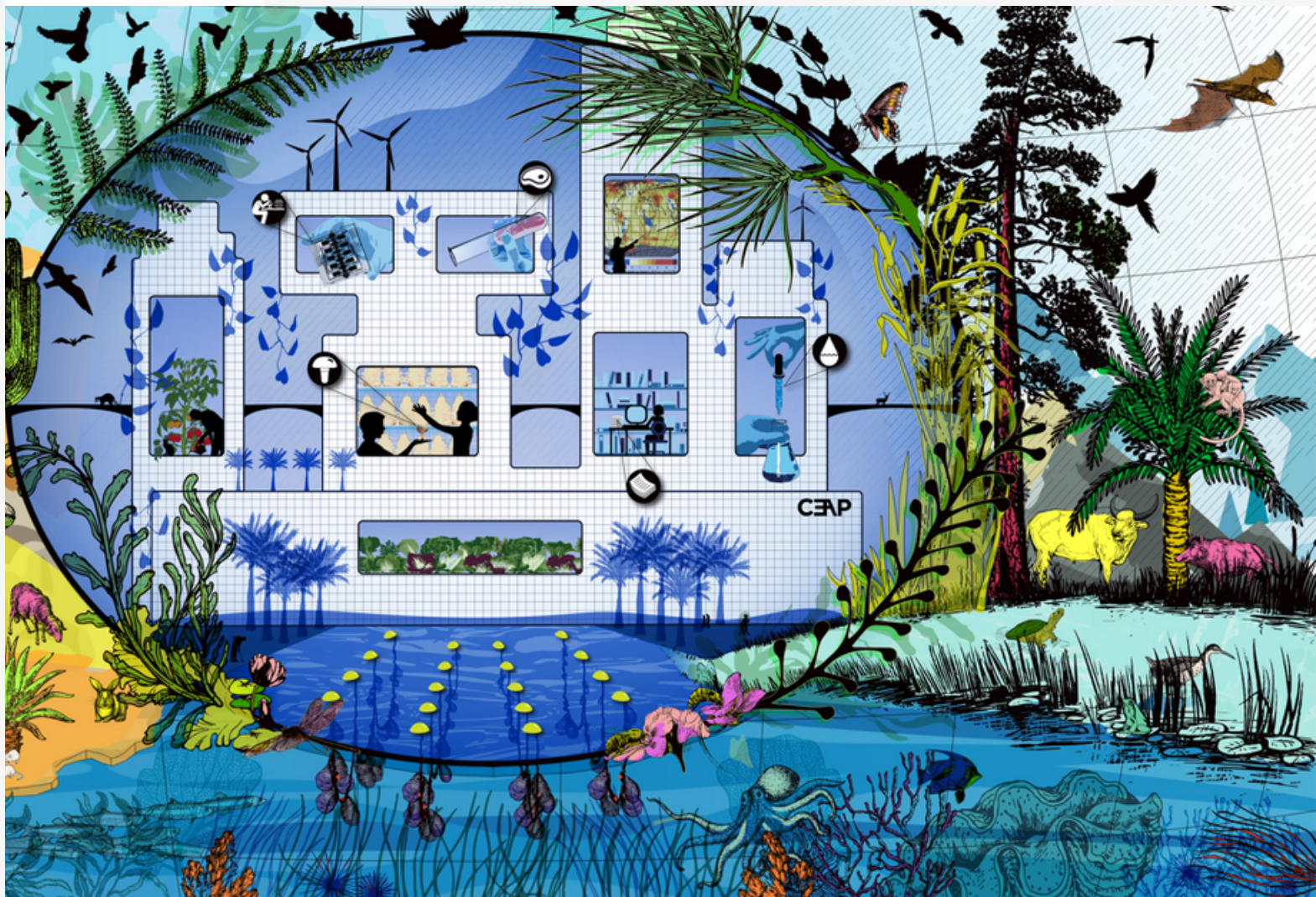




# CENTER FOR ENVIRONMENTAL AND ANIMAL PROTECTION

2021-2022

ANNUAL REPORT



[HTTPS://WP.NYU.EDU/CEAP](https://wp.nyu.edu/ceap)  
CEAP@NYU.EDU

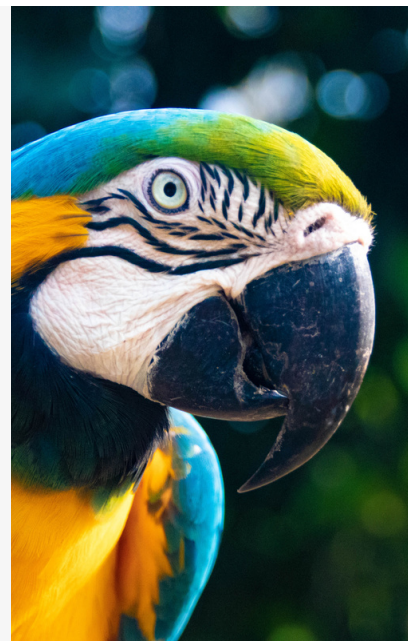
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# INTRODUCTION

