability to grow food.[73] This market manipulation due to adulteration can be masked unfortunately by reports, such as a recent article in the Wall Street Journal, of the increase in global retail honey prices due to consumer demand for natural sweeteners.[74] These reports overlook that higher prices do not resolve honey adulteration problems; in some cases, it might even exasperate the pressure to cheat in order to cut production costs. The leadership of the Apimondia Scientific Commission on Beekeeping Economy[75] – Dr. Norberto Garcia and Ron Phipps – along with Dr. Stan Daberkow, Emeritus Economist of the USDA, in

---

[72] Ron Phipps, International Honey Market, American Bee Journal 977, 981 (Sept. 2018).

[73] *See* Ron Phipps, International Honey Market, American Bee Journal 1119, 1122 (Nov. 2018) (honest honey produers are pushed out of the market because they cannot produce an honest product at a competitive price).

[74] *See* Lucy Craymer, You'll Need a Lot More Money to Buy That Jar of Honey, The Wall Street Journal, May 22, 2019, *available at* https://www.wsj.com/articles/youll-need-a-lot-more-money-to-buy-that-jar-of-honey-11558526402?ns=prod/accounts-wsj (showing that prices of honey have increased 25% since 2013 while the cost of sugar has fallen around 30% over the same time frame).

[75] Apimondia, an International Federation of Beekeepers' Associations, organizes congresses and symposia and is led by an executive council and presidents of seven scientific commissions. The Beekeeping Economy is one of the seven scientific commissions. Its mission is to promote the development of beehive products and commercial activities linked to bees as well as improve the health of people and the environment. *See* Apimonida, https://www.apimondia.com/en/home

an upcoming publication of the International Honey Market with the American Bee Journal, will note the anomaly of rising retail honey prices and the popularity of bees.[76] While retail prices are increasing and while honey is being utilized in an increasingly diversity of products and applications (foods, pharmaceuticals, cosmetics, etc.), there has been a steady erosion and a sharp downward trajectory for raw honey paid to beekeepers by packers, importers, and exporters.[77] As will be shown in the upcoming report, this vexing anomaly is due to adulterated honey in the international and domestic markets, which artificially increases the supply of products that are fraudulently marketed as honey.[78] Against this backdrop, authentic honey – the very honey that contains the charms and attributes that drive the demand for honey – accumulates in dead inventories, further compounding the supply problem that distorts the market.[79] As long as adulterated imported honey floods the market domestic, US honey producers will find it very difficult to build a sustainable business model predicated on authentic honey.

This form of adulteration is known as "economically motivated adulteration" (EMA), a type of food fraud[80] that "includes the padding, diluting, and substituting of food product for the purpose of economic gain that may or may not affect the safety of the product."[81] It is the intent or the purpose of the adulteration – economic gain – that distinguishes EMA from other forms of adulteration. Hence, in a notice of public hearing on EMA in 2009 the FDA defined EMA as "the fraudulent, intentional substitution or

---

[76] See *supra* note 1.

[77] See *id.*

[78] See *id.*

[79] See *id.*

[80] EMA is distinguishable from counterfeiting, another category of food fraud, which involves the unauthorized representation of a registered trademark carried on goods similar to goods for which the trademark is registered, with the intent to deceive the purchaser into believing that they are buying the original food product. Roberts and Turk, *supra* note 26 at 11.

[81] *Id.* at 5.

addition of a substance in a product for the purpose of increasing the apparent value of the product or reducing the cost of its production, i.e., for economic gain."[82]

Honey fraud or EMA honey takes different forms. Dr. Norberto Garcia, President of the Apimondia Scientific Commission on Beekeeping Economy, succinctly identifies five different ways honey is intentionally adulterated: intentionally diluting honey with cheap syrups (corn, rice, beet, etc.), extracting immature honey and dehumidifying it by mechanical means, using ion exchange resins to remove residues and lighten honey color, masking the geographical and/or botanical origin of honey, and feeding hives during a nectar flow.[83] As a result of this cheating, this natural product that in modern terms is known as a high-quality and valued "premium product" because of its desirable flavor, taste, and nutritional value,[84] becomes a fraudulent, cheapened, and less nutritious commodity.[85]

C. Scope of Honey Fraud

Today, according to the US Pharmacopeia's (USP) Food Fraud Database, honey ranks as the third "favorite" food target for EMA, ranking only behind milk and olive oil.[86] Three salient characteristics of honey fraud help frame the scope and complexities of this problem. First is that honey fraud emanates largely from Asia. As explained in a recent article in the Economist:

---

[82] FDA Notice of Public Meeting on Economically Motivated Adulteration, 74 Fed. Reg. 15,497 (April 6, 2009). The public meeting was held in response to a food scandal in 2007-08 involving Melamine being added to pet food and infant formula in China, resulting in animal deaths in the U.S. and 50,000 hospitalizations and six infant deaths in China. Roberts, *supra* note 12, at 7 -8.

[83] Norberto L. García, The Current Situation on the International Honey Market, Bee World 2 (2018), *available at* https://www.tandfonline.com/doi/full/10.1080/0005772X.2018.1483814

[84] *See* Sónia Soares et al., A Comprehensive Review on the Main Honey Authentication Issues: Production and Origin, Comprehensive Reviews in Food Science and Food Safety (2017), available at https://onlinelibrary.wiley.com/doi/full/10.1111/1541-4337.12278

[85] *See generally* József Popp, et. al, Network Analysis for the Improvement of Food Safety in the International Honey Trade, 20 Amfiteatru Economic 84-98 (2018).

[86] Renée Johnson, *Food Fraud and "Economically Motivated Adulteration" of Food and Food Ingredients,* Congressional Research Service 19 (Jan. 2014).

