ZOONOSIS WATCH

COLUMBIA SIPA
School of International and Public Affairs

NEW YORK STATE ASSEMBLY BILL A05947

OF FEBRUARY 25, 2025

PROHIBITING IMPORTATION OF CERTAIN WILDLIFE AND FISH, AND LIVE ANIMAL MARKET RESTRICTIONS

WORKSHOP IN APPLIED EARTH SYSTEMS MANAGEMENT

SUMMER TERM 2025

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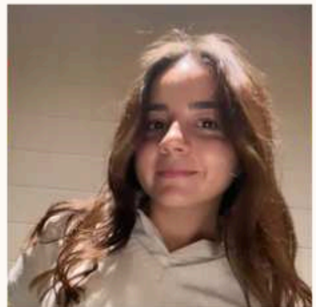

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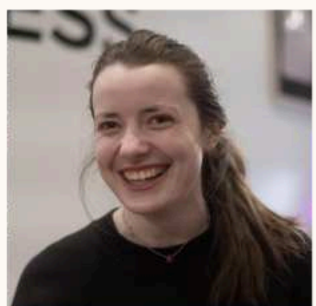

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EXECUTIVE SUMMARY

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Zoonotic diseases pose a **significant and growing threat** to public health, economies and ecosystems. In New York State, the combination of high human mobility, a large wildlife import market and the operation of live animal markets with both domestic livestock and wildlife creates multiple **high-risk interfaces for spillover events.** New pathogens are more likely to emerge and develop into major public health emergencies when there is inadequate sanitation and insufficient regulatory oversight.

New York State Assembly **Bill A5947 aims to reduce these risks.** It places limits on the trade of species known to carry higher risks, sets stronger hygiene and safety standards for live animal markets and gives state agencies the flexibility to act quickly when new threats are identified. The bill also calls for science to guide decisions and for agencies to work together instead of in isolation. These provisions form the basis of the proposed solution.

The solution tackles zoonotic disease risks by removing the conditions that allow dangerous pathogens to spread from animals to people. **By reducing high-risk wildlife contact,** improving sanitary conditions in markets and ensuring rapid action on new threats, it closes key gaps in prevention. While fish are included in the Bill, the authors decided to focus on the greater zoonotic threats posed by mammalian and avian species; fish were therefore considered outside the scope of our study.

Analysis of Bill A5947 highlights three main insights. **First, acting early** to limit risky human-animal contact is essential to stopping outbreaks before they start. **Second, coordinated, science-driven action** across agencies is essential to strengthening public health. **Third, lasting success** will require efficient data sharing, adequate resources, and consideration of economic and cultural impacts.

Based on these findings, **this report recommends** adding high-risk wild avian species to the prohibited species list and setting up a real-time surveillance and reporting system that links all relevant agencies. Furthermore, healthcare providers and veterinarians should be fully integrated into this system through training and clear reporting channels. Lastly, a single and integrated database would make it easier to share information, avoid delays, and keep responses coordinated.

Implementation should be guided by measurable indicators. Success can be measured through both outcome and output indicators. Outcomes include reduced zoonotic risk in live animal markets and improved compliance with hygiene and safety protocols. Outputs include the publication of updated hygiene guidelines, the launch of an interagency database and provisions of resources for law enforcement. Tracking these indicators will show whether the bill is reducing zoonotic risk and ensure implementation stays on track.

At the time of writing (August 2025), the Bill is being considered by the Committee on Environmental Conservation of the New York State Assembly.

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About Zoonosis Watch

Zoonosis Watch is a team of 10 graduate students at Columbia University's Master of Public Administration in Environmental Science and Policy (MPA-ESP) program, Class of 2026. During Summer 2025, as the first part of a six-month policy workshop in "Applied Earth Systems Management", Zoonosis Watch researched the scientific foundations of the problem addressed by, and solutions proposed in, Bill A5947.

Glossary

Coronavirus Disease 2019 (COVID-19): "a highly contagious respiratory disease caused by the SARS-CoV-2 virus. SARS-CoV-2 is thought to spread from person to person through droplets released when an infected person coughs, sneezes, or talks."[1]

Highly Pathogenic Avian Influenza (HPAI): "highly pathogenic avian influenza is an acute respiratory infectious disease caused by some viral strains of avian influenza virus A. Its severity is highly diverse ranging from common cold-like symptoms to septicemia, shock, multiple organ failure, Reye syndrome, pulmonary hemorrhage, and other complications leading to death."[2]

Live Animal Market: "retail food market where, in the regular course of business, animals are stored alive and sold to consumers for the purpose of human consumption."[3]

Mutation: "a change in the DNA sequence of an organism" that can result from errors in DNA replication during cell division, exposure to mutagens or a viral infection.[4] When mutation occurs in viruses, viral populations can evolve and increase the likelihood of escaping the immunity of the host.[5] For instance, RNA coronaviruses such as SARS-CoV-2 can mutate up to a million times more frequently than their hosts.[6]

One Health: "an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems."[7]

Pandemic: "large-scale outbreaks of infectious disease that can greatly increase morbidity and mortality over a wide geographic area and cause significant economic, social, and political disruption."[8]

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Pathogen: "an organism causing disease to its host, with the severity of the disease symptoms referred to as virulence. Pathogens are taxonomically widely diverse and comprise viruses and bacteria as well as unicellular and multicellular eukaryotes."[9]

Reassortment: "the process where related segmented viruses exchange genome segments creating novel reassortant viruses".[10] When viruses such as Highly Pathogenic Avian Influenza (HPAI) cross species barriers and infect humans, segments between similar human viruses and the zoonotic virus can reassort to create a new virus readily transmissible from human to human.[11]

Severe Acute Respiratory Syndrome (SARS): "a severe respiratory disease caused by a coronavirus (SARS-CoV-1). It was initially an animal virus that crossed over to infect humans."[12]

Zoonosis: "any disease or infection that is naturally transmissible from vertebrate animals to humans".[13]

Zoonotic spillover: "the transmission of a pathogen from a vertebrate animal to a human".[14]

Acronyms

AML	Agriculture and Markets Law, New York State
ECL	Environmental Conservation Law, New York State
LAM	Live Animal Market
NYDAM	New York State Department of Agriculture and Markets
NYDEC	New York State Department of Environmental Conservation
NYDOH	New York State Department of Health
NYS	New York State
SARS	Severe Acute Respiratory Syndrome
SARS-CoV	Severe Acute Respiratory Syndrome Coronavirus
MERS-CoV	Middle East Respiratory Syndrome Coronavirus

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01.
Introduction

Introduction

Zoonotic diseases have long posed a major threat to global health. The World Health Organization defines **zoonosis** as "any disease or infection that is naturally transmissible from vertebrate animals to humans.[15] The total number of zoonoses is unknown, but a study in 2001 catalogued 1,415 known human pathogens, and 62 percent were of zoonotic origin.[16] Many zoonotic pathogens have already been detected in wildlife, but the number of unidentified pathogens remains extremely high. Recent estimates suggest that millions of unknown viruses in wild mammals and birds may have the potential to spill over to humans.[17] The **COVID-19 pandemic**, believed to have emerged from animal origins, is the most recent example and demonstrates how emerging infectious diseases can rapidly escalate into global crises. Given their prevalence and severity, zoonotic spillover remains a significant public health concern.

Zoonotic pathogens can take the form of parasites, fungi, bacteria, viruses, prions, and other microorganisms. Some of these pathogens undergo genetic variation as they pass through different species, which can enhance their ability to infect humans. Successful cross-species transmission often depends on rapid viral evolution driven by high **mutation** rates, genetic recombination, and host species similarity.[18] When pathogens are transmitted from a vertebrate animal to a human, **zoonotic spillover** occurs.[19]