NYU's Center for Environmental and Animal Protection (CEAP) is an endowed research center that conducts, supports, and disseminates research that contributes to environmental and animal protection. The Center has three distinguishing features: (1) its focus on highly credible, evidence-based research that provides usable knowledge and policy recommendations to decision-makers and advocacy groups; (2) its emphasis on the integration of environmental and animal protection issues; and (3) its attention to fostering collaboration between scholars and private-sector change makers. In addition to supporting academic research, CEAP publishes occasional research briefs intended for a wide audience that you can sign up for by emailing: [ceap@nyu.edu](mailto:ceap@nyu.edu).

In its fourth year, CEAP's research projects continue to focus on animal agriculture and its relation to environmental and animal protection. Our two largest research projects explore 1) global pathways towards a world without meat and 2) bending the curve of meat and dairy consumption in China. In addition, CEAP has supported projects on the impacts of COVID-19 on nonhumans, the environmental and welfare effects of CAFO-free chicken production, and the development of plant-based proteins.

CEAP is an independent entity, housed in NYU's Department of Environmental Studies, that maintains close collaborative relationships across the University including with NYU Animal Studies and the professional schools in law, business and medicine. Since becoming a degree-granting program in 2007, Environmental Studies has graduated more than 948 majors. The Animal Studies minor, created in 2010, has graduated approximately 130 students. The MA program in Animal Studies, which welcomed its inaugural class in 2018-19, has awarded 30 degrees and has 45 enrolled students contributing to a diverse community of energy, enthusiasm, and talent.



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# REIMAGINING SUSTAINABLE FISHERIES



CEAP Deputy Director Jennifer Jacquet and renowned fisheries scientist, Daniel Pauly, who spoke at the CEAP launch, published an invited perspective in *PLoS Biology*, in which they articulate a new vision for sustainable fisheries.

"Imagine an ocean in which aquatic animals were protected from industrial fishing. Imagine that strong norms and rules developed against the use of fish and aquatic invertebrates as feed for other animals. Imagine eliminating subsidies, greatly limiting the international trade of these animals, and reserving the right to fish to artisanal fishers supplying local communities and to subsistence fishers providing for their families. Imagine, in other words, that wild fish and invertebrates were considered something more like wild animals and less like traded commodities."

From Jacquet J, Pauly D (2022) Reimagining sustainable fisheries. *PLoS Biol* 20(10): e3001829. <https://doi.org/10.1371/journal.pbio.3001829>.

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# PROTECT GLOBAL VALUES OF THE SOUTHERN OCEAN ECOSYSTEM

Jennifer Jacquet was an author on a policy forum in *Science* (October 2022) timed with the 2022 meeting of Convention for the Conservation of Marine Living Resources. The authors argued that the Southern Ocean should be valued for more than its extractive value, which provides short term benefits, primarily for a small number of wealthy nations. They recommended a moratorium on fishing, pointing to "the proven vulnerability of Southern Ocean organisms and ecosystems to climate change and ways in which fishing is known to compromise ecosystem services."



# NGOS UNITE TO OPPOSE OCTOPUS FARMING



After the Spanish government authorized permits to the seafood company, Nueva Pescanova, NGOs united on World Octopus Day (October 8) and called for the EU to ban octopus factory farming. The campaign cited the 2019 work by Jennifer Jacquet, Becca Franks, Peter Godfrey-Smith and Walter Sanchez-Suarez, and their letter opposing octopus farming that was signed by more than 100 university scholars.

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# TOWARD A MEATLESS FUTURE

Humans now manage, slaughter, and consume billions of terrestrial and trillions of aquatic animals each year to fulfill growing meat demands. As a result, animal agriculture is now among the largest drivers of global environmental change, contributing to climate change, exceedances of biogeochemical flows, biodiversity and wild animal loss, land, energy, and water consumption, and ecosystem destabilization. Despite the enormity of animal agriculture, global food and nutrition insecurity is still both pervasive and persistent—this sector primarily serves the industrialized world and wealthier population segments.

