

AWI Quarterly

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A MESSAGE FROM THE PRESIDENT

Dear Friends of AWI:

Last year I noted what a tough year it had been. This year, circumstances have changed, but a collective hurt remains. People the world over are still reeling from a pandemic that has taken millions of lives and left economic upheaval in its wake. Meanwhile, the news brings us shattering images of lives torn asunder in Ukraine and lives cut short by horrific acts of violence in America.

Despite it all, you continue to have room in your heart and your mind for animals. Thank you for financially supporting AWI's work year after year to prevent the suffering of animals, protect species threatened with extinction, and provide animals everywhere with a life worth living. Thanks, too, for supporting our campaign to help animals affected

by the war in Ukraine. Your contributions are especially meaningful in these trying times. So if you've donated recently—or if it's been a while and you are willing and able to make a donation today—thank you.

As grateful as we are for your financial support, we also rely on the power of your voice—contacting federal and state legislators, agencies, and other policymakers. In this issue of the magazine, we include many calls to action, including contacting your members of Congress to end the exploitative trade in lions, tigers, and other big cats; phase out massive factory farms; ban wildlife killing contests on federal land; stop dangerous helicopter roundups of wild equines; and outlaw trade in a product that is contributing to the cruel death of millions of domestic donkeys.

Any action you can take on behalf of animals is appreciated. You are making a difference, and we couldn't do our work without you! 🐾

— Cathy Liss

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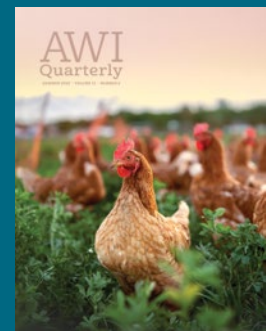
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ABOUT THE COVER

Farm animals raised on pasture have room to roam and opportunities to engage in natural behaviors—foraging, rooting, grazing, dust bathing, lounging in sun or shade. Most animals raised for food in the United States, however, feel neither sun above nor grass below. They are crammed into factory farms with little or no room to maneuver. In recent years, a number of states have enacted laws banning some of the more extreme forms of confinement, but there is still a long way to go. Beginning on page 13, AWI reviews the reform efforts and summarizes the current state of factory farming. Photograph by Jacqueline Anders.

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ABBIE WARNOCK-MATTHEWS



Wildlife killing contests ruthlessly target wolves and native carnivores—sacrificing sound wildlife management for bloodsport. The Prohibit Wildlife Killing Contests Act would ban most types of wildlife killing contests on federal lands.

BILL SEEKS BAN ON WILD HORSE HELICOPTER ROUNDUPS

Earlier this year, footage of a Bureau of Land Management roundup in Nevada captured a horrifying and tragic incident where a young colt's leg snapped in half as he was being relentlessly chased by a helicopter. In response to this and countless other incidents where wild horses have been seriously injured or killed during roundups, Representative Dina Titus (D-NV) introduced the Wild Horse and Burro Protection Act (HR 6635) in the House in February to ban the use of helicopters to gather and remove wild horses from the range.

EFFORT TO END KILLING CONTESTS ON PUBLIC LANDS

In April, the Prohibit Wildlife Killing Contests Act (HR 7398) was introduced in the House by Representative Steve Cohen (D-TN) to bar organizing, sponsoring, conducting, or participating in most types of wildlife killing contests on more than 500 million acres of US public lands.

Each year, thousands of ecologically important native carnivores and other wildlife are killed during these competitions. Such contests are cruel, violate fundamental hunting principles, and undermine science-based wildlife management. The bill would require five federal agencies—the Bureau of Land Management, Bureau of Reclamation, National Park Service, US Fish and Wildlife Service, and US Forest Service—to enact regulations within a year to ban wildlife killing contests on lands they manage.

ADVOCATING ANIMAL-FRIENDLY APPROPRIATIONS

During a key stage of the fiscal year 2023 appropriations cycle, members of Congress consider spending requests from individuals and groups. In the House of Representatives, where that part of the process has concluded, several animal welfare matters received widespread bipartisan support. As we do every year, AWI worked with legislators on letters to committee chairs endorsing requests to benefit animal welfare—either through funding for

important programs or directives to agencies to take (or refrain from taking) certain actions.

Among AWI's efforts this year: We helped enlist cosigners on a letter sponsored by Representatives Jared Huffman (D-CA), Jimmy Panetta (D-CA), Bill Posey (R-FL), Suzan DelBene (D-WA), Stephanie Murphy (D-FL), and Bill Keating (D-MA) urging robust funding of programs that would strengthen marine mammal conservation work. We helped recruit a number of members to join Representatives Ann McLane Kuster (D-NH) and John Katko (R-NY) on a letter urging Congress to ask the US Department of Health and Human Services to add animal cruelty as a risk factor when it collects data on child abuse. And we helped rally 119 members to join Representatives Raúl Grijalva (D-AZ), Don Beyer (D-VA), and Debbie Dingell (D-MI) on a letter urging increased funding for Endangered Species Act implementation. We also assisted with outreach on letters related to Animal Welfare Act enforcement, trophy hunting, and captive marine mammal protection.

On equine issues, AWI rallied support among a bipartisan coalition of 66 representatives for language that would direct the Bureau of Land Management to employ safe, effective immunocontraceptive vaccines to manage wild horses in their natural habitats. We also helped spur an effort by 120 representatives (and 28 senators) to request language that would permanently prohibit the domestic slaughter of horses for human consumption.

OHIO: EFFORTS TO CURTAIL CRUEL PUPPY MILL PRACTICES

In the last eight years, the number of puppy mills in Ohio has increased fourfold—a consequence of the Ohio Department of Agriculture (ODA) relaxing its regulation of these entities. To make matters worse, a shocking rule allows breeders to remove the dew claws and dock the tails of young puppies without veterinary supervision, pain medication, or anesthesia.

When AWI learned that the Joint Committee on Agency Rule Review was to review the puppy mill regulations, we seized an opportunity to get this rule invalidated. AWI submitted testimony, and our Ohio action team members sprang into action, contacting committee members to object to the rule. Our voices were heard! The committee tabled that regulation, along with another that would have allowed puppy mill operators to process their own criminal background checks, rather than having the ODA do it.

This is a significant victory, but the fight isn't over. The ODA must either abandon these ill-advised rules or come back with revisions. AWI is watching carefully to see which move it makes, and we will be ready to act and to engage Ohio residents once again if necessary.

HEARING HELD ON BIG CAT PUBLIC SAFETY ACT

The Big Cat Public Safety Act (HR 263/S 1210) received a hearing in the House Natural Resources Committee on May 12. This bill would prohibit private ownership of big cats and outlaw direct public contact such as cub petting and photo ops—benefiting both animals and public safety. Sheriff Matthew Lutz of Muskingum County, Ohio, testified about his department's response to the 2011 tragedy in Zanesville when dozens of big cats (and other species) kept as "pets" were set loose in the community—with nearly all killed by emergency responders. His powerful

and harrowing story reinforced the point that no community should have to fear lions or tigers running through its streets, no first responder should be forced to come face-to-face with a dangerous big cat in the line of duty, and no animals should be kept under conditions that could lead to their escape and possible death.

TAKE ACTION!

As the success in Ohio demonstrates, speaking out on behalf of animals can make a difference! A hearing was an important first step toward enactment, but getting the Big Cat Public Safety Act to the president's desk will take putting pressure on Congress to act. Please urge your representative and senators to cosponsor this bill through AWI's online Action Center (awionline.org/supportbigcats).

Prefer paper and pen? For senators, address Big Cat Public Safety Act letters to the following: The Honorable [full name], US Senate, Washington, DC 20510. To urge your representative to sponsor the bill—as well as the Prohibit Wildlife Killing Contests Act and the Wild Horse and Burro Protection Act—use the following address: The Honorable [full name], US House of Representatives, Washington, DC 20515.



The Big Cat Public Safety Act would ban private ownership of big cats and outlaw cub petting and photo ops—activities that stress animals and fuel relentless breeding to produce a constant supply of cubs.



BOTTOM RIGHT PHOTO: NARCIS POP, SPERANTA; OTHERS: SAVE THE DOGS

Animal Lives Among Those Upended by Ravages of War

Russia's invasion of Ukraine has caused a nearly unfathomable level of suffering for both humans and animals within the war-torn country. Thousands of people, many of them civilians, have been killed or wounded, and more than 12 million people are believed to have fled their homes in Ukraine since the conflict began, with an additional 12 million believed to be stranded or unable to leave areas affected by the fighting. An

untold number of animals have been caught in the crossfire as well, from companion animals and stray dogs and cats, to farm animals and horses, to captive wild bears, lions, and other animals located in various facilities across the country.

From news reports and from our discussions with groups working on the ground, we have heard countless stories of animal shelters and horse stables being deliberately bombed, of stray dogs being used as target practice, of the bodies of cows, goats, and horses found riddled with bullets, and of zoo animals starving or dying of stress from explosions around their enclosures. Companion animals have suffered greatly as well, with some families forced to leave their animals behind, and other people carrying their pets for many miles as they desperately flee relentless bombardment of their homes, with little more than a backpack and their beloved companions tucked under their arms.