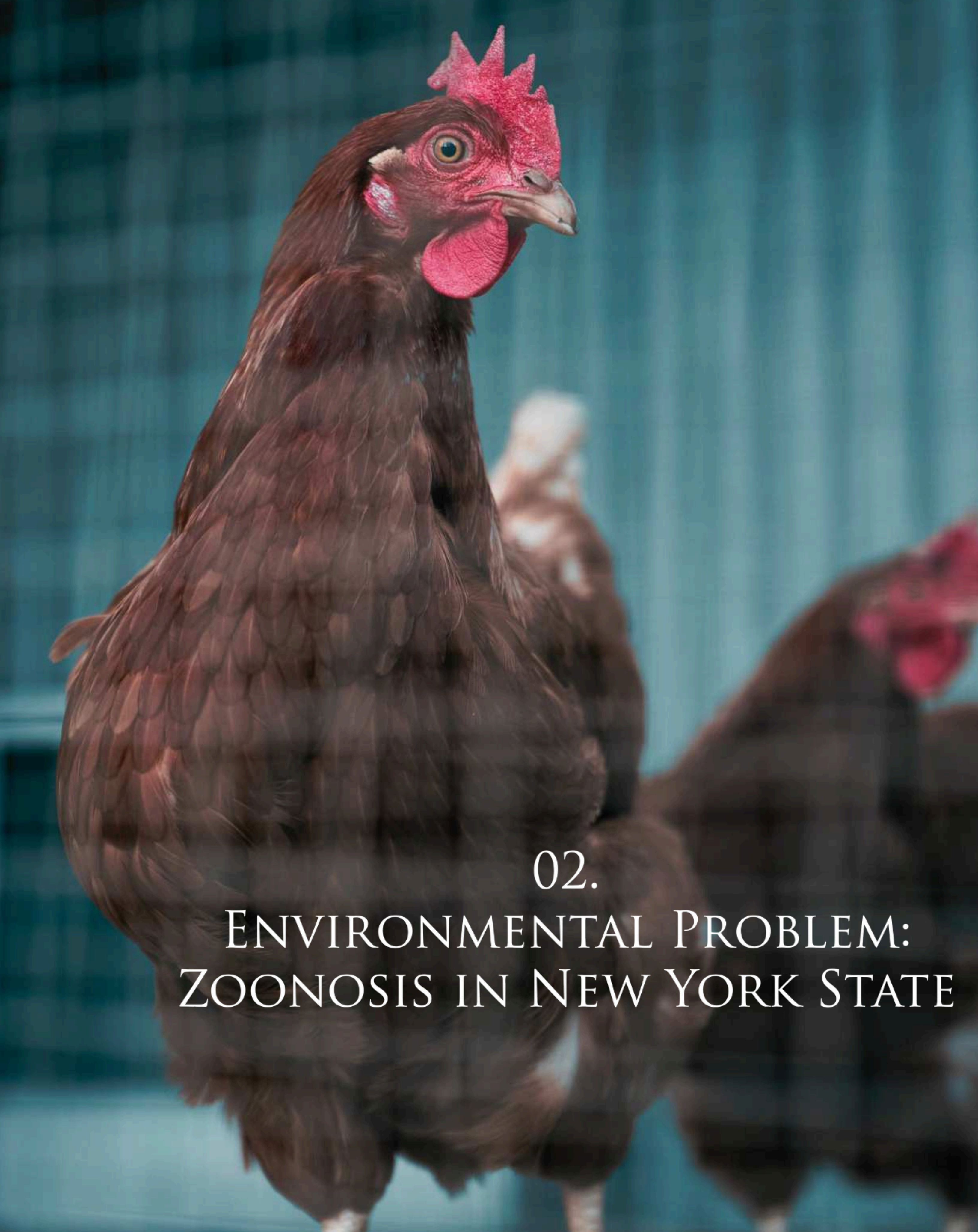
Zoonotic diseases can emerge rapidly and unpredictably, while human-driven habitat destruction, climate change, and global wildlife trade are increasingly forcing wildlife, domestic animals, and humans into unnatural contact.[20] Because novel pathogens bypass human immunity, their spread can lead to widespread illness and death.[21] Since humans have never faced these pathogens before, they have no immune memory and thus their response to new diseases is slow and often less effective. Among zoonotic diseases feature highly pathogenic viruses such as the Ebola virus, **Severe Acute Respiratory Syndrome Coronavirus** (SARS-CoV), Middle East respiratory syndrome coronavirus (MERS-CoV), and Hendra virus, which are believed to exist in reservoirs such as bats and can be transmitted to humans.[22]

Beyond these biological factors, **environmental changes are increasingly influencing zoonotic risk**. An increasing amount of scientific literature has shown the link between climate change and the transmission of zoonotic diseases.[23,24] Increasing temperatures and humidity are widening the range of many insect-borne pathogens, providing more opportunities for inter-species transmission and mutation.[25,26] Climate instability has also been linked to immune suppression in animals, increasing their susceptibility to infectious and noninfectious diseases.[27] Additionally, deforestation, urbanization, and extreme weather events disrupt food systems and habitat for animals and people, creating the conditions for disease to spread more rapidly between species.[28,29] Climate change has increasingly brought humans and the animals we rely on for food into closer proximity.[30,31]

Wildlife population crashes can trigger cascading effects throughout ecosystems. For example, declines in prairie dog populations due to plague decrease their availability as a food source for their major predator, the black-footed ferret. Similarly, amphibian losses from chytridiomycosis lead to reduced food availability for predatory snakes, thus decreasing their diversity.[32] These disruptions compromise critical ecosystem services such as pest control, pollination, and nutrient cycling, often resulting in increased pesticide use and rising economic costs. Furthermore, biodiversity loss weakens the "dilution effect," where diverse host communities reduce pathogen transmission, thereby potentially elevating the risk of future zoonotic disease outbreaks.[33]

In parallel, **human activities such as wildlife trade and live animal markets have also become major areas of concern.** Global wildlife trade is a key driver behind the recent rise in emerging infectious diseases.[34] Recent pandemics such as Ebola, SARS, and H1N1 (swine flu) have shown the urgent need for policymakers to address the factors contributing to the emergence and spread of infectious diseases. Many of these outbreaks originate from zoonotic sources, highlighting the intersection between humans, wildlife, domestic animals, and the environment. These events have reinforced the importance of proactive policies aimed at preventing future spillovers.

In response to this growing concern, **New York State Assemblymember Jo Anne Simon introduced Assembly Bill A5947 on February 25, 2025, to equip the State with preventative strategies to lower the risk of a new pandemic**. The bill mandates the New York Department of Environmental Conservation (NYDEC) to establish a list of prohibited species to be imported to New York State and regulate the behavior of people and businesses that operate live animal markets, while leaving room for exemptions for importing those animals by research institutions and zoos. The bill also aims to limit the potential threats from the import of high-risk non-native species to safeguard New York's ecosystems and agriculture.[35] Ultimately, it aims to reduce the likelihood of zoonotic disease transmission in New York State before a crisis emerges.



02. Environmental Problem: Zoonosis in New York State

Environmental Problem: Zoonosis in New York State

Despite decades of scientific progress, **the threat of zoonotic spillover continues to be a pressing issue.** Zoonosis represents a significant global public health concern due to the close interaction between humans and animals in agricultural, domestic, and urban settings.[36] Risks are also elevated when wild animals are kept as pets. For instance, in 2003, a shipment of animals imported from Ghana to Texas introduced the monkeypox virus into the United States.[37] After importation, some of the infected animals were housed near prairie dogs, which were subsequently sold as pets before exhibiting symptoms, facilitating the spread of the disease.[38]

While zoonotic diseases pose a global threat, **the State of New York could pose an additional challenge for disease containment due to the high volume of daily human movement.** The constant flow of people in and out of New York through cars, public transportation, and tourism significantly increases the risk that, once a zoonotic pathogen affects a single individual, it could spread rapidly across communities. Considering the New York City region alone, a 2016-2020 survey found that an average of 999,000 individuals would commute daily into the region, and 260,000 would commute out of the region for work.[39]

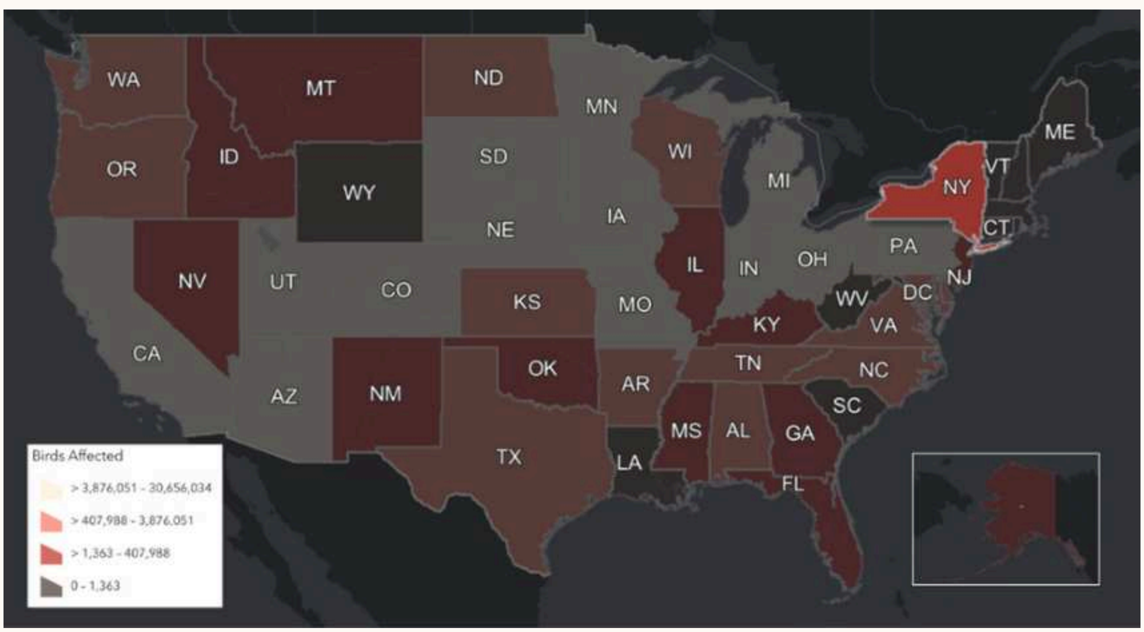


Figure 1. Number of birds (poultry and wild birds) by State affected by confirmed **Highly Pathogenic Avian Influenza** (HPAI) Detections in the continental United States since February 2022 (last updated on 2 July 2025). Data sourced from U.S. Department of Agriculture's HPAI Detection Database. Credits: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community.

The dynamic and high-volume flows of human movement warrant rapid and decisive regulatory action on high-risk activities for public health, such as live animal markets (LAMs). A 2023 report by the New York State Bar Association advocated for a statewide ban on live animal markets, citing significant public health concerns. Live markets pose serious risks to local communities by facilitating the spread of zoonotic diseases. In addition to health risks, many of these markets were found to be operating in violation of land use regulations, often situated in zoning districts where such activities are not permitted.[40] The report recommended New York State take a leadership role in aligning with federal and international efforts to implement stricter regulations on live animal markets.[41]

Because of New York's intense human traffic and the reportedly unsanitary conditions of live animal markets, **zoonotic infections could not only spread to humans, but also rapidly disperse through their human carriers**. Zoonotic pathogens can evolve rapidly through processes such as mutation and **reassortment**. The National Human Genome Research Institute defines mutation as "a change in the DNA sequence of an organism" that can result from errors in DNA replication during cell division, exposure to mutagens, or a viral infection.[42] In contrast, reassortment refers to "the process where related segmented viruses exchange genome segments creating novel reassortant viruses".[43] These mechanisms allow viruses to adapt to new hosts, subsequently enabling the possibility of transmission from animals to humans.