> According to the National Honey Board, the per person consumption of honey has doubled in the US since the 1990s. At the same time, domestic production in the US has decreased. In 2016, American bees produced 73,000 tons of honey, or 35% less than they did 20 years ago. This has given honey-sellers an incentive to dilute it with cheaper things like corn, rice and beet syrup. The mismatch between domestic production and demand means the US imports a lot of honey, 203,000 tons in 2017. Most once came from Argentina, Brazil, Canada, Mexico and Uruguay, but now nearly half comes from Asia. [87]

The Economist further describes the factory system in Asia that generates the fraudulent honey product:

> Asian beekeepers frequently harvest unripe honey with high water content, which . . . means higher yields and diminished costs. This production system makes "phony factories" absolutely necessary. These factories firstly filter, dilute, and eliminate residues, and finally dehumidify and pack the product. The process of drying and maturation partially happens in a factory instead of inside the hive. The resulting product seems not to be hazardous to the consumer's health but does not have some of the positive properties cited for honey. The production of honey by bees is indeed a long and laborious process that man can imitate but never emulate."[88]

China in particular is a hotbed of honey fraud production.[89] Attempts to keep honey originating in China from reaching the United States have largely been unsuccessful. A protectionist tariff known as antidumping duties have been imposed on China honey producers starting in 2001.[90] The anti-dumping tariff, however, does not stop the honey from China from being imported into the United States. The ultra-filtration process used in China results in a more shelf-stable product and removes traces of the original country of origin. Moreover, Chinese honey exporters typically sell "to middle-man

---

[87] The Scourge of Honey Fraud, The Economist, Aug. 30, 2018, *available at* https://www.economist.com/united-states/2018/08/30/the-scourge-of-honey-fraud.

[88] *Id.*

[89] *See* Kara M. Reynolds & Yan Su, Dumping on Agriculture: Case Studies in Antidumping, American University, Oct 24, 2005, on file with author.

[90] *See* Mateusz Perkowski, U.S. Retains Antidumping Duties on Chinese Honey, Capital Press, Nov. 29, 2012, *available at* https://www.capitalpress.com/ag_sectors/u-s-retains-antidumping-duties-on-chinese-honey/article_08d234cc-10f8-533e-8be8-c1d5a4311996.html.

countries who then send the honey to US importers so that the label does not reference 'made in China.'"[91]

A second characteristic of honey fraud, one that it shares with other food products susceptible to fraud, is that the adulteration can be very sophisticated and difficult to detect.[92] In general, testing a food product's authenticity rather than focusing on a specific adulterant can also be difficult to manage because the composition of food products often varies by location, growing conditions, production methods, and other variables.[93] One form of testing for honey authenticity that has shown promise in detecting fraud is an analytical technique to test different kinds of honey using high resolution Nuclear Magnetic Resonance (NMR) profiling.[94] NMR tests for the presence and absence of thirty-six major components within honey, including country of origin, and has the biggest database of any scientific methodology applied to honey.[95] The development and application of NMR to the analysis of honey authenticity is ongoing through collaboration between private, government, an academic laboratories.[96] Notwithstanding the promise of this emerging technology, the cheaters will continue to search for new adulterants and methods of cheating to avoid detection. For example, a new syrup has been recently reported in imported honey that when under a certain threshold, NMR is unable to detect its presence.[97] It is critical for NMR to be successful

---

[91] Sarah Ramsey, What's Actually in Your Honey? A Look at Honey Laundering, Wide Open Eats, Sept. 7, 2018, available at https://www.wideopeneats.com/honey-laundering/.

[92] Roberts and Turk, supra note 26, at 12.

[93] *Id.*

[94] *See* Marc Spiteri et al., Fast and global authenticity screening of honey using H-NMR profiling, 189 Food Chemistry 60-66 (2015); Arne Dübecke, et al., *NMR Profiling A Defense Against Honey Adulteration*, American Bee Journal 83 (Jan. 2018).

[95] Ron Phipps, International Honey Market, American Bee Journal 23 ((Jan. 2018).

[96] *Id.*

[97] *See* Letter from Kelvin Adee, President, American Honey Producers Association, to Ron Phipps (May 9, 2019) (on file with author).

that the authenticity of honey be constantly and vigilantly monitored to ensure that this powerful tool adapts and improves and that the database continues to develop.[98]

A third characteristic of honey fraud is that the commission of honey fraud itself is complex and global, and, based on media reports of high-profile incidents, is not phasing out anytime soon.[99] The complexities are underscored by the predicament that even if honey is tested positive for fraud in a laboratory, the chances are that the honey will not be destroyed or confiscated, but will revert to the seller who then sells the adulterated honey again, eventually finding an importer who does not test the honey. The globalness of honey fraud is evidenced by a 2018 report that fake honey is "flooding" Europe.[100] The US does not stand alone when it comes to honey fraud. Also, in 2018, a report from Australia was released showing that of 95 commercial honeys from 19 countries, including Australia, 27% of them were of "questionable authenticity," meaning that they had potentially been adulterated with cane or corn syrups.[101] Australia's biggest honey company, Capilano, was found by the lab to have nearly half the 28 honey samples from its various retail brands adulterated.[102] In 2019, a New Zealand food safety agency announced prosecution against a manuka honey company for allegedly adding synthetic chemicals, including one commonly used in tanning lotion, to honey it sold as

---

[98] NMR-profiling is credited for being a powerful tool to undercover adulteration of honey because instead of targeting single substances, it analyses many substances in honey by combining the targeted with an untargeted approach. The growth of the databased will improve the power of the NMR analytics. Arne Dübecke, *supra* note 94 at 86.

[99] *See* Larry Olmsted, The Latest Food Fraud – And What You Can Do to Protect Yourself, Forbes, Apr. 12, 2018, available at https://www.forbes.com/sites/larryolmsted/2018/04/12/the-latest-food-fraud-and-what-you-can-do-to-protect-yourself/#48898a2c5618.

[100] The cheating is reported in the US and the EU. *See* Paola Tamma, Honeygate: How Europe is Being Flooded with Fake Honey, Euractiv, Sept. 9, 2017, *available at* https://www.euractiv.com/section/agriculture-food/news/honey-gate-how-europe-is-being-flooded-with-fake-honey/.

[101] Xiaoteng Zhou et al., *Authenticity and geographic origin of global honeys determined using carbon isotope ratios and trace elements*, Scientific Reports, Oct. 2, 2018.

[102] Adele Ferguson and Chris Gillett, Capilano, Australia's biggest honey producer and supermarkets accused of selling "fake" honey, Sept 2, 2018, *available at* https://www.abc.net.au/news/2018-09-03/capilano-and-supermarkets-accused-of-selling-fake-honey/10187628.