AWI QUARTERLY



In the midst of the atrocities being committed, both large- and small-scale efforts to help animals have been underway in Ukraine and neighboring countries. These efforts tell a story of people around the world working together to help alleviate the suffering of the people and animals of Ukraine. AWI is aiding this effort. Since the start of the war, thanks to our members' very generous donations, we have distributed nearly \$80,000 to 14 organizations in Ukraine and neighboring countries that run or support private and public shelters, veterinary clinics, zoos, and rescue and rehabilitation centers providing desperately needed care. The organizations we have funded to date are as follows:

Animal Society: Romanian organization assisting companion animals of refugees crossing into Romania. Veterinarians, psychologists, and volunteers are providing medical care, food, blankets, and other supplies at two primary locations.

Asociatia Save Our Paws: Romanian organization supporting refugees and their companion animals by assisting them with documents they need to travel to other European countries with their animals. It is also offering accommodations for companion animals and providing food and supplies.

Casa lui Patrocle Animal Rescue: Romanian organization providing food, microchips, vaccines, and other medical services to animals crossing the border from Ukraine with their families. It is also helping find temporary or permanent shelter for animals who have been separated from their families.

Four Paws International: Global animal welfare organization providing refugees with supplies, medical care, and temporary accommodation for companion animals after they cross into Romania and Moldova. It is also launching a pilot pet and family reunification program and developed an emergency website and logistical platform to provide animal shelters and volunteers a way to request food and supplies and connect them with donors. The project has delivered over 475 tons of pet food across Ukraine. In addition, Four Paws has delivered food for animals in Ukrainian zoos and operates a sanctuary that has been accepting bears evacuated from zoos and rescues.

Gyvūnų Gerovės Iniciatyvos: Lithuanian organization helping Ukrainian animal shelters obtain food and supplies, providing information about border entry requirements, and preparing shelters in Lithuania to accept animals from Ukraine.

Happy Paw: Ukrainian animal welfare organization working to protect homeless animals within the country. Happy Paw is coordinating supply deliveries to more than 60 animal shelters across Ukraine to help feed and shelter animals caught in the crossfire.

Romanian League in Defense of Animals (ROLDA): Romanian organization delivering food to animal shelters in Ukraine; providing emergency veterinary care, pet food, and

pet supplies to families crossing into Romania; and assisting refugees with their companion animals' papers so that they can continue their journey to Western Europe.

Save the Dogs and Other Animals: Romanian organization assisting refugees crossing into Romania by providing them with food and supplies, allowing them to continue their journey to safety, and dispatching over 10 tons of food to animal shelters in Ukraine. It is also increasing capacity at its Romanian shelter to accommodate evacuated dogs.

Sirius: Ukrainian organization that operates the nation's largest animal shelter, housing over 3,000 companion animals in the Kyiv region. The area encompassing the shelter was surrounded by Russian troops at the start of the war, and delivering food and supplies was challenging until Ukraine regained control of the area. Since then, the shelter has resumed adoptions to find loving homes for animals affected by the war.

Speranta Shelter: Romanian organization providing medical assistance, food, pet carriers, and other supplies to support refugees crossing into Romania and opening its own shelter to provide temporary accommodations for Ukrainian dogs.

UAnimals: Ukrainian organization purchasing and delivering food across Ukraine to help animal shelters, zoos, and wildlife rehabilitation centers restock dwindling supplies.

Ukrainian Equestrian Federation Charity Foundation: Ukrainian organization delivering horse feed, bedding, and veterinary supplies to stables in Ukraine, transporting horses to safer regions in the country, operating evacuation shelters, and providing veterinary services.

Viva! Poland: Polish organization rescuing animals from Ukraine and caring for them in their Korabiewice shelter, which houses cats, dogs, horses, and farm animals, and delivering food and medicine to shelters in Ukraine.

White Paw Organisation eV: German organization coordinating sheltering and fostering services for animals in Ukraine and supplying food at the Polish border.

For all the stories of pain and destruction, in our conversations with those working on the ground and in neighboring countries, we have been struck by the tone of hope, strength, and resiliency of the Ukrainian people. With your help, AWI is committed to continuing to help alleviate current suffering and rebuild toward a safe and secure future. 🐾

AWI continues to accept donations to further this important work. You can donate through our website at awionline.org/donate.



EVERETT

Safe Havens for Pets: Unique Models, Unified Mission

AWI's Safe Havens for Pets Mapping Project aims to provide an accurate listing of the nation's available safe havens for pets—i.e., sheltering services that assist individuals experiencing domestic violence in placing their companion animals out of harm's way so that they may seek safety for themselves. The project also seeks to strengthen communication among safe haven facilities and supporters to build a strong coalition and to conduct and disseminate research that will inform strategic decision-making by individual safe havens and their sponsors.

Safe havens come in various shapes and sizes, depending on the needs and resources of the local communities. Some rely on networks of foster care homes. Some use additional kennel space provided by a local humane society or veterinarian. In some cases, they are domestic violence shelters that are able to house victims and pets together.

Over 1,200 safe havens are listed in the AWI directory, and the Safe Havens for Pets team has contacted them all. In the process, we discovered unique, innovative, and ambitious efforts by groups working to meet their communities' needs related to domestic violence and pet safety. We would like to introduce a few of these entities:

Pets come in a variety of shapes and sizes—and species. At **Pigtopia** (pigtopia.org)—a nonprofit refuge in Memphis, Tennessee, for abandoned and neglected pigs—founder Anna Yancey recently announced plans to build “Amber’s Refuge,” a dedicated shelter to provide a temporary safe space for the pigs of domestic violence survivors. It is named in memory of Anna’s close friend, Amber Dawn, who rescued and fostered

hundreds of animals, including pigs. Amber lost her life to domestic violence in October 2020.

Georgia’s **Ahimsa House** (ahimsahouse.org) is the nation’s only statewide network of foster homes and boarding facilities for domestic violence victims with pets. The nonprofit organization was founded in 2004 by Emily Christie after she lost a pet to domestic violence. Ahimsa House provides veterinary services for abused pets; assistance in transporting pets (both in and out of Georgia); food, supplies, and payment of deposits in transitional housing; assistance in safety planning, and legal advocacy for including pets in protection orders. Since its inception, Ahimsa House has provided over 139,000 nights of safe, confidential shelter for pets in need.

In October 2021, **BestyBnB** (bestybnb.com) launched as a for-profit “highly secure, technical platform designed specifically for domestic violence shelters” allowing them to select from a list of private caregivers who wish to foster the pets of individuals escaping abuse. Potential caregivers “must complete a detailed application, complete safety and training videos, and undergo comprehensive background checks,” according to BestyBnB, and its platform supports domestic violence shelters with “zero prior animal-sheltering experience/capabilities” as well as those with established pet sheltering services that wish to expand capacity.

If your group would like to start a safe haven for pets of domestic violence survivors, support the efforts of an existing safe haven, or simply know more about safe havens, visit safehavensforpets.org. Follow Safe Havens for Pets on Facebook, Twitter, and Instagram to see more of these shining examples through our Safe Haven Spotlight series. 🐾

COURT INTERVENES TO HALT HORROR AT BEAGLE BREEDING FACILITY

A federal court in Virginia has taken the extraordinary step of granting the Department of Justice a temporary restraining order against a facility in Cumberland, Virginia, that breeds and sells beagles for experimentation. The court ordered the facility, operated by Envigo, to immediately cease those activities while taking immediate steps to comply with the Animal Welfare Act's requirements regarding humane treatment.

The DOJ noted that Envigo had been cited for more than 60 violations over the preceding 10 months. The court's order offers a chilling account of conditions at the facility:

Over 300 beagle puppies have died onsite due to "unknown causes" over seven months. Many were not given anesthesia before they were euthanized by intracardiac injection. Beagles with even minor injuries or easily treated medical conditions were euthanized rather than given veterinary care. Nursing female beagles were denied food ... The food that the beagles did receive was observed to contain live insects, worms, maggots, beetles, flies, ants, mold, and feces. ... Over an eight-week period, 25 beagle puppies died from cold exposure. The enclosures were overcrowded. The facility was understaffed. Inspectors found over 900 beagle and beagle puppy records to be incomplete or inaccurate. The list of serious violations ... goes on and on.

The order followed execution of a federal search warrant at the facility, during which law enforcement officers seized a

total of 446 dogs and puppies (including 145 on the first day) needing immediate care to "alleviate life-threatening illnesses or injuries," and identified many others requiring medical attention. To argue for the restraining order, the DOJ included a necropsy report—completed two days before the raid began—that exemplified the extent of the catastrophic neglect, abuse, and suffering. A puppy's cause of death was "unknown" because they had been "eaten—only has a head left."

AWI had previously urged the USDA to rigorously enforce the law and revoke Envigo's license. Unfortunately, action was taken only after the DOJ, working with the Commonwealth of Virginia, stepped in, supported by the very same inspection reports that the USDA created but failed to act upon for 10 months. While the seizure and restraining order are welcome developments after the appalling delay, the government's action remains incomplete: Even after the suffering and death of untold numbers of dogs, Envigo retains possession of its breeder license and thousands of dogs at this horrific facility.

In May, *National Geographic* published an in-depth story on Envigo and its parent, Inotiv—a fast-growing multinational company that "reported \$89.6 million in revenue last year" and "owns about 62,000 animals." The article exposes the USDA's inexplicable refusal to act on Envigo and repeatedly quotes AWI, including our calling the situation an "unprecedented, unmitigated disaster." Referencing the magazine's October 2021 investigation, the article also states that "*National Geographic* has documented a pattern of USDA failure to take action over animal welfare violations during the past several years, marked by a 90 percent drop in enforcement actions against licensed animal facilities between 2015 and 2020."