Spillover into humans usually occurs via five cooperative pathways:

- direct contact with animals;
- body fluids and tissues;
- indirect contact with contaminated sites and fomites carrying;
- aerosol or droplet transmission;
- ingestion of foodborne and waterborne sources, such as undercooked meat and raw dairy, or water polluted with animal feces.[44]

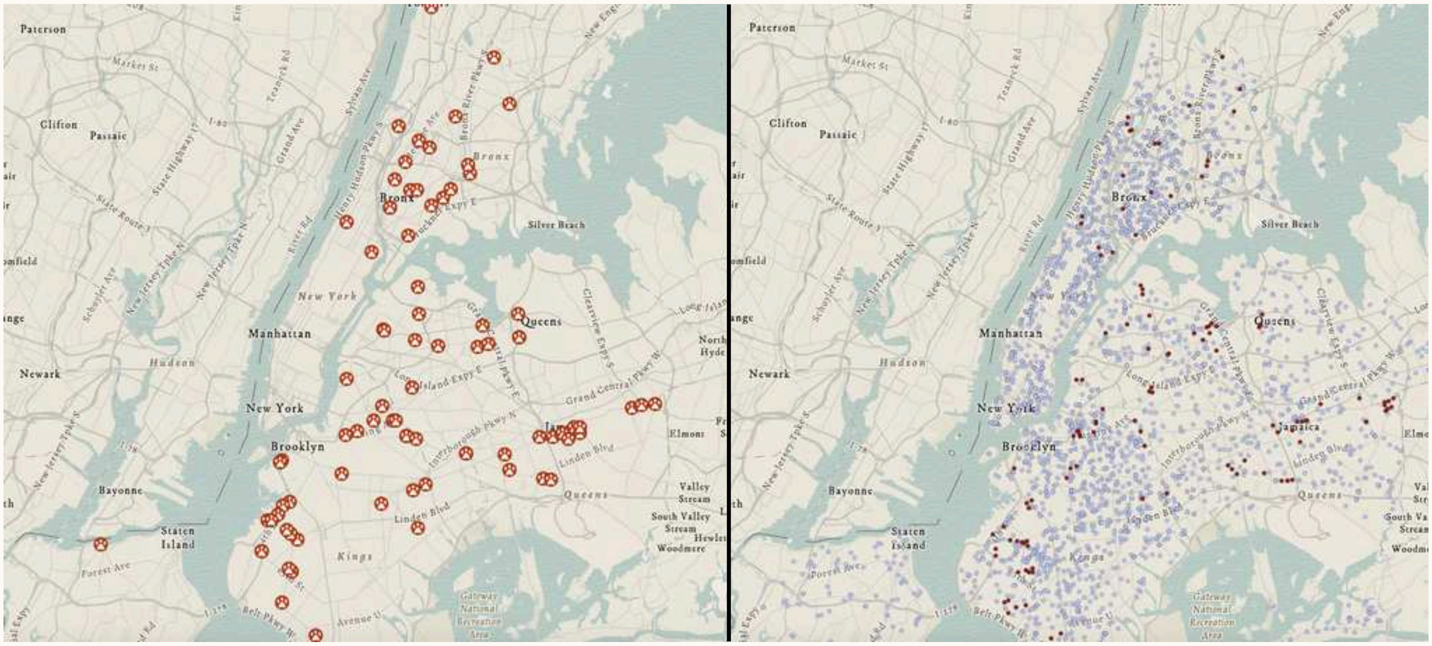
Wildlife trade can also increase the risk of transmission and spillover. Cramped transport and novel environments impose extreme stress on transported animals, suppressing immunity and provoking heavy viral or bacterial shedding. Mixed-species crating and holding allow microbes to leap between hosts and adapt to new onesat the same time.[45] These conditions accelerate mutation and reassortment processes, increasing the likelihood that a pathogen gains the necessary traits for zoonotic spillover, ultimately turning the global wildlife trade into long-distance supply chains for pathogen movement.[46]

2.1 Live Animal Markets and the Wildlife Trade: Risk Multipliers for Zoonotic Diseases

LAMs and the global wildlife trade represent potent risk multipliers of zoonotic disease emergence. LAMS bring diverse domestic and wildlife species into close proximity with humans, creating suitable conditions for zoonotic spillover. Meanwhile, the trade of wild animals across international borders introduces novel and possibly dangerous species and their pathogens into new environments. These intersecting systems amplify opportunities for viral spillover and spread, intensifying risks for public health and ecological stability on a global scale.

First, **live animal markets concentrate the main pathways in which zoonotic spillover occurs in a single setting.** Overcrowded enclosures housing diverse domestic and wildlife species, inadequate sanitation, transport-related stress that weakens animals' immune systems, while on-site slaughtering aerosolizes blood and bodily fluids. People who work in live animal markets or handle by-products from wild animals, as well as those living near dense wildlife populations, are particularly vulnerable to exposure to zoonotic diseases.[47]

These hazardous conditions have historically enabled the emergence of deadly diseases. For example, SARS is believed to have originated from masked palm civets in such environments.[48] In 2025, concerns over public health were reaffirmed when detections of the H5N1 virus led to the closure of seven live-bird markets in New York City.[49] In September 2024, The New York Times reported the existence of approximately 70 live-animal markets across New York City, with a concentration in Queens, the Bronx, and Brooklyn. Alarmingly, several of these markets are situated in close proximity to schools and residential neighborhoods, heightening concerns about potential exposure to zoonotic diseases and unsanitary conditions.[50]



Figures 2-3. Confirmed live animal markets (left) and schools (right) in New York City as of 2021. Schools within 400 feet of LAMs are marked as red points.[51] Credits: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community.

Some wildlife species can be at particularly high risk for zoonosis as they serve as reservoir hosts, silently harboring and shedding pathogens.[52]

Second, the **global wildlife trade turns complex supply chains into potential pathogen pipelines.[53]** The stress of transport weakens animals' immune systems and increases viral shedding, while close confinement of multiple species promotes cross-species transmission.[54] The exotic pet trade heightens these risks by introducing non-native reptiles, amphibians, and small mammals, many of which carry pathogens such as *salmonella spp.*, directly into domestic settings, increasing the likelihood of human exposure.[55]

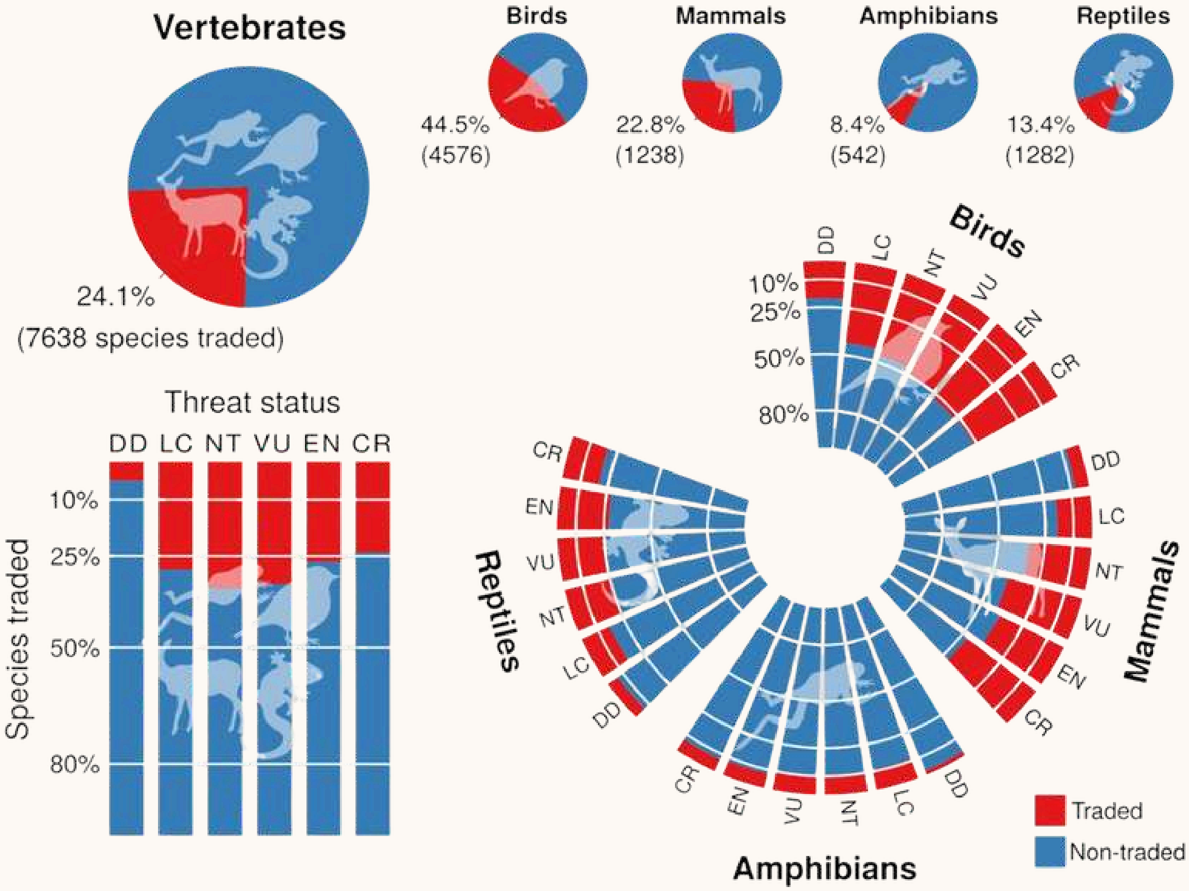


Figure 4. Global wildlife trade of terrestrial vertebrates. The figures in brackets indicate the total number of traded species. The threat status refers to the International Union for Conservation of Nature classification: data deficient, DD; least concern, LC; near threatened, NT; vulnerable, VU; endangered, EN; and critically endangered, CR.[56]

Zoonosis-related risks from wildlife imports are material for New York State. Wildlife imports into the United States originate from all over the world, as data on wildlife imports into the US between 2000 and 2013 indicate (Figure 5).[57] Furthermore, the State of New York is located in the regional port of entry with the highest number of wildlife shipments in the same period (Figure 6).[58] The central role of northeast ports of entry in wildlife imports characterizes NYS as a harbor of potential zoonotic disease-carrying species.