"manuka."[103] Finally, in 2019, it was reported in China that one of China' most famous health brands - Tong Ren Tang, one of the world's biggest traditional Chinese medicine producers, who was the royal pharmacy for the Quing Dynasty in 1723 – carried "fake" honey and as a result was fined 14 million yuan ($2.9 million) and was banned from selling honey.[104]

5. Government Attempts to Resolve Honey Fraud Problem

A. FDA and the Development of Standards of Identity

It is notable that the FDA, the one agency who has statutory authority to enforce against honey EMA, was not listed in the *White House Memorandum on Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators* nor in the White House *Pollinator Partnership Action Plan*. The passage of the enabling legislation for the FDA – the Food, Drug, and Cosmetic Act (FDCA) in 1938 – was in part intended to remedy the perceived problem of imitation food as well as EMA in general. The principle approach under the 1938 FDCA for the FDA in dealing with EMA became the development of "standards of identity," which set out the formula or method of production required for certain foods defined by the FDA. [105] Section 403(g) of the FDCA deems a food

---

[103] Rosie Taylor, *New Zealand brings first 'fake manuka honey' prosecution,* The Guardian, Jan. 30, 2019, *available at* https://www.theguardian.com/world/2019/jan/31/new-zealand-brings-first-manuka-honey-prosecution-chemicals.

[104] Kirsty Needham, *Famous Chinese health food brand stung in honey scandal*, The Sydney Morning Herald, Feb 13, 2019, *available at https://www.smh.com.au/world/asia/famous-chinese-health-food-brand-stung-in-honey-scandal-20190213-p50xj2.html.*

[105] Roberts, *supra* note 12, at 47. Section 401 of the FDCA gives the FDA broad authority to choose to develop these standards. 21 U.S.C. § 341.

misbranded if it fails to conform to a standard of identity for the food that it purports or is represented to be.[106] From the enactment of the FDCA in 1938 through the 1960s, the FDA developed and enforced standards of identity for many staple foods.[107] The result of this development effort is three hundred extant standards of identity in twenty food categories.[108]

In the 1970s, standards of identity began to lose favor with the FDA, as advances in preservatives, freezing, shipping, flavoring, and methods of cooking foods fundamentally altered the nature of artificial enhancement.[109] Even without food technology, the variety of foods available to the modern consumer outstripped the ability of the FDA to develop standards. Standards began to be viewed as unwieldy and time consuming. Since then, the FDA has shown little interest in pursuing standards of identity.[110]

B. Congress's Interest in Honey Fraud

In an attempt to stop the importation of adulterated honey, segments of the US honey industry asked the FDA in a 2006 citizen's petition to establish a standard of identity for honey that would essentially adopt a standard established by the Codex Alimentarius Commission,[111] which develops food code or more precisely, international standards, guidelines, or recommendations for the regulation of food.[112] The Codex honey

---

[106] 21 U.S.C. § 343(g).

[107] See Christopher Chen, Food and Drug Administration Food Standards of Identity: Consumer Protection Through the Regulation of Product Information, 47 FOOD & DRUG L.J. 185 (1992).

[108] Roberts and Turk, *supra* note 26 at 18.

[109] *Id.* at 19.

[110] *Id.*

[111] Citizen Petition from American Beekeeping Federation et al. to Andrew C. von Eschenbach, Commissioner of Food and Drugs, Food & Drug Administration, Docket 2006P-0101/CP (submitted March 3, 2006) (on file with author).

[112] See Codex is an international body developed by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations. The World Trade Organization (WTO) Sanitary and Phytosanitary Agreement (SPS Agreement) names Codex specifically as the organization that is "to harmonize sanitary and phytosanitary measures on as wide a basis as possible" by setting international standards, guidelines or recommendations." See Agreement on the Application of Sanitary

standard in essence defines honey sold as such as not having added to it any food ingredient, including food additives.[113] Two years later the FDA responded that, due to other pressing matters, it would not be able to review the petition. In 2009, Congress stepped in, and as recorded in a June 2009, House Agriculture Appropriations Committee Report accompanying the 2010 Agriculture Appropriations bill, the committee referenced the problem of EMA honey entering the US market and directed FDA as follows:

> Honey. – The Committee recognizes that honey is produced in the United States, traded internationally and consumed as both a packaged food and as a food ingredient. However, there have been instances where manufacturers have been marketing products illegally as "honey" or "pure honey" that contained other ingredients. The Committee believes that guidance about the composition and labeling of honey is needed to protect consumers and the domestic honey industry from misbranded honey about the misbranding and adulteration provisions of the Federal Food Drug and Cosmetic Act. It is the Committee's understanding that FDA intends to respond to the pending citizen petition proposing a standard of identity for honey, and the Committee expects the agency to do so.[114]

Similarly, a July 2009, Senate Agriculture Appropriations Committee report accompanying the companion Senate bill included the following directive:

> Standards of Identity – The committee recognizes that honey is produced in the United States, traded internationally and consumed as both a packaged food and as a food ingredient, and believes that FDA needs to work to prevent misbranded honey and honey-derived products from entering the US market. The Committee is aware that the FDA has been in receipt of a proposed standard of identity for honey for three years, and directs FDA to respond to this proposal and, if deemed appropriate, begin working toward a US standard of identity for honey.[115]

There was no comment in either the House nor the Senate Agriculture Appropriations Committee about the role of domestic honey production being key to sustaining pollination.

---

and Phytosanitary Measures (SPS Agreement), Introduction (April 15, 1994), Marrakesh Agreement Establishing the WTO, Annex 1A, 1867 U.N.T.S. 493, 33 I.L.M. 1125.

[113] Codex Alimentarius International Food Standards, CODEX STAN 12-1981 (2001).

[114] H.R. Rep. No. 111-181, at 63 (2009).

[115] S. Rep. No. 111-139, at 109 (2009).