A more detailed report on this unfolding story will appear in the next issue of the *AWI Quarterly*. In the interim, we recommend reading the *National Geographic* article: on.natgeo.com/3N7s7JQ. 🐾



NATIONAL ACADEMIES' CURIOUS CONFLICT OF INTEREST CRITERIA

The National Academies of Sciences, Engineering, and Medicine (NASEM) recently announced the provisional composition of an ad hoc committee that will examine the need, both current and future, for the use of nonhuman primates (NHPs) in research funded by the National Institutes of Health. To evaluate the need for *future* use, the committee is tasked with exploring four specific questions, three of which are related to “new approach methodologies” (NAMs)—i.e., non-animal approaches, such as in vitro or in silico methods for toxicity testing. Among the 13 members of the committee, 10 have a history of using animals—many of them NHPs—in research. Only three members have any expertise in NAMs, two of whom also use animals in research. Of those with NAM expertise, NASEM flagged two as having a potential conflict of interest because of their involvement with companies that produce NAMs. Conversely, NASEM flagged none of the committee members who make a living by using

NHPs in research. Evidently, NASEM views only one type of bias—the one that may sway someone away from the use of NHPs in research—as problematic.

SHOULD KILLING SURPLUS LAB ANIMALS BE A CRIME?

A court in Germany is investigating whether killing animals bred for labs but never used in research constitutes a crime, since German law forbids hurting animals without reasonable cause. According to a 2017 report by the European Commission, more animals (12.6 million) were bred and killed without being used in experiments than those who were bred and used (9.4 million) in the European Union that year. In response to the ongoing legal deliberations, some groups are already finding ways to reduce the number of surplus animals, for example by creating fewer animals through more efficient breeding and better matching of supply to demand, and by considering the transfer of animals to different laboratories.

SOMETHING DOESN'T ADD UP

Fish can perform simple addition and subtraction, a study recently published in the journal *Scientific Reports* revealed (Schluessel et al., 2022). In a series of runs, cichlids and stingrays were first shown an image containing 1–5 shapes. Then, that image disappeared and the fish were shown two new sets of shapes simultaneously—one of these added a shape to the original, the other subtracted a shape. On each run, the color of the original set of shapes signaled the task for the fish: If the original was blue, choose the “plus one” set next. If it was yellow, choose the “minus one” set. Fish who swam up to the correct image received a food reward. Most chose the right answer.

This ability to perform simple arithmetic may be surprising, because fish lack a neocortex—a set of brain layers responsible for cognition in mammals. The neocortex is also involved in sensory perception, including pain, and the absence of this structure in fish has long been touted by some scientists as evidence that they cannot feel pain. Now that fish can clearly perform a cognitive task despite lacking a neocortex, perhaps it is time to acknowledge that fish—just as birds—may simply use a different brain structure than mammals to perceive pain as well.



A cobalt blue zebra cichlid in Africa's Lake Malawi. A recent study found cichlids and stingrays could add and subtract—challenging long-held notions about the limits of fish cognition and perception.

GRIGOREV MIKHAIL



CHIRANTA NA MATHKARI, M.Sc.

Protective and Stimulatory Environmental Enrichments in Japanese Quail Colony

by Rachel Dennis, PhD, University of Maryland

Barren colony cages are often used for housing of breeding and research quail, especially within laboratory animal housing systems. These systems provide for ease of care and the maintenance of strict laboratory hygiene requirements, but create serious welfare concerns and limit environmental enrichment options. Quail maintained in barren environments have been shown to exhibit high-stress-related behaviors, reduced immunocompetence, and increased injury and mortality due to excessive matings and agonistic interactions. In addition to creating concerns over poor animal well-being, these environments may compromise research results by oversampling high-stressed and immunocompromised individuals.

In the present study, funded by an AWI Refinement Grant, we investigated the impacts of six environmental enrichments that were primarily either protective (acrylic hut, natural grass, or hanging synthetic leaves/brush) or stimulatory (foraging mat, mirror, or feeder toy) on colony-housed Japanese quail. We hypothesized that protective enrichments would have a greater impact on behavioral and physiological measures of well-being. We included natural grass (see photo above) due to its use in nature by wild Japanese quail. However, the difficulties of maintaining grass in a laboratory setting make it challenging in certain circumstances that require high degrees of cleanliness and sterility.

Our results showed that all enrichments used in this study improved welfare measures compared to a barren environment. Protective enrichments reduced incidents of

agonistic interactions and matings, while having no impact on rates of egg fertilization. Specifically, grass and hut enrichment lowered frequency of mounting, feather pecking, and vigilance behaviors.

Quail most frequently interacted with the grass enrichment, including by pecking at the grass, sitting in the grass, and laying eggs inside the enrichment area. Protective huts provided the second-greatest increase in welfare measures. Quail provided with huts increased sitting behavior, gained more weight, and laid more eggs than control birds. Fecal corticosterone levels (a noninvasive measure of stress) were reduced in both grass- and hut-enriched birds. Hanging leaves also provided an improvement in welfare measures compared to a barren environment, but to a lesser degree than grass or huts.

Stimulatory enrichments also improved overall well-being by reducing feather pecking and improving feather condition scores. All enrichments increased sitting behavior compared to quail in barren environments. Corticosterone levels were reduced in quail provided with foraging mats; however, no difference in corticosterone was found in birds provided hanging leaves, mirrors, or feeder toys.

In conclusion, these results highlight the importance of environmental enrichments in colony-caged Japanese quail. Natural grass appears to be the most beneficial and is strongly recommended whenever possible. Our study further suggests that, at minimum, protective huts should be provided. They are easy to maintain and hygienic, improve growth and production measures, and significantly enhance the well-being of the birds. 🐾



BROWSER EXTENSION HELPS CONSUMERS CHOOSE HIGHER-WELFARE FOODS

AWI is partnering with Consciously, a public benefit company, and the ASPCA's Shop With Your Heart program on a new internet browser extension (add-on) that will help consumers select higher-welfare and plant-based alternatives while they shop. The extension will help online shoppers choose products that promote AWI's goal of supporting higher-welfare family farms and abolishing factory farms.

With the extension added to their browser, shoppers visiting a food product page will see a small box in the corner of the browser that recommends two higher-welfare and two plant-based alternatives. The higher-welfare alternatives suggested by the Consciously extension are generated from the ASPCA's Shop With Your Heart product directory, which is consistent with the recommendations of AWI's *A Consumer's Guide to Food Labels and Animal Welfare*. All recommended products are verified by one of the following third-party food

certification programs: Certified Animal Welfare Approved by AGW, Certified Humane, and the Global Animal Partnership (Step 2 and higher). The Consciously extension is currently available for shoppers on Whole Foods and Amazon websites, but will eventually be expanded to other major online food retailers.

Most animal products sold in American grocery stores come from producers that maximize profits by treating animals not as sentient creatures, but as production units. Unfortunately, compassionate consumers who want to find higher-welfare options are confronted with a dizzying number of "self-made" food label claims. These claims are touted by companies purely for marketing purposes, with no independent verification process and, more often than not, no basis in reality. Conditions for these animals are usually nothing like the bucolic images conjured up by corporate farming operations to advertise their products.

AWI's collaboration with Consciously provides one solution to this problem by helping consumers make food choices that alleviate animal suffering

Consciously, a new browser extension, makes it easier for consumers to select higher-welfare and plant-based alternatives when shopping online for food products.

rather than perpetuate cruelty. Learn more and download the extension by searching for "Consciously: Conscious Shopping Assistant" in your internet browser's add-on store.

SUPREME COURT TO WEIGH CALIFORNIA ANTICONFINEMENT LAW

The Supreme Court agreed to hear a case challenging California's Proposition 12, a voter initiative requiring pork, veal, and eggs sold in the state to come from animals raised in environments where they can move freely, extend their limbs, and turn around. The question hinges on whether this sort of regulation by a state of products sold within its borders discriminates against or unduly burdens interstate commerce—a violation of the Constitution's Commerce Clause. The proposition, passed in 2019, was an expansion of a 2012 ballot measure that applied only to in-state animals. Bans that affect products produced out-of-state in a manner prohibited by that state have been contentious, particularly those that relate to the sale of animal products. For instance, California bans the in-state sale of foie gras. But the state's ban on the purchase, for personal use, of foie gras from out-of-state producers was recently invalidated by the Ninth Circuit Court of Appeals.

AWI urged the Biden administration to withdraw its support of the industry challenge to Proposition 12. If the court overturns the law, other state statutes affecting out-of-state products may be invalidated as well.

THE CURRENT STATE OF ANIMAL FARMING IN THE US

On November 5, 2002, voters in Florida approved the first US law prohibiting the use of small “gestation crates” to house pregnant sows. Such crates are but one example of the extreme animal confinement that is a standard feature of concentrated animal feeding operations (CAFOs, a.k.a. “factory farms”). In this article, AWI examines what progress has been made over the past two decades toward replacing factory farming with a more humane and sustainable food system.

■ FARMS CONTINUE TO DECLINE IN NUMBER AND GROW IN SIZE

The consolidation of the animal agriculture industry that began in the 1970s has continued. Just four meat companies—Cargill, Tyson, JBS, and National Beef Packing—now control 55 to 85 percent of the pork, beef, and chicken markets in the United States. This has contributed to the loss of thousands of small and medium-sized farms, and a continued shift from an independent system of farming to a corporate contract model (in which

individual farmers have little say over how the animals are reared on their land). According to the US Department of Agriculture, the number of US dairy farms dropped from 125,000 in 1997 to under 55,000 in 2017, and the number of hog farms declined from 125,000 to 66,000.