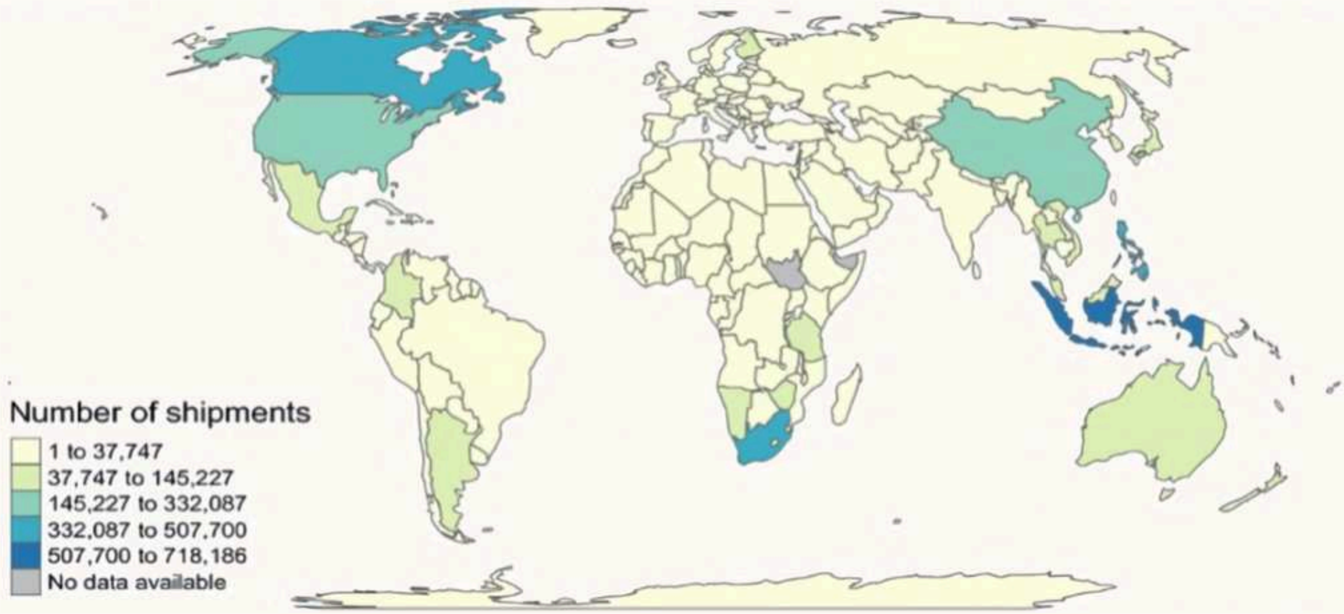


Figure 5. Shipment of wildlife imports to the USA between 2000 and 2013, by country of origin.[59]

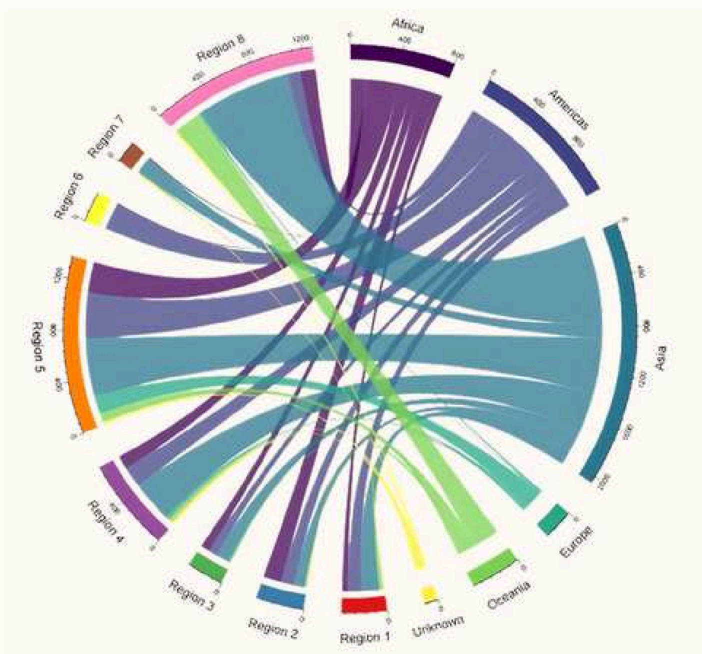


Figure 6. Circle plot representing the thousands of shipments of wildlife, divided by origin continents to US regional ports of entry between 2000 and 2013 (Region 1: Pacific; Region 2: southwest; Region 3: Great Lakes; Region 4: southeast; Region 5: northeast; Region 6: Mountain Prairie; Region 7: Alaska; Region 8: Pacific southwest).[60]

2.2 Zoonotic risks to economies

Beyond public health, **zoonotic diseases can have far-reaching economic impacts**, notably disrupting food production systems and supply chains, which in turn pose serious risks to national and global economies. These disruptions can have direct consequences on the agricultural sector, where the loss of livestock can severely affect productivity. The primary risks stem from indirect impacts, such as labor shortages, transportation delays, and other disruptions that reduce productivity and can significantly strain the broader economic system. Sectors such as tourism and international trade may be particularly hard-hit due to quarantine measures and travel restrictions. From a macroeconomic perspective, reduced consumer demand will have consequences across all sectors, leading to broader economic contraction and slower recovery.

In addition, **while the full economic cost of zoonotic outbreaks is often difficult to quantify, their consequences can be immense.** The cost of response and recovery efforts, such as healthcare spending and economic stimulus packages, can place severe strain on public finances, risking resources for long-term economic development. For example, the COVID-19 pandemic was estimated to cost the U.S. economy around $16 trillion, surpassing half of the nation's 2023 GDP of $27.2 trillion.[61] These numbers highlight the urgent need for preventive strategies, which are far more cost-effective than reacting to pandemics. Yet, underinvestment in early warning systems remains a major challenge.[62]

2.3 Role of the government in addressing the problem

Competing economic and health priorities, as well as information gaps, may limit the effectiveness of private zoonotic disease prevention efforts, indicating the need for a public intervention.

Market-based solutions alone may prove insufficient in addressing the environmental and public health risks associated with live animal markets and wildlife importation. This is due to competing economic and health priorities, unequal access to information among stakeholders, and the complexity of coordinating actions across diverse sectors. In such contexts, relying solely on consumer behavior or voluntary compliance may not lead to meaningful or timely change. As a result, public entities, particularly those with regulatory authority, are often better positioned to implement comprehensive, enforceable policies that align with public health goals. Their ability to mandate standards and coordinate across agencies makes them essential actors in addressing this multifaceted issue effectively.

Externalities are the unintended side effects of individual decisions that impact others who are not directly involved in a given transaction.[63] These effects, whether costs or benefits, are often not internalized by the individuals or entities making the decisions. As a result, individuals may engage in activities that impose burdens on others without bearing the full consequences themselves. In a free market system, this disconnect can lead to irresponsible behavior, where the social costs of actions are shifted onto the broader public rather than absorbed by the actor responsible.

Additionally, **information gaps limit individuals from making informed choices and avoiding harmful actions.** Individuals may be unaware of the risks their behavior poses or the magnitude of potential consequences. This is especially true in the context of zoonotic diseases, where neither sellers nor buyers can readily determine whether an animal carries a dangerous pathogen or could become invasive if released into the environment. Effective surveillance and control of such risks typically require coordinated, multisectoral collaboration engaging government agencies, the private sector, and environmental and public health institutions.[64] Without this integrated approach, efforts to prevent spillovers and mitigate threats to public health remain limited.

03.
The Legislation

The Legislation

Amid growing concerns that the rise of zoonotic diseases in domestic animals, along with importing wildlife, such as bats, rodents, and primates, and selling them in live animal markets can introduce invasive species and spark zoonotic outbreaks, Assemblymember **Jo Anne Simon** introduced a bill on February 25, 2025, to equip the state with stronger early-response tools. The bill targets pathogens that spill over from animals to humans, which can cause serious human disease outbreaks, harm livestock, and threaten ecosystems and the broader economy.[65]

3.1 Legislative summary

New York State Assembly Bill A5947 targets a pressing environmental problem: the risk of zoonotic spillover associated with the importation, trade, and handling of wildlife. It proposes a science-based, adaptive framework to mitigate zoonotic and ecological risks associated with wildlife trade and certain domestic animal movements into New York, supporting prevention, public health, and ecosystem protection while allowing flexibility for research.