C. FDA's Relegation of Honey Fraud to a Labeling Solution

Although it appears that Congress is willing to direct a resistant FDA to develop a standard of identity for honey, the agency is wedded rather to relying on the misbranding provisions in FDCA that require honey to be properly labeled. In October of 2011, the FDA formally denied the 2006 citizen's petition, concluding that no standard of identity was needed. The FDA expressly noted that "to the extent that consumers are confused about what honey is and what it contains, the food label provides the relevant information to alleviate consumer confusion."[116]

In response to high-profile reports at the time on the adulteration of imported honey, the FDA in April 2014 did issue draft guidance on the proper labeling of honey.[117] The guidance focuses on the labeling of honey with added sweeteners and other substances, and on the possible contamination with illegal pesticides. The draft guidance specifically provides that adding sweeteners to honey requires the label to be marked as a "blend." The label "pure honey" is reserved for honey products that do not contain added sugar, corn syrup, or other sweeteners.[118] It stands to reason and it is true in practice that with imported honey from Asia, relying simply on a labeling demarcation between blended and pure honey is inadequate to remedy EMA honey.

In January 2018, in a Strategic Policy Roadmap for 2018, the FDA signaled its intent to modernize certain standards of identity.[119] This news sparked hope that products like honey might be included in this modernization effort. A public hearing was held in July

---

[116] Letter from Donald W. Kraemer, acting deputy director for operations, Center for Food Safety and Applied Nutrition, to Kristen C. Gunter, Counsel to American Beekeeping Federation et al. (October 5, 2011) (on file with author).

[117] *See* FDA Notice of Draft Guidance for Industry: Proper Labeling of Honey and Honey Products; Availability, 79 Fed. Reg. 19620 (2014).

[118] *See id.*

[119] *See* Healthy Innovation, Safer Families: FDA's 2018 Strategic Policy Roadmap, Jan. 2018, at 15, *available at* https://www.fda.gov/media/110587/download.

2018 to discuss the FDA's Nutrition Innovation Strategy (NIS), and FDA Commissioner Scott Gottlieb mentioned the need to update nearly 300 standards of identity.[120] It is clear, however, based on Commissioner Gottlieb's comments at the public hearing and FDA press releases, that these efforts to update standards of identity for food products are not geared to address directly EMA. Instead, the objective is to identify and prioritize potential standards of identity for update based on their public health value, with the primary focus being on the use of plant-based foods as substitutes for standardized dairy products.[121] There is nothing in these deliberations to suggest non-public health factors to be used in prioritizing standards of identity needing an update, which is not surprising, given the FDA's public health mandate.[122]

Even if honey EMA ends up on the list of 300 food standards to be updated, the process could take years for a modernized honey standard. The FDA creates standards of identity for food through the rulemaking process. After the FDA proposes a standard of identity, it would publish the proposed standard in the Federal Register, and members of the public may submit objections and demand a public hearing.[123] The standard would not be effective until the FDA publishes the final order in the Federal Register. Finally, even if a standard were to be published as a final order, the growing sophistication of food fraud could make the standard obsolete in short time. Under the rulemaking

---

[120] *See* Statement from FDA Commissioner Scott Gottlieb, M.D., on the process FDA is undertaking for reviewing and modernizing the agency's standards of identity for dairy products, FDA Statement, July 26, 2018, *available at* https://www.fda.gov/news-events/press-announcements/statement-fda-commissioner-scott-gottlieb-md-process-fda-undertaking-reviewing-and-modernizing.

[121] These plant-based foods use traditional dairy terms (e.g., milk, yogurt, and cheese) in the name of the product. *Id.* Dr. Gottlieb suggested that these plant-based products can confuse consumers about their nutritional characteristics compared to traditional milk. Gottlieb cited case reports in the public hearing that show feeding rice-based beverages to young children has resulted in a disease called kwashiorkor, a form of severe protein malnutrition. He also notes a case report of a toddler being diagnosed with rickets, a disease caused by vitamin D deficiency, after parents used a soy-based alternative to cow's milk. Given that these products vary widely in their nutritional content when compared to cow's milk, the FDA has decided to examine these differences in relation to potential public health consequences. *See id*.

[122] *See* POM Wonderful L.L.C. v. Coca-Cola Co., 134 S. Ct. 2228 (2014) (the FDA's statutory regime is designed primarily to protect the health and safety of the public at large). The Supreme Court has previously acknowledged, however, that the agency is responsible under its statutory regime to issue certain regulations to "promote honest and fair dealing in the interest of the consumer." 62 Cases of Jam v. United States, 340 U.S. 593, 596 (1951).

[123] *See generally* Roberts, *supra* note 12 at 18-24 (summary of rulemaking).

process, it is difficult if not impossible for the agency to be nimble enough to modify a standard to adapt to new forms of adulteration.

D. FDA's Regulation of Intentional Adulteration

At one point it was thought that a provision in the Food Safety Modernization Act of 2011 (FSMA) that dealt with intentional adulteration would be a possible route for the FDA to develop rules on EMA; however, the provision was silent about its extension to EMA.[124] FDA's final rule that governs how intentional adulteration is regulated focused exclusively on what experts call "food defense."[125] Food defense is the aspect of intentional adulteration that deals with hazards deliberately introduced to the food supply chain, usually under political motivations, otherwise known as bioterrorism.[126] When the FDA's final rule on intentional adulteration was published, the agency remarked that EMA would be handled under the food safety rule Hazard analysis and risk-Based preventive controls for Human food. As we noted in our previous white paper on food fraud,

> "[t]he problem with this approach, however, is that the preventive controls rule focuses almost exclusively on food safety and the management of health hazards like pathogen contamination. These rules are important for food safety, but they treat EMA as a matter of regulation and enforcement only as an incidental threat to health. The preventive controls rule does not address preventing EMA itself, only the health and safety hazards that may occur as a result of EMA.[127]

---

[124] See John Spink, Review: *Final Rules for FSMA 'Third-Party Certification,' 'Foreign Supplier Verification,' and 'Produce Rule' Regarding Food Fraud and EMA*, MICHIGAN STATE UNIVERSITY FOOD FRAUD INITIATIVE (Jan. 28, 2016).

[125] Riëtte van Laack, *And Then There Were Seven: FDA Issues the Final Rule on Intentional Adulteration of Food; the Last Required by FSMA*, FDA LAW BLOG (May 31, 2016).

[126] *Id.*

[127] Roberts and Turk, *supra* note 26 at 21.