Reducing human consumption of animal protein is one of the most effective things we can do for both environmental and human health, and animal welfare. Furthermore, an emerging body of research shows that diets higher in plant proteins—pulses, legumes, and coarse grains—could offset losses in animal protein by providing nutritionally dense foodstuffs, thereby contributing to food security and protein needs, while also providing several environmental co-benefits.

In response to these challenges, CEAP has undertaken a long-term research commitment to exploring how to reduce animal meat production and consumption while ramping up plant-based alternatives. A CEAP study currently under revision, entitled “Research Needs for a Protein Transition,” identifies three core research needs to facilitate a protein transition: improved data collection and analysis at the intersection of protein production/consumption and human and natural systems; the development of current and future alternative protein pathways with varying degrees of ambition; and the use of these pathways to evaluate trade-offs and co-benefits (e.g. across environmental and socio-economic dimensions), and inform decision-making at national and regional scales.



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A new component of CEAP research on animal agriculture was also launched this past year to consider avenues for improved modeling of dietary influences on climate change mitigation goals. More specifically, this work addresses the research question: to what extent does adopting a plant-based diet aid in meeting climate targets, i.e. globally averaged surface temperature change of 1.5°C or 2°C? While previous studies have attempted to quantify the climate impact of “plant rich diets,” our work aims to move beyond this to evaluate the spectrum of dietary scenarios, from fully vegan to business-as-usual, as informed by our Research Needs for a Protein Transition framework. Drawing from the methodology of several previous agricultural emissions modeling projects, we have constructed a model that estimates annual GHG emissions on a global scale from 2020 to 2050. This model can be used to assess a range of global dietary scenarios for their climate impact in response to a key set of input parameters, including agricultural production efficiency improvements and dietary composition disaggregated across seventeen major food groups. Preliminary results suggest that the global agricultural system (including post-production emissions, but excluding land-use change) would cumulatively emit 615 Gt CO<sub>2</sub>e by 2050 under a “Business-as-Usual” scenario, but that a global shift to entirely vegan diets by 2050 could limit these emissions to 264 Gt CO<sub>2</sub>e. When potential carbon sequestration resulting from land-use change under a vegan scenario is incorporated into these results, our model suggests that approximately .45°C of global warming could be avoided by a global shift to fully vegan diets.



## Research Team

*Dept. of Environmental Studies Faculty:*

Sonali McDermid (Associate Professor, Department of Environmental Studies, NYU);  
Matthew Hayek (Assistant Professor, Department of Environmental Studies, NYU);  
Dale W Jamieson (Professor Emeritus, Department of Environmental Studies, NYU);  
David Kanter (Associate Professor, Department of Environmental Studies, NYU)

*External Collaborators:*

Galina Hale (Professor, Department of Economics, UC Santa Cruz);  
Luke Stuntz (MSc Student, Department of Fisheries, Wildlife, and Conservation Sciences,  
Oregon State University)

# BENDING THE CURVE: MEAT AND DAIRY PRODUCTION AND CONSUMPTION IN CHINA

There are many reasons for environmental and animal welfare groups to be concerned about China's food trajectory. From a national perspective, China is the world's largest consumer of meat and emitter of greenhouse gases (GHGs). The GHG emissions from China's livestock industry alone are about the same as those from the entire global transportation system. In per capita terms, the average Chinese person consumed 49.3 kilograms of meat in 2018, more than tripling the 1990 figure of 15.6 kilograms. In 2016 alone, China slaughtered more than 14 billion terrestrial animals for food, or about 448 animals per second. These trends in the production and consumption of animal protein raise serious challenges to human health, global economic and environmental stability, and animal welfare.



In alignment with President Xi's plans to foster an "ecological civilization" ("生态文明"), "Bending the Curve" builds on China's long history of plant-based eating, aiming to produce concrete suggestions for policymaking and advocacy related to meat reduction in China. The first published outcome of this project, "China's Food Pagodas: Looking Forward by Looking Back?," was published in the *Journal of Food Law and Policy* in 2021. This paper examined the historical evolution of China's Dietary Guidelines (known as the Food Pagoda) and analyzed their implications for the environment, health, and animal welfare. The results of this study were updated in CEAP Brief #8, which took into account the 2022 update of the Food Pagoda. In future work, CEAP researchers will examine whether China's Food Reduction Law is a resource for limiting the production and consumption of meat and dairy.