The proposed Bill has two major components that amend different sections of the New York State law.

a) Environmental Conservation Law (ECL)

The bill proposes adding a new section (§11-1710) to the ECL, which would prohibit the importation and/or transportation of certain wildlife and fish into the State. It bans the import of certain fish and wildlife into the State of New York and requires the NY Department of Environmental Conservation (NYDEC) to publish a list of fish and wildlife prohibited from entering the state. This list will automatically include all bat, rodent, and primate species, which are considered hazardous species, unless the prohibition of those species is found to be unnecessary. Additionally, species found to impact public health and safety will also be prohibited from entering the state. The legislative proposal would require the NYDEC to suspend any permits for the import of such species.

However, the bill allows any university, college, governmental research agency, bona fide scientific institution, or zoo located in the State to apply for an exemption from any prohibited import or transport of wildlife or fish included in the bill. The applicant is required to demonstrate biosafety equipment and protocols necessary to handle such wildlife or fish.

b) Agriculture and Markets Law (AML)

The bill introduces a new article (Art. 22-A) which pertains to the operation of live animal markets. NY Agriculture and Markets Law regulates the sale and distribution of organic materials in New York State, including the safety of dairy products, disease tracking of plants and animals, and regulation of farmers' markets. This law will also be amended by adding a new article, which further regulates the operation of live animal markets.

The bill requires that the well-being of animals be maintained during both holding and processing. It prohibits the inclusion of invasive species and taxa associated with zoonotic diseases. Additionally, it mandates that wild animals be kept separate from livestock and domestic animals at all stages of the process and bars animals showing signs of illness from entering live animal markets.

3.2 Key provisions and structure of proposed solutions

While the proposed bill cannot eliminate the risk of future zoonotic diseases, it is a critical step toward mitigating their likelihood and lessening their potential impact.

Section 11-1710.1 ECL establishes a proactive prohibited species list. By 31 December 2026, the Department of Environmental Conservation (NYDEC) must publish—and regularly update—a list of wildlife and fish prohibited from entering New York. The list automatically includes all bat, rodent, and primate species, and allows for additions or removals of a wide variety of animals, including domestic livestock and pets, based on scientific evidence of risk to public health, native ecosystems, or agriculture.

If new scientific evidence indicates that a species could transmit a novel, easily spreadable disease to humans, **Section 11-1710.2 ECL** authorizes the NYDEC to act immediately: all existing import permits for that species must be suspended, and no new licenses should be issued until strong testing, treatment, or quarantine protocols are in place. These actions must be coordinated with the Department of Health and the Department of Agriculture and Markets to ensure a science-based response.

To avoid disrupting legitimate research or conservation work, **Section 11-1710.3 ECL** allows for case-by-case exemptions. Universities, government labs, zoos, and similar institutions may apply for waivers, granted only if they demonstrate strong biosafety measures, pass inspections, and possibly pay a processing fee. This ensures high-risk species stay out of the commercial market, while enabling essential scientific and zoological work to continue safely.

A5947's provisions will also allow the NYDEC to request any additional information when necessary to meet the objectives of this section. It also authorizes the Department to conduct inspections during the application process to ensure compliance. By granting regulatory agencies the authority to take immediate action when new risks are identified, the bill directly addresses a key transmission pathway to zoonotic diseases.

On the other hand, **Article 22-A AML** further regulates the conditions of animal sale and behaviors of market operators in LAMs. To limit risks of zoonotic spillover, **Section 271** mandates the NYDAM to publish a list of prohibited animals that may be invasive or responsible for zoonosis.

Section 272.1 further requires LAMs to follow stricter rules to protect both animal welfare and public health. It prohibits the processing and dismemberment of live animals, as well as the transport and sale of wildlife near livestock or domestic animals. Animals must be housed humanely, with no risk of dehydration or starvation; species included in the prohibited species list established in Section 11-1710.1 ECL are banned; visibly sick wildlife cannot be sold; and bat, rodent, and primate species are entirely prohibited from sale.

To ensure that the provisions of Article 22-A are enacted, **Section 272.2** establishes a system of penalties for noncompliance. Written warnings shall be issued for a first violation, while penalties for subsequent violations shall include charges of a class A misdemeanor plus a fine of up to one thousand dollars.

While the bill sets several mandatory requirements, such as the publication of the prohibited species list by the DEC, the suspension of licenses if credible evidence links a species to a novel, transmissible pathogen—in consultation with Department of Health (NYDOH) and the Department of Agriculture and Markets (NYDAM), it also offers some flexible elements. The NYDEC may update the list as science evolves, impose additional disease-control measures, and grant exemptions to zoos, universities, and research institutions.

The incorporation of scientific discretion, institutional coordination, and regulatory flexibility makes the bill responsive to a dynamic threat environment, while aligning with broader efforts toward integrated environmental governance that seek to advance both human and ecological health. However, its effectiveness may depend on the development of clear implementation mechanisms, sufficient funding, and attention to equity impacts.

3.3 POLICY PRINCIPLES GUIDING THE BILL

This proposal is based on two fundamental scientific ideas. One of these is the **Precautionary Principle**, which supports action in the face of scientific uncertainty to prevent potentially serious or irreparable harm.[66] Critics of this principle argue that over-caution can stifle low-risk activities, harm livelihoods, and drive trade into difficult-to-monitor illegal channels.

To balance this, the bill incorporates **Adaptive Management.** This approach treats policy as a hypothesis, using a dynamic banned list updated as new surveillance data becomes available.[67] The challenge to this approach is that the strategy requires strong surveillance capacity and transparent, science-based criteria for making updates to be effective.

3.4 Public and private stakeholders: who stands to win or lose from the Bill?

Stakeholders hold varying preferences and positions regarding the definition and scope of the environmental problem targeted by the bill. These differences can significantly influence how the bill is interpreted and implemented. Therefore, identifying potential opponents to the bill's adoption is essential to evaluating the likelihood of its successful passage and the effectiveness of its proposed provisions. Understanding these perspectives will also help anticipate potential sources of resistance and inform strategies to build broader support for the legislation.

The bill was introduced in February 2025, and as of the date of publication of the present report, it remains uncertain whether the Committee on Environmental Conservation has taken a formal position on it. While the legislative process at the state level is ongoing, international efforts to address similar environmental and public health concerns have been underway. However, reaching global consensus on mitigation strategies remains difficult, particularly in rapidly developing regions such as parts of Asia, where emerging markets often contend with competing priorities between public health protections and economic growth. These global dynamics highlight the importance of coordinated, evidence-based policies at both the national and international levels.

Stakeholders likely to oppose the legislation include live animal market vendors, wildlife importers, and the consumers of these products.

- Vendors may face two primary challenges: (i) stricter regulatory requirements and (ii) a potential loss of income due to decreased sales or market closures.
- Importers could encounter increased barriers to accessing high-value species, leading to higher operational costs.
- Consumers, particularly those from immigrant communities, may experience reduced availability and increased prices of culturally significant foods. This introduces a cultural dimension, as dietary practices tied to heritage may be restricted.

Experts emphasize that while regulating wildlife trade is essential for safeguarding environmental and public health, such policies must also account for the livelihoods and food security of communities that rely on these markets to avoid unintended social and economic consequences.[68]

The bill may have a disproportionate impact on certain regions. Urban centers such as New York City and Buffalo, which host a significant number of live animal markets, could be especially affected due to strong consumer demand and the cultural importance of these products. Rural and agricultural communities may also face unintended consequences if certain species currently imported for farming, aquaculture, or local consumption become restricted. In these areas, the legislation could limit the availability of specific fish or wildlife, potentially disrupting the regional supply chains. These geographic and economic disparities highlight the importance of assessing regional impacts and ensuring that regulatory measures are accompanied by support mechanisms for affected communities.

04. Science, implementation tools, and controversies of the proposed solutions

4.1 Regulation of Live Animal Markets (LAMs)

i. Science

Live animal markets create unnatural aggregations of species, where stress, close confinement, and interspecies interactions facilitate viral shedding and transmission.[69] Although many zoonotic infections are preventable, current regulations in U.S. states are not proportional to the risk level of these infections, yet regulators have often overlooked and underappreciated this issue.[70,71]

For this reason, the bill grants the NYDEC the authority to suspend existing animal trade licenses, allowing for rapid intervention in markets, fairs, pet shops, and exhibitions, where amplification conditions—such as crowded, multispecies environments where animals are stressed and immunosuppressed—are higher.