E. FDA's Limited Reach to Food Systems Thinking

It is interesting to consider how the FDA would have responded if Congress in 2009 had connected honey fraud to the endangerment of the honey producer's livelihood and the subsequent threat to the role of the honeybee as a pollinator. If the FDA were to make this connection on its own, without a legislative mandate from Congress or an executive mandate from the White House or the Department of Health and Human Services, the department in which the agency is housed, the FDA would need to cease viewing EMA honey as a subset of adulteration and to see it as a real threat to the ecosystem and food security. The challenge in convincing the FDA to make this shift is evident in its response to a 2011 Government Accountability Office (GAO) report that examined the FDA's approaches to detecting and preventing EMA of food and medical products.[128] The GAO report recommended that the FDA take three actions to detect and prevent EMA: 1) officially adopt a working definition of EMA (the GAO noted that without such a definition, when FDA detects adulteration, it is more difficult for the agency to distinguish EMA from other forms of adulteration in order for the agency to be more proactive about EMA); 2) provide written guidance to agency centers and offices on the means of addressing EMA; and 3) enhance communication and coordination of agency efforts on EMA.[129] The FDA responded to the GAO report by explaining that it viewed EMA as a "subset of cases within the broader concept of adulteration, and believes that a holistic approach toward understanding and addressing adulteration is the best course forward."[130] The irony with the FDA's response is that a true "holistic approach" (or food systems thinking) would lead the agency to comprehend and act on the ecosystem implications of EMA honey, but it would be

---

[128] *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-46, FOOD & DRUG ADMIN: BETTER COORDINATION COULD ENHANCE EFFORTS TO ADDRESS ECONOMIC ADULTERATION AND PROTECT THE PUBLIC HEALTH (2011).

[129] *Id.* at 23.

[130] *Id.* at 24.

unusual and perhaps even inappropriate for the agency suddenly to step outside its jurisdictional confines and take on the problem of dying bee colonies by linking this problem to EMA honey.

6. Recommendations

A. POLICYMAKERS

The White House has set a precedent in thinking broadly about the pollination problem even though it was unable to connect the problem to the economic and fraud problems that plague the domestic honey producer, as the manager of honey bees. Congress has shown interest in dealing with EMA honey and has shown concern for the domestic honey producer, but like the White House, did not see the connection between EMA honey and the threat to pollination. The 2018 EU Parliament, on the other hand, went a step further than the 2008 Parliament and expressly connected honey fraud to the hindrance of a viable domestic honey production and to sustainable honey bee pollination.[131] The 2018 EU Parliament included in the resolution the following recitals:

> whereas the beekeeping sector is vital for the EU and contributes significantly to society, both economically . . . and environmentally by maintaining the ecological balance and biological diversity . . . .
>
> . . . . .
>
> whereas consumers often think they are eating honey from the EU, when a proportion of that honey in fact is a blend of EU and third-country honey, while a large proportion of imported honey is adulterated.

[131] In Spain, the disappearance of bee colonies was recently attributed not only to parasites, pesticides, and global warming, but also to the importation of adulterated honey from China. See Gregory Beals, Winged Migrants, Daily Beast (June 2, 2019, 4:46 AM ET), https://www.thedailybeast.com/its-not-just-bees-that-are-disappearing-its-peopleand-both-are-moving-to-the-cities.

. . . .

whereas honey is the third most adulterated product in the world . . . .

. . . .

whereas current rules do not take account of fraudulent practices affecting processed products such as biscuits breakfast cereals, confectionary, etc.; whereas the label 'honey' can mislead consumers in regard to the real content of the given product . . . .[132]

The resolution then makes a number of recommendations a few of which are mentioned in this paper as follows:

Expects the Member States and the Commission to guarantee full compliance of imported honey and other bee products with high-quality EU standards, thus combating both honey producers in non-EU countries who use dishonest methods and EU packagers and traders who wilfully mix adulterated, imported honey with EU honey;

Calls on the Commission to develop effective laboratory analysis procedures, such as nuclear magnetic resonance testing . . . in order to detect instances of honey adulteration . . . .

Stresses that the suggested measures would strengthen the EU monitoring applied to honey packagers in non-EU countries, thereby enabling the official auditors to find out if adulterated honey has been used and ensuring its removal from the food chain;

Believes that honey should always be identifiable along the food supply chain and should be classifiable according to its plant origin, irrespective of whether it is a domestic or an imported product . . . .

Requests that the Commission amend the Honey Directive with a view to provide clear definitions and setting out the main distinctive characteristics of all apiculture products, such as monofloral and multifloral honey, propolis, royal jelly, beeswax, pollen pellets, beebread and bee venom, as already called for in texts adopted by Parliament;

---

[132] European Parliament resolution of 1 March 2018 on prospects and challenges for the EU apiculture sector (2017/2115(INI)), *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018IP0057.

> Calls on the Commission to thoroughly examine the functioning of the EU market in bee feeds, supplements and medicines, and to take the necessary measures to streamline the market and prevent adulteration and illegal trading in those products;
>
> . . . .
>
> Calls on the Commission to ban the distribution of resin-filtered honey as soon as possible, since such honey contains nothing whatsoever of biological value;
>
> . . . .
>
> Reminds the Commission that consumers have the right to know the place of origin of all foodstuffs . . . . prevent consumers from being misled and facilitate the detection of fraud . . . .[133]

Much of what is in the Parliament resolution is unique to the EU marketplace and legal regime; however, borrowing from Parliament's resolution, this paper recommends the following steps for the White House, Congress, and the FDA to implement to save the endangered honey producer in order to save the ecosystem:

- The White House should amend or supplement the previous 2016 *Pollinator Partnership Action Plan* and connect a healthy and sustainable domestic production of honey to the vitality of the ecosystem via pollination. There should be a direct and frank acknowledgement of the need to address honey fraud in order to build a sustainable domestic production of honey and thriving population of honey bees.
- The White House should order the federal agencies – the FDA, USDA, and EPA – to coordinate on strategies to promote a sustainable domestic production of honey. Beyond dealing with the EMA honey problem, the strategies should also consider how labeling, trade, research, and other strategies can be used to sustain and grow the domestic production of honey. The agencies should focus attention not only on honey products in retail stores, but in all of the markets,

[133] *Id.*

including industrial and food-service industries, where manufactured honey is sold whole or used as an ingredient.