With this consolidation has come a dramatic increase in the number of animals housed at individual locations. While animal mistreatment is known to occur on farms of all sizes, the largest operations are far less likely to provide animals with adequate space and access to range or pasture, and far more likely to subject them to painful procedures. Moreover, large operations are ill-equipped to protect and humanely handle animals during major disasters or disease outbreaks. On multiple occasions in the past few years, a quarter of a million birds or more have died in barn fires at a single location. And the detection of avian influenza in one egg-laying hen has led to the intentional “depopulation” of millions of birds at a production facility—usually via cruel methods—to prevent further spread.



■ CHALLENGING THE OPERATION OF FACTORY FARMS

Factory farms were largely unregulated 20 years ago, and they remain so today. There are no national standards for where or how a CAFO may be built. Instead, CAFOs are governed by a patchwork of state and local laws—most often designed not to hold them accountable but to further entrench them in American society.

All 50 states have enacted some form of right-to-farm law to thwart lawsuits against operations engaged in standard farming practices that result in “nuisance” conditions—noises, odors, pollutants, etc. inflicted upon neighbors. These statutes and their beneficiaries have been challenged extensively in southeastern states, where massive pig and chicken operations contaminate community water and foul the air with their waste and stench. Such efforts have met with little success, however, as the legal landscape in these states overwhelmingly favors industrial agriculture—not the rural homeowners who must endure a neighboring CAFO’s unwholesome output.

Many states have sought to further shield factory farms from scrutiny by creating laws that criminalize whistleblower activities such as recording or photographing the abysmal conditions that farm animals typically face. Because exposing the cruel realities of factory farming is a critical tool used by investigators, these laws have been the subject of dozens of lawsuits. Courts have largely agreed with advocates that these “ag-gag” laws violate the First Amendment. Ag-gag laws have been overturned in Idaho, Iowa, Kansas, North Carolina, Utah, and Wyoming, but they remain in force in several other states.

Animal and environmental advocates have sometimes used environmental and zoning laws to slow down or even stop CAFOs from being built. Diligent advocates monitor state and local processes to ensure that laws are followed and that public concerns are aired. In some cases, enough opposition is generated to cancel construction plans. Bills have also been introduced at both the state and federal level to limit or ban CAFOs. One current federal bill—the Farm System Reform Act, introduced by Senator Cory Booker (D-NJ) and Representative Ro Khanna (D-CA)—would prohibit the construction of new large CAFOs and the expansion of those currently operating.

■ REFORMING CONVENTIONAL ANIMAL CARE PRACTICES

Painful Procedures

In the past 20 years, concern about painful procedures performed on farm animals has grown substantially, and the routine use of some procedures has decreased. But most farm animals are still subjected to one or more painful physical alterations over the course of their lives, typically at a young age. These include castration of all mammalian species, dehorning of dairy cattle and goats, tail docking of sheep and pigs, branding of cattle, teeth clipping of pigs, and beak trimming of both egg-laying hens and breeding chickens.

Historically, pain medication was never used; even today, its use varies widely between animal industries. The egg and poultry industries show no interest in managing pain with medication, although industry guidelines now at least acknowledge that beak trimming (used to control cannibalism and other aggressive behaviors triggered by the crowded, unnatural conditions) does cause pain, and producers are encouraged to breed more docile birds to decrease reliance on beak trimming.

Cattle are currently the species most likely to receive pain medication, especially if the procedure is performed by a veterinarian. In one study, over three-quarters of cattle veterinarians surveyed reported an increase in their use of pain relief between 2008 and 2018. However, most procedures are performed by the producers themselves, of whom only 32 percent reported increased analgesic use over this period. In another study, over half of veterinarians reported providing pain relief for castrations and dehorning some or all of the time, while most producers reported they never do so.

With pigs, nearly all males are castrated within a week of birth, and pigs of both sexes frequently undergo procedures that can cause chronic pain, such as tail docking and teeth





PIGS: AGNORMARK; CATTLE: ANNE LINDGREN

clipping. In the United States, there is virtually no use of anesthetics or analgesics for these procedures. However, tail docking and teeth clipping are becoming less routine, and the pork industry is participating in research that should hasten the development of FDA-approved drugs to decrease piglet castration pain.

Growth Promotants

Growth promotants are another tool employed to facilitate intensive animal production by increasing the rate of weight gain or milk production. Their use can have harmful effects on animal welfare. For example, the administration of bovine growth hormone (BGH) to dairy cattle is associated with a 25 percent higher risk of mastitis (a painful udder infection) and a 55 percent higher risk of lameness. Fortunately, since 2002, BGH use has gradually decreased; by 2014—the year of the USDA's most recent dairy survey—one-third fewer cows were receiving it.

Even bigger declines have been seen with the “beta-agonist” class of growth promotants used in pigs and cattle raised for meat. In cattle, drugs in this class increase mortality rates and lameness. In pigs, they increase stress levels, aggression, hoof lesions, and risk of becoming unable to walk. As of 2012, just over a quarter of grower-finisher pig operations used the beta-agonist ractopamine. Since that time, many major US trading partners, including China and EU member countries, have banned the use of ractopamine, prompting the largest US pork suppliers, including JBS, Smithfield, Hormel Foods, and Tyson foods, to ban ractopamine in their supply chains.

Antibiotics

The most controversial animal health practice over the past 20 years has been the use of antibiotic drugs. In the United States, the vast majority of antibiotics have long been administered not to humans but to animals used in food production, often in “subtherapeutic” doses to spur growth rather than treat infections. The widespread use of antibiotics on farms has contributed to an increase in resistance of bacterial pathogens to antibiotics that are medically important to humans.

Consumer pressure on grocery stores, restaurants, suppliers, and farmers has been a driving force in corporate decisions to reduce agricultural use of antibiotics. Despite some positive developments, however, there is ongoing cause for concern.

The Food and Drug Administration did not even begin tracking the sale of antibiotics in animal agriculture until 2008 (and only in 2016 issued a rule that required reporting by species). In 2012, the FDA released guidance on voluntary measures for limiting use of medically important antibiotics, and in 2017, new regulations went into effect banning their use as growth promoters.

After a 26 percent increase in the agricultural use of medically important antibiotics from 2009 to 2015, such use declined by 38 percent from 2015 to 2020 (resulting in a net decline of 22 percent from 2009 to 2020). The poultry industry has achieved the greatest reduction, while use in pigs and cattle remains high. Although the use of medically important antibiotics for growth promotion has been banned, the

therapeutic use of antibiotics (i.e., to treat infections—including those caused or exacerbated by intensive production conditions) has increased, and there are few restrictions on the use of medically important antibiotics for this purpose. New restrictions also do not address the prophylactic use of antibiotics to prevent infections. Finally, antibiotics not currently considered medically important can still be used as growth promoters.

■ ENDING EXTREME CONFINEMENT

A hallmark of industrialized animal agriculture is the extreme confinement of animals. Egg-laying hens in battery cages, breeding sows in gestation crates, and veal calves tethered or in crates have caught the public's attention, leading to attempts to curtail these common industry practices. Since the successful 2002 ballot initiative in Florida, more than a dozen prohibitions on extreme confinement have passed via state legislatures and ballot measures.

Although the specific language differs, these laws generally ban the confinement of animals in cages and crates. Ten states have prohibited the confinement of pregnant sows in a manner that does not allow them to stand up, lie down, and turn around without touching the sides of the enclosure. Seven states have prohibited confining veal calves in a similar manner. The livestock care regulations of two states go further by mandating that veal calves be kept in groups, a housing method that addresses not only extreme confinement but also social isolation of these young animals. The American Veal Association now requires its members to house calves in groups after 10 weeks of

age. Depending on the state, however, the calves may be confined individually for those first weeks.

Nine states have prohibited the extreme confinement of egg-laying hens. Some laws require housing that allows hens to lie down, stand up, fully extend their wings, and turn around. Others mandate a minimum amount of usable floor space per hen, plus enrichment (such as perching, scratching, and foraging areas). The remainder merely require compliance with United Egg Producer's relatively weak cage-free housing standards. Some state anti-confinement laws also ban the sale of animal products from any facility, in state or out, that engages in forms of confinement prohibited by the law. California and Massachusetts, for example, ban the sale of veal, pork, and eggs from animals raised in intensive confinement, regardless of origin.

In 2020, when AWI researched the impact of state farm animal welfare laws, there was no evidence that any of these laws had been the subject of enforcement actions, with the exception of the sales bans, which led to only three enforcement actions. Sales bans can have substantial effects on the market, and the industry has worked hard to challenge them in court, claiming they discriminate against out-of-state producers in a manner that violates the Constitution's Commerce Clause. The US Supreme Court will soon consider a challenge to California's sales ban (see page 12), and the outcome will have implications for the future of all state sales bans.

While the increase in state laws banning extreme confinement is encouraging, the largest production states—



where the industry has enormous political sway—have not followed suit, meaning that the vast majority of animals in food production are not covered. For example, only 3 percent of pigs in the United States are covered by gestation crate bans (and there are no bans on farrowing crates, which confine sows from late pregnancy until weaning of the piglets). To date, the animals most impacted by anti-confinement laws are hens. As of April 2022, 28 percent of laying hens were in cage-free housing, up from 10 percent just six years ago.