For instance, an example from China illustrates how early intervention is critical because time is a major limiting factor in outbreak response. After the first laboratory-confirmed human infection with avian influenza A (H7N9) virus was officially reported in Shanghai in early 2013, Chinese public health authorities acted swiftly to implement targeted interventions, most notably the closure of live poultry markets (LPMs)—the primary venue for human exposure to infected birds. However, the first human infections occurred in February, and they were not officially reported and confirmed until late March, delaying targeted interventions. This lag in detection and reporting was partly due to the virus's unusual characteristics.[72] It caused severe illness in humans but little to no symptoms in birds, making early identification in poultry populations difficult.[73] The delay in recognizing the virus's human health threat limited the window for early containment and allowed the virus to spread more widely in the initial weeks, underscoring the critical importance of rapid detection and cross-sectoral communication in zoonotic disease control. However, after public notification of the virus outbreak, live poultry markets were shut down days later.[74,75]

In Shanghai, where the outbreak was first detected and market closures were promptly enforced, the mean daily number of new human cases dropped by 99%. Similarly, in Hangzhou, cases declined by 99%, and in both Huzhou and Nanjing, the reduction was approximately 97%.[76] These reductions occurred within days of market closures, strongly indicating a causal link between the suspension of live poultry trading and the interruption of viral transmission to humans.

ii. Implementation Tools

Bill A5947 provides a strong framework for regulating the sale of high-risk wildlife species, including important tools such as permit suspension authority and quarantine and testing requirements. While NYDAM already regulates the general operation of LAMs under the AML (including hygiene standards, animal handling, and disease prevention), this bill expands the NYDEC's role to address wildlife-specific zoonotic risks. These measures are intended to complement, rather than replace, NYDAM's existing enforcement authority and will require close coordination between the two agencies to avoid duplication and ensure consistent application across markets.

NYDEC's regulatory authority over the operative conditions of LAMs is a crucial implementation tool, as sanitation and disinfection protocols play a critical role in controlling the transmission of pathogens. LAMs, farms, and any other facility with high exposure to wildlife animals must meet minimum sanitation standards, including proper waste disposal and access to clean water for animals. These minimum standards should include a list of disinfectants proven to be effective at killing viruses, bacteria, and other pathogens on surfaces, equipment, and animal enclosures. For example, products like hydrogen peroxide and sodium hypochlorite help eliminate germs on surfaces and equipment by breaking down their protective structures and killing them, preventing further spread.[77] Designated quarantine facilities and protocols are also essential to prevent further transmission during this critical waiting period. Animals that appear sick or have been in close contact with other sick animals should be quarantined while awaiting diagnostic confirmation.

Additionally, zoonotic outbreaks can be detected in people, not animals. Hospitals, primary care physicians, and public health clinics play a critical role in recognizing unusual clinical presentations that may indicate emerging zoonosis. For example, the SARS outbreak was first identified by physicians treating patients with unexplained respiratory illness, not by market surveillance.[78] Therefore, effective implementation requires training for healthcare providers to recognize potential zoonotic diseases and to integrate health system data with wildlife surveillance.

Indicators

The primary outcome of the bill is to reduce zoonotic spillover from animal markets and wildlife trade in the state of New York. In order to achieve that outcome, a series of outputs with tangible results from specific activities must be delivered. All this can then be measured with indicators, which will assess whether the bill's proposed solutions are being effectively implemented and contributing to achieving the goal for which they were created.

Table 1. Outcome indicators for the regulation of LAMs. Authors' own elaboration.

Outcome Indicators	
Lower disease risk in live animal markets	Evaluated through the number of infected animals in LAMs reported by the NYDAM. NYDEC will use this surveillance data, in coordination with NYDAM, to take action on risks, such as license suspensions or adding species to the prohibited list. Eventually, a successful implementation would lead to a decrease in the number of sick animals in these markets.
Consistent compliance	Assessed by the number of LAM violations following the Bill's implementation. If successful, the number is initially expected to increase, but in the long run, it will decrease as markets comply with the new protocols.

In order to achieve the regulatory outcomes on how LAMs operate, four key outputs need to be produced: updated hygiene and sanitation protocols, an inter-agency coordination system, updated resources for law enforcement, and an integrated monitoring dashboard with NYDOH.

The indicators below aim to measure the successful and timely implementation of the four outputs regarding LAMs.

Table 2. Output indicators for the regulation of LAMs. Authors' own elaboration.

Output	Competent agency	Indicator	Timeline
Updated Hygiene and Sanitation	NYDAM (lead), NYDEC	Publicly accessible and science-backed hygiene protocols and guidelines made available through formal notification issued by the NYDAM to LAMs before the enforcement of new standards on Dec. 31, 2026. NYDAM leads on hygiene protocol development and enforcement in LAMS, while NYDEC coordinates on zoonotic disease risks identified through these protocols and inspections.	**Month 1** - Bill is adopted **Month 3** - Literature review completed **Month 6** - Protocols drafted **Month 9** - Rules refined and shared with all LAMs **Dec. 31st, 2026** - Enforcement begins
Inter-Agency Coordination System	NYDEC, NYDAM, NYDOH	Creation of a shared database documenting all cases of animal diseases with high risk of zoonosis that includes the 1) date of identification 2) location of sick animal(s) and 3) actions taken in response (culling, quarantining, contact-tracing, sanitation) by Dec. 31st, 2026. Additionally, the establishment of a quarterly meeting and monthly email updates between the NYDEC, the NYDAM, and NYDOH to evaluate zoonotic disease risk in the state.	**Month 1** - Bill is adopted **Month 3** - Website mock-up finalized, development begins **Month 9** - Interagency coordination system active, existing data uploaded **Dec. 31st, 2026** - Website live, meetings and email blasts begin
Resources for Law Enforcement	NYDAM	Creation and distribution of fact-sheets informing law enforcement officers how to 1) identify high-risk species 2) recognize non-compliant LAMs 3) safely engage with animals by Dec. 31st, 2026	**Month 1** - Bill is adopted **Month 3** - First draft of fact-sheets **Month 6** - Fact-sheets finalized, distributed to DOH, DEC, for final approval **Dec. 31, 2026** - Fact-sheets distributed to law enforcement
Integrated monitoring dashboard with Department of Health	NYDOH	Communication of zoonotic-specific causes for hospitalization to NYDOH and integration of factors within the Electronic Syndromic Surveillance System (ESSS)	**Month 1** - Bill is adopted **Month 4** - Initial coordination begins **Month 6** - Data-sharing protocols defined **Month 10** - ESSS starts including data on hospitalization related to zoonotic risks **Dec. 31, 2026** - The dashboard is implemented

Figure 7 below provides the implementation timetable for these four outputs, outlining the key deadlines required to ensure a timely and effective implementation of the Assembly Bill A5947.

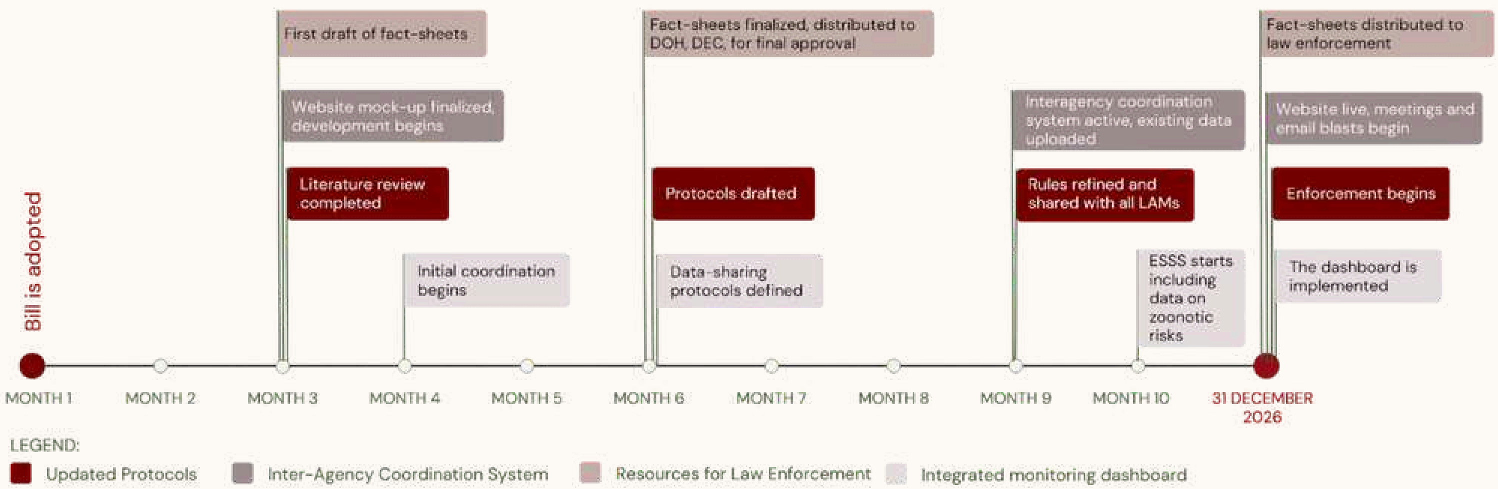


Figure 7. Timeline of implementation of outputs for the regulation of LAMs. Authors' own elaboration.

iii. Controversies

Although there is increasing scientific consensus regarding the links between wildlife trade and disease emergence, the bill raises many scientific and policy issues. For example, the economic implications of its implementation are a topic of much debate. To meet basic standards, LAMs must invest in better sanitary and hygiene practices, infrastructure upgrades, and successfully pass regular health inspections with more stringent standards, all of which could result in high operational costs. [79]

However, increasing compliance costs could force some markets to close, directly affecting how vendors and small businesses operate. For instance, small live animal markets may be unable to afford additional facility upgrades and regular staff training costs, forcing them out of operation entirely.