- The White House should direct the FDA to develop strategies to eradicate EMA honey, including standards-making, testing (especially imported honey), and enforcement. The FDA should follow the suggestions or at least the spirit of the 2011 GAO Report and seek to coordinate these strategies with the other agencies and authorities.
- Congress should legislate if the White House does not modify the 2016 *Action Plan* for the same coordination called for under the document amongst the federal agencies to address the two honey problems. The Farm Bill would be an appropriate platform for this type of legislation, as well as any appropriations necessary for the interagency collaboration and cooperation.
- Congress should modify the FDA's authority under the FDCA to give the agency the latitude to develop standards of identity for foods like honey that are particularly susceptible to fraud without having to engage in formal notice and comment rulemaking.[134] This way the FDA can be nimble to escalating levels of adulteration sophistication in honey, as well as in other products, and modify standards when necessary.
- Congress should explore legislating legitimate product labeling on the origin of honey and products containing honey.
- Regardless of action or inaction by the White House and Congress, the FDA should explore and evaluate how better to improve its enforcement of EMA honey. For example, one tool that could be utilized more extensively against EMA honey is the import alert. The FDA has authority over imported food per Section 801 of the FDCA: Section 801(a) prescribes that a food may be refused entry into the United States if it is adulterated.[135] An import alert is an

[134] From the inception of the FDCA, Congress has not modified FDA's authority for promulgating standards of identity. However, Congress has introduced legislation calling for the FDA to promulgate standards for specific foods. For example, the Trade Facilitation and Trade Enforcement Act of 2015 (H.R. 644, S. 1269) of the 114th Congress includes a provision to encourage a standard of identity for honey.

[135] 21 U.S.C. § 381(a).

administrative remedy that allows for a specific food article to be detained without physical examination.[136] Import alerts are guidance documents that inform FDA filed personnel that the FDA has sufficient evidence to determine that the food article is unsuitable to import.[137] The FDA notes in the 2014 draft guidance honey document on honey labeling that it has a long-standing import alert for the surveillance of honey for adulteration with cane or corn sugars. The FDA should add to this alert the countries that import into the United States honey originating in China until this practice stops.

- If the FDA is not going to move soon on making a standard of identity for honey, the agency should promote efforts by credible institutions to do the same, such as the case now with USP, who is currently working on a standard of identity for honey.[138] The agency should coordinate with institutions like USP to ensure that the standard(s) are robust and credible enough to avert honey fraud and that they are implemented and used.
- The FDA should exert leadership internationally and work with the U.S. Customs and Border Protection and other enforcement agencies to facilitate cooperation for enforcement collaboratively. A precedence for this approach was in February 2014, when more than 1,200 tons of fake food and 430,000 liters of counterfeit drinks were seized in an Interpol-Europol coordinated operation that spanned across thirty-three countries in the Americas, Asia, and Europe, including the United States.[139] The operation resulted in the arrest or detention of ninety-six people and involved police, customs, national regulatory bodies, and private firms.[140]

---

[136] *See* Food & Drug Admin., Regulatory Procedures Manual 9-19, 9-50 (2011).

[137] *See id.* at 9-19, 9-21, 9-50.

[138] *See* Call for Candidates, Honey Expert Panel, United States Pharmacopeial Convention, *available at* https://callforcandidates.usp.org/node/5341.

[139] *See* Press Release, Thousands of Tonnes of Fake Food and Drink Seized in Interpol-Europol Operation, Europol (February 13, 2014), *available at* https://www.europol.europa.eu/newsroom/news/thousands-of-tonnes-of-fake-food-and-drink-seized-in-interpol-europol-operation.

[140] *Id.*

- The FDA and the United States via its participation in Codex should support the recently formed Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) that has commenced work on food fraud through an electronic working group and, in 2018, produced a Discussion Paper on Food Integrity and Food Authenticity, analyzing the CCFICS's texts related to food fraud, working definitions of food fraud, and related terms.[141]
- The FDA should state clearly and unequivocally that resin-filtered honey is adulteration and take proactive steps to root it out of the honey being imported into the United States. As noted in the Economist, resin technology is used extensively in the sophisticated "beehive factories" in Asia.[142] Use of this technology to adulterate honey is well known. It transforms honeys which are non-marketable because of their aromas into mild, readily blendable honeys. In a letter to Ron Phipps (Vice-President of the Apimondia Scientific Commission on Beekeeping Economy), Charlotte Liang of the Center for Food Safety and Applied Nutrition (CFSAN), clarified that use of this technology should preclude a product from being labeled as "honey":

> Resin technology involves addition of water to honey for ease of filtration. Although the added water is later removed, the basic nature and essential characteristics of the resulting food differs from that of honey. Therefore, calling the product that has been treated with the resin technology simply "honey" would not accurately identify the food generally understand [sic] to be honey. The product should be labeled with a name that sufficiently describes its characterizing properties in a way that distinguishes it from honey which has not been treated with resin technology.[143]

---

[141] *See* Joint FAO/WHO Food Standards Programme, Committee on Food Import and Export Inspection and Certification Systems, Discussion Paper on Food Integrity and Food Authenticity, Oct. 22-26, 2018, CX/FICS 18/24/7 (Aug. 2018), *available at* http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%3A%2F%2Fworkspace.fao.org%2Fsites%2Fcodex%2FMeetings%2FCX-733-24%2FWorking%2BDocuments%2Ffc24_07e.pdf.

[142] Economist, *supr*a, note 87.

[143] Letter from Charlotte Liang, Center for Food Safety and Applied Nutrition (CFSAN), Food and Drug Administration, to Ronald Phipps (Feb 23, 2019) (on file with author).

> Again, labeling guidance falls short as an enforcement tool. The aggression of blenders and manufacturers in the use of resin technology in transforming honey is astonishing. China's largest resin producer, Sunresin, openly flouts on its website: "With our effort, many honey companies and juice producers of many countries are successfully getting rid of the barriers from the US due to the restrictions on antibiotics."[144]

Given the current political climate it is difficult to trust that the federal government could adopt a food systems thinking approach and coordinate and execute sufficient to implement these steps; however, if it were possible, implementation of these steps would help to address the two honey problems.