Hundreds of producers, retailers, and distributors have also pledged to rid their supply chains of products from animals kept in extreme confinement. Over 50 companies, including McDonald's, Burger King, Kroger, Safeway, and Costco, have adopted policies to eliminate gestation crates from their supply chains over various timelines. Over 100 companies have pledged to source only cage-free eggs. While this is indeed an encouraging trend, the follow-through on these commitments remains less than perfect.

■ THE GROWTH OF ALTERNATIVE FARMING MODELS

Even as large, industrial-scale farming has continued to expand over the past 20 years, awareness has grown over the detrimental impact of this type of production on animal welfare, the environment, and local communities. Consumers have begun demanding more from companies in terms of animal welfare and sustainability, leading to the emergence and growth of alternative systems that aim to produce food more closely aligned with the values of conscientious consumers.

Many companies are taking steps to respond to consumer demands for more ethically produced food by implementing practices that improve animal welfare. One example is the growing use of free-range and pasture-raising systems within the poultry and egg industries. The Associated Press has reported that over 8 million egg-laying hens are currently being reared free-range or on pasture. One of the nation's largest chicken producers, Perdue Farms, recently announced it now provides at least 25 percent of its chickens with outdoor access.

Additional production methods with the potential to improve farm animal welfare are organic and regenerative agriculture. While organic production has been around for quite some time, the USDA has recently committed to reviving the minimum welfare standards (withdrawn in 2017) for farm animals raised under the National Organic Program. These regulations would improve the lives of millions of farm animals, as well as increase the selection of higher-welfare products available to consumers. Regenerative agriculture builds on organic principals by focusing on soil health and ecological outcomes, while incorporating organic animal-raising practices. Farms

committed to regenerative agriculture reject the conventional CAFO model and prioritize raising animals on pasture so they can graze the land and live more naturally.

To distinguish their higher-welfare products from those produced from animals raised on factory farms, many companies are pursuing third-party certification. To qualify for certification, producers must undergo audits that ensure compliance with established animal care standards. In the years since AWI founded the Animal Welfare Approved certification program, several other nonprofit programs have been launched to improve farm animal welfare. Today, the three largest certification programs verify the treatment of 1.5 billion—one out of every six—farm animals in the United States. While the strength of the programs varies, all feature standards above those of the conventional animal agriculture industry.

The past 20 years has seen both advances and setbacks in the effort to eliminate factory farms and transition to a more ethical food system. While the animal agriculture industry has not voluntarily made significant improvements to its animal care practices, state legislation and ballot initiatives, along with corporate commitments, are raising standards for many farm animal species. Alternative forms of animal agriculture have also grown in popularity. However, it remains unlikely that most farm animals will be raised under higher-welfare conditions any time soon. In addition to supporting legal reforms, individuals can play a role in achieving this transition by reducing their consumption of food from animals and avoiding any products from animals raised on CAFOs. 🐾

Learn more about what to look for at the store with AWI's *A Consumer's Guide to Food Labels and Animal Welfare*, available for download at awionline.org/foodlabelguide.

Take action! Please urge your representative and senators to cosponsor the Farm System Reform Act (HR 4421 /S 2332), a bill that would phase out the largest factory farms and provide opportunities for farmers to transition to higher welfare farming or crop production. You can contact your legislators through AWI's online Action Center (awionline.org/supportfarmwelfare) or by writing them at The Honorable [full name], US House of Representatives, Washington, DC 20515 and The Honorable [full name], US Senate, Washington, DC 20510.

Donkeys Die by Millions as Ejiao Demand Soars

Donkeys are valued and trusted companions. As working animals, they are essential to many livelihoods. Around the globe, however, donkeys are being killed in unprecedented numbers.

“Ejiao” (pronounced “eh-gee-yow”) is a gelatin made from boiling donkey hides. It is used primarily in cosmetics and traditional Chinese medicines. Despite little scientific evidence of its purported health benefits, demand is increasing dramatically. In 2018, the *New York Times* reported that ejiao can sell for \$400 per pound. Today, the industry consumes about 4.8 million hides annually. At the current rate, half of the world’s donkeys could be gone in five years.

At one point, China had the world’s largest population of donkeys—an estimated 11 million. In recent years, its donkey population has fallen to 3–4 million, prompting the ejiao industry to target other parts of Asia, South America, and Africa, causing populations to plummet in those regions as well. Increasingly, animals are being stolen to feed the trade. In response, several African countries—including Kenya, Botswana, Uganda, Tanzania, Niger, Ghana, Gambia, Ethiopia, Burkina Faso, Mali, and Senegal—have banned or severely restricted the export of donkey hides or the commercial slaughter of donkeys.

Donkeys who fall victim to this industry experience immense suffering. They are shoved into crowded trucks and

typically face appalling transport conditions without water, food, or rest en route to slaughter. With practically no oversight of the trade and only the hides considered valuable, there’s little incentive to provide care during transport. Infections or broken limbs are left untreated, and those who die in transport are often skinned on the spot—their remains discarded by the side of the road. Those who do survive are sometimes bludgeoned to death at journey’s end.

Some companies have prohibited the sale of ejiao—eBay being one notable example. But others, including Amazon, continue to sell the gelatin. Consumers looking to avoid purchasing anything containing ejiao should read product information and ingredient lists carefully. Related terms include “donkey hide,” “donkey glue,” “donkey-hide gelatin,” “donkey skin plastic,” “donkey oil,” and “*colla corii asini*” (Latin for “donkey neck hide”), or iterations using “ass” in lieu of “donkey.”

Ejiao remains largely unknown to most American consumers, yet the United States is the third largest importer

of products containing ejiao, after mainland China and Hong Kong, with approximately \$12 million in annual imports each year. This means the United States can play an important role in curbing this brutal and largely unregulated trade. Representative Don Beyer (D-VA) has introduced the Ejiao Act (HR 5203), which would ban the sale and trade of ejiao products in the United States. AWI worked with Rep. Beyer’s office to ensure that this legislation would not present loopholes allowing sellers to skirt the prohibition.

The Ejiao Act has already attracted widespread support among animal welfare and equine industry groups; the American Association of Equine Practitioners endorsed it, citing the need to combat a trade that has “created immense suffering for the animals and those affected by their loss.” **Please urge your US representative to cosponsor the Ejiao Act. Contact them online through AWI’s Action Center (awionline.org/protectdonkeys) or by writing to The Honorable [full name], US House of Representatives, Washington, DC 20515. 🐾**



USING COMPUTER SIMULATIONS TO STUDY JAGUAR GENE FLOW THROUGH MEXICO

by Jennifer M White, PhD, University of Washington

The preservation of large carnivores such as jaguars will not be achieved only by conserving isolated protected areas. They need large landscapes. Subpopulations need to mix genes to remain genetically robust; therefore, animals must move between protected areas, through landscapes dominated by human activity. Our understanding of how individual movement and human-wildlife conflict affect regional population persistence is poorly understood, as, traditionally, it would require large-scale trapping of jaguars to outfit them with radio collars to monitor their movements over time.

This study, supported by a Christine Stevens Wildlife Award, demonstrated the ability of a spatially explicit, individual-based “SimFelid” computer model, implemented in the HexSim simulation platform, to capture the complex movements of jaguars. It showed how a model populated with biological data on jaguars from published studies can be used to generate predictions of wildlife movements relevant to management decisions made by field biologists and conservation practitioners. The “SimFelid” model is finely tuned to account for sex-specific territoriality, sex-specific juvenile dispersal behavior, and behaviors specific to available resources, roads, and rivers. As this work is based on computer simulations, it is completely noninvasive.

The model was used to predict how two locally implemented conservation strategies impact regional jaguar population dynamics: (1) assisted juvenile migration via “stepping stones”—small, high-quality habitat patches between protected areas, and (2) reducing retaliatory poaching near urban areas.

Two major results from this study are of particular relevance to jaguar conservation: One is that the stepping stone simulation showed that *very* small changes to the landscape can greatly enhance movement and therefore significantly improve genetic connectivity between the subpopulations of the region. Specifically, improving the habitat quality of seven 13.75 km² areas in Mexico resulted in a 25 percent improvement in gene flow by facilitating jaguar movement between higher-quality habitats. These results support the use of even very small migration stepping stones to improve future genetic resilience of jaguars.

The second is that human-caused mortality associated with urban areas is predicted to have profound effects on jaguar subpopulation “source-sink dynamics” (i.e., how various habitats affect population growth or decline—ecological “sources” experience more births than deaths, while the opposite is true for ecological “sinks”). Absent urban-associated mortality, most of the subpopulations acted as sources. However, when urban proximity and mortality is factored in, three subpopulations in the southern Yucatan peninsula (those furthest from urban centers) became the dominant sources in the region while the remainder became sinks. Therefore, conservation practitioners may wish to secure the preservation of those southern Yucatan subpopulations prior to investing in conservation measures for subpopulations near urban areas that may be acting as sinks.

This study aimed to demonstrate the capacity of spatially explicit, individual-based computer simulations to model the complex movement ecology of jaguars, thereby offering a replacement for large-scale trapping and collaring field studies. The results demonstrate how biologically detailed computer models can successfully capture complex movement behavior and improve our predictive ability by (1) generating predictions over large geographic areas that would be untenable via traditional methods, (2) manipulating anthropogenic impact scenarios in a geographically realistic manner relevant to conservation practitioners, and (3) enabling predictions of how conservation efforts affect the gene pool over multiple generations, even when generation times are long and movement behavior is complex. 🐾

Wild horses on the open range. The BLM routinely rounds up such animals and crowds them into holding pens. At one Colorado facility, over 140 have died of a highly contagious strain of equine influenza.