4.2 Creation of a prohibited species list

i. Science

The production of a list of prohibited species for import will contribute to reducing repeated contact with high-risk wildlife species, which is one of the most effective strategies for preventing zoonotic emergence.[80] Scientific evidence demonstrates that zoonotic pathogens are not evenly distributed across species; instead, they are concentrated in a small number of wildlife groups that share ecological and physiological traits favoring viral maintenance and transmission.[81] The proposal to create a prohibited species list to reduce the diversity of species present in trade and public display would minimize the viral genetic pool at human-animal interfaces. This strategy follows the ecological network theory, whereby reducing the number of reservoir hosts at an interface decreases the opportunity for viral spillover and recombination.[82]

The selection of the species to be included in the list is grounded in decades of scientific research identifying which taxa pose a higher zoonotic risk. Studies of wildlife-pathogen networks have shown that species with high population densities, broad geographic ranges, fast reproductive rates, and strong tolerance for asymptomatic infections tend to maintain diverse viral communities and facilitate spillover.[83] In addition to host traits, the ecological context of trade environments further amplifies risk. Mammalian orders such as Chiroptera (bats), Rodentia (rodents), and Primates are of particular concern due to their biological and ecological traits that favor viral maintenance and transmission.[84] These taxa are recognized as major reservoirs of zoonotic viruses.[85]

Bats host an exceptionally high diversity of zoonotic viruses.[86] Their unique immune system, characterized by a dampened inflammatory response and robust antiviral defenses, enables them to harbor viruses without developing disease.[87] In addition, their long lifespans and flight capabilities contribute to both viral persistence and long-distance spread.[88] Rodents are important reservoirs for hantaviruses, arenaviruses, and other zoonoses, in part due to their high reproductive rates and close association with human settlements.[89] Primates pose risks as they share approximately 98% of their DNA with humans. This physiological and genetic similarity increases the likelihood of cross-species transmission, representing a heightened risk for zoonotic spillover. Viruses like simian immunodeficiency viruses and Ebola exemplify the potential for transmission from primates to humans.[91,90]

Risk assessment theory suggests species should be evaluated based on ecological traits and host-pathogen dynamics. While particular species in these orders are indeed high-risk, others, such as some bat species, may pose a lower risk, yet are automatically included in the ban.[92]

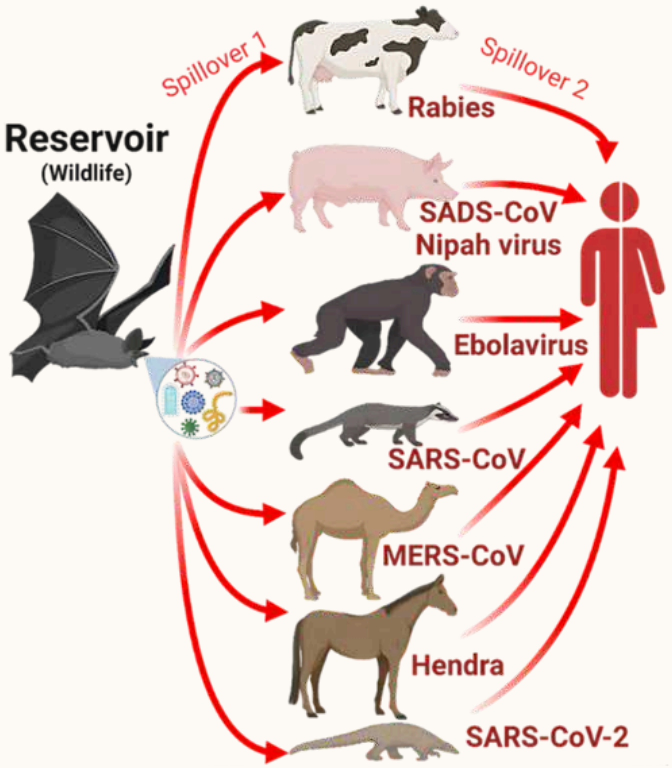


Figure 8. Recent cases of cross-species transmission from a wildlife host (left) to wildlife or domesticated species (middle) to humans (right).[93]

Although these wildlife species represent a disproportionately higher risk, given that they have not co-evolved with humans or domestic environments and often carry viruses without showing clinical symptoms, zoonotic pathogens can also emerge from domestic species and pets, particularly in contexts where hygiene, veterinary oversight, and animal welfare are insufficient. For example, dogs and cats can transmit a series of viral, bacterial, parasitic, and fungal diseases to humans, including cowpox, leptospirosis, and salmonella.[94] Livestock, similarly, have been the source of zoonotic outbreaks such as avian influenza and brucellosis.[95]

In addition to risks from direct contact between humans and wildlife, these taxa represent threats to domestic livestock such as horses and cattle.[96,97] This may have negative consequences on the agricultural productivity that the Bill seeks to protect, further indicating the need for targeted import bans on high-risk species to protect economic welfare in addition to public health.

The creation of this list reflects a preventive approach rooted in ecological science. It follows the core of the **One Health** framework, which recognizes that human, animal — domestic and wild — and environmental health are deeply interconnected.[98]

Figure 9. Venn diagram of the One Health Framework. Illustration generated with Artificial Intelligence (model: ChatGPT-4o).

By restricting high-risk taxa in wildlife trade, the bill removes one of the key ecological pathways for zoonotic emergence. One Health science shows that zoonotic pathogens do not emerge in isolation but arise from the dynamic interactions between wildlife, domestic animals, humans, and shared ecosystems. By removing key zoonotic reservoirs from trade, the bill reduces ecological disruptions that facilitate pathogen spillover, while also translating One Health principles into actionable trade regulations that protect human, animal, and environmental health.

ii. Implementation tools

The implementation of a prohibited species list in trade practices requires a multi-pronged approach. While regulating species is critical, monitoring and surveillance are equally important to prevent spillover. Incorporating interagency consultation and requiring disease mitigation protocols like quarantine and testing are appropriate and effective measures.[99] There is consensus that robust oversight mechanisms to prevent zoonotic spillover at key points in trade chains are necessary to prevent zoonotic transmission.[100] Market closures and trade restrictions are two such mechanisms that have historically reduced zoonotic transmission.[101]

Interdisciplinary monitoring teams—including veterinarians, human physicians, and epidemiologists—can detect warning signs in animals and environments. This requires standardized protocols for collecting blood, saliva, and other diagnostic samples, as well as for handling and examining sick or dead animals following the necessary biosecurity measures. A better centralized reporting system for tracking cases can function as the main surveillance tool. When symptoms are detected, the enactment of rapid response protocols can lead to immediately isolating affected animals or humans, implementing quarantine protocols, and conducting confirmatory testing. Communicating information to the public is also relevant.[102] Furthermore, public engagement should also include education about zoonotic risks and early warning signs, as well as accessible mechanisms for communities to report suspected threats.

<u>Indicators</u>

Similar to the regulatory provisions on LAMs, compliance and effective implementation of the prohibited species list can be measured with targeted indicators. Although the ultimate outcome remains the same—reducing zoonotic spillover from animal markets and wildlife trade in the state of New York— output-specific indicators facilitate monitoring the successful implementation of the intended regulatory action on high-risk wildlife trade.

Table 3. Outcome indicators for implementation of a prohibited species list, including the 1) desired outcome and 2) indicator used to evaluate the success of that outcome

Outcome Indicators	
1. Fewer high-risk species will enter New York live animal markets	Customs enforcement data, which shows the number of prohibited species intercepted at ports of entry, can be used to assess the success of this result. With a good implementation, the number of detected prohibited species is expected to rise in the short term and fall in the long run.
2. Transparent and limited exemption use	It can be evaluated by the number of exemptions granted with complete documentation for all the banned species entering New York's markets.

Additionally, the success of the implementation can be evaluated based on its timely implementation, distribution, and utilization. For instance, the bill explicitly mandates the terminal date for publication of the prohibited species list as 31 December 2026.

At the same time, to ensure the bill's successful implementation, formal communications and information sharing between federal agencies, New York State agencies, the State of New York, and other states must be established.

The indicators below aim to measure the successful and timely implementation of the two outputs regarding the prohibited species list.

Table 4. Output indicators for the implementation of a prohibited species list.

Output	Competent agency	Indicator	Timeline
Prohibited species list	NYDEC	Creation and distribution of a specific and scientifically-grounded list of animal species that are at high-risk for zoonotic disease spillover into human populations by Dec. 31st, 2026	**Month 1** - Bill is adopted **Month 3** - Research on taxa completed **Month 6** - List drafted **Dec. 31, 2026** - List finalized and published
Exemption Application Process	NYDEC	Creation and publication an online application for the importation of prohibited species that requires 1) institutional affiliation 2) demonstrated understanding of updated hygiene and safety protocols 3) documentation establishing a clear need for importation and verifying the applicant's qualifications	**Month 1** - Bill is adopted **Month 3** - Rules defined for when and how exemptions can be granted **Month 5** - Website mocked-up **Month 6** - Website development begins **Dec. 31, 2026** - Application system is active

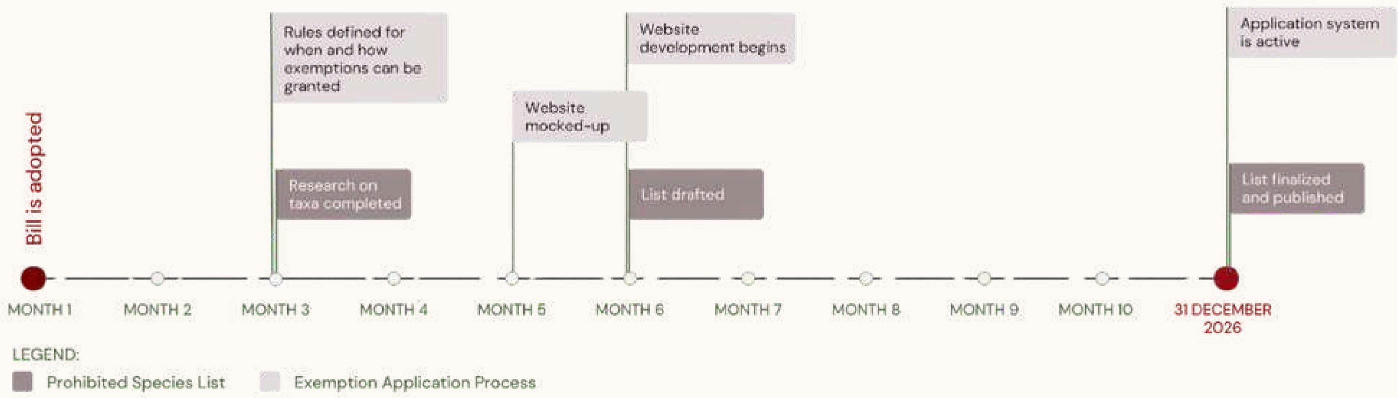


Figure 10. Timeline of implementation for the prohibited species list and the exemption application process. Authors' own elaboration.

iii. Controversies

Some scientists argue that the default ban on all bat, rodent, and primate species is too broad.[103] According to risk assessment theory, species should be evaluated based on a combination of factors that include ecological traits and host-pathogen dynamics.