B. Food Retailers

Why would food retailers be more apt than the policymakers to employ food systems thinking in addressing the two problems identified in this White Paper? The first reason is self-interest. Leading retailers have already made steps to address the first problem – the threat of pollination loss and the disappearance of honey bees. Retailers recognize the symbiotic relationship that their business enterprise has with pollination; grocery stores depend on pollination as a means to stock stores with nutritious food products dependent on pollination.

Why have retailers not recognized the missing link in the pollination problem to the endangered honey producer and the need to rectify honey fraud? There is not the same institutional and jurisdictional barriers and limitations that exist for government agencies as there are for retailers. Large retailers especially are multinational enterprises that have considerable clout and influence in the food supply chain.[145] The answer may be as

---

[144] Ron Phipps, International Honey Market, American Bee Journal 23 (Nov. 2018) (showing screenshot from Sunresin website).

[145] Doris Fuchs, et al., *Retail Power, Private Standards, and Sustainability in the Global Food System*, (May 2009) 48-49, *available at*

simple as the connection has not been made to retailers; after all, NGOs, scientists, and conservation organizations who consult with retailers on the pollination problem are generally not plugged into the economic conditions of honey production or the authenticity of honey products and honey ingredients.

A second reason for food retailers to make the link between the two honey problems and to take steps to resolve the problems is that this undertaking is a perfect opportunity for retailers to blend implementation of corporate social responsibility (CSR) values with food systems thinking in order to make a real difference in society and to build trust with consumers. CSR is generally understood as the way through which an enterprise achieves a balance of economic, environmental, and social imperatives, while at the same time addressing the expectations of shareholders and stakeholders.[146] In the modern, global food supply chain, there has in recent years been a sharp escalation in the social roles that large food retailers and food enterprises are expected to play.[147]

Retailers are certainly well situated to address the honey problems. Scholars have noted how the growth in the market power of retail chains has spawned an increase in their political power.[148] Complementing this power is the securing by retailers of a close proximity and relation to consumers whose preferences have changed significantly over time: consumers are increasingly demanding methods of production and processing that are environmentally sustainable, animal friendly, and compliant with labor practices.[149]

---

https://www.researchgate.net/publication/265032168_Retail_Power_Private_Standards_and_Sustainability_in_the_Global_Food_System_1.

[146] *See What is CSR?* United Nations Industrial Development Organization, *available at* https://www.unido.org/our-focus/advancing-economic-competitiveness/competitive-trade-capacities-and-corporate-responsibility/corporate-social-responsibility-market-integration/what-csr.

[147] Roberts, *supra* note 12, at 32.

[148] CM Rossignoli and R. Muruzzo, *Retail Power and Private Standards in the Agri-Food Chain*, Agroecology and Sustainable Food Systems 1108-09 (Oct. 2014).

[149] Steven Jaffee & S. Henson, *Agro-Food exports from developing countries: The challenges posed by standards*, (Jan. 2005).

This development has led to more and in some cases full control of the product chain – from farm to shelf – and competition based not on price, but on quality of products.[150]

Adopting a systems approach to the pollination problems should come naturally to food retailers via CSR. The literature of CSR often incorporates in its theory the concept of symbiosis.[151] Food systems thinking also should come naturally to retailers given their constant adaptation to the growing levels of complexity in the food supply chain. Increases in food trade facilitated by new foods, communications, and transportation technologies have caused food supply lines to fragment across multiple enterprises and within various regulatory frameworks.[152] To deal with these changes, retailers have established new tools, including private standards, as well as direct contracts with suppliers, purchase centers, and branding strategies. Adopting food systems thinking in the exercise of CSR as a strategy was well put in the following statement:

> To date, contributors and practitioners often approach the topic from a narrow perspective or discipline; however, CSR is predicated upon understanding multiple perspectives and relationships that would benefit from the use of holistic methods. . . . The motivation for this special edition – systems thinking helps organizations make sense of the complexities encountered in CSR.[153]

Notwithstanding the natural posture of food retailers to systems thinking, applying it to food sector problems does not simply magically happen. A concerted effort is required

---

[150] *See* Jason Konefal, et. al, *Governance in the Global Agro-Food System: Backlighting the Role of Transnational Supermarket Chains*, 22 Agriculture and Human Values 292-297 (Jan. 2004).

[151] *See e.g.*, Ian M. Langella, et al., An examination of the symbiosis between corporations and society with lessons for management education and practice 6 Global Virtue Ethics Review 51-82 (2012). *See also* Doris Fuchs & Agni Kalfagianni Discursive power as a source of legitimation in food retail governance, 19 The International Review of Retail, Distribution and Consumer Research, 553-570 (2009).

[152] Spencer Henson and John Humphrey, *The Impacts of Private Food Safety Standards on the Food Chain and on Public Standard-Setting Processes*, Joint FAO/WHO Food Standards Programme 10 (July 2009).

[153] José-Rodrigo Córdoba & Tim Campbell, *Systems Thinking and Corporate Social Responsibility*, Systems Research and Behavioral Science, Syst. Res. 25, 359-360 (2008).

to develop food systems thinking and for a CSR strategy to be coherent, it needs the support and active engagement of senior management.[154]

The good news is that there is precedence for successful CSR activity by food retailers. In just the last decade, companies have moved from the non-acknowledgement of the environmental impact of food production and manufacturing to vocal advocacy and CSR statements on sustainability and reducing the farm-to-fork carbon footprint. Fifteen years ago, organic food in many grocery stores was a rarity, often set aside in its own tiny subsection of a produce aisle. now, organics make up a huge chunk of the market, as do many products touting their GMO-free production. These sustainable concepts—reducing pesticides, avoiding GMOs, requiring environmental impact analyses—are production and market responses to values-driven consumer concerns. Sustainability now occupies a core piece of CSR for many food companies, becoming the basis in many instances for marketing and self-promotion on the part of these companies. Research demonstrates the positive effect of corporate sustainability on organizational processes and performance, giving credence to the adage, "do well by doing good."[155]

In a sense, the question of CSR for food retailers when it comes to honey fraud is academic; retailers have already shown keen interest in preserving pollination. The key now for food retailers is to make the strategic link between the pollination problem and the endangered honey producer who manages the pollinator honey bees and to recognize that the fraudulent honey on the retail shelf endangers the livelihood of the producer. It would also be very practical for retailers to connect the goal of ridding EMA honey with the goal of building trust with consumers. Consumer trust is the an

---

[154] See V. Kasturi Rangan, et al., *The Truth about CSR*, Harvard Business Review, Jan.-Feb. 2015, *available at* https://hbr.org/2015/01/the-truth-about-csr ("Although many companies embrace this broad vision of CSR, they are hampered by poor coordination and a lack of logic connecting their various programs. . . . we have found that CSR programs are often initiated and run in an unaccounted for way by a variety of internal managers, frequently without the active engagement of the CEO. . . . To maximize their positive impact on the social and environmental systems in which they operate, companies must develop coherent CSR strategies.").