## AY 20-21 Research Team

Yifei Li (Assistant Professor, Department of Environmental Studies, NYU Shanghai);

Dale Jamieson (Professor Emeritus, Department of Environmental Studies, NYU);

Congcong Li (CEAP Postdoctoral Fellow, NYU Shanghai);

Michelle Huang (B.A. Alumna, Environmental Studies, NYU Shanghai)

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# OTHER PROJECTS

## **One Health, COVID-19, and a Right to Health for Human and Nonhuman Animals**

COVID-19 is a reminder that human, nonhuman, and environmental health are linked, and so efforts to improve human, nonhuman, and environmental health should be linked as well. But current efforts to link these issues fall short by not doing enough for humans, not doing enough for nonhumans, and focusing narrowly on health instead of expansively on health, welfare, and rights. This paper surveys the case for respecting and promoting human and nonhuman welfare, health, and rights simultaneously. The authors review the impacts of COVID-19 on human and nonhuman populations—including farmed, research, companion, and wild nonhuman animals— and propose steps that can be taken that respect and promote both human and nonhuman health, welfare, and rights. The paper was published in *Health and Human Rights* (Volume 23/2, December 2021, pp. 35-47).

Kimberly Bernotas (Animal Studies M.A. Alumna, Department of Environmental Studies, NYU)  
Laurie Sellars (Postgraduate Fellow in the Law, Ethics & Animals Program at Yale Law School; Animal Studies M.A. Alumna, Department of Environmental Studies, NYU)  
Jeff Sebo (Clinical Associate Professor, Department of Environmental Studies, NYU)

## **The ‘Sustainability Gap’ of US Broiler Chicken Production: Trade-offs Between Welfare, Land Use and Consumption**

In 2018, over nine billion chickens were slaughtered for meat in the United States. To address welfare concerns, there is large-scale interest in raising chickens on pasture and switching to slower-growing, higher-welfare breeds. This paper investigates the welfare and land-use consequences of shifting to slower-growing broiler chickens, housed with outdoor access, in the US. Maintaining present-day chicken meat production with a slower-growing breed would require a 44.6%–86.8% larger population of chickens, a 19.2%–27.2% higher annual slaughter rate, and an increase of 19.9–30.6% of land used in chicken production. Without a drastic reduction in consumption, switching to alternative breeds will lead to a substantial increase in the number of individuals killed each year, an untenable increase in land use, and a possible decrease in aggregate chicken welfare in the US. The paper was published in *Royal Society Open Science* (Volume 9/6, June 2022)



Iris Chan (Animal Studies M.A. Alumna, Department of Environmental Studies, NYU)  
Becca Franks (Assistant Professor, Department of Environmental Studies, NYU)  
Matthew Hayek (Assistant Professor, Department of Environmental Studies, NYU)



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## The Genealogy of the Plant-Based Protein Industry

This work seeks to inform, support, and understand the development of policies that would improve the protection of animals and the environment through the transformation of industrial food production, specifically via the development of plant-based proteins. This project involves interviews with product developers and investors, and also includes compiling and analyzing a database of news media coverage and academic articles covering developments in the plant-based protein industry. This information will provide usable knowledge to inform policy recommendations to decision-makers and advocacy groups, as well as the strategies of private-sector innovators working to expand the plant-based protein industry and its impact. This paper is now under revision.

Elan Abrell (Assistant Professor of Practice, Environmental Studies, Wesleyan University)  
Katerina Kalergios (Animal Studies M.A. Alumna, Department of Environmental Studies, NYU)



## Reviewing the Benefits of No-entry Marine Protected Areas

Marine protected areas (MPAs) can provide resilience to climate change, and protection for biodiversity and marine animals. An estimated 7.7% of the global oceans are technically a protected area, although multi-use MPAs that allow commercial and recreational fishing and other forms of resource extraction are common. A number of MPAs that have been designated (or are *de facto*) "no-entry" zones where humans are excluded from entering the park or in fact do not enter it. This project seeks for the first time to review all existing evidence for the effectiveness of no-entry zones for environmental and animal protection. Research is currently underway.