While certain species in these orders are indeed high-risk, others, such as some bat species, may pose a lower risk, yet are automatically included in the ban.[104] On the other hand, avian species are not explicitly mentioned in the bill; however, evidence demonstrates that zoonotic diseases can also originate from this group.[105] Avian species, both wild and domestic, have been linked to zoonotic influenza outbreaks. Influenza A viruses can reassort and evolve rapidly when multiple bird species are held together in close quarters under stressful and unhygienic conditions.[106]

Moreover, although the bill requires agencies to act based on scientific evidence, zoonotic emergence can be rapid and unpredictable. Current models and methods have limitations that do not allow them to determine which species will be the source of future outbreaks, potentially resulting in regulatory delays or precautionary overreach.

05. Strengths and Weaknesses of the Bill

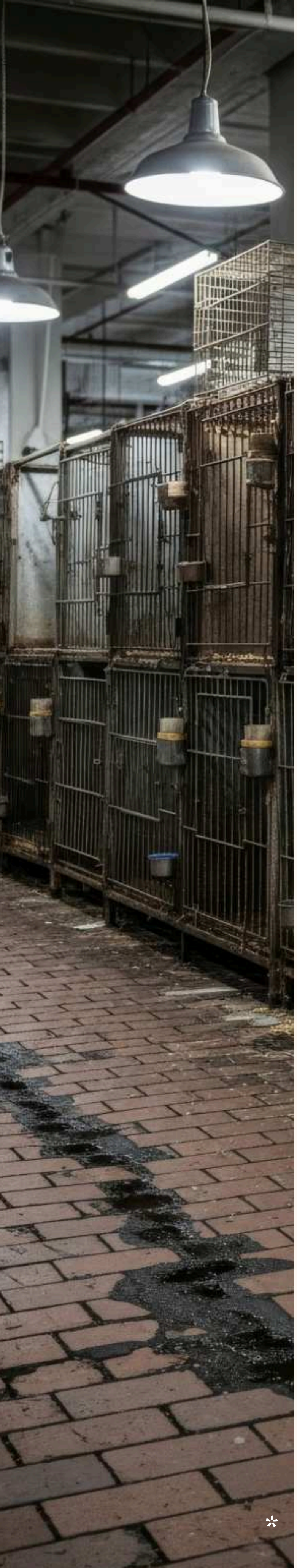
Bill A05947 presents strong preventative measures, long-term economic benefits, positive effects on ecological protection, and incentives for inter-agency coordination.

A key strength of the bill lies in its emphasis on prevention rather than reaction. This is particularly important because zoonotic diseases can emerge and spread rapidly, overwhelming the capacity of response systems.[107] The associated costs of preventive efforts are substantially less than the economic and mortality costs of responding to these pathogens once they have emerged.[108] Orienting policy towards the prevention of future crises is crucial, which is exactly what this bill aims to do.[109]

From an economic perspective, the bill's preventive approach offers strong long-term benefits. The up-front implementation costs, such as agency staffing, interagency coordination, risk assessments, and enforcement, may be substantial. However, these costs are significantly less than the costs of a zoonotic outbreak.

The bill also delivers significant public health and ecological benefits by targeting one of the primary pathways for zoonotic transmission: the international trade of high-risk wildlife species. A 2020 study found that, between 1990 and 2020, the United States imported more wildlife-associated pathogens than any other country.[110] Public health officials in both the United States and globally have pointed to wet markets and illegal wildlife trading as conduits for disease transmission.[111]

Another key strength is the enhanced ecological protection that will result from the implementation of the bill. Invasive species from the pet and animal trade further threaten native biosecurity, including the introduction of novel pathogens or shifts in host–vector relationships.[112] By restricting the importation and sale of potentially invasive species, the bill strengthens biosecurity as well as ecosystem resilience. This too represents an indirect economic benefit related to maintaining biodiversity and protecting agricultural resources; limiting the importation of invasive or high-risk species reduces the possibility of ecological invasions that could result in pest infestations, native species declines, or harm to commercial fisheries.[113] A proactive legislative approach, like that taken in A5947, helps safeguard not only public health but also the long-term viability of rural economies and food systems.



Additionally, the bill promotes inter-agency collaboration to ensure that the implementation is informed by the best available science. By fostering these cross-sector collaborations, the bill ensures an integral approach to preventing zoonotic risks, in accordance with the "One Health" framework, which recognizes that the health of humans, domestic and wild animals, plants, and the wider environment are closely linked and interdependent.[114]

However, several challenges and limitations could still affect the bill's impact and successful implementation.

Although knowledge of zoonotic diseases has advanced significantly in recent years, especially following the COVID-19 pandemic, many uncertainties remain. Regulatory decisions must rely on the best available data, which continues to evolve. In designing policy responses, one consideration is whether to narrowly target the highest-risk species or apply broader bans, while also weighing the risk that overly restrictive measures might lead to unregulated activity.

In addition, more than 80 wildlife markets are currently operating in New York State, suggesting that the bill could impact small businesses and employees who rely on them, potentially resulting in enforcement challenges. While the legislation represents a step toward protecting public health at the state level, its impact might be limited without broader national and international coordination. On the cost side, small-scale importers and sellers of wildlife could face financial strain as a result of new licensing barriers or species bans. Compliance costs arising from administrative burdens of exemption seeking, adherence to biosafety standards, or adaptation to new protocols can be particularly difficult for companies lacking access to technical expertise or legal services.[115]

Finally, while the bill does not explicitly address diversity, equity, or inclusion (DEI), its impact will not be evenly distributed across all populations. While those living in urban areas with nearby access to densely clustered live animal markets stand to benefit the most from improved public health protections, patrons of those markets may lose access to culturally significant foods if the market is unable or unwilling to comply. Historical analysis illustrates that marginalized groups disproportionately face exposure to zoonotic risk via proximity to underregulated markets or to environmental health infrastructure that is lacking.[116]

06. Key Insights and Recommendations

Key Insights and Recommendations

Provisions in the current bill will significantly improve New York State's ability to prevent zoonotic diseases from domestic animals and wildlife in live animal markets. For example, implementing Bill A5947 would generate procedural and substantive implications for State departments, public and private institutions, businesses, and citizens of the State of New York. For citizens in particular, the proposed bill aims to reduce risks associated with zoonotic diseases sourced from live animal markets and wildlife trade in the State, with a possible long-term reduction of citizens' exposure to infectious hazards, including potentially deadly infections. Ultimately, the bill aims to prevent the harms of zoonotic disease outbreaks, which account for up to 2.7 million deaths annually.[117]

However, the risk of zoonotic disease transmission from animals to humans remains a significant public health concern. Beyond its direct health impact, such transmission can disrupt food production systems and supply chains, ultimately leading to broader economic consequences. These disruptions can significantly affect the agricultural sector and, in severe cases, the overall economy. Additionally, the impact of the bill will likely not be evenly distributed across all populations, as those living in urban areas with nearby access to live animal markets that are concentrated stand the most to benefit from improved public health protections.

Addressing these challenges demands sustained, interdisciplinary One Health research and science-based policies. New York State's Bill A05947 would curb high-risk wildlife imports and close unhygienic live markets to sever critical links in the transmission chain and foster a more resilient, adaptive living system. Nevertheless, early intervention is critical because time is a major limiting factor in outbreak response.

Recommendations

1. **Expand the prohibited species list to nontraditional taxa.** Including select high-risk wild avian species in the prohibited species list may further strengthen the preventive impact of the proposed regulatory action in limiting risks of zoonotic spillover.

2. **Strengthen real-time data sharing mechanisms.** To strengthen implementation, real-time data sharing should be established across all levels of government and between key agencies, including the Departments of Environmental Conservation, Public Health, and Agriculture and Markets.

3. **Build interdisciplinary surveillance teams.** Local healthcare professionals and veterinarians, who may be the first to detect zoonotic disease signals, must be integrated into surveillance systems. A unified database across agencies is also critical, as fragmented information and unclear chains of command can create confusion, delay emergency responses, and reduce regulatory effectiveness.

4. **Improve equity and retain a science-based approach to zoonosis prevention.** Ultimately, the success of the bill will depend on its ability to apply scientific evidence while ensuring that implementation remains responsive, equitable, and grounded in real-time interagency coordination.

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