S. M.

wildlife

RED WOLF BIRTHS BOOST CHANCES FOR SPECIES

As spring brought budding trees and new shoots to Alligator River National Wildlife Refuge in North Carolina, it also brought renewed hope for the survival of the red wolf, the most critically endangered canid in the world. In April, Red Wolf Recovery Program staff confirmed the birth of six wild red wolf pups—four females and two males. This litter is the first to be born in the wild since 2018. Starting around 2014, poaching and unlawful changes to the US Fish and Wildlife Service's once-successful recovery program management caused a drastic decline in the wild red wolf population. Lawsuits by AWI and allies in recent years have spurred management reforms (see *AWI Quarterly*, spring 2021), and this new litter is a promising, much needed sign for the species' path to recovery.

COVID-19 MINK VARIANT INFECTING HUMANS

The Centers for Disease Control and Prevention has now confirmed four cases of humans infected with a variant of the coronavirus originating in farmed mink during an outbreak in Eaton County, Michigan, in late 2020 and early 2021—two mink farm employees, a local taxidermist, and his wife.

While these are the only known instances of humans in the United States contracting a form of the virus that had mutated in nonhuman animals, they are likely not the only

ones. The taxidermist and his wife had no contact with the farmed mink, and their infections with the variant were discovered almost two months after those in the mink farm employees, strongly suggesting spread within the community. Further, many other farms exist—over 200 in 18 states as of 2017.

The CDC has no comprehensive system to monitor COVID-19 infections in animals or animal-to-human transmissions in the United States, and the agency took months to publicly disclose the likely mink-to-human transmission in Michigan. To protect public health and the welfare of both captive and wild mink, AWI has called for a phase-out of the mink farming industry and, in the meantime, far greater transparency and enhanced disease monitoring and prevention efforts by federal officials.

FLU OUTBREAK FELLS WILD HORSES IN HOLDING FACILITY

Since April, over 140 wild horses have died from influenza exacerbated by a bacterial infection at a Colorado holding facility in Cañon City in what

is thought to be the largest disease outbreak in the Bureau of Land Management's fraught history of wild horse management. Although these horses were removed from the range last summer, it appears many had not been vaccinated or were only partially vaccinated against the flu when the outbreak began.

The crowded conditions in which the BLM often warehouses wild horses can unfortunately facilitate the rapid spread of disease. The Cañon City facility holds up to 3,000 horses. At a Wyoming holding facility designed to house 3,500 wild horses, an outbreak of strangles—a highly contagious disease affecting horses—has claimed more horses' lives.

AWI worked with federal lawmakers to call attention to this unacceptable situation during a congressional oversight hearing on preventing pandemics and the spread of wildlife-borne disease. Representatives Dina Titus (D-NV) and Steve Cohen (D-TN) wrote to Interior Secretary Debra Haaland calling for an investigation into the conditions at off-range BLM holding facilities and a halt to the constant roundups that shift wild horses into government-run corrals.

New Hope to Solve an Old Threat for Hawaiian Birds

The Hawaiian Islands are full of astounding beauty and an incredible diversity of plants, insects, and birds. Most people picture the islands—one of the most isolated archipelagoes in the world—as a tropical paradise. However, Hawai‘i’s wildlife and ecosystems have suffered tremendously from invasive species, as well as habitat destruction and degradation, particularly in the lower elevations where most people live. The majority of plants and animals in these lowland regions are non-native: they arrived with humans and displaced native Hawaiian species.

Hawaiian birds—particularly the honeycreepers, a group of small, brightly colored birds—have been devastated by non-native species. Hawaiian honeycreepers are found nowhere else in the world, and are critical components of forest ecosystems and Hawaiian culture. They are internationally renowned for their incredible diversity of bills, foraging styles, and plumage (greater diversity even, than that found in Darwin’s Galapagos finches), which occurred after their arrival in Hawai‘i approximately 5.7 million years ago,

when the oldest of the main Hawaiian islands, Ni‘ihau, was forming.

Over 115 endemic bird species thrived in Hawai‘i before humans arrived, with whole groups that are now absent, including moa-nalos, flightless rails, stilt-owls, and a blind mole duck. Since human colonization, at least 71 bird species in Hawai‘i have become extinct. Historically, at least 57 species of honeycreepers filled Hawaiian forests from the sea to the mountains with their songs. Today, only 17 honeycreeper species remain, many of them on the brink of extinction. Eleven are listed as endangered or threatened under the US Endangered Species Act, and the International Union for Conservation of Nature lists 15 as vulnerable or worse.

The biggest threat to the honeycreepers’ survival is introduced diseases—specifically, avian malaria, which is transmitted by non-native southern house mosquitoes. This mosquito species arrived in 1826 and quickly spread across the islands, while

avian malaria reached Hawai‘i in the early 1900s. A wave of honeycreeper extinctions soon followed. Most honeycreepers have no resistance to the disease, so one bite from an infected mosquito can be enough to kill some birds—such as the iconic ‘i‘iwi, with its brilliant scarlet feathers, black wings, and long, salmon-colored sickle bill. Both mosquitoes and the malaria pathogen require warm temperatures to reproduce, so their range has historically been limited to the lowlands (a.k.a. the mosquito zone), while most honeycreepers found refuge in cooler, high-elevation forests. The high mountains of Kaua‘i, Maui, and Hawai‘i provided significant forested area above the mosquito zone and therefore retained many of their native birds, while the lower islands tragically did not.



Unfortunately, the mosquito zone has been expanding because of increasing regional temperatures due to global climate change. Now, these invasive insects are present year-round in many formerly safe Kaua'i and Maui forests, and honeycreeper populations are crashing as a result. Without action, the 'akikiki and 'akeke'e on Kauai and the kiwikiu and 'ākohekohe on Maui are likely to go extinct in the next decade. The 'akikiki is at greatest risk—it could vanish within two years. From 2015 to 2021, the number of 'akikiki breeding pairs in the core of their range decreased from 35 to 1, and the entire wild population is now estimated at fewer than 76 birds (and likely closer to 45). Soon, the rest of the honeycreepers—including those on Hawai'i Island, where higher mountain forests have provided more protected, disease-free areas—will suffer the same mosquito-driven population collapse seen on Kaua'i.

Yet there is hope, because we have the ability to save these irreplaceable treasures of cultural and biological diversity. Birds, Not Mosquitoes (BNM), a collaboration of over 20 state, federal, and nonprofit partners and dozens of individuals, is working to deploy what is known as an "incompatible insect technique"—a form of mosquito birth control that conservation practitioners and agency biologists agree is the most promising approach to suppress mosquito populations and save these native birds. It involves a very common, naturally occurring bacteria,

Wolbachia, that affects mosquitoes' ability to reproduce. For mosquitoes to produce viable eggs, both the male and female must carry the same strain of *Wolbachia*. To control populations, scientists will rear males that carry a different strain of the bacteria than is found in wild mosquitoes, then release the lab-reared mosquitoes into forests in Hawai'i. Male mosquitoes do not bite birds (or people!), but very effectively find and mate with wild females. Because the bacteria strains are incompatible, females mated to lab-reared males will lay eggs that do not hatch. After several releases, the mosquito population will decline due to this lack of successful reproduction.

Millions of lab-reared males would be released to outnumber the wild males and increase the likelihood that incompatible males will mate with the wild females. Population suppression would be achieved by repeating this weekly or monthly, depending on the situation. Because mosquitoes are such recent arrivals to Hawai'i, none of the native species depend on them, so removing them should not significantly impact food webs. Mosquito birth control was originally developed and deployed to control diseases affecting humans, and this safe and proven technique has been used to suppress various mosquito species worldwide,

including in Fresno County, California, and Miami-Dade County, Florida.

BNM is building upon that investment and research to launch the first application of this mosquito suppression method for wildlife conservation purposes. We are working on all components of this project to advance it as quickly as possible. *Wolbachia* mosquitoes are regulated as a biopesticide by the US Environmental Protection Agency and the state Department of Agriculture. We are securing the required permits, completing the necessary environmental assessments for Kaua'i and Maui, and conducting extensive community engagement about this project across the islands.

BNM partners are also researching ways to construct the best implementation plan for location and frequency of releases. The males only live a few days and do not reproduce, so many releases each year will be needed to maintain protection of the birds' habitat from the remnant wild population and any female mosquitoes that move into the forest from the lower elevations. While this does increase the costs, it also means the process is reversible, and if there are unforeseen consequences, stopping the releases will allow the system to return to its previous state. The current timeline is to begin field tests and pilot releases in 2023, and effective



landscape-scale control of mosquitoes in 2024. Although complicated, all these individual steps have been done elsewhere, so we are confident we can combine everything to save our honeycreepers.

AWI is a key part of BNM's strategy to save the Hawaiian honeycreepers from extinction and has provided support for Kaua'i Forest Bird Recovery Project surveys to better understand mosquito distribution. This will help BNM determine release frequency and locations, monitor and assess mosquito population reductions, and adaptively adjust deployment once started. AWI has also supported the American Bird Conservancy's community

engagement activities. The mosquito birth control project will be an extensive management action on multiple islands, using a technique new to Hawai'i. Because honeycreepers are uncommon to extremely rare and found in remote areas, most people—even those who live in Hawai'i—are unfamiliar with them. Inspiring people and connecting them to the need to save these species is critical to building the public support necessary for the project to succeed.