Gabrielle Carmine (Ph.D. student, Duke University; Alumna, Department of Environmental Studies, NYU)  
Patrick Halpin (Professor, Nicholas School of the Environment, Duke University)

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# RESEARCH BRIEFS

## RESEARCH BRIEF #8

### **China's Food Pagodas: Looking Forward by Looking Back?**

In CEAP Research Brief #8, based on a paper co-authored with Dale Jamieson that appeared in the *Journal of Food Law and Policy*, Professor Yifei Li shows that China's national food policies have been driven by nutrition and health considerations, largely neglecting wider issues of climate resilience, ecological sustainability, and animal welfare. Yet China has a rich and varied culinary tradition that is healthier for people, animals and the planet than the western diets that have been gaining ground. These traditional dietary practices could have an important role in steering both China and the world towards healthier, more climate- and animal-friendly diets.



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## RESEARCH BRIEF #7

### COVID-19, One Health, and a Right to Health for Non-Human Animals

COVID-19 has had a wide range of positive and negative impacts on nonhuman animals. Many animals, like minks, were directly affected by contracting the virus, and many others were indirectly affected when the pandemic prompted humans to treat them differently. In some cases, these deviations from the status quo benefited animals, and in other cases they harmed animals. For instance, some companion animals benefited from being adopted during lockdowns, while some farmed animals suffered from being “culled” in especially painful ways due to slaughterhouse shutdowns. These impacts reveal the inadequacy of health policy frameworks like One Health. One Health aspires to improve human, nonhuman, and environmental health holistically, but it also values nonhuman health primarily for the sake of humans, which can lead to policies that harm or neglect other animals unnecessarily. The research suggests we should extend a right to health to animals to improve our health policy frameworks. As with humans, this right would establish that nonhuman animals have an interest in health, and that we have a responsibility to assign weight to this interest when making decisions that affect nonhuman animals.



## RESEARCH BRIEF #6

### Telling better stories about food



Modern agricultural practices are unsustainable both in their environmental impacts and in the amount of animal suffering that they impose. Animal agriculture harms humans, animals, and the environment more than most plant agriculture, and extensive, premodern agriculture cannot scale to meet current and future needs. Yet, many stories about solutions propose pre-modern agricultural practices; they are also often un motivating. How might we craft stories that better reflect the empirical and moral realities of our agricultural challenges?



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## LOOKING AHEAD

A little over three years ago a cluster of patients in China's Hubei Province, in the city of Wuhan, began to experience an atypical pneumonia-like illness that did not respond well to standard treatments. On January 10th the World Health Organization announced that the outbreak was caused by the "2019 Novel Coronavirus (2019-nCoV)." Thus far this virus has killed more than 6.5 million people, and continues to affect our work in various ways. COVID-19 is a zoonotic virus, and CEAP researchers along with many others have sounded the alarm that we have not yet recognized the degree to which the fate of humanity is bound up with that of other living things. In 2023 we expect to announce the results of a project that maps regulatory responses to live animal markets in 15 countries, work that has been done in collaboration with Harvard University's Brooks McCormick Jr. Animal Law & Policy Program and other partners around the world.

Other exciting work continues as well. Early next year, we expect to release a major report on "The Role of Agency, Sentience, and Cognition (ASC) in the Protection of Aquatic Animals." In the spring, we will be hosting Dr. Alejandra Mancilla from Oslo University who is researching a book on the moral, political, and legal status of nonhuman animals in that last wilderness, Antarctica. Here at home, research with colleagues in the NYU law school continues on how to implement a meat tax that is efficient, fair, and effective.

We warmly thank those of you who make our work possible, and also those of you who find our work valuable. We welcome your feedback at [ceap@nyu.edu](mailto:ceap@nyu.edu).

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# ADMINISTRATION

## DIRECTOR



**Dale Jamieson**

Professor of Environmental Studies and Philosophy Emeritus; Affiliated Professor of Law; Affiliated Professor of Medical Ethics, School of Medicine; Associated Faculty, Center for Bioethics, College of Global Public Health

## EXECUTIVE COMMITTEE



**Jennifer Jacquet, Deputy Director**

Associate Professor of Environmental Studies; Affiliated Faculty, Stern School of Business; Affiliated Faculty, Center for Data Science; Director, XE: Experimental Humanities and Social Engagement



**Colin Jerolmack**

Professor of Sociology and Environmental Studies; Chair, Department of Environmental Studies



**Sonali McDermid**

Associate Professor of Environmental Studies; Affiliated Faculty, Center for Data Science



**Jeff Sebo**

Clinical Associate Professor of Environmental Studies; Affiliated Professor of Bioethics, Medical Ethics, and Philosophy; Director of the Animal Studies M.A. Program