[155] See generally, Eccles, R., Ioannou, I., and Serafeim G., The Impact of a Corporate Culture of Sustainability on Corporate Behavior and Performance, Harvard Business School, Working Paper 12-035 (Nov. 2011), *available at* file:///Users/michaelroberts/Downloads/SSRN-id1964011.pdf.

ever more decisive factor for success in the food retail market.[156] As noted by the recent Wall Street Journal article previously cited in this paper, there is a robust growing demand by consumers for natural, authentic honey.[157] It stands to reason therefore that media coverage of honey fraud will increase and as a result civil litigation will target suppliers who purposefully or unwittingly sell EMA honey. These two developments could breach the trust that retailers cultivate so carefully with consumers and undermine the growing consumer demand for honey in general.

The following steps are recommended for food retailers to take that will result in authentic and nutritious honey on retail shelves, a better society, and consumer trust:

- Convene a meeting with the American Honey Producer's Association (AHPA), which comprises honey producers keenly interested in producing and selling domestic, authentic honey. The express mission of the AHPA is to "promote[] responsible industry practices to ensure the honey consumed every day is trustworthy and pure." The three pillars that support this mission are "1) supporting bee health (hive management, pesticides, foraging and protecting the beekeeping profession), 2) championing pure honey (protect purity and full traceability), and 3) nurturing the planet (limiting impact on waste/packaging, energy, emissions, and water)." These three pillars provide a blue print for a food systems thinking approach to resolving both honey problems. By convening a meeting with the APHA, retailers could find a common ally in the pursuit of mutual goals and objectives. A meeting would also open the door to explore the second prong of systems thinking – the acquisition of knowledge. Retailers could hear first-hand and directly of the complexities of honey fraud and possible solutions. Retailer knowledge is key to success.
- Form an alliance directly with the AHPA. It is important for retailers to recognize that not all stakeholders in the honey supply chain are genuinely

---

[156] See Renee Sexton, Food Think Study Examines Consume Trust in Food Industry, The Shelby Report, Apr. 10, 2019, *available at* https://www.theshelbyreport.com/2019/04/10/foodthink-study-trust-food-industry/.

[157] See Craymer, *supra* note 74.

interested in authentic honey. This stakeholder dynamic differs from food safety where all stakeholders want food to be safe because there is not benefit to anyone – from the farmer to the manufacturer to the consumer – for food not be to be safe. When it comes to authenticity, however, some stakeholders, particularly those who blend, package, market, and distribute honey – those beyond the point of honey production – are not in favor of a strong, vibrant honey authenticity standard or a robust enforcement regime. Again, EMA honey exists because of the economic motive. There is no economic gain in unsafe honey, but there is in fraudulent honey. In the oft-repeated words of Ron Phipps, "we must be aware of the fox in the hen house." To solve the honey problems effectively, it will behoove the retailers to work directly with the AHPA.

- Develop concurrently with this outreach to AHPA a CSR strategy that connects the two honey problems and that allows the food retailer to mobilize its suppliers to take the steps necessary to resolve the honey EMA problem. Retailers should consider using private standards in the supply chain as a way to create accountability and compliance and to complement efforts to curb food fraud in general by institutions such as Global Gap[158] and the Food Fraud Initiative by Michigan State University[159] instituting a sharper focus on the linkage between fraud and pollination, retailers could shape these standards to accomplish real, tangible, measurable, sustainable results.
- As mentioned in this White Paper, the key to authentic honey is a vibrant, dynamic standard – one that withstands the continuous efforts by cheaters to cheat and one that has the teeth to separate the fake from the authentic. Retailers can use their leverage to insist that the industry and government standards that emerge meet sensible and stringent criteria. Otherwise, the

[158] GLOBALG.A.P. Chain of Custody: Guardian of Food Safety, Sustainability & Social Responsibility Claims, Global G.A.P., July 6, 2018, *available at* https://www.globalgap.org/uk_en/media-events/news/articles/GLOBALG.A.P.-Chain-of-Custody-Guardian-of-Food-Safety-Sustainability-Social-Responsibility-Claims/.

[159] *See* Food Fraud Initiative, Michigan State University, Webpage, http://foodfraud.msu.edu/.

standard may prove no more than a marketing gimmick and will not facilitate solving the two honey problems.

- Retailers have already started educating consumers on the importance of pollination. Another key strategy to consumer education is to help the consumer see the additional value to purchasing certifiably authentic honey – not only does it taste delicious and is nutritious, but it can help save the ecosystem.
- Multinational food retailers could support and promote global efforts to link together and solve the honey problems. Retailers could familiarize themselves with and express support for the recently formed CCFICS and its work on food fraud referenced above in the recommendation for the FDA and United States Codex delegation.[160]

7. Conclusion

Policymakers and retailers stand at a unique crossroads that requires food systems thinking to resolve two problems that are inextricably linked together. Without the honey bee producers, the unique challenges in modern society to pollinate will suffer terribly. Without addressing the problem of honey fraud, the plight of the honey bee producer will be irreversible: they simply will go out of business, depriving consumers of high-quality domestic honey, but also endangering the ecosystem.

This White Paper has provided a roadmap for policymakers and retailers that explains the rationale for linking these two problems that otherwise will remain siloed. This paper has explained the barriers to relying on federal regulatory agencies from being able to resolve the problems. The problems must be met head-on by legislative leadership or by the White House to sustain the sort of food systems thinking that needs to be addressed to be successful.

[160] *See* Joint FAO/WHO Discussion Paper, *supra* note 141.

The practical suggestions set forth by this White Paper can guide policymakers and retailers to start the process by which steps can be taken to achieve a quality "state of living together."