The success of this project will prevent additional extinctions of Hawaiian birds and help populations

of these birds to rebound, providing opportunities for everyone to see and experience these precious beings of the Hawaiian Islands. 🐾

by Chris Farmer, PhD, Hawai'i Program Director, American Bird Conservancy, and Lisa "Cali" Crampton, PhD, Project Leader, Kaua'i Forest Bird Recovery Project

HOW YOU CAN HELP

- Learn more and stay informed:
 - + BirdsNotMosquitoes.org
 - + flowcode.com/page/kauaiforestbirds
 - + abcbirds.org/program/hawaii/mosquitoes
- Help KFBRP with remote projects (kauaiforestbirds.org/volunteersinternsstudent):
 - + Sorting photos
 - + Entering data
 - + Making bird bags
- Spread the word by sharing with family and friends
- Address climate change
 - + Conserve energy by driving less, riding your bike, using energy efficient vehicles and appliances, and turning off the lights
 - + Reduce, reuse, and recycle
 - + Invest in carbon offsets
 - + Shop wisely. Choose products that are energy efficient, durable, made from sustainable sources, and sustainably packaged
- Engage policymakers and let them know you support policies that protect endangered species and mitigate climate change, and vote for candidates that support these policies
- Practice good biosecurity—when traveling between different habitats or islands, clean your boots and gear of mud and seeds
- Support nature-friendly causes with your time and donations

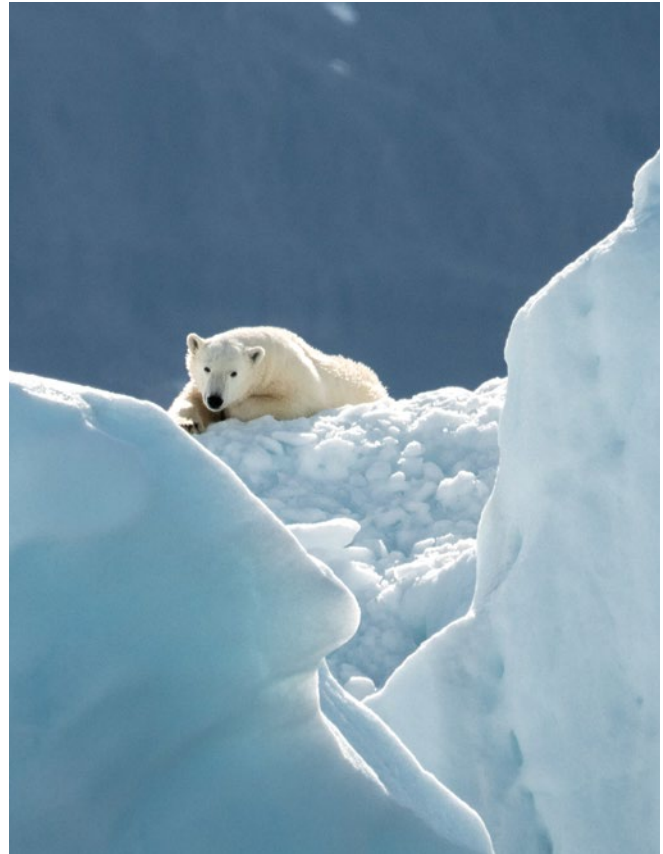
AWI is celebrating the Marine Mammal Protection Act this year and working to ensure this venerable law continues to provide powerful protection well into the future.

Celebrating the MMPA: 50 Years of Safeguarding Sea-Faring Mammals

In October 1972, during the Nixon administration, the United States passed an environmental law well ahead of its time. The Marine Mammal Protection Act, inspired by horrific images of dolphins dying in tuna nets, factory ships harpooning great whales, and airplanes and helicopters running down mighty polar bears so sport hunters could shoot them, was a precautionary piece of legislation when “precautionary principle” was still a new term. Back then, Congress believed in science and understood that marine mammals were uniquely difficult to study and monitor. These animals would thus require special protection to ensure they remained a “functioning element of the ecosystem of which they are a part.”

This year marks this groundbreaking statute’s 50th anniversary. AWI and a coalition of more than 20 other animal and environmental protection organizations are working together on a campaign to celebrate this milestone and promote amendments that will allow the law to help marine mammals face the next 50 years of human-caused threats and challenges. The campaign is largely social media-based and will culminate in the fall with an event in Washington, DC, to showcase the MMPA’s importance.

The campaign launched in February, using the hashtag #MMPA50 to generate attention. The launch featured a video highlighting the amazing nature of these species. Some marine mammals (e.g., polar bears, sea lions) are perfectly at home on solid ground, but spend much of their time in or near the ocean because their prey live there. Others are wholly aquatic (e.g., whales, dolphins, and manatees), and coming ashore, known as stranding, is usually a death sentence. All marine mammals are ecologically tied to marine habitats, coastal or in the open ocean, and many have adaptations that allow them to exploit even deep waters, including the ability to handle excessive saltwater exposure, withstand heavy pressure, and hold their breath for long periods. Some



ANNIE SPRATT

whales can dive thousands of feet deep and hold their breath for more than an hour. For them, no light is no problem—their eyesight is excellent, but they can hear even better. Many whales and dolphins use echolocation, like bats, to navigate and identify prey in the darkest depths of the sea.

Our goal with the #MMPA50 campaign is to educate the public about this legislation and the remarkable animals it protects. For a half century, the MMPA has brought many species back from the brink of extinction, but sustained success can become background noise and lead to political invisibility. Marine mammals now face challenges from entanglement in fishing gear, human-caused noise, changing climate, and more. We must work together to ensure the MMPA continues to protect marine mammals from these present-day and future threats.

Each month we offer new content on social media—engaging activities to teach people unique undersea vocalizations, informational webinars, and actions we all can take to help vulnerable marine mammal populations. Join the celebration and take action by following AWI on social media and liking, commenting, and sharing content using #MMPA50! 🐾

OCEAN NOISE STUDY TARGETS MORE MINKES

In June 2021, a dubious US government-funded attempt to study minke whales' response to ocean noise began in the northern Norway region of Lofoten. (See *AWI Quarterly*, summer 2021.) It involves stretching a net between islands to herd migrating juvenile minke whales into an enclosure and, from there, into a modified aquaculture pen, where electrodes would be attached to determine how they might react to active sonar from naval operations and noise from oil and gas exploration. The whales could be held up to four days before release. Even one of the project co-leads acknowledged, "Anyone who has worked with wild animals knows that when they are handled by humans, they will be stressed."

During the study's first phase in 2021, six whales, including a humpback and several adult minkes, swam into the net, though none were tested. One apparently broke through, highlighting the risk of entanglement for whales, seabirds, fish, and other marine life. AWI and our Norwegian and international colleagues continue to urge the government of Norway to revoke its

approval of this potentially cruel and dangerous experiment. Unfortunately, the project resumed in May 2022.

VAQUITA'S FATE HINGES ON END TO ILLEGAL FISHING

Fewer than 10 vaquita porpoises remain in Mexico's Upper Gulf of California. Yet, calves were observed during a 2021 survey, and new evidence, published in *Science*, indicates that the vaquita's historical rarity reduces inbreeding risk and the species "can recover if bycatch mortality is immediately halted."

Whether this will occur is very much in doubt. Mexico claims it has dramatically reduced the number of illegal fishing vessels in the "zero tolerance area" at the heart of vaquita habitat. Observers tell a different story—of rampant illegal fishing in and around the area (mostly for shrimp and totoaba) and boats laden with illegal gillnets entering the Upper Gulf without mandated government inspection and vessel monitoring systems.

And yet, in early March, the Standing Committee for the Convention on

International Trade in Endangered Species of Wild Fauna and Flora (CITES) not only failed to sanction Mexico for its failures but also agreed to permit trade in meat from captive-bred totoaba—an alarming decision given its potential to provide cover for the trafficking of wild-caught totoaba.

CELEBRATING WHALING BAN AGREEMENT'S 40TH ANNIVERSARY

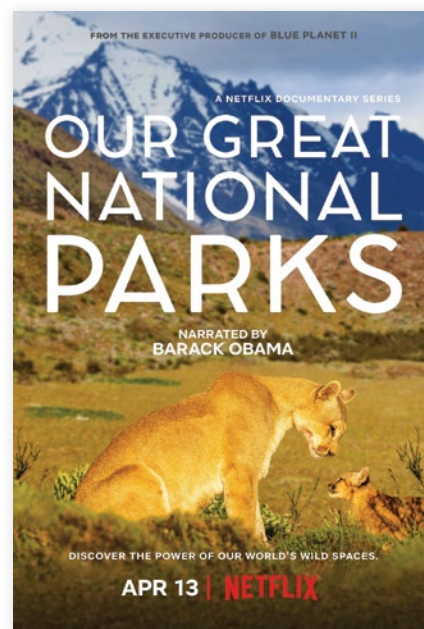
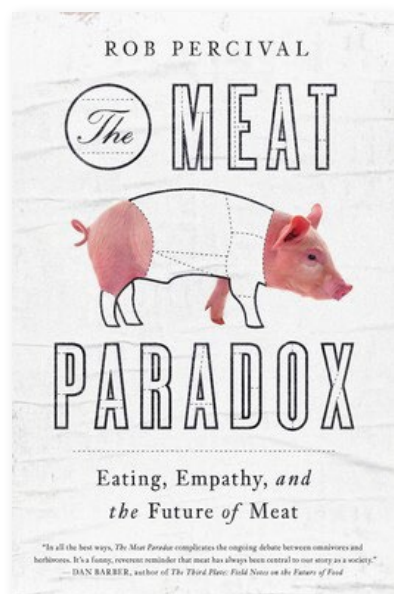
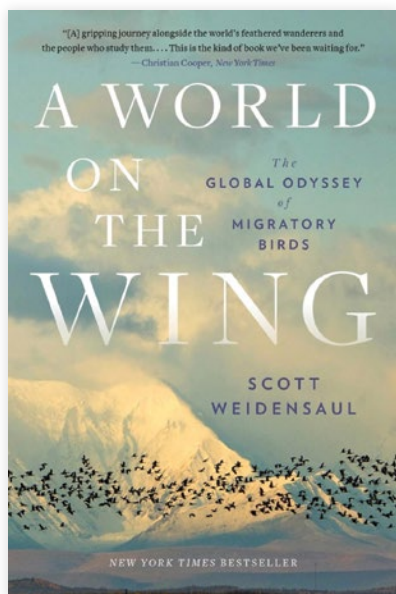
Almost 3 million whales were killed for their oil and meat in the 20th century, bringing many species and populations to the brink of extinction. Forty years ago, in July 1982, the International Whaling Commission (IWC), meeting in Brighton, England, agreed that the inhumane and devastating commercial whaling industry had to end; the parties voted 25–6 for a global ban on commercial whaling. The ban, which took effect in 1986, is widely acknowledged as one of the most significant conservation victories of all time, saving the lives of hundreds of thousands of whales.

AWI, a leader of the Save the Whales movement of the 1960s and '70s, was instrumental in securing the ban. To celebrate this landmark anniversary and call attention to the human-caused threats cetaceans still face, AWI and other animal protect and conservation NGOs are cohosting an event with the UK government at the Brighton hotel where the ban agreement was reached. Lord Goldsmith, Minister of State for the Environment, will unveil a memorial plaque at the site of the decision and recommit the United Kingdom to the conservation and welfare of cetaceans and to the future of the IWC.

Animal welfare advocates rallied at the scene of the pivotal 1982 International Whaling Commission meeting in Brighton, England, that resulted in a global ban on commercial whaling.



PA IMAGES



A WORLD ON THE WING

Scott Weidensaul / W. W. Norton / 416 pages

In rich detail, *A World on the Wing: The Global Odyssey of Migratory Birds* unveils the captivating world of migratory birds, the threats they face, and the scientists and conservationists who strive to protect them. From beginning to end, author Scott Weidensaul induces a sense of awe. Just a few of the tantalizing facts he shares: The annual, pole-to-pole (and back again) journey of some Arctic terns has been tallied at 57,000 miles. Certain songbirds fly up to a week without stopping, fueled by short naps in the air. Some daredevil migratory species fly directly into hurricanes—using the wind to propel them to their destination.

Advances in radio telemetry and radar systems, as well as the ability to leverage big data, have produced a technological revolution so central to modern migratory studies that it nearly becomes a main character in the book. Knowledge gleaned about where birds go, how they use habitat, and how they are affected by habitat quality has revealed the sheer magnitude and complexity of the many threats that migratory species face. It has allowed us to

better understand why so many populations are in steep decline but also—as Weidensaul makes clear—to tailor cross-continent conservation efforts to address threats species face at different stages of their lifecycles.

As with much research aimed at understanding wildlife, the study of migratory birds raises ethical considerations. Some of these are briefly touched upon in the book, mostly in the form of the author's attempt to assuage readers' concerns. But lingering questions remain about how researchers came to know certain things, like the fact that many internal organs shrink dramatically while birds are in flight. Certain studies highlight humanity's compulsion merely to know. In such cases, individuals may be harmed to learn *about* a species without regard, seemingly, for whether the acquired information might help save the species.

Yet on the whole, the information presented in this book, and the research being conducted, is opening vitally important windows into the world of migratory birds and providing insights essential to ensuring that these winged marvels thrive long into the future.

THE MEAT PARADOX

Rob Percival / Pegasus Books / 352 pages

As Rob Percival, author of *The Meat Paradox: Eating, Empathy, and the Future of Meat*, recounts, an Inuit shaman stated a century ago that “the greatest peril in life lies in the fact that human food consists entirely of souls.”

Percival is head of policy for the Soil Association, a UK-based organic farming charity and, admittedly, a meat eater. Yet he advocates for “ethical meat consumption,” which he defines as eating less meat and eating only that which is produced under sustainable, organic, and higher-welfare conditions.

The tension between necessity and murder—that is the crux of the meat paradox, according to Percival. He begins with the assumption that there are significant ecological, nutritional, and financial barriers to giving up meat entirely. While applauding vegans for “speaking the truth” about the immense animal suffering caused by factory farming, he also recycles industry arguments that humans are omnivores by design and that farm animals would disappear without meat consumption.

It’s clear that Percival is as conflicted about eating meat as the indigenous hunters he describes, who revere animals, yet butcher them to survive. In one illuminating passage, the author stands in a stun cage at a slaughterhouse, staring into the almond eyes of a cow facing imminent death. He uses this haunting image as a launching pad to discuss our emotionally and ethically complicated relationship with meat, one that is fraught with myriad contradictions.

As humans have evolved, Percival notes, they have constructed narratives and performative rituals to reduce the cognitive dissonance arising from caring about animals and eating them. More recently, many of us have elected to remain willfully ignorant of the meat-processing industry as we disassociate the pork on our plate from the pig on the farm.

This book offers a provocative examination of the nature of empathy and the origins of species bias. From an environmental perspective, Percival also concludes that “we are eating our way to extinction.” If we have any hope of saving the planet, he argues, we must drastically reduce our meat intake.

OUR GREAT NATIONAL PARKS

2022 / Netflix / Five episodes

During his time in office, Barack Obama protected more natural habitat than any president in history. His conservation ethos is on full display in *Our Great National Parks*, a Netflix docuseries he hosts. Through compelling stories and narration, the former president highlights the importance of preserving nature and, more importantly, the fundamental need to create systems that allow all beings to not only coexist, but also thrive.

In five episodes, viewers are taken around the globe to some of the most remarkable examples of protected land, including Chile’s Patagonia National Park, Kenya’s Tsavo National Park, California’s Monterey Bay National Marine Sanctuary, and Indonesia’s Gunung Leuser National Park. Stunning underwater and aerial footage—including never-before-filmed animal behavior—exemplifies the beauty and diversity that survive in these areas. Hippos swimming in the Atlantic Ocean, sandgrouse using their feathers to sponge up and transport water, and orangutans using tools to crack open fruit elicit a sense of wonder and remind us we are still learning about life on our planet.

Beyond providing refuge for countless endangered species, protected lands hold the potential for medical and scientific discoveries. A fungus that grows in the fur of rainforest sloths, for example, produces a chemical with the potential to fight certain cancers and antibiotic-resistant “superbug” pathogens. And while wildlands are key, enacting wildlife protections in built environments has given animals an opportunity to show us just how adaptable they can be. Monterey Bay harbors—formerly industrial and denuded of wildlife—now provide sanctuary to sea otter mothers who hide their newborns among the quiet docks while they hunt.

When the destruction of the natural world seems too vast to reverse, successful examples of government and community-led change show that there is still much we can do. *Our Great National Parks* is inspirational viewing, reminding us that national parks are “some of the last strongholds of wilderness and wildlife” and worth fighting for.

BEQUESTS

If you would like to help assure AWI’s future through a provision in your will, this general form of bequest is suggested: *I give, devise and bequeath to the Animal Welfare Institute, located in Washington, DC, the sum of \$ _____ and/or (specifically described property).*

Donations to AWI, a not-for-profit corporation exempt under Internal Revenue Code Section 501(c)(3), are tax-deductible. We welcome any inquiries you may have. In cases in which you have specific wishes about the disposition of your bequest, we suggest you discuss such provisions with your attorney.



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STUDY EXAMINES PANDEMIC POTENTIAL OF CLIMATE CHANGE

COVID-19—the most recent example of a zoonotic pathogen causing a global pandemic—continues to claim human lives, even as vaccines and other strategies return us to some semblance of normalcy. However, as many as 10,000 other viruses silently circulate among wild mammals, according to estimates, and some will spill over to humans, triggering future pandemics. A recent analysis published in *Nature* (Carlson et al., 2022) indicates that how and when that happens will be profoundly affected by the changes we effect on the Earth and its climate.

Carlson and colleagues assessed the impact of climate and land-use change on virus sharing among mammals and the potential for a zoonotic spillover event into humans. Based on predicted range shifts for 3,139 mammal species in response to projected climate and land-use change scenarios for 2070, the authors determined there will be approximately 4,000 novel opportunities for virus transmission among wildlife species who were previously geographically isolated, potentially

leading to new zoonotic spillover events. With bats accounting for the majority of virus-sharing events and the most likely vector for virus emergence in humans, these opportunities are more likely in high-elevation habitat, biodiversity hotspots, and high-density human populations in Asia and Africa.

The study authors found that climate and land-use changes are already creating novel opportunities for virus sharing and, further, that holding warming to 2°C (3.6°F) over the pre-industrial average (the upper limit goal of the Paris Agreement) will not be sufficient to reduce future viral sharing. What's more, the authors' simulations, which only involved mammals, likely underestimate the risk of novel virus sharing. Other taxa, particularly birds, could escalate the potential for the cascading impacts of climate and land-use change to hasten arrival of the next pandemic.

These findings reemphasize the need for a global wildlife surveillance system to monitor wildlife health, track climate change-induced range shifts, protect wildlife habitat, and minimize our exploitation of wildlife and habitat to reduce our own risk of exposure to dangerous novel pathogens. 